UNDERGRADUATE CALENDAR

1986-88

McMASTER UNIVERSITY

ARTS & SCIENCE PROGRAMME
FACULTY OF BUSINESS
FACULTY OF ENGINEERING
FACULTY OF HEALTH SCIENCES
FACULTY OF HUMANITIES
FACULTY OF SCIENCE
FACULTY OF SOCIAL SCIENCES
McMaster University

Undergraduate Calendar

1986-1988

Arts and Science, Business, Engineering,
Health Sciences, Humanities,
Science and Social Sciences.

The University reserves the right to change information contained in this calendar, and, because of resource limitations, reserves the right to limit enrolment in or admission to any course or programme at any Level. The timetable which is published annually should be used to determine:

1. if a course is to be offered, and
2. the term in which a course is to be offered.

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Directory for Correspondence and Enquiries
Mailing Address: McMaster University
Hamilton, Ontario, L8S 4L8
Telephone: Area Code 416, Number 525-9140

The following is a list of University offices (with the appropriate postal code) and administrative staff members that are most frequently called on. Other offices and services are described throughout the Calendar with their addresses and telephone numbers.

Admission to Undergraduate Studies
Associate Registrar (Admissions and Awards) Harold D. Bridle
Admissions Officers Edie Rochkin, Liz McCullum
Gilmour Hall, Room 120 (L8S 4L8) extn. 4034, 4796

Health Sciences Admissions
Assistant Registrar (Health Sciences) Elaine Rhodes
Health Sciences Centre, Room 1B7 (L8S 4J9) extn. 2114

Student Liaison
Manager Chris Jewell
Liaison Officers Paul Thomson, Marilyn Mason, and Virginia Alderman
Gilmour Hall, Room 102 (L8S 4L8) extn. 4787

Student Financial Aid
Director of Financial Aid Ron Coyne
Divinity College, Room 229 (L8S 4L8) extn. 4319

Scholarships and Prizes
Academic Awards Officer Olga Tynowski
Gilmour Hall, Room 113 (L8S 4L8) extn. 4789

Examinations, Schedules and Reservations
Assistant Registrar (Examinations and Schedules) Helen I. Barton
Gilmour Hall, Room 107 (L8S 4L8) extn. 4453

Transcripts and Records
Associate Registrar (Records) Jim Walker
Gilmour Hall, Room 108 (L8S 4L8) extn. 4457

Using the Calendar
The information in this Calendar is arranged in the sequence most appropriate for use by a prospective or a new student.

The first sections describe procedures and regulations that apply university-wide. These are sessional dates, application and admission procedures, academic regulations, Senate policy statements, and fees and other financial information. These are followed by a summary of the various degree programmes offered by each Faculty.

The next sections start with the Arts and Science Programme followed alphabetically by sections related to the six Faculties: Business, Engineering, Health Sciences, Humanities, Science and Social Sciences. Each section describes specific Faculty regulations and the undergraduate degree programmes by department. The programme descriptions specify which courses and what academic standing is required in order to satisfy the University's requirements for awarding a Bachelor's degree.

After consulting the programmes, you will note that some courses are Required and some are Electives. You should then look at the section, Course Listings by Teaching Departments, to determine the prerequisite requirements you must meet in order to register for a specific course. The course listing is presented alphabetically by department.

At the back of the Calendar there are two sections of information about the University services, the libraries, residences, research laboratories, computing facilities, and student activities and organizations.

The next section on Academic Awards, lists all the awards and scholarships offered to Undergraduate students by McMaster University. The regulations governing these awards are also described.

Bursaries and loan funding is presented under Supplementary Student Financial Aid.

To locate information about a specific subject, you should consult the Index at the back of the Calendar.

School of Graduate Studies
Gilmour Hall, Room 110 (L8S 4L8) extn. 3679

Centre for Continuing Education
Commons Building, Room 116 (L8S 4K1) extn. 4321

Arrangements for disabled persons
Systems Development and Calendar Officer Laurel Stuart
Gilmour Hall, Room 107A (L8S 4L8) extn. 4339

On-campus housing
Director of Residence Life John Metford
Manager of Residence Administration Barbara Stewart
Commons Building, Room 115 (L8S 4K1) extn. 4223

Off-campus housing
Commons Building, Room 101A (L8S 4K1) extn. 4649

Employment opportunities
Student Placement Office, Hamilton Hall Room 409 (L8S 4K1) extn. 4253

Advice on personal problems
Director of Student Counselling Services R. Heinzl
Hamilton Hall, Room 302 (L8S 4K1) extn. 4711

Advice for overseas students
International Students' Advisor Pat J. Fernando
Hamilton Hall, Room 401 (L8S 4K1) extn. 4748

Grievances
Secretary of the Senate Joan Morris
Gilmour Hall, Room 104 (L8S 4L8) extn. 4337

Other Publications
UNDERGRADUATE STUDIES
McMaster Divinity College Calendar
School of Social Work Booklet
Level I Handbook

All of the above publications are available from the Office of the Registrar.

GRADUATE STUDIES
Calendar of the School of Graduate Studies, available from the School of Graduate Studies
Faculty of Business M.B.A. programme booklet, available from the Faculty of Business
Post-Graduate Medical Program Calendar available from the Health Sciences Registry, in the Health Sciences Complex, Room 1B7.

CERTIFICATE AND PROFESSIONAL STUDIES
Professional designations, certificate and correspondence programmes, available from the Centre for Continuing Education.

GENERAL INTEREST NON-CREDIT STUDIES
Brochures about non-credit programmes and special offerings, available from the Centre for Continuing Education.
McMaster University, in 1987, proudly celebrates one hundred years of active life in post secondary education, during which it has grown to be one of the leading universities in Canada.

Named after Senator William McMaster, who bequeathed funds to endow a 'Christian school of learning', McMaster University grew out of educational work initiated by Baptists in central Canada as early as the 1830's. After its initial years in Toronto from 1887 to 1930, the University was moved to Hamilton and became non-denominational in 1957, although the historic Baptist connection has been continued through the separately incorporated McMaster Divinity College. Over 11,000 full-time students attend McMaster University, almost 1,200 of whom are pursuing advanced degrees offered through the School of Graduate Studies. In addition, about 3,000 part-time students are registered in the Winter Session from September to April, and 2,500 in the Summer Session from May to August. The University also provides courses in centres located outside Hamilton, for which full credit is granted.

McMaster University is a medium-sized, full service university offering educational programmes through six Faculties. The extensive activity in research supported by over $40 million in grants and contracts means that there are first-class libraries and sophisticated facilities. Undergraduate teaching is conducted through the Faculties of Business, Engineering, Health Sciences, Humanities, Science, and Social Sciences, and the distinctive Arts and Science programme. The Schools of Physical Education and Athletics, and Social Work are part of the Faculty of Social Sciences.

The Faculty of Humanities offers programmes in Art, Art History, Classics (Greek, Latin and Classical Civilization), Canadian Studies, Dramatic Arts, English, German, History, Humanities, Music, Philosophy, Romance Languages (French, Italian, and Spanish), and Russian.

Students pursuing Honours degree programmes in Modern Languages (French, German, Italian, Spanish), may complete and receive credit for the third level of the programme in study at a university in a country whose language is being studied.

The Faculty of Social Sciences offers programmes in Anthropology, Economics, Geography, Gerontology, Labour Studies, Political Science, Psychology, Religious Studies and Sociology. The School of Social Work offers the combined B.A./B.S.W. degree, the School of Physical Education and Athletics the B.P.E. degree, and the Music department the Bachelor of Music degree. The programmes in the other subjects lead to B.A. degrees.

Bachelor of Science programmes are available in the Faculty of Science at the B.Sc., and B.Sc. Honours and Major levels. Programmes are offered in Biochemistry, Biology, Chemistry, Computer Science, Geophysics, Geology, Health and Radiation Physics, Mathematics, Materials Science, Molecular Biology and Biotechnology, Physics, Psychology, and Statistics.

The Faculty of Health Sciences has gained an international reputation for its innovative educational programming, and offers through the School of Medicine the M.D. Programme, and through the School of Nursing the B.Sc.N. degree programme. The Bachelor of Health Sciences degree may be earned in Occupational Therapy or Physiotherapy.

The Faculty of Business offers the Honours B.Com., Honours B.Com. & Arts, and B.Com. degrees.

The Faculty of Engineering offers the Bachelor of Engineering programme in Ceramic Engineering, Chemical Engineering, Civil Engineering, Civil Engineering and Computer Systems, Computer Engineering, Electrical Engineering, Manufacturing Engineering, Materials Engineering, Mechanical and Metallurgical Engineering, and Engineering Physics.

The Faculty of Engineering, in cooperation with the Faculty of Business, also offers the Engineering and Management programme which is normally completed in five years.

Most of the over 900 members of the University faculty hold doctoral degrees in the areas of their specialization. Faculty members are expected to teach both graduate and undergraduate courses and may be involved in the academic counselling of students. The Instructional Development Centre which is assisted by student donations offers workshops in the instructional process, and provides resource material and diagnostic assistance.

The diverse academic programmes of the University are supported by some fine, and even unique, facilities. The Library is a member of the Research Libraries Association and contains nearly 1.5 million volumes, and has subscriptions to over 13,000 periodical titles. The Library has an extensive special collections section which includes the Bertrand Russell Archives, 18th Century materials and major Canadian collections. Facilities for programmes in the Humanities include modern Language Laboratories, music rehearsal rooms, art studios, an art gallery, and seminar rooms. The work of the Faculties of Science and Engineering is supported by sophisticated facilities which include a Nuclear Reactor and Van De Graaff Accelerator. Computing facilities include mainframes, terminal clusters, and microcomputers, and support academic and non-academic applications. The Faculty of Engineering has made special arrangements for students to lease-purchase microcomputers.

The athletics programme offers 25 different sports in which over 3,000 men and women participate. The Intercollegiate Athletic Programme provides 17 sports for men and 17 for women. The athletic facilities include a 50-metre pool, a 400 metre all-weather track as well as fully equipped laboratories for exercise, physiology and biomechanics.

The University is located on an attractive campus beside the Royal Botanical Gardens at the western end of Lake Ontario. The campus is reserved for pedestrian traffic. Residential accommodation on the campus is available for over 2,400 students and includes men's and women's residences as well as co-educational facilities.

Access to downtown Hamilton and the activities that a major city has to offer is easy. As part of the extensive downtown redevelopment, new facilities, which support cultural life of the city, have been constructed in recent years. These include an Art Gallery, a Convention Centre, Hamilton Place, an auditorium which seats over 2,400 persons and includes a studio theatre, and most recently a major arena, the Copps Coliseum. The new public library has recently been constructed, in which McMaster University and Mohawk College operate a Downtown Information Centre which includes teaching facilities.
SESSIONAL DATES

For the purpose of teaching, the academic year is divided into sessions. The Winter Session, from September to April, is the session in which most undergraduate students register and classes are offered in both the day and the evening. The Summer Session comprises a Summer Evening Session from May to August, and a Summer Day Session from July to August. In recent years, courses have been offered in the periods of January to June and February to June. The dates relevant to this period are listed as the January/February to June Session. Deadlines for applying for Admission appear under Application Procedures.

1986-87 WINTER SESSION
(for both Full-time and Part-time Students)

Friday August 8 and Saturday August 9
Friday August 15 to Monday August 18
Tuesday September 2 to Friday September 5
Tuesday September 2
Monday September 8
Friday September 19
Friday October 10
Monday October 13
Friday October 31
Friday November 14
Monday December 1 to Saturday December 6
Saturday December 6
Monday December 8 to Saturday December 20
Saturday December 13

1986
Level 1 Registration and McMaster Test of Writing Competence.
Deferred Examinations arising from April Examinations.
Registration as per schedule published annually.
McMaster Test of Writing Competence.
Classes begin.
Last day for registration, and for changing registration in, or replacing first-term and full-year courses.
Last day for withdrawing from a first-term course.
Thanksgiving - No classes.
Last day for confirmation of intent to write Deferred Examinations arising from Summer Session Examinations.
Autumn Convocation.
No examinations or tests may be held.
First-term Classes end.
1. Final Examinations in first-term courses.
2. Deferred Examinations arising from Summer Session Examinations.
3. Mid-Session Tests in Level 1 courses.
McMaster Test of Writing Competence.

Monday January 5
Wednesday January 14
Friday February 13

Friday February 12
Saturday April 9
Monday April 4 to Monday April 11
Saturday April 9
Tuesday April 12 to Thursday April 28
Friday May 13
Thursday May 26 to Saturday May 28
Friday June 26

1987 Classes begin for second-term courses.
Registration for second-term courses in some Faculties.
Last day for registration, and for changing registration in second-term courses.
Last day for withdrawing from second-term or full-year courses, for changing Programme and completing a Graduation Information Card for graduation at Spring Convocation, and for confirming intent to write Deferred Examinations arising from December Examinations.
Mid-term Recess.
No examinations or tests may be held.
Classes end.
McMaster Test of Writing Competence.
1. Final Examinations in second-term and full-year courses.
2. Deferred Examinations arising from December Examinations.
Good Friday - No examinations.
Health Sciences Convocation.
Mid-Year Convocation.
Last day for confirmation of intent to write Deferred Examinations arising from April Examinations.

1987-88 WINTER SESSION
(for both Full-time and Part-time Students)

Friday August 14 and Saturday August 15
Thursday August 13 to Saturday August 15
Friday September 4 to Wednesday September 9
Thursday September 10
Saturday September 12
Wednesday September 23
Friday October 9
Monday October 12
Friday October 30
Friday November 13
Thursday December 3 to Wednesday December 9
Wednesday December 9
Thursday December 10 to Wednesday December 23
Saturday December 12

1987
Level 1 Registration and McMaster Test of Writing Competence.
Deferred Examinations arising from April Examinations.
Registration as per schedule published annually.
Classes begin.
McMaster Test of Writing Competence
Last day for registration, and for changing registration in, or replacing first-term and full-year courses.
Last day for withdrawing from a first-term course.
Thanksgiving Day - No classes.
Last day for confirmation of intent to write Deferred Examinations arising from Summer Session Examinations.
Autumn Convocation.
No examinations or tests may be held.
First-term Classes end.
1. Final Examinations in first-term courses.
2. Deferred Examinations arising from Summer Session Examinations.
3. Mid-Session Tests in Level 1 courses.
McMaster Test of Writing Competence.

Monday January 4
Wednesday January 13
Friday February 12

Monday February 22 to Saturday February 27
Friday April 1
Monday April 4 to Monday April 11
Saturday April 9
Tuesday April 12 to Thursday April 28
Friday May 13
Thursday May 26 to Saturday May 28
Friday June 24

1988 Classes begin for second-term courses.
Registration for second-term courses in some Faculties.
Last day for registration and for changing registration in second-term courses.
Last day for withdrawing from second-term and full-year courses, for changing Programme and completing a Graduation Information Card for graduation at Spring Convocation, and for confirming intent to write Deferred Examinations arising from December Examinations.
Mid-term Recess.
Good Friday - No classes.
No examinations or tests may be held.
Classes end.
McMaster Test of Writing Competence.
1. Final Examinations in second-term and full-year courses.
2. Deferred Examinations arising from December Examinations.
Health Sciences Convocation.
Spring Convocations.
Last day for confirmation of intent to write Deferred Examinations arising from April Examinations.
## SESSIONAL DATES

### SUMMER SESSIONS 1987 AND 1988

(All dates for the McMaster Test of Writing Competence appear in the Winter Session dates.)

#### April-June and Summer Evening 1987

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday April 6</td>
<td>Classes begin in April-June courses.</td>
</tr>
<tr>
<td>Friday April 17</td>
<td>Last day for registering and changing registration in April-June courses.</td>
</tr>
<tr>
<td>Friday May 8</td>
<td>Last day for withdrawing from April-June courses.</td>
</tr>
<tr>
<td>Monday May 11</td>
<td>Summer (Evening) Session classes begin.</td>
</tr>
<tr>
<td>Friday May 15</td>
<td>Last day for registration, and changes of registration.</td>
</tr>
<tr>
<td>Monday May 18</td>
<td>Victoria Day - No classes.</td>
</tr>
<tr>
<td>Friday May 22</td>
<td>First-term Summer (Evening) Session classes end.</td>
</tr>
<tr>
<td>Tuesday June 23</td>
<td>April-June classes end.</td>
</tr>
<tr>
<td>Thursday June 25</td>
<td>Examinations in first-term Summer (Evening) Session courses.</td>
</tr>
<tr>
<td>Wednesday June 24 and Thursday June 25</td>
<td>Second-term Summer (Evening) Session classes begin.</td>
</tr>
<tr>
<td>Monday June 29</td>
<td>Examinations in April-June courses.</td>
</tr>
<tr>
<td>Monday June 29 to Thursday July 2</td>
<td>Canada Day - No classes.</td>
</tr>
<tr>
<td>Wednesday July 1</td>
<td>Last day for registration, and change of registration in second-term Summer (Evening) Session courses.</td>
</tr>
<tr>
<td>Friday July 10</td>
<td>Last day for withdrawing from second-term or full session courses of the Summer (Evening) Session.</td>
</tr>
<tr>
<td>Monday August 3</td>
<td>Civic Holiday - No classes.</td>
</tr>
<tr>
<td>Thursday August 13</td>
<td>Summer Session classes end.</td>
</tr>
<tr>
<td>Thursday August 13 to Saturday August 15</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 14 and Saturday August 15</td>
<td>Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday October 30</td>
<td>Last day for confirmation of intent to write Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Thursday December 10 to Wednesday December 13</td>
<td>Autumn Convocation.</td>
</tr>
</tbody>
</table>

#### Summer Day 1987

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday July 2</td>
<td>Classes begin.</td>
</tr>
<tr>
<td>Friday July 3</td>
<td>Last day for registration, and changes of registration.</td>
</tr>
<tr>
<td>Wednesday July 8</td>
<td>Last day for withdrawing from first-term courses of the Summer (Day) Session.</td>
</tr>
<tr>
<td>Thursday July 23</td>
<td>Second-term day classes begin.</td>
</tr>
<tr>
<td>Friday July 24</td>
<td>Last day for registration, and changes of registration in second-term Summer (Day) Session courses.</td>
</tr>
<tr>
<td>Wednesday July 29</td>
<td>Last day for withdrawing from full-session or second-term courses of the Summer (Day) Session.</td>
</tr>
<tr>
<td>Monday August 3</td>
<td>Civic Holiday - No classes.</td>
</tr>
<tr>
<td>Thursday August 13</td>
<td>Classes end.</td>
</tr>
<tr>
<td>Thursday August 13</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 14 and Saturday August 15</td>
<td>Summer Session Examinations, and Deferred Examinations arising from April Examinations.</td>
</tr>
</tbody>
</table>

#### January/February-June 1987 and 1988

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday January 5</td>
<td>Classes begin in January-June courses.</td>
</tr>
<tr>
<td>Wednesday January 14</td>
<td>Last day for registering and changing registration in January-June courses.</td>
</tr>
<tr>
<td>Monday February 2</td>
<td>Classes begin in February-June courses.</td>
</tr>
<tr>
<td>Thursday February 12</td>
<td>Last day for changing registration in February-June courses.</td>
</tr>
<tr>
<td>Friday March 6</td>
<td>Last day for withdrawing from January/February-June courses.</td>
</tr>
<tr>
<td>Monday May 18</td>
<td>Victoria Day - No classes.</td>
</tr>
<tr>
<td>Saturday, June 27</td>
<td>Last day of classes.</td>
</tr>
<tr>
<td>Monday June 29 to Thursday July 2</td>
<td>Examinations in January/February-June courses.</td>
</tr>
<tr>
<td>Friday October 30</td>
<td>Last day for confirmation of intent to write Deferred Examinations arising from January/February-June Session.</td>
</tr>
</tbody>
</table>

### January/February-June 1988

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday January 4</td>
<td>Classes begin in January-June courses.</td>
</tr>
<tr>
<td>Wednesday January 13</td>
<td>Last day for registration and changing registration in January-June courses.</td>
</tr>
<tr>
<td>Monday February 1</td>
<td>Classes begin in February-June courses.</td>
</tr>
<tr>
<td>Thursday February 11</td>
<td>Last day for changing registration in February-June courses.</td>
</tr>
<tr>
<td>Friday March 4</td>
<td>Last day for withdrawing from January/February-June courses.</td>
</tr>
<tr>
<td>Monday May 23</td>
<td>Victoria Day - No classes.</td>
</tr>
<tr>
<td>Saturday June 25</td>
<td>Last day of classes.</td>
</tr>
<tr>
<td>Monday June 27 to Thursday June 30</td>
<td>Examinations in January/February-June courses.</td>
</tr>
<tr>
<td>Friday October 28</td>
<td>Last day for confirmation of intent to write Deferred Examinations arising from January/February-June Session.</td>
</tr>
</tbody>
</table>
Application Procedures

Because of the large number of applications, the University has established application deadlines. Many of the programmes have a limited number of places available for applicants. It is therefore, in your own interest to apply early.

**YOU MUST APPLY BY THE DATES BELOW, IN ORDER FOR YOUR APPLICATION TO BE CONSIDERED.**

<table>
<thead>
<tr>
<th>Programme</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>November 1</td>
</tr>
<tr>
<td>Winter Session, Term 2 courses</td>
<td>November 30</td>
</tr>
<tr>
<td>January to June courses</td>
<td>November 30</td>
</tr>
<tr>
<td>February to June courses</td>
<td>January 10</td>
</tr>
<tr>
<td>Nursing</td>
<td>February 15</td>
</tr>
<tr>
<td>School of Social Work</td>
<td>March 1</td>
</tr>
<tr>
<td>April to June courses</td>
<td>March 15</td>
</tr>
<tr>
<td>B.H.Sc.</td>
<td>March 1</td>
</tr>
<tr>
<td>Nursing</td>
<td>April 15</td>
</tr>
<tr>
<td>Grade 13 applicants</td>
<td>May 1</td>
</tr>
<tr>
<td>Summer Day courses</td>
<td>May 31</td>
</tr>
<tr>
<td>Full-time Winter Session</td>
<td>July 15</td>
</tr>
<tr>
<td>Part-time Winter Session</td>
<td>August 15</td>
</tr>
</tbody>
</table>

**ENQUIRIES**

The Directory for Correspondence and Enquiries on page 2 of this Calendar, provides a list of University offices and Administrative staff members to whom you should direct your queries.

**FORMER MCMASTER STUDENTS**

If you have previously registered at McMaster, but did not attend last year, you must write to the Associate Dean (Studies) of the appropriate Faculty to seek re-admission, unless five years have passed since your last registration.

If five years have passed since you last registered at McMaster, you will be required to follow the current regulations and curriculum. You must obtain and complete an application form from the Admission Office (Gilmour Hall, Room 120, telephone 525-9140 extension 4796). Your application will be considered by the appropriate Faculty committee.

**APPLICANTS WITH DISABILITIES**

The University encourages disabled persons to apply for admission to its programmes. All students are expected to satisfy the normal requirements for courses and programmes (including final examinations), although the Associate Deans (Studies) may authorize special arrangements to assist students to complete assignments, tests, and examinations. Some programmes may include requirements which cannot be met by some people. Nevertheless in selected programmes an adapted course of study may be prescribed by the Associate Dean (Studies) on behalf of the Faculty following discussion with the student. Although there are many obstacles to overcome, experience has shown that students with various disabilities have been able to complete a variety of programmes at McMaster.

Applicants with disabilities are encouraged to contact the Systems Development and Calendar Officer (Office of the Registrar, Gilmour Hall Room 107A, telephone extension 4339) who will discuss their programmes of study and other aspects of university life, and will identify the faculty advisers to whom they should speak. Information on sources of financial assistance is also available.

A student of McMaster who incurs a permanent or temporary disability while enrolled at McMaster should consult the Associate Dean (Studies) of his or her Faculty to consider whether or not special arrangements can be made to enable that student to continue the course of studies in which he or she is enrolled.

**ACADEMIC COUNSELLING FOR THOSE OFFERED ADMISSION**

If you are offered admission, you will be asked to confirm that you have accepted the offer of admission and will attend the University. When we receive your acceptance of our offer, we shall send you a Registration Kit with information about the University, academic counselling and registration procedures.

Each Faculty also makes arrangements for students to visit the University and meet with a Faculty advisor to set up their programmes. Though attendance at the summer counselling and registration sessions is not compulsory, you are strongly advised to do so. If you cannot attend one of these sessions, counselling will be provided at the time of September registration.

**PROGRAMMES ENTERED IN LEVEL I**

McMaster University has the following Level I programmes: Arts and Science I, Business I, Engineering I, Humanities I, Music I (General and Performance), Nursing I, Physical Education I, Natural Sciences I and Social Sciences I.

The application procedures differ according to your current academic qualifications and your ultimate goals.

You may determine the procedure you have to use by answering each of the questions below in sequence until you are directed to the procedure you must follow.

```
  Do you wish to receive grades in the courses you take?  
    NO  
    YES  

  Do you wish to study as a part-time student (i.e. take less than 24 units)?  
    NO  
    YES

  Do you wish to study for an undergraduate (bachelor's) degree?  
    NO  
    YES

  Do you already have an undergraduate degree?  
    NO  
    YES

  Are you seeking to enter Level I?  
    NO  
    YES

  Are you now taking one or more Ontario Grade 13 subjects?  
    NO  
    YES
```

A student of McMaster who incurs a permanent or temporary disability while enrolled at McMaster should consult the Associate Dean (Studies) of his or her Faculty to consider whether or not special arrangements can be made to enable that student to continue the course of studies in which he or she is enrolled.
PROCEDURE A:
This procedure applies to applicants who are now taking one or more Ontario Grade 13 subjects in day school and wish to enter a full-time degree programme.

Application forms (OUAC 101) are available from your guidance office. You should choose one of the following programmes and complete the form:

<table>
<thead>
<tr>
<th>PROGRAMME</th>
<th>OUAC PROGRAMME CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Science I (Special Programme)</td>
<td>MX</td>
</tr>
<tr>
<td>Business I</td>
<td>MB</td>
</tr>
<tr>
<td>Engineering I</td>
<td>ME</td>
</tr>
<tr>
<td>Humanities I</td>
<td>MH</td>
</tr>
<tr>
<td>Music I</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Sciences I</td>
<td>MS</td>
</tr>
<tr>
<td>Nursing I</td>
<td>MN</td>
</tr>
<tr>
<td>Physical Education I</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences I</td>
<td>ML</td>
</tr>
</tbody>
</table>

Send the form and the application fee to the Application Centre. We shall acknowledge every application.

PROCEDURE B:
This procedure applies to applicants who wish to enter Level I of a full-time degree programme, but who are not now taking one or more Ontario Grade 13 subjects in day school.

It also applies to all out-of-province applicants who wish to enter Level I of a full-time degree programme.

Obtain an application form (OUAC 105) from the Admissions Office (Gilmour Hall, Room 120, telephone 525-9140, extension 4796). You should choose one of the following programmes and complete the form:

<table>
<thead>
<tr>
<th>PROGRAMME</th>
<th>OUAC PROGRAMME CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Science I (Special Programme)</td>
<td>MX</td>
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<tr>
<td>Business I</td>
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</tr>
<tr>
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<td>ME</td>
</tr>
<tr>
<td>Humanities I</td>
<td>MH</td>
</tr>
<tr>
<td>Music I</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Sciences I</td>
<td>MS</td>
</tr>
<tr>
<td>Nursing I</td>
<td>MN</td>
</tr>
<tr>
<td>Physical Education I</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences I</td>
<td>ML</td>
</tr>
</tbody>
</table>

Send the form and the application fee to the Application Centre. You should provide transcripts of marks and/or certificates from any secondary school or post-secondary institution you have attended.

Students who are attending, or have attended, secondary school in another province may have to obtain the transcript of secondary school marks from the Ministry or Department of Education for that province.

If you:
1. do not have the required Ontario Grade 13 standing or its equivalent; and
2. will be 21 or older in the calendar year in which you plan to start your University courses; and
3. have not attended secondary school as a full-time student for at least two years,
you may qualify for entry as a Special Student. If so, write to the Admissions Office, (Gilmour Hall, Room 120, telephone 525-9140, extension 4796).

PROCEDURE C:
This procedure applies to applicants who seek to enter a full-time degree programme above Level I.

Obtain an application form (OUAC 105) from the Admissions Officer (Gilmour Hall, Room 120, telephone 525-9140, extension 4796).

You should choose one of the degree programmes listed in this calendar, and complete the form. Send the form and the application fee to the Application Centre.

PROCEDURE D:
This procedure applies to applicants who wish to register as Listeners. Listeners may attend classes, but do not write assignments or examinations. A Listener does not receive a grade for the course.

Write, visit or phone the Centre for Continuing Education in order to register as a Listener (Commons Building, telephone 525-9140, extension 4757).

PROCEDURE E:
This procedure applies to applicants who wish to register as Listeners. Listeners may attend classes, but do not write assignments or examinations. A Listener does not receive a grade for the course.

Write, visit or phone the Centre for Continuing Education in order to register as a Listener (Commons Building, telephone 525-9140, extension 4757).

PROGRAMMES ENTERED ABOVE LEVEL I

Medicine, Nursing (for holders of the Diploma R.N.) and Physiotherapy and Occupational Therapy: If you wish to apply to any of these programmes, refer to the Faculty of Health Sciences section of this Calendar. You should obtain the appropriate application form and make any enquiries at the Health Sciences Registry (McMaster University Medical Centre, Room 1B7, telephone 525-9140, extension 2114).

Medicine commences after three years of undergraduate study and Level IV is the level of entry to the Occupational Therapy or Physiotherapy programme.

Social Work: The level of entry for Social Work is Level II. Admission to the Combined B.A. and Social Work Programme is by selection of the applicants who have completed, or are completing, 30 units of work including Psychology 1A6 and Sociology 1A6 and normally with a University Average of at least 6.0.

Students, enrolled at McMaster, who are interested should apply directly to the School of Social Work.

Students wishing to apply for transfer from another university must apply both to the University, through the Associate Registrar (Admissions) AND to the School of Social Work. Applicants transferring from another university must clearly indicate on the application form which specific Arts programme they wish in conjunction with their Social Work programme.
Admission Requirements

The University reserves the right to change any information contained in this section at any time without notice. The University Senate may limit enrolment in programmes where the available resources indicate the need, so that admission to most Level I programmes is by selection. This means, therefore, that possession of the minimum admission requirements does not guarantee admission.

Admission from Ontario Secondary Schools

We know that experimental programmes are offered in some Ontario secondary schools and welcome applicants from these programmes. If you are such an applicant and do not meet exactly the subject requirements outlined below, you should write to the Associate Registrar (Admissions and Awards) who will ensure that your application is carefully considered.

Early Admission From Ontario Secondary Schools

Early admission is granted annually in June on a date agreed upon by all Ontario universities. Early Admission is based on interim marks and may be granted to an applicant who expects to acquire final standing later in the year.

If you are granted Early Admission, you must subsequently obtain the Secondary School Honour Graduation Diploma and, in addition, you will be expected to meet the minimum average required for your programme on your final Grade 13 marks. The University reserves the right to withdraw offers of admission to those applicants who do not meet the minimum average prescribed for the programme using the final Grade 13 marks. Final marks are reported to the University for students registered in Grade 13, but applicants may submit such marks directly to the Associate Registrar (Admissions and Awards).

If you have already attained the final standing in your current programme in each of the Grade 13 credits required to enter the McMaster University programme you have chosen, you may be granted Final Admission.

Regular Admission From Ontario Secondary Schools

To be considered for admission you must satisfy not only the general requirements of the University, but also the subject requirements for the specific programme you wish to enter.

For an applicant from an Ontario secondary school there are three requirements:

1. a Secondary School Honour Graduation Diploma with acceptable standing; and
2. a ‘weighted average’ in the Grade 13 work done for the Diploma above the minimum specified by each programme; and
3. the subject requirements for the appropriate programme must be satisfied.

The ‘weighted average’ is computed as in the example below:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mark</th>
<th>Credits</th>
<th>Marks x Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject A</td>
<td>66</td>
<td>1.0</td>
<td>66</td>
</tr>
<tr>
<td>Subject B</td>
<td>70</td>
<td>1.0</td>
<td>70</td>
</tr>
<tr>
<td>Subject C</td>
<td>80</td>
<td>1.5</td>
<td>120</td>
</tr>
<tr>
<td>Subject D</td>
<td>56</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>Subject E</td>
<td>72</td>
<td>1.0</td>
<td>72</td>
</tr>
<tr>
<td>Subject F</td>
<td>60</td>
<td>1.0</td>
<td>60</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>6.0</td>
<td>416</td>
</tr>
</tbody>
</table>

'Weighted average' = 416 ÷ 6 = 69.3%.

Grade 13 Music is acceptable as a credit and the mark obtained is included in the average for admission. Alternatively, the applicant may submit certificates from a recognized conservatory of music in Grade 4 theory, or in Grade 9 practical and Grade 3 theory.

Admission From Level 4 (Grade 12)

An Ontario secondary school student who holds a Secondary School Graduation Diploma may be considered for admission if the following conditions have been met:

1. Grade 12 has been completed with high academic standing (normally 80% or higher, or the equivalent); and
2. a minimum of two Grade 13 credits have been completed with high academic standing (80% or higher, or the equivalent); and
3. the Grade 13 credits are appropriate to the Faculty into which the student seeks admission;
4. a comprehensive report has been submitted by the student's secondary school.

Admission is by selection and candidates may be interviewed. Meeting the requirements outlined above does not guarantee admission to the University. All the academic requirements stated above must have been fulfilled by June of the year in which admission is sought, and within four years of the student first enrolling in secondary school.

SUBJECT REQUIREMENTS FOR SPECIFIC LEVEL I PROGRAMMES

In view of the changes that are occurring in Ontario secondary school curricula, we shall in the interim to accept Grade 13 courses and Ontario Academic Courses (OACs) equally. Since we have not had an opportunity to review the proposals for all the individual OACs, we have continued to refer to Grade 13 credits, but we have attempted to provide advice particularly with respect to Mathematics. We shall treat graduates of four and five year programmes under the new curriculum equally.

ARTS AND SCIENCE I (Special programme)

1986

Enrolment in the Arts and Science Programme is limited and admission is by selection. Candidates may be interviewed. Students applying from Ontario secondary schools must have:

1. One Grade 13 credit in English.
2. Grade 13 Calculus.
3. Completion of additional Grade 13 work to qualify for the Secondary School Honour Graduation Diploma with a weighted average of at least 75.0%.

Candidates without these qualifications who nevertheless provide evidence of unusual promise will also be considered.

Students from colleges, other universities, and other provinces are invited to apply. Each case will be considered on its individual merit.

1987

Enrolment in the Arts and Science Programme is limited and admission is by selection. Candidates may be interviewed. Students applying from Ontario secondary schools must have:

1. One Grade 13 credit in English.
2. Grade 13 Calculus.
3. Completion of additional Grade 13 work to qualify for the Secondary School Honour Graduation Diploma with a weighted average of at least 75.0%. At least three of the additional Grade 13 credits must be selected from among English, français, other languages, Relations and Functions, Algebra, Biology, Chemistry, Physics, Geography, History, and Music.

Candidates without these qualifications who nevertheless provide evidence of unusual promise will also be considered.

Students from colleges, other universities, and other provinces are invited to apply. Each case will be considered on its individual merit.
Students presenting Ontario Academic Courses (OACs)

OACs may be substituted in place of the Grade 13 courses above. Finite Mathematics, and Algebra and Geometry will be accepted within Group 3 of the 1987 requirements.

BUSINESS I

1986

Enrolment in Business I is limited and admission is by selection. The specific percentage required for admission varies from year to year. The following are the minimum requirements for consideration:

1. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations. Calculus is preferred.
2. One Grade 13 credit in English.
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall average of 70.0%.

Since Business I enrolment is limited, the minimum overall average of 70.0% will not guarantee admission. An average of approximately 75.0% could be required.

1987

Enrolment in Business I is limited and admission is by selection. The specific percentage required for admission varies from year to year. The following are the minimum requirements for consideration:

1. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations. Calculus is preferred.
2. One Grade 13 credit in English.
3. At least three additional Grade 13 credits must be selected from among English, français, other languages, Calculus, Relations and Functions, Algebra, Biology, Chemistry, Physics, Geography, History, Music, Accounting and Economics.
4. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall average of 70.0%.

Since Business I enrolment is limited, the minimum overall average of 70.0% will not guarantee admission. An average of approximately 75.0% could be required.

Students presenting Ontario Academic Courses (OACs)

OACs may be substituted in place of the Grade 13 courses above. The Mathematics requirement (Group 1) may be fulfilled preferably by Calculus or alternatively by Algebra and Geometry. In Group 3 of the 1987 requirements Calculus, Algebra and Geometry, and Finite Mathematics are acceptable.

ENGINEERING I

1986 and 1987

Enrolment in Engineering I is limited and admission is by selection. The minimum requirements are:

1. an overall weighted average of at least 75.0% in the six credits offered for the Secondary School Honours Graduation Diploma including
2. a weighted average of at least 75.0% in the following five Grade 13 credits: Calculus, Algebra, Functions and Relations, Physics, and Chemistry.

We strongly recommend that potential applicants take a senior high school course in English designed to improve their basic reading and writing abilities.

As a general policy, applicants from Ontario Colleges of Applied Arts and Technology who have achieved a first-class honours standing in the last two years of a three-year technology programme will be considered for admission to the second level of a relevant Engineering programme.

Students presenting Ontario Academic Courses (OACs)

Six OACs with an average of at least 75.0% must be presented, and these must include English, Calculus, Algebra and Geometry, Chemistry, and Physics with an average of at least 75.0% in these five subjects.

For applicants presenting a mixture of Grade 13 subjects and OACs, OACs in Calculus, Chemistry, and Physics may substitute for the Grade 13 subjects. An applicant presenting Algebra and Geometry must also present English; these two courses replace Algebra, and Functions and Relations.

HUMANITIES I

Enrolment in Humanities I may be limited and admission is by selection.

Programmes are available in the following areas of study: Art, Art History, Canadian Studies, Classics, Classical Studies, Comparative Literature, Dramatic Arts and Film, English, French, German, Greek, History, Humanities, Italian, Latin, Music, Philosophy, Russian, Slavic Studies, and Spanish.

Art 1F6: If you intend to take Art 1F6, you must submit a portfolio by April, to show your interest and ability, to the Chairman of the Department of Art and Art History. Drawings are especially helpful in making this assessment. The portfolio should contain drawings from nature in several media, for example, self portrait, a still life, or landscape. Late applications may be considered if places are available in the class.

1986

Required:

1. One Grade 13 credit in English, with a grade of at least 65.0%.
2. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall weighted average of 65.0%. At least three of the additional Grade 13 credits must be selected from the following Humanities subjects: English, français, other languages, History, one of the Arts (Drama, Music, or Visual Arts), or from the following non-Humanities core courses: Biology, Chemistry, Geography, Mathematics, Physics.

Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

1987

Required:

1. One Grade 13 credit in English or français with a grade of at least 65.0%.
2. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall weighted average of 70.0%. Of the five additional Grade 13 credits, at least four must be selected from the following Humanities subjects: Art, Drama, English, français, other languages, History, and Music; or from the following non-Humanities core courses: Biology, Chemistry, Geography, Mathematics, and Physics.

3. Preference will be given to those candidates who have selected at least one credit from the Humanities subjects, in addition to English or français.

Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

Students presenting Ontario Academic Courses (OACs)

OACs may be substituted in place of the Grade 13 courses above. Algebra and Geometry, Calculus, and Finite Mathematics will be accepted within Group 2 of the 1987 requirements.

MUSIC I (General)

The academic requirements are the same as for Humanities I. In addition, applicants to Music I (General) or to the B.A. in Music must successfully complete a music audition/examination consisting of:

1. demonstration of technique (approximately Grade 9 level of the Royal Conservatory of Music, Toronto);
2. performance (approximately 20 minutes' duration) of two or three varied pieces of the candidate's choice (approximately Grade 9 level), including at least one from the 20th century;
3. ear test appropriate to the Grade 9 performance level;
4. written examination on rudiments of theory (Grade 2 level);
5. interview.

Those applying for Music I (General) must make arrangements with the Department of Music for the audition.

MUSIC I (Performance)

(The offering of this programme is contingent upon approval by the Senate of McMaster University and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.)

The academic requirements are the same as for Humanities I. In addition, applicants must successfully complete a music audition/examination in which they give evidence of outstanding performing ability on the piano or on a standard orchestral wind instrument, brass, or string instrument. The entire audition consists of the following:
ADMISSION REQUIREMENTS

1. demonstration of technique (approximately Grade 10 level of the Royal Conservatory of Music, Toronto);
2. performance (approximately 30 minutes’ duration) of four or five varied pieces or movements of the candidate’s choice (approximately Grade 10 level), including at least one from the 20th century;
3. ear test appropriate to the Grade 10 performance level;
4. written examination on rudiments of theory (Grade 2 level);
5. interview.

Those applying to enter Music I (Performance) must make arrangements with the Department of Music for the audition. Note: All applicants will automatically be considered for Music I (General) with no further audition.

NATURAL SCIENCES I

1986 and 1987
Admission to Natural Sciences I is by selection, and the specific percentage required for admission varies from year to year. Students with weighted Grade 13 averages of 75.0% or better have a good chance of success in science programmes and will be given priority. The following are the minimum requirements for consideration:
1. Grade 13 Calculus.
2. Grade 13 Physics or a second Grade 13 Mathematics credit.
3. One Grade 13 credit in Biology, or Chemistry, or another Mathematics.
4. A weighted average of at least 60.0% in Calculus and the two additional credits specified above.
5. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

Note: The Faculty of Science strongly recommends that students present at least one Grade 13 credit in Biology, or Chemistry, or Physics when meeting the above requirements.

Additional Mathematics: Grade 13 Algebra and/or Grade 13 Functions and Relations is also desirable.

Although Grade 13 English is not required for admission, a very large proportion of students entering Natural Sciences I have taken it. We strongly urge all prospective students to take Grade 13 English.

Students presenting Ontario Academic Courses (OACs)
The OAC in Calculus may be substituted for Grade 13 Calculus in Group 1, and Algebra and Geometry may be substituted for the Mathematics in either Group 2 or 3. The OAC in Finite Mathematics will be accepted for admission to Science within Group 5 above, but will not be included in the Mathematics/Science average as described in point 4 above. It is probable that OACs in Biology, Chemistry, and Physics will be viewed as direct equivalents to the Grade 13 courses. Changes to the admission requirements will be publicized at least one year before implementation.

NURSING I

1986 and 1987
Admission is by selection. Possession of the minimum requirements does not guarantee admission. Normally there are ten times as many applicants as there are places in the programmes. Only those applicants who offer high academic standing are selected.

Required:
1. Grade 12 Mathematics (advanced level).
2. One Grade 13 credit in Chemistry and in English.
3. One Grade 13 credit in Mathematics or Biology or Physics.
4. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma. At least two of the additional Grade 13 credits must be selected from English, français, other languages, Calculus, Functions and Relations, Algebra, Biology, Physics, Geography, History and Music.

Health requirements for admission: Before registration, students must file information pertaining to their state of health and immunization with the University. Detailed instructions will be provided upon acceptance into the programme.

Deadlines: Grade 13 applications must be postmarked no later than May 1 in the year in which study is to commence.
Non-grade 13 applications must be postmarked no later than February 15 in the year in which study is to commence.

Students presenting Ontario Academic Courses (OACs)
OACs may be substituted in place of the Grade 13 courses above. Algebra and Geometry, Calculus, and Finite Mathematics will be accepted in Group 3 above.

PHYSICAL EDUCATION I

Admission to this programme is by selection; the minimum requirements will not guarantee admission.

1986
Students applying from Ontario Secondary Schools are expected to complete the requirements for the Secondary School Honour Graduation Diploma. A minimum average of 70.0% (to be computed on the basis of the six highest marks achieved in Grade 13 subjects) will probably be required.

There are no specific Grade 13 subject areas which are required for admission to Physical Education I, although it is strongly recommended that one of Biology, Chemistry or Physics be included by potential applicants in their Grade 13 programmes.

Mathematics, at least through Grade 12, is required.
Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

1987
A minimum average of 70.0% (to be computed on the basis of the six highest marks achieved in Grade 13 subjects) will probably be required.

Required:
1. One Grade 13 credit in English.
2. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations.
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

It is strongly recommended that one of Biology, Chemistry, or Physics be included by potential applicants in their Grade 13 programmes.
Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

Students presenting Ontario Academic Courses (OACs)
OACs may be substituted in place of the Grade 13 courses above. Algebra and Geometry, Calculus, and Finite Mathematics will be accepted within Group 2 of the 1987 requirements.

SOCIAL SCIENCES I

Programmes are available in the following areas of study: Anthropology, Economics, Geography, Gerontology, Labour Studies, Political Science, Psychology, Religious Studies, Sociology and Social Work.

Admission to the School of Social Work in Level II requires successful completion of any Level I programme with the inclusion of Psychology 1A6 and Sociology 1A6. Criteria include an average of at least 6.0 at the end of Level I, and personal suitability.

Admission to Social Sciences I is by selection and a minimum average of 70.0% (to be computed on the basis of the six highest marks achieved in Grade 13 subjects) will probably be required.

1986
Students applying from Ontario secondary schools are expected to complete the requirements for the Secondary School Honour Graduation Diploma. The Faculty of Social Sciences does not require specific Grade 13 subjects for admission. You should have passed Mathematics at least to Grade 12. Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

Applicants who might be interested in concentrating in Economics, Psychology or Geography, from Social Sciences I, are strongly advised to include Grade 13 Mathematics in their programmes.

We strongly recommend that potential applicants take a senior high school course in English designed to improve their basic reading and writing abilities. A university English course is required for students concentrating in Economics or Psychology.

1987
Required:
1. One Grade 13 credit in English.
2. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations.
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

**Students presenting Ontario Academic Courses (OACs)**

OACs may be substituted in place of the Grade 13 courses above. Algebra and Geometry, Calculus, and Finite Mathematics will be accepted within Group 2 of the 1987 requirements.

**PROGRAMME TRANSFER AFTER ADMISSION**

If you have been admitted to one programme and subsequently wish to transfer to another, you may be able to do so, provided you have met the subject requirements for the second programme and a place is available. If you wish to make such a transfer, consult the Admissions Office.

**Admission With Other Qualifications**

**A. ADMISSION FROM ONTARIO COLLEGES OF APPLIED ARTS AND TECHNOLOGY**

Applicants from Colleges of Applied Arts and Technology who have completed at least one year of work are invited to apply for admission. Each case will be considered individually on its merits and the programme desired. Advanced credit will normally be given to well-qualified students who have completed at least two years of work.

In the granting of credit attention will be given to:

1. the applicant's performance in the college programme;
2. the duration of the previous programme;
3. the programme taken at the college and the programme to which entry is sought;
4. the applicant's secondary school record.

Normally the credit will be at least one Level for a well-qualified graduate of a three-year programme, and at least 12 units for an applicant who has completed two years and performed well, provided the college work is appropriate for the university programme to which entry is sought.

Credit beyond this may be given on an individual basis where the college and university programmes are in similar areas, and where the applicant's academic record and background warrant special consideration.

**B. ADMISSION FROM RYERSON POLYTECHNICAL INSTITUTE**

In determining admissibility and the possibility of advance credit, due consideration is given to the admission requirements of the Ryerson programme, its length of study and nature (i.e. certificate, diploma or degree), standing in the programme and studies desired at university level. Students with high standing after one or two years of study are invited to apply.

Every application is dealt with individually so that appropriate academic credit may be granted where warranted.

**C. ADMISSION FROM REDEEMER COLLEGE**

For admission to McMaster University a student must present, with an appropriate average, six Year 1 courses from Redeemer College which are appropriate for the McMaster programme. Students who wish advanced credit for work completed at Redeemer College must write an examination set by McMaster for each course in which credit is sought.

**D. ADMISSION FROM OTHER CANADIAN PROVINCES**

We welcome applications from students from other Canadian provinces. They must meet the following minimum requirements and present subjects appropriate for the programmes as noted described above Subject Requirements for specific Level 1 Programmes. For clarification, applicants are invited to contact the office of Student Liaison.

**E. ADMISSION FROM OTHER COUNTRIES**

We have, for convenience, indicated our admission requirements for applicants from selected countries.

Students from other countries should send official matriculation certificates well in advance of the session. The equivalent of first-class standing is required for limited enrolment programmes. Clear photocopies of certificates in a language other than English should be accompanied by notarized English translations. Clear photocopies of English language certificates must be notarized. Each applicant is considered on an individual basis. Applicants are strongly advised not to come to the University until they have been informed of their acceptance.

Applicants whose native language is not English will be required to obtain standing satisfactory to the University in the University of Michigan English Language Test. The University of Michigan authorization form will be sent upon receipt of a formal application for admission.

Applicants from **Great Britain and the West Indies** require:

1. five G.C.E. subjects at least two of which must be at the Advanced Level;
2. Advanced Level subjects appropriate for the programme desired,
   (refer above to Subject Requirements for Specific Level 1 Programmes);
3. an average of at least 'C' in the two Advanced Level subjects for non-limited enrolment programmes. Limited enrolment programmes require first-class honours standing.

Applicants from **Hong Kong** require:

1. five subjects in the G.C.E. or University of Hong Kong Matriculation, at least two of which must be at the Advanced Level;
2. Advanced Level subjects appropriate for the programme desired, (refer above to Subject Requirements for Specific Level 1 Programmes);
3. an average of at least 'C' in the two Advanced Level subjects for non-limited enrolment programmes. Limited enrolment programmes require first-class honours standing.
4. standing satisfactory to McMaster University in the University of Michigan English Language Test. Details of the test will be sent upon receipt of a formal application for admission.

Applicants from **the United States of America** should be students with high standing from Grade 12 of an accredited high school in the U.S.A. Normally high standing will have been demonstrated by 'A' standing, or scores of 600 or better in CEEB achievement examinations, or appropriate scores in the CLEP examinations. Students who do not meet these requirements may qualify for admission by completing one year of college-level work with standing acceptable to the University.

**F. SPECIAL STUDENTS (MATURE STUDENTS)**

Applicants who have attended university are not admissible as special students.

**Full-time Study:** If you do not meet the normal admission requirements described above in Admission from Ontario Secondary Schools, you may be admitted on university probation to full-time study provided you satisfy all of the following three conditions:

1. you are at least 21 years old or will be in the calendar year in which you propose to start;
2. you have not attended school on a full-time basis for at least two years;
ADMISSION REQUIREMENTS

3. you obtain a satisfactory standing on a scholastic aptitude test (held in May, June and August) and are considered qualified by the appropriate Faculty Admissions Committee.

The writing of the test will be waived for those who have satisfactorily completed a certificate programme or professional designation at McMaster University or the equivalent (see also K. Graduates of McMaster Certificate Programmes below). Information concerning the date of final application and other details may be obtained from the Associate Registrar (Admissions and Awards).

A student who has been admitted in this manner may, nevertheless, choose to study in a part-time basis; he or she would be on university probation and follow the normal academic regulations.

Part-time Study: If you do not meet the normal admission requirements described above in Admission from Ontario Secondary Schools, you may be considered for admission as a part-time student on university probation, provided you are at least 21 years old (or will be in the calendar year in which you propose to start university study) and you have not attended school on a full-time basis for at least two years.

Admission is not automatic, but is at the discretion of the Faculty to which you are seeking admission.

If you are admitted, you may register as a Special Student and may take up to six units of work course per session; the Winter Session extends from September to April and the Summer Session from May to August. Normally, these first courses will be Level I courses.

After you have taken 12 to 14 units, your performance will be reviewed.

1. If you have a weighted average of at least 4.0 and a grade of at least D - in each course, you may transfer to the Level I programme of the Faculty in which you are registered.

2. If you have a weighted average of less than 2.5, you may not continue without permission of your Faculty.

3. If you meet neither of the above conditions, you may take further courses as a Special Student and your record will be reviewed after you have taken at least 24 units in total.

At the second review:

1. If you have a weighted average in all the work taken of at least 4.0, you may transfer to the Level I programme of the Faculty in which you are registered.

2. If your weighted average is less than 4.0, you will be required to withdraw.

After you have met the above conditions to clear probation, you may continue your studies on either a full-time or part-time basis.

G. STUDENTS TRANSFERRING FROM OTHER UNIVERSITIES

If you wish to transfer to McMaster University, you will normally obtain credit only for courses in which you have achieved at least a 'C' (third-class honour) standing. Assessment of courses for transfer credit is subject to the guidelines of the individual Faculties.

If your native language is not English, you must obtain standing satisfactory to the University in the University of Michigan English Language Test. The University of Michigan authorization form will be sent upon receipt of a formal application for admission.

A student transferring to McMaster University must satisfy the Residence Requirements set out in Academic Regulations. The University will not accord to students transferring to McMaster privileges which would not be granted by their own universities. Grades obtained in courses taken at another university will not be included in the various McMaster averages, and, therefore, cannot be used to raise standing.

H. GRADUATES APPLYING FOR A SECOND BACHELOR'S DEGREE

Admission is by selection.

If you have a first degree you may apply to take a second degree in the same discipline or in another discipline. The requirements are set out in the Academic Regulations. Application forms are obtainable from the Associate Registrar (Admissions and Awards).

Graduates of other universities must supply an official up-to-date transcript with the completed application.

I. CONTINUING AND POST-DEGREE STUDENTS:

(Graduates not proceeding to a second degree or an advanced degree)

A Continuing Student is a university graduate who is not proceeding to an advanced degree, but wishes to take one or more undergraduate classes.

Continuing students who wish to take courses other than Commerce and Engineering need only to apply formally through Admissions in the first instance. In subsequent sessions they need only to submit a Registration form.

Continuing students who wish to take Commerce or Engineering courses must re-apply for each session on an application form obtainable from the Associate Registrar (Admissions and Awards).

Applicants will be expected to have at least a 'C' (third-class standing) average, with no failures, in the work of their final year (or the equivalent, in the case of a degree taken in part-time studies), and academic records which are satisfactory to the Department and the Associate Dean (Studies) of the appropriate Faculty.

Acceptance as a Continuing Student carries no implications with respect to acceptance in the School of Graduate Studies. Students who plan to proceed to a graduate degree should apply directly to the Dean of Graduate Studies.

A Post-Degree Student is a university graduate or a person with professional qualifications who is not proceeding to an advanced degree but wishes to take one or more graduate courses.

Such students must apply to the appropriate departments and have their admissions and registrations approved by the School of Graduate Studies for each session in which they wish to take courses. These students will be registered and pay fees as undergraduates.

Acceptance as a Post-Degree Student carries no implications with respect to admission to advanced degrees, and even if such admission is granted subsequently, credit towards the advanced degree will not normally be granted for the work previously taken.

J. OCCASIONAL STUDENTS:

(Non-graduates attending undergraduate classes for other than degree credit)

Occasional students are those who:

1. do not hold a University degree; and

2. wish to take undergraduate courses; and

3. are or will be at least 21 in the calendar year in which they plan to take university courses.

An Occasional Student may take up to 12 units of work in courses at the discretion of the Dean of Studies and instructor(s) concerned in the period September 1 to August 31.

The status of an Occasional Student is reviewed after the completion of five courses, and a decision may be made at that time by the student as to whether he or she wishes to enter a degree programme or to continue as an Occasional student.

K. GRADUATES OF McMaster Certificate Programmes

Advanced credit may be granted at the time of admission to those applicants to degree programmes who have completed a certificate programme at McMaster. The amount of credit will vary according to the performance of the student and the degree programme desired. Responsibility for the granting of credit rests with the Associate Deans (Studies) of the Faculty.

L. ENRICHMENT PROGRAMME

High school students with first-class standing may be allowed to enrol in courses which do not duplicate the material available to them in their own high schools. Degree credit for successfully completed courses will not be granted until after students have been admitted to and have registered at McMaster University.

Applicants must provide letters of recommendation from their Principal as well as one other teacher who knows their abilities, aptitudes and interests.

Interested students are invited to contact the Office of Admissions for information regarding available courses and application procedures.
M. STUDENTS STUDYING IN CANADA ON STUDENT AUTHORIZATION (VISA)
In limited enrolment programmes the number of places available in Level I will not exceed 5% of the total Level I enrolment in those programmes.

N. ADVANCED CREDIT
As noted in sections (A),(B),(C), and (G) above, advanced credit may be granted to applicants who have completed work at another university or college, subject to the applicant having met the minimum requirements prescribed. Advanced credit serves to shorten the degree programme.

In special situations, where a student has acquired the knowledge at another kind of institution or in a different manner such that the qualifications are difficult to assess, the University may require an examination of the student. In such a case, the Associate Dean (Studies) of the Faculty will request the appropriate academic department to assess the feasibility of such an examination. When such an examination is deemed feasible, the department involved will be responsible for deciding the appropriate method of evaluation and for administering the examination, which may consist of a variety of possible modes of evaluation, both written and oral. The examinations must be arranged by the last date for registration in the student's initial term at the University and may not be repeated. Any credit granted as the result of such an examination will be shown on the transcript in the normal manner used for advanced credit.
The regulations which follow are the general regulations of the University. You should read both these general regulations and the Faculty regulations which may be more stringent and appear in the Faculty sections of this Calendar.

Since the Academic Regulations are continually reviewed, we reserve the right to change the regulations in this section of the Calendar. This University also reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing.

Honours and three-level degree programmes are offered in the Faculties of Humanities, Science, and Social Sciences and in the Arts and Science Programme, and Major programmes are offered in the Faculty of Science only. The general regulations governing these programmes appear in this section of the Calendar. The regulations governing programmes in Business, Engineering, Engineering and Management, Medicine, Nursing, Occupational Therapy and Physiotherapy, Social Work, and Physical Education appear in the appropriate Faculty sections.

In the event there is a conflict between the programme regulations for these eight programmes and the general regulations in this chapter, the programme regulations take precedence.

The following regulations cover the ordinary cases. Faculties are authorized to use discretion in special situations by taking into account past practice, the spirit of the regulations, and circumstances which, in the opinion of the Faculty, are deserving of unusual treatment. Students who have irregular cases should consult the appropriate Associate Dean (Studies).

General Regulations

RESIDENCE REQUIREMENTS

While most students will complete all their undergraduate work at McMaster University, the minimum requirements set out below apply to students who take part of their work at other institutions.

In order to obtain a four- or five-level (Honours, Major, etc.), first undergraduate degree, you must complete at least two of the levels (approximately 60 units of work) beyond Level I, including the final level at McMaster.

In order to obtain a three-level, first undergraduate degree, you may satisfy the residence requirements either:

1. by completing the final level and at least one other level (a minimum of approximately 60 units of work) at McMaster University, or
2. by completing the final level (approximately 30 units of work) at McMaster University, including at least 18 units of Area courses.

The work used to satisfy the residence requirements must be completed at McMaster University; work taken at another university on a Letter of Permission will not count toward the minimum residence requirements. The appropriate Dean of Studies may relax these requirements in special cases, and may take into account high academic standing and place of residence, among other considerations.

All the work for a second bachelor's degree must be completed at McMaster University.

REGISTRATION

The purpose of registration is to record officially your selection of programme and courses. This is done before or at the beginning of each session, and information on how to register will be sent to eligible students. Counselling is available to assist you in course selection and in some programmes is compulsory.

Selection of Courses: Before you select the courses you wish to take, please read the requirements for your programme in the appropriate Faculty sections of this Calendar. First select the courses required for your programme and then electives; ensure that you have completed the courses which are listed as prerequisites and have completed or chosen courses that are listed as corequisites. If you fail to meet the programme requirements, you will not be eligible to graduate, and, if you have not passed the prerequisite courses, you will not be able to take the course selected.

Approval of Programmes: You are responsible for the completeness and accuracy of your registration. If you try to register in a programme or courses for which you are not qualified, your registration may not be accepted and you may not receive credit in selected courses. Your programme and course selection must be approved by the Associate Dean (Studies) of your Faculty. Similarly, you must obtain approval from the Associate Dean (Studies) for any change, including the dropping of courses. You should note that in order to qualify for most scholarships, you must register for the full load prescribed for your programme and level.

Extra Work: If you wish to take more than the normal number of units prescribed for a Level, you may do so only with the permission of the Associate Dean (Studies) of your Faculty. Normally, a University Average of at least 7.0 in the immediately preceding review period will be required if extra work is to be permitted. Additional academic fees will be assessed where the extra work is approved to clear an academic deficiency.

Load in Summer Session: No more than 12 units in total may be attempted in the Summer Evening and Day Sessions. Of these, no more than 6 units may be taken during the Summer Day Session, and no more than 3 units during each term of the Summer Day Session.

Sequence of Courses: Courses must be taken in the sequence specified in the programmes of the University which are set out by Faculty. For programmes described by Level, this means that, when registering in a Level, you must have completed the preceding Level, or be registered in any remaining courses for that Level. At the discretion of your Faculty, substitutions may be approved, especially for part-time students, when a required Area course is not available.

Repetition of Courses: To repeat a course for which credit has been obtained, you need approval of your Associate Dean (Studies). There is no limit on the number of repetitions of a failed course. The grades for all attempts appear on the transcript and enter into the computation of the various averages; however, only one successful attempt will enter into the computation of credit earned towards your degree.

Limit on Level I Courses: After you have completed Level I, you may obtain credit in no more than 12 additional units of courses beginning with the digit 1 in a four-level degree programme, except where special permission has been obtained from the Associate Dean (Studies). This means that in most Faculties credit may be obtained in no more than 42 units of Level I courses in a three-level programme, and in no more than 48 units in a four-level programme.

Letters of Permission: If you wish to attend another university to take courses which will carry credit towards a McMaster degree, you must obtain permission ahead of time. To do this you must seek a Letter of Permission from your Associate Dean (Studies) and pay the appropriate fee. If your Associate Dean (Studies) grants you this privilege, you should take note of any conditions that might apply, including the requirement of a grade of at least C— for transfer credit. Courses taken at another university cannot be used to satisfy the minimum residence requirements, and probably will delay graduation if permission has been granted to take the last courses for the degree at another institution.

You should note that the grades obtained in courses taken at another university will not be included in the various McMaster averages, and, therefore, cannot be used to raise standing.
Cancellation of a Course: If you cancel a course during the change of registration period, it will not show on your record. After that the course will show on your record. The grade will be recorded as CAN (cancelled) if the course is cancelled up to and including the last date for withdrawing from the course shown in the Sessional Dates.

After the last date for withdrawing you will remain registered in the course whether or not you attend, you will receive no refund of fees, and you will be assigned a grade based on the work submitted.

The various dates appear in the Sessional Dates at the beginning of this Calendar and are rigidly adhered to.

Withdrawal from the University: If you wish to withdraw from the University, you must consult the appropriate Associate Dean (Studies). Your identity card must be surrendered to the Associate Dean (Studies). Fees are not refunded unless this procedure is followed.

Your record in the courses being taken will be handled as outlined in the section above Cancellation of a Course.

Readmission: If you are seeking readmission to the University following withdrawal or poor academic performance, you must do so in writing. You should pay attention to any special requirements of the Faculty you wish to re-enter, including the deadline for applications. These requirements are specified in the Faculty sections of the Calendar.

In considering applications for readmission, the University may take into account both the secondary and post-secondary educational achievement of the applicant, and may require oral or written tests of the applicant, or other evidence which in the judgement of the appropriate Faculty is relevant. The Faculty may specify conditions which must be met in granting readmission.

Transfer of Credit between Faculties: Transfer of credit between Faculties is handled by the Associate Deans (Studies). Full credit may not be given at the time of transfer between Faculties and additional courses may need to be taken.

McMaster Test of Writing Competence

All undergraduates entering baccalaureate degree programmes must write a test of writing competence which is held in August, September, December, and April.

Those who fail or do not take the test will have the following notation on their records and transcripts: This student has not passed the McMaster Test of Writing Competence. This will be removed after the test is passed.

Those who do not attempt the test will not be allowed to register in or after the September following their initial registrations.

The Faculties of Engineering and Social Sciences have additional requirements which are noted in their Faculty sections of this Calendar.

Examinations

Final examinations are held in December and April for the Winter Session, and in August for the Summer Session. Final examinations for January to June, February to June, and first-term Summer Evening courses normally will be held at the end of June. Mid-session tests for full-year Winter Session Level I courses are held in December.

Mid-session tests in December for Level I courses and final examinations for two and three-unit courses normally are of two hours duration. Final examinations for courses of four or more units normally are of three hours duration.

No examinations or tests may be held in the final week of the terms of the Winter Session except for those specifically approved by the Undergraduate Council. The specific dates appear in the Sessional Dates.

Tests and examinations organized by the Office of the Registrar may be scheduled in the morning, afternoon, or evening, Monday through Saturday. You should arrange to be available throughout the examination periods since, until the final examination timetable is published, you cannot know when during the examination period your examination may be scheduled.

If you miss an examination for medical reasons you must submit a medical certificate from Student Health Services or from a doctor to the Office of the Registrar. The certificate must define both the disability and the period of absence, and must be submitted by the end of the examination period.

If you miss an examination for any reason other than illness, you must report immediately to the Examination Section of the Office of the Registrar.

A deferred examination privilege may be granted by your Faculty Reviewing Committee if you fail to write a final examination for a certifiable medical or compassionate reason, provided that you have submitted the certificate by the end of the examination period. Deferred examinations are conducted in April and August for Winter Session courses, and in December for Summer Session courses.

A decision to grant a deferred examination privilege will be reported on your grade report. You must confirm your intention to write a deferred examination by submitting an application to the Office of the Registrar. Specific deadline dates appear in the Sessional Dates.

Regulations: These regulations apply to all examinations conducted by the Office of the Registrar. Variations may occur for instructor-conducted examinations. Students who do not observe these regulations will be required to withdraw from examinations. Special circumstances must be reported immediately to the Examination Section of the Office of the Registrar.

McMaster student photo identification cards are required at all examinations. Students who seat themselves at an examination without photo I.D. cards will be required to withdraw from the examination. Students who arrive without photo I.D. cards will be required (before being seated) to obtain a substitute card and pay the appropriate fee; no extension of the examination will be permitted to compensate for any delay encountered.

It is the responsibility of students to be present on the day and hour when an examination is scheduled. If you fail to appear at the scheduled time, you will be considered to have defaulted the examination.

Punctuality is essential and no extra time will be allowed to those arriving late. No candidate will be admitted to an examination room more than 30 minutes after the start of any session.

No candidate may leave the room to withdraw from an examination during the first 45 minutes of any session. Candidates must leave the room immediately after handing in their examination materials.

A student who becomes ill during an examination may be excused by a Proctor but must file a doctor’s certificate with the Office of the Registrar.

No conversation or any form of communication between candidates is permitted in the examination room. No books, papers or instruments may be taken into any examination room unless specifically prescribed on the examination paper. No examination books or supplies are to be removed from the examination room. Smoking is not permitted in any examination room.

Handbags must be left beneath the chairs, not on the desks. The University can assume no responsibility for lost articles.

If you are a part-time student and your employer requires you to be away from the Hamilton area when you are to write an examination, you may seek special arrangements for writing your examination. Your application must be supported by a letter of explanation from an executive of your company.

Examinations are not rescheduled for purposes of travel.

Other regulations related to the conduct of examinations appear on the examination timetable and the examination booklets.

Grading System

The grade for a course is normally determined by combining the grades obtained on classwork, assignments, tests, and examinations. The method for determining the final grade is to be given in the course outline. The results of all courses attempted will appear on your transcript.

Since September 1982, the grading scale has been as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>12</td>
<td>first class</td>
</tr>
<tr>
<td>A</td>
<td>11</td>
<td>first class</td>
</tr>
<tr>
<td>A−</td>
<td>10</td>
<td>first class</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>second class</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>second class</td>
</tr>
<tr>
<td>B−</td>
<td>7</td>
<td>second class</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>third class</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>third class</td>
</tr>
<tr>
<td>C−</td>
<td>4</td>
<td>third class</td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td>pass</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>pass</td>
</tr>
<tr>
<td>D−</td>
<td>1</td>
<td>failure</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>failure</td>
</tr>
</tbody>
</table>
Before submitting a failing grade, the instructor reassesses whatever examples of the student's work are available. For the purpose of satisfying prerequisite requirements a grade of at least D− is required unless otherwise stated.

You retain credit for all courses with grades of D− or better, except in those programmes for which a higher grade is specified in the programme regulations.

Weighted averages are calculated using the grade points and units for a course as shown in the example below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A−</td>
<td>10</td>
<td>6.0</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>6.0</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td>B−</td>
<td>7</td>
<td>6.0</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Total  30  213

AVERAGE = 213 ÷ 30 = 7.1

**Terminology**

This glossary of terminology is arranged in alphabetic sequence.

**Area Courses** ("A" courses) are those courses in which the grades are used in computing the Cumulative Area Average (CAA) and the Graduation Average (GA). These courses are listed in the programme requirements.

**Course Numbers** (e.g. 1A3) can be deciphered as follows: the initial digit indicates the Level of the course; the letter(s) in the middle identifies the specific courses within the Level; and the final digit defines the number of units of credit associated with the course.

**Cumulative Area Average** (CAA) is computed as shown in the example below, using the best 80% of the grades obtained in the Area courses prescribed for the programme beyond Level I, provided that at least 12 units of Area courses have been attempted since the CAA was computed.

For students re-admitted to the University after obtaining a University Average of less than 2.0, the CAA will be computed from the time of re-admission.

In Combined Honours programmes consisting of two separate components two Cumulative Area Averages will be computed on the best 80% of the grades in each component; in other Combined Honours programmes a single average will be computed.

The grades in the following example are ranked in descending sequence. Since the student has taken 27 units, the average will be computed on the basis of the best 21.6 units (80% of 27 = 21.6). Thus, only 0.6 units of the course in which the student obtained the D+ have been included.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>(Units)</th>
<th>CAA Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A−</td>
<td>10</td>
<td>(6)</td>
<td>6.0</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(6)</td>
<td>6.0</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>(3)</td>
<td>3.0</td>
</tr>
<tr>
<td>B−</td>
<td>7</td>
<td>(6)</td>
<td>6.0</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>(6)</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Total  27 × 0.6 = 16.9

CAA = 169.8 + 21.6 = 7.9

**Elective Courses** ("E" courses) are those courses which are not required courses, and which a student has free choice in selecting. These courses form part of the total number of units required for the degree programme.

**Extra Courses** are those courses taken by a student which are over and above the total number of units required for the degree programme. The grades obtained in such courses will not be included in the computation of the various averages.

**Graduation Average** is used to determine the standing of a student at the time of graduation. In the case of the three-level degree programmes it is computed on at least 24 units of Area courses, and in the case of Honours and Major programmes on at least 36 units of Area courses. For Combined Honours programmes created from two distinct components two Graduation Averages will be computed using at least 24 units in each component; in other Combined Honours programmes a single average will be computed.

For three-Level programmes the computation will be based on Level II and III Area courses (i.e. courses with a first digit of 2 or 3) and for Major and Honours programmes on Level III and IV Area courses (i.e. courses with a first digit of 3 or 4). Where a student has taken more than the minimum number of Area courses specified for the programme, the Graduation Average will be computed on the best 80% of the appropriate Area courses, or the minimum, whichever number of units is greater.

In the example below of a three-level degree programme the total number of appropriate Area course units with a course number beginning with 2 or 3 actually taken was 42 and the required number was 24, so that the average will be computed on the basis of the best 33.6 units (80% of 42 = 33.6). If the student had taken 24-30 units of appropriate Area courses, the Graduation Average would be calculated on 24 units.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>(Units)</th>
<th>GA Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A−</td>
<td>10</td>
<td>(6)</td>
<td>6.0</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(6)</td>
<td>3.0</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>(3)</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Total  (42) × 0.5 = 21.0

GA = 298.2 ÷ 33.6 = 8.9

Graduation Standing is assigned on the basis of the Graduation Average calculated as above. First-class standing is given to those with averages of 9.5 or higher, second-class for averages of 7.0 to 9.4, and third-class for averages of 4.0 to 6.9.

**Level** is used in two ways:
1. to describe how far through a programme a student has progressed.
2. to indicate at what stage in a programme a student normally takes a given course. Level I courses (beginning with the digit 1) normally are taken by students registered in Level I, Level II courses by students registered in Level II, etc. The number of units required to complete a level is specified for each programme in the Faculty section of this calendar.

Two levels consist of courses which are indicated by the digit 1; upon completion of Level 1 the student will progress to Level II, etc. The number of units required to complete a level is specified for each programme in the Faculty section of this calendar.

**Programme Probation** may be assigned to students who do not meet the normal promotion requirements on the Cumulative Area Average for a programme, which appear under the programme regulations. A student may be on Programme Probation only once.

**Required Courses** ("R" courses) are those courses which are specifically designated for inclusion in a programme.

**Reviewing Period** is the time between two reviews for a student. Students records are reviewed in May and August each year for those who:
1. have attempted at least 18 units of work since the last review, or
2. may be eligible to graduate at the next Convocation, or
3. were admitted under the part-time mature student provision and have attempted the first 12 units of work which constitute their probationary period.

**Units** define the amount of credit associated with a course and are used in the computation of averages. A unit is roughly equivalent to one lecture-hour per week for one term or two hours of laboratories or seminars per week for one term. Most courses are of 3 or 6 units credit. Normally 30 or more units or work are specified for a Level; approximately 90 units or more constitute the work for a three-level degree and 120 units or more for a four-level degree.

**University Average** is computed on the grades obtained in all courses since the last review of student standing.
University Probation may be assigned to students who fail to obtain a University Average of 2.5 which is required for continuance at the University but do obtain a University Average of at least 2.0. A student may be on University Probation only once, except with the special permission of the Faculty in which he or she is registered.

Programmes Of Study and Academic Standing

Students entering McMaster University register in one of the following Level I programmes: Arts and Science I, Business I, Engineering I, Humanities I, Music I, Natural Science I, Nursing I, Physical Education I, or Social Sciences I. The admission requirements for specific programmes beyond Level I (e.g. Honours History) appear in the appropriate Faculty sections of the Calendar and prescribe the required standard of performance in appropriate Level I courses.

ACADEMIC STANDING

Academic standing is reviewed in May and August each year for students who

1. have completed at least 18 units of work since the last review, or
2. may be eligible to graduate at the next Convocation, or
3. were admitted under the part-time mature student provision and have attempted the first 12 units of work which constitute their probationary period.

In the review of academic standing, three sets of decisions are made:

1. whether a student may continue at the University for which the University Average, calculated on at least 18 units, is used;
2. whether a student may continue in a programme for which the Cumulative Average, calculated on at least 12 units of area work, is used; and
3. whether a student may graduate and the classification of the degree, for which the Graduation Average is used.

REQUIREMENTS FOR LEVEL I

If you enter the University without advanced standing being granted, you must attempt a full load of Level I work before proceeding to the work of higher Levels. Admission to the programmes beyond Level I is based on the performance in Level I, and you must meet the normal requirements prescribed in the following section, Minimum Requirements for Continuance at the University, in order to continue at the University.

If you meet the requirements for continuance at the University after completing the Level I work, but fail to meet the admission requirements of any programme, you may continue at the University for one additional reviewing period. You will be registered as Irregular on Programme Probation.

If you again fail to qualify for admission to a programme, you may not continue without special permission.

If you are repeating Level I voluntarily, your registration status will be Clear Admission.

In the case of part-time students, the Associate Dean (Studies) has the discretion to permit students to take some of the work in the higher Levels prior to having attempted the full load of Level I. Decisions will be made on an individual basis according to the special circumstances that apply in the particular case.

MINIMUM REQUIREMENTS FOR CONTINUANCE AT THE UNIVERSITY

You may continue at the University if you obtain a University Average of at least 2.5, subject to meeting any special requirements of your programme. If you fail to meet the requirement of a 2.5 average, you may continue on University Probation for one reviewing period, provided that you have a University Average of at least 2.0. You may be on University Probation only once.

If your University Average is less than 2.0 you may not continue without permission and must seek re-admission. The decision will be made by the appropriate Faculty Reviewing Committee, and, if you are permitted to continue, you will be placed on probation for one reviewing period.

If you fail to obtain a University Average of 2.5 on a second occasion, you will be required to withdraw from the University for a period of at least 12 months. If there are special circumstances which apply, the Faculty Reviewing Committee may waive the requirement of withdrawal for 12 months.

In the event that you are eligible to continue at the University, but are ineligible to continue in any programme because the programme requirements have not been met, you require the permission of your Faculty to reregister. If permitted to reregister, you will be on programme probation and may register as Irregular for one reviewing period, during which you may take up to 18 units of Area work that would qualify you to re-enter a programme. Other courses taken may be used as electives. This privilege will be granted only once.

PROGRAMME REQUIREMENTS FOR B.A. AND B.S.C. PROGRAMMES

The programme requirements are in addition to the minimum requirements prescribed above for continuance at the University.

Honours Programmes: If you obtain a Cumulative Area Average of at least 7.0 you may continue in an Honours programme. If you fail to obtain a Cumulative Area Average of 7.0 but have an average of at least 6.5, you may continue on Programme Probation for one reviewing period. You may be on Programme Probation only once. If you fail to obtain a Cumulative Area Average of 6.5, you may not continue in the programme and must seek entry to another programme.

Graduation Standing in Honours degree programmes is awarded in three classes: first-class, second-class, and third-class. For first-class standing a minimum Graduation Average of 9.5 is required, for second-class standing 7.0 and for third-class standing 4.0.

A student who at the time of graduation fails to meet the requirements for an Honours degree may seek to transfer to another programme.

Combined Honours Programmes: All Combined Honours programmes offered by the Faculty of Science will be treated in the same manner as single Honours programmes above, thus, a single CAA and GA will be computed.

In the case of Combined Honours programmes in other Faculties two separate Cumulative Area Averages will be computed using the Area courses for each of the two components, except where the Calendar specifies that a single average will be computed. Where two Cumulative Area Averages are computed, you must meet the specified minimum averages for each of the two components of the combined Honours Programme.

Similarly, two separate Graduation Averages will be computed, and Graduation Standing will be determined by taking the mean of the two Graduation Averages, except for those programmes where a single CAA is computed, in which case one Graduation Average will be computed.

A student who at the time of graduation fails to meet the requirements for a combined Honours degree may seek to transfer to another programme.

Major Programmes: Major programmes are available through the Faculty of Science only. Effective for students registered in the programme before September 1987: If you obtain a Cumulative Area Average of at least 4.0, you may continue in a Major programme. If you fail to obtain a Cumulative Area Average of 4.0 but have an average of at least 3.5, you may continue on Programme Probation for one reviewing period. You may be on Programme Probation only once. If you fail to obtain a Cumulative Area Average of 3.5 you may not continue in the programme and must seek entry to another programme.

Effective for students admitted to a Major programme after August 1987: If you obtain a Cumulative Area Average of at least 5.0, you may continue in a Major programme. If you fail to obtain a Cumulative Area Average of 5.0 but have an average of at least 4.5, you may continue on Programme Probation for one reviewing period. You may be on Programme Probation only once. If you fail to obtain a Cumulative Area Average of 4.5 you may not continue in the programme and must seek entry to another programme.

Graduation Standing in Major degree programmes is awarded in three classes: first-class, second-class, and third-class. For first-class standing a minimum Graduation Average of 9.5 is required; for second-class standing 7.0; and for third-class standing 4.0 for the first group covered.
above and 5.0 for the second group. A student who at the normal time of graduation fails to meet the requirements for a major degree may seek to transfer to another programme.

**Three-Level Degree Programmes:** If you obtain a Cumulative Area Average of at least 4.0 you may continue in the programme. If you fail to obtain an average of 4.0 but have an average of at least 3.5, you may continue on Programme Probation for one reviewing period. You may be on Programme Probation only once. If your Cumulative Area Average is less than 3.5, you may not proceed in the programme and must transfer to another programme.

Graduation Standing in these programmes is awarded in three classes: first-class, second-class, and third-class. For first-class standing a minimum Graduation Average of 9.5 is required; for second-class standing 7.0; and for third-class standing 4.0. A student who at the normal time of graduation fails to meet the requirements for one of these degrees may seek to transfer to another programme.

**TRANSFER BETWEEN PROGRAMMES**

If you are registered in Level III of an Honours or Major programme and wish to transfer to a three-level degree programme in order to be eligible for graduation at the next Convocation you must apply to the appropriate Associate Dean (Studies) by March 1 for Spring Convocation and by September 1 for Autumn Convocation. If permission is granted, you must go to the Office of the Registrar and complete a graduation information card.

If you wish to transfer from one programme to another, you must have a Cumulative Area Average with standing appropriate for the programme you wish to enter. The Faculty will specify whether you need to take additional course work to obtain a specialist background equivalent to that of students already registered in the programme. You should discuss the practicability of transfer with the appropriate Associate Dean (Studies).

**SECOND BACHELOR’S DEGREE PROGRAMMES**

Credit for courses taken towards a first undergraduate degree may be applied to a second undergraduate degree, except in the case of some professional programmes (e.g. Bachelor of Education and Bachelor of Library Science). All the additional work to obtain the second degree must be taken at McMaster University.

Credit from the first two degrees cannot be applied to a third undergraduate degree. To obtain a third undergraduate degree it would be necessary to take the complete programme, i.e. approximately 90 units for a three-level degree and approximately 120 for a four-level degree.

For admission to the Second Degree programme you must hold a first degree. Extra courses taken while you are registered in a first degree programme may be applied to the Second Degree programme. The minimum admission requirements and programme of study for the second degree depend on both second and first degrees and whether they are in the same subject.

Students who do not qualify for a Second Degree programme on the basis of the relevant course work completed during their first degree studies may, with the permission of the department and appropriate Associate Dean (Studies), be allowed to qualify on the basis of further work undertaken as Continuing students considered in conjunction with their previous performance in the area courses.

Students who are allowed to qualify for admission on the basis of further work taken as Continuing students at McMaster University may, with the permission of the department and the appropriate Associate Dean (Studies), have this course work applied toward the fulfillment of the requirements for the second degree.

Faculties wishing this provision to apply only to second degree programmes in another subject may make that restriction in the Faculty regulations. The Faculty of Science has so indicated.

A student in a Second Degree programme must meet the minimum requirements prescribed in earlier sections for the University Average, the Cumulative Area Average, and the Graduation Average, with the exception that, where the number of Area courses prescribed is less than the minimum normally prescribed for inclusion in the Graduation Average, all Area courses taken in the second degree programme will be included in the computation of the Graduation Average.

**Major Degree Following a Three-Level Degree in Same Subject:** For entry into a Major Degree programme in the Faculty of Science, a Graduation Average of at least 4.0 in the first degree programme is required for those entering a major programme before September 1987; thereafter an average of at least 5.0 will be required.

If admitted, you must take at least 30 units of work as specified by the department(s); normally this will include the Level IV specialist courses and courses from Levels II and III to provide specialist background equivalent to that of students already in the programme.

**Honours Degree Following Major or a Three-Level Degree in the Same Subject:** For entry, a Graduation Average of at least 7.0 in the first degree programme is required.

If admitted, you must take at least 30 units of work specified by the department(s); normally this will include the Level IV specialist courses and courses from Levels II and III to provide specialist background equivalent to that of students already in the programme.

**Second Degree in Another Subject:** For admission to the second degree you must meet the admission requirements for the programme you wish to enter (e.g. an average in specified courses of at least 7.0 for entry to an Honours programme and of at least 4.0 for entry to other programmes of the Faculties of Humanities, Science, and Social Sciences). The average used for admission would normally be based on Area courses for, or courses related to, the programme you wish to enter.

If the second degree is a Bachelor of Arts or Bachelor of Science degree, you must complete at least 30 units of work specified by the department offering the programme. If the second degree is a Major or Honours degree, the minimum is 60 units.

**DEANS’ HONOUR LIST**

Each year outstanding students are recognized by their being named to the Deans’ Honour List for which a minimum average of 9.5 is required. In the case of full-time students, they must have completed in a Winter Session at least 30 units (36 in the case of Engineering). The Deans have the power to exercise discretion where the full load for a particular level of a programme is less than 30 (36 in Engineering e.g. Civil Engineering and Engineering Mechanics, Level IV, 34 to 36 units). In the case of a full-time student the minimum average of 9.5 must have been obtained on the University Average. For those who have studied part-time on a continuous basis, the assessment will be made at the reviewing periods where 30, 60, and 90 units have been completed, and at graduation.

(Special provision for students in the B.H.Sc. programme are explained in the section Faculty of Health Sciences, Occupational Therapy & Physiotherapy Programme.)

**Graduation**

When you register for the session in which you expect to complete the graduation requirements, you must file a graduation information card. If you fail to do so at the time of registration you must do so in the Office of the Registrar before March 1 for Spring Convocation and before September 1 for Autumn Convocation.

Graduates must take the degree at the Convocation immediately following the completion of the appropriate degree work.

A Programme Standing will be determined for students who have fulfilled the graduation requirements in May of each year. The Programme Standing will be determined on the basis of the Graduation Average and will appear on the transcript. The notation will show your rank in the graduating class for the programme and the number of students graduating from that programme in May.
The University has defined its expectations of students in both the academic and non-academic life of the University community, and developed procedures to ensure that all members of the community receive equitable treatment. Each year at registration, you will receive the document Senate Policy Statements which contains the following:

- Statement on Academic Ethics
- The University's Statement on Human Rights
- Policy Statement on Applicants and Students with Disabilities
- Code of Conduct
- Student Appeal Procedures
- Policy on Undergraduate Student Access to Final Examinations; and
- General Regulations for McMaster University Library

The following provides a brief summary of the major policies contained in the Senate Policy Statements. Additional copies may be obtained from the Senate Secretariat, Room 104, Gilmour Hall.

**ACADEMIC ETHICS**

The expectations of the University for academic work and the procedures for dealing with alleged cases of academic dishonesty are contained in the document Statement on Academic Ethics.

Academic dishonesty is defined as follows:

Academic dishonesty is not qualitatively different from other types of dishonesty. It consists of misrepresentation in an attempt to deceive. In an academic setting this may take any number of forms such as: copying or the use of unauthorized aids in tests, examinations and laboratory reports; plagiarism; the submission of work that is not one's own or for which previous credit has been obtained, unless the previously submitted work has been presented as such to the instructor of the second course and has been deemed acceptable for credit by the instructor of that course; aiding and abetting another student's dishonesty; and giving false information for the purpose of gaining admission, credits, etc.

**APPEAL PROCEDURES**

The University has a responsibility to provide fair and equitable procedures for the lodging and hearing of student complaints arising from University regulations, policies and actions that affect them directly. The procedures described in the Student Appeal Procedures are intended to provide a mechanism to remedy injustices and may culminate in a hearing before the Senate Board for Student Appeals.

Students are advised, however, to pursue any complaint or grievance through informal channels, before following the formal procedures. Experience has shown that many complaints can be resolved more quickly in this manner.

Students should seek remedies for their grievances as promptly as possible, and must do so within six months of the end of the academic year in which the grievance has occurred. The end of the academic year is August 31.

Decisions on admission or re-admission to an undergraduate degree programme cannot be appealed, except under the conditions described in the next paragraph. Applicants may, however, ask for a review of a decision on admission or re-admission or on the granting of transfer credits. To initiate such a review, the applicant must write to the Registrar within one week of receiving the original decision and state the grounds for seeking the review.

Applicants who have been refused re-admission to an undergraduate degree programme may appeal the decision, using the procedures described in the Student Appeal Procedures, if the following two conditions have been met:

i. the applicant withdrew from the University voluntarily; and

ii. the applicant alleges error or injustice on grounds other than academic judgement.

**CODE OF CONDUCT**

McMaster University is a community dedicated to furthering learning, intellectual inquiry, and personal and professional development. Membership in the community implies acceptance of the principle of mutual respect for the rights of others and a readiness to support actively an environment conducive to intellectual growth, both for individuals and for the whole University.

The Code of Conduct contains regulations which outline the limits of conduct considered to be consonant with the goals and the well-being of the University community, and define the procedures to be followed in cases of violation of the accepted standards.

**STATEMENT ON HUMAN RIGHTS**

McMaster University wishes to ensure the full and fair implementation of the principles of the Ontario Human Rights Code which states:

*Every person has a right to equal treatment with respect to services, goods and facilities, without discrimination because of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, age, marital status, family status or handicap.*

The University Senate has approved Procedures on Human Rights which outline the procedure to be followed in the event that a student has a complaint regarding an alleged violation of human rights.

**STUDENT RECORDS**

The University has developed operating procedures which are designed to protect the confidentiality of undergraduate student records. The following have been defined as public information: student number, student name, sex, degrees earned and when, undergraduate awards earned and when, and whether a student is full-time or part-time. Additional information may be used by the various offices and officials of the University where a need to know has been established.

Information about applicants for admission who do not gain admission will be kept for a limited period only. For those admitted to the Nursing and M.D. Programmes a separate admission file is maintained. While a student may have access to his or her file, documents received from a third party in confidence are not normally placed in the student's file, but, in those cases where they have been, they will not be disclosed.

The operating procedures also define the circumstances under which information may be disclosed to judicial and law enforcement agencies, the Ontario Universities Application Centre, Statistics Canada, agencies charged with the recovery of funds provided under OSAP or CSL, and secondary schools.

Transcripts are issued only with the consent of the student. Addresses will not be released except under provisions noted above.
Financial Information

Upon receiving official acceptance from the Registrar's Office and upon completion of registration, a student is responsible for the full payment of all fees as defined in this Calendar. Payment of academic fees does not mean acceptance to the University or approval of a student's registration. Academic requirements have to be fulfilled before registration is completed.

New students may not forward academic fees to the Business Office until they have received their Letters of Acceptance.

Students should not send residence fees unless notification of acceptance has been received.

Students are responsible for the fees for each academic session and no fee credits can be transferred from one academic session to another.

It is the policy of the University not to accept registrations until all previous accounts are paid in full. Any payments received are therefore first applied to previous debts and any balances to the most recent debts.

The University reserves the right to amend the fees at any time.

Undergraduate Fees

NOTES APPLICABLE TO ALL UNDERGRADUATES
The fees payable by a student are composed of an academic fee and supplementary fees. The academic fees payable are calculated on a per unit basis up to the maximum stated under Tuition Fee shown in the 1985-86 fee schedules, below. The full supplementary fees are payable by full-time students, i.e. those taking 24 units or more.

Fees do cover the student's portion of the tuition cost, campus health services, student organizations, athletics, registration, library, McMaster Fund, examinations and diplomas and are payable by all students attending McMaster University.

Fees do not cover the Ontario Health Insurance Plan, which is the personal responsibility of the student.

All new students will have a $5.00 photo identification card fee added to the fees. A fee of $15.00 will be charged for all replacement photo identification cards. Your photo identification card will be a requirement at the Bookstore, Libraries, Examinations and various student locations and events.

No caution deposits are required, but students will be assessed for any unwarranted breakage.

The University reserves the right to assess other supplementary fees or charges in some courses or programmes to recover in part or in full the cost of providing course materials, and accommodation and transportation for field trips, and the costs of breakages.

Fees charged by the University are subject to annual changes. The current fee schedule, including the refund schedule, for any given academic year will be sent to each student during the summer preceding September registration.

CANADIAN STUDENTS

Full-time Fees
The following fees for Canadian students for an academic load of 28 units or more were charged during 1985-86 and are subject to change:

<table>
<thead>
<tr>
<th>Tuition Fee</th>
<th>Supplementary Fees</th>
<th>Total Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine I,II</td>
<td>$2,319.00</td>
<td>$102.50</td>
</tr>
<tr>
<td>Medicine III</td>
<td>1,546.00</td>
<td>87.50</td>
</tr>
<tr>
<td>Engineering, and Eng. Mgt. III, V</td>
<td>1,320.00</td>
<td>123.50</td>
</tr>
<tr>
<td>Eng. Mgt. II,IV</td>
<td>1,214.00</td>
<td>123.50</td>
</tr>
<tr>
<td>Nursing</td>
<td>1,214.00</td>
<td>118.50</td>
</tr>
</tbody>
</table>

All other programmes

<table>
<thead>
<tr>
<th>Tuition Fee</th>
<th>Supplementary Fees</th>
<th>Total Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business, Commerce, and Physical Education</td>
<td>1,214.00</td>
<td>113.50</td>
</tr>
</tbody>
</table>

Additional Notes to Full-time Fees:
For academic loads between 24 and 27 units, the fee was $43.00 per unit plus full supplementary fees.

An additional charge is made for students enrolled in the Nursing and Medical programs to cover the cost of Learning Resource material. The charge is $5.00 for Nursing students and $60.00 for Medical Students.

Health Services Fee: The supplementary health services fee of $11 includes reimbursement of expenses up to $500, resulting from an accident incurred during the academic year, where such expenses are not recoverable under the Ontario Health Insurance Plan. These expenses may include X-ray, ambulance, dental treatment, prescribed drugs, wheelchairs or similar appliances. Reimbursement is not made for accident expenses to dental plates, crowns, fillings, glass frames, lenses or similar. Accidents should be reported to Student Health Services within ten days.

Part-time
For students taking less than 24 units, the fee was $43.00 per unit plus a supplementary fee of $1.25 per unit for membership in the McMaster Association of Part-time Students, or the McMaster Students' Union.

Students enrolled in the Nursing programme as part-time students should also note an additional $5.00 charge to cover the cost of Learning Resource material.

Listeners
A Listener student is one not seeking credit, and may be admitted at one-half of the standard fee upon application to the Centre for Continuing Education.

A husband and wife attending the same course as Listeners may pay the reduced rate of one Listener fee, plus half of the fee for another listener.

Persons Aged 65+
Subject to meeting admission and prerequisite requirements, persons aged 65 and over may register in any courses without payment of tuition fees.

VISA STUDENTS

Full-time Visa Students
The following fees for full-time Visa students were charged during 1985-86 and are subject to change:

<table>
<thead>
<tr>
<th>Tuition Fee</th>
<th>Supplementary Fees</th>
<th>Total Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine I,II</td>
<td>$10,185.00</td>
<td>$102.50</td>
</tr>
<tr>
<td>Medicine III</td>
<td>6,790.00</td>
<td>87.50</td>
</tr>
<tr>
<td>Nursing</td>
<td>6,790.00</td>
<td>118.50</td>
</tr>
<tr>
<td>Engineering</td>
<td>6,790.00</td>
<td>123.50</td>
</tr>
<tr>
<td>Business, Commerce, and Physical Education</td>
<td>4,165.00</td>
<td>113.50</td>
</tr>
<tr>
<td>All other programmes</td>
<td>4,165.00</td>
<td>108.50</td>
</tr>
</tbody>
</table>

Part-time Visa Students
Engineering, Engineering and Management III, V and Nursing are assessed at $187.00 per unit tuition fee, plus supplementary fees of $1.25 per unit. For example:

3 units x $187.00 per unit = $561.00

Plus supplementary fees at 3 x $1.25 = 3.75

Total Fee for a 3-unit course = 564.75
### Payment of Fees

**Full-time** students should note that fees are payable in full during the registration period in August/September. Prepayment of academic fees is encouraged to simplify the registration process (see below Prepayment of Academic Fees). Payments through instalments are also available, with the first payment due by September 1, or at the time of registration, and the second, including the service charge of $25.00, due by January 15.

**Part-time** students should note that payment of fees must accompany registration. Payments through instalments are also available, with the first payment due upon registration and a post-dated cheque for the balance, including a service charge of $25.00, due by January 15, or February 28 for the January registrant.

Cheques must be made payable to McMaster University. Any cheque not accepted and returned by the bank will be subject to an additional administrative charge of $15.00. Fees paid by a cheque which is returned by the bank are considered unpaid fees at the date the cheque was deposited and interest charges described above will be applied. The cheque must be replaced and include the additional administrative charge of $15.00.

**Failure to comply** with payment dates will result in the University adding interest at the rate of 1.5% per month on unpaid fees in excess of the second installment after September 30, 1986, and on all unpaid fees after the due date for the second installment, January 15, 1987.

In addition, refusal to pay fees, or any part of the fees, may result in the student being refused admission to the University or being requested to withdraw with all privileges suspended.

No student may be eligible for any examination results, transcripts, or financial assistance, or any part of the fees, are paid in full, or until acceptable arrangements are made with the Manager, Financial Services in the Business Office.

### Prepayment of Academic Fees

In order to simplify registration, all tuition, supplementary, residence and food plan fees should be received in the Business office prior to the date that you register. Your registration cannot be completed until fees are paid.

In order for your payment to appear on University records by the time you register, pre-payment must be received at the University by:

- **Year 1 students**, who will be registering early August: **August 1, 1986/87**.
- **Upper Level students**, who will be registering early September: **August 23, 1986/87**.

Students must fill in the fee prepayment form and send it together with a cheque, which may be post-dated to September 1, to the Business Office. Your student identification number should be written on the back of your cheque. By following this procedure you will reduce the time needed to complete Registration in September.

Students who are expecting to receive financial assistance under the Ontario Student Assistance Programme or are to be recipients of scholarships, bursaries or other awards, may arrange fee deferrals on the day of registration, provided they can show satisfactory evidence that such awards have been granted. All fees are payable upon receipt of financial assistance.

### Residence and Food Service Fees

#### Regular Session

Residence fees for students living on campus cover the period, September 3 to the end of the Spring examinations (April examination period). The fees below are those for 1985-86. Fees are due on September 1, but may be paid in two instalments. Please note the due dates.

Full payment of fees must be completed by **January 15**.

<table>
<thead>
<tr>
<th>Residence</th>
<th>Payable In Full by September 1</th>
<th>Payable In Part by September 1</th>
<th>Completion of payment by Jan. 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room and Board</td>
<td>$2500.00</td>
<td>$1700.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Apartments: Per Person (Room Only)</td>
<td>1275.00</td>
<td>895.00</td>
<td>380.00</td>
</tr>
<tr>
<td>Food Plan Only</td>
<td>1225.00</td>
<td>850.00</td>
<td>375.00</td>
</tr>
</tbody>
</table>

A complete and current schedule of residence charges and payment dates may be obtained upon application to the Manager of Residence Administration, Commons Building, telephone 525-9140, extension 4223.

The University reserves the right to use the rooms during vacation periods, and the charges do not include the use of the room or the cost of meals during these periods, unless arrangements to the contrary are made.

Students will be assessed for unwarranted breakage.

#### Other Than Regular Session (Students, Alumni, Transient Visitors, and School Children in Groups)

The following rates are for Room Only during May to September. Room rates include all bedding, with a weekly linen change, but not towels or daily maid service. Parking is not included in these rates. Guests pay whichever of these rates (i.e. daily or weekly) is to their advantage. Stays of one month or less are subject to 5% sales tax.

The following rates apply to 1985 only. For successive years and other enquiries, contact the Conference Office, Commons Building Room 101B, telephone 525-9140, extension 4781.

<table>
<thead>
<tr>
<th>Double Occupancy</th>
<th>Cost Per Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Nights</td>
<td>$12.00</td>
</tr>
<tr>
<td>First Week</td>
<td>$60.00</td>
</tr>
<tr>
<td>Second &amp; Successive Weeks</td>
<td>$32.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Single Occupancy</th>
<th>Cost Per Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Nights</td>
<td>$16.00</td>
</tr>
<tr>
<td>First Week</td>
<td>$80.00</td>
</tr>
<tr>
<td>Second &amp; Successive Weeks</td>
<td>$42.00</td>
</tr>
</tbody>
</table>
**Miscellaneous Fees**

As a guide, the following fees were in effect for the 1985-86 academic year, and are over and above assessed academic fees, supplementary fees, and residence fees and food plan fees.

**OPTIONAL USER FEES**

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transcript (for up to 3 copies)</td>
<td>$2.00</td>
</tr>
<tr>
<td>Replacement of Diploma</td>
<td>15.00</td>
</tr>
<tr>
<td>Replacement of M.D. and Graduate Diploma</td>
<td>25.00</td>
</tr>
<tr>
<td>Letter of Permission</td>
<td>25.00</td>
</tr>
<tr>
<td>Late Registration Fee</td>
<td>25.00</td>
</tr>
<tr>
<td>Deferred Examination at Another Centre</td>
<td>30.00</td>
</tr>
<tr>
<td>Supervision of Examinations for Other Universities</td>
<td>25.00</td>
</tr>
<tr>
<td>Examination Reread</td>
<td>25.00</td>
</tr>
<tr>
<td>Duplicate Tuition Fee Receipt</td>
<td>5.00</td>
</tr>
<tr>
<td>Replacement Student I.D. Card</td>
<td>15.00</td>
</tr>
<tr>
<td>Replacement Food Card</td>
<td></td>
</tr>
<tr>
<td>Lost Card</td>
<td>10.00</td>
</tr>
<tr>
<td>Misuse of Card</td>
<td>25.00</td>
</tr>
<tr>
<td>Picture</td>
<td>2.00</td>
</tr>
<tr>
<td>Returned Cheque Charge (NSF, Payment Stopped)</td>
<td>15.00</td>
</tr>
<tr>
<td>Installment Fee</td>
<td>25.00</td>
</tr>
<tr>
<td>Residence Withdrawal Fee</td>
<td>25.00</td>
</tr>
<tr>
<td>Photocopy of Examination Script</td>
<td>10.00</td>
</tr>
<tr>
<td>Athletic Fees</td>
<td></td>
</tr>
<tr>
<td>Undergraduate Part-time-Full Year</td>
<td>48.00</td>
</tr>
<tr>
<td>Undergraduate Part-time-8 months</td>
<td>33.00</td>
</tr>
<tr>
<td>Undergraduate Part-time-4 months</td>
<td>20.00</td>
</tr>
<tr>
<td>Tennis User Fee</td>
<td>15.00</td>
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<td>Athletic Locks and Apparel Users’ Fee</td>
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<tr>
<td>Visitor fee</td>
<td>3.00</td>
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<tr>
<td>Locker, large</td>
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<td>Locker, small</td>
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<td>Library charges</td>
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<td>Overdue Recalled Books (per day)</td>
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<td>Overdue Reserve Material (per hour)</td>
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<td>Replacement Costs/Fines ... up to</td>
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<td>Returned Books After Replacement Obtained</td>
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<td>Campus Health Service (optional for part-time (day)</td>
<td>11.00</td>
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<tr>
<td>students)</td>
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</table>

**EXPENSES**

To some extent, expenses are controlled by the student (e.g., clothing, living expenses and amusement). The essential costs for a typical student in Level I not living at home will be approximately $4,000 depending upon the amount the student chooses to pay for room and board.

**Costs Other Than Fees for Students in Clinical Courses:** Students must buy uniforms, shoes, stockings and uniform accessories, for clinical practice. Uniforms and accessories are ordered under the direction of the School of Nursing and the approximate cost is $100. White shoes and hose are also necessary.

**Transportation:** Students are responsible for expenses involved in transporting themselves to community agencies, making home visits or in connection with other clinical practice. In Nursing, for example, if using public transportation, the cost is approximately $32.00 in Level I; $75.00 in Level II; and $125.00 to $150.00 in each of Levels III and IV. In Levels II, III and IV, a car would be an asset.

**Registration Examinations:** Graduates of the B.Sc.N. programme can expect to pay fees ($176.00 in 1986) to write the comprehensive registration examinations administered by the College of Nurses of Ontario.

**Insurance of Personal Property on University Premises:** The University cannot assume any responsibility for the personal property of any employees, faculty members, or students, nor does the University carry any insurance that would cover their personal property.

In most cases, personal fire insurance policies provide an automatic 10% extension covering property away from home. It is suggested that insurance policies be inspected to be certain that this is the case.

**Death and Dismemberment Insurance:** The University considers that the purchase of insurance coverage for death and dismemberment is the individual responsibility of its students. It must be remembered that the greater part of a student's day is usually devoted to activities not related to a University course. There are various insurance plans available and although the University does not specifically endorse any one of these plans, it has no objection to the explanatory brochures and literature being posted on bulletin boards or distributed in appropriate places. Students involved in laboratory or field work are particularly encouraged to investigate such coverage.

**Student Financial Aid**

Financial aid to help students meet the costs of post-secondary education is available from the federal and provincial governments through the Ontario Student Assistance Programme (OSAP) which consists of five plans.

- Ontario Study Grant Plan
- Canada Student Loans Plan
- Ontario Student Loans Plan
- Ontario Special Bursary Plan
- Ontario Work-Show Plan

To be eligible for assistance under each of these plans, a student must be a Canadian citizen or permanent resident of Canada and fulfill certain requirements for residency in Ontario. The amount of financial aid awarded is determined by a need-testing procedure.

All of the government programs described in this text are modified and restructured annually to reflect the changing needs of students from the Province of Ontario. It is therefore recommended that you discuss your specific financial requirements with a counsellor in the Student Financial Aid Office.

**ONTARIO STUDY GRANT PLAN**

A plan which primarily helps students from less affluent families complete undergraduate work and not incur significant debt. Grants under this plan are not contingent upon a student taking a government loan and are limited to a student's first eight academic terms of post-secondary study. After that, generally at professional or graduate levels of study, students are expected to assume more responsibility for educational costs or to turn for assistance to student loans plans outlined below.

Grants are available to both full-time and part-time students, resident in Ontario, enrolled at recognized post-secondary institutions anywhere in Canada.

**CANADA STUDENT LOANS PLAN**

A federal government plan, administered by the provincial government, which provides loans to needy students for completion of any level of study. Maximum assistance under this plan is about two-thirds of standard costs at an Ontario institution. Loans are available to full-time students enrolled at recognized post-secondary institutions anywhere in the world.

The federal government recently expanded its Canada Student Loans Plan to include loans for needy part-time students. Interest-bearing, such a loan will cover a student's costs for tuition, books, transportation, day care and incidentals.

**ONTARIO STUDENT LOANS PLAN**

A plan which provides loans to full-time students whose financial needs are not fully covered by the Canada Student Loans Plan. This plan also helps part-time students or students enrolled in programmes not eligible for the Canada Student Loans Plan.

Loans are available to students enrolled at recognized post-secondary institutions in Ontario only.

**ONTARIO SPECIAL BURSARY PLAN**

A plan which helps exceptionally needy students (usually single parents) who are unable to attend school full-time but need post-secondary training to improve their job prospects. A student participating in this plan will not receive assistance through the Ontario Study Grant Plan.

Bursaries are available to such part-time students enrolled at recognized post-secondary institutions in Ontario only.
ONTARIO WORK-STUDY PLAN
A recent addition to the OSAP package which is intended to comple­ment the original four plans. It offers to needy students part-time jobs during the school year to help them meet exceptional costs, often unex­pected, not recognized under OSAP. It also helps students who lack resources expected under OSAP criteria or, whose assessed need under OSAP is not met because of grant/loan maximums or, who do not wish to borrow further due to high debt load.
Costs of this plan are shared equally by the provincial government and a local sponsoring agency which must be a non-profit organization, such as the university.

For information and applications contact:
Student Financial Aid Office
Divinity College, Room 229
McMaster University
Hamilton, Ontario
L8S 4K1
Telephone: (416) 525-9140, extension 4319
Students should also refer to the Supplementary Student Financial Aid section in this calendar for information about bursaries and loans.
McMaster University offers the following undergraduate degrees:

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<tr>
<th>Faculty/Degree</th>
<th>Duration In Years</th>
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<td>B.Arts Sc. (Honours)</td>
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<tr>
<td>B.Com.</td>
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<tr>
<td>B.Com. (Honours)</td>
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<td>B.Com. &amp; Arts (Honours)</td>
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<td>B.Eng.</td>
<td>4</td>
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<td>(with the exception of Civil Engineering and Computer Systems which requires 5 years of study.)</td>
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<tr>
<td>B.Eng. Mgt.</td>
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<td>Faculty of Health Sciences</td>
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<td>B.H.Sc.</td>
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<td>B.Sc.N.</td>
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<td>(in addition, the B.Sc.N. in available as a 2-year programme to those holding a R.N. Diploma)</td>
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<tr>
<td>M.D. (Doctor of Medicine)</td>
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<td>(The M.D. Degree is taken after at least three years of undergraduate study.)</td>
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<tr>
<td>Faculty of Humanities</td>
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<td>B.A. (Honours)</td>
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<td>B.Mus.</td>
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<td>Faculty of Science</td>
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<td>B.Sc. (Major)</td>
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<td>B.Sc. (Honours)</td>
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<td>Faculty of Social Sciences</td>
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<td>B.A.</td>
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<tr>
<td>B.A. (Honours)</td>
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<td>B.P.E.</td>
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<td>B.A./B.S.W.</td>
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<tr>
<td>B.S.W. (as a Second Degree)</td>
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</table>

Second Undergraduate Degree

Provision exists for a university graduate to take a second bachelor's degree. This programme is normally shortened. An application for admission is necessary for entry to a second degree programme, and it should be submitted by the application deadlines. (See Application Procedures, and Academic Regulations, Second Bachelor's Degree Programme.)

Combined Programme

There is the opportunity to combine two subjects of study within one Faculty, or between two Faculties. Further information can be obtained by referring of the Faculty Sections of this Calendar, or contacting the appropriate Associate Dean (Studies).

Courses Instructed In French

In order to facilitate the intellectual development of students in the French language, the University has adopted the following policy for 1986-88.

The University will attempt to offer one to two courses annually where French is the language of instruction. These courses are open to all students providing they have the necessary prerequisites for the courses concerned and a suitable working knowledge in the French language.

Elective Courses Available to Level I Students

The following is a list of courses available as electives to Level I students, provided that the student has met any prerequisites and provided any enrolment limitations are not exceeded. Normally, a student may select up to 6 units in any particular subject (excluding Mathematics, of which up to 12 units may be taken). A brief description of each course is included under the appropriate Department within the section headed Courses by Departments.

- Anthropology
  - 1A3, 1B6, 1Z3

- Art
  - 1C3

- Art History
  - 1A6

- Biology
  - 1G6

- Canadian Studies
  - 1A6

- Chemistry
  - 1B6

- Classical Civilization
  - 1A6

- Comparative Literature
  - 1A6

- Computer Science
  - 1B3, 1C3, 1H3

- Dramatic Arts
  - 1A6

- Economics
  - 1A6

- English
  - 1A6, 1B6, 1C6

- French
  - 1A6, 1B6, 1Z6

- Geography
  - 1A6

- Geography
  - 1B6, 1D6

- Geology
  - 1A3, 1C3

- German
  - 1A6, 1Z6, 2Z6

- Greek
  - 1Z6

- History
  - 1C6, 1D6, 1L6

- Humanities
  - 1C3

- Italian
  - 1A6, 1Z6, 1Z26

- Labour Studies
  - 1AA3, 1A3

- Latin
  - 1Z6

- Linguistics
  - 1A6

- Mathematics
  - 1A6, 1B3, 1K3, 1L3, 1M3

- Materials
  - 1A3, 1B3

- Music
  - 1A6

- Philosophy
  - 1B6, 1D6

- Physics
  - 1A6, 1B6, 1C6

- Polish
  - 1Z6

- Political Science
  - 1A6

- Psychology
  - 1A6

- Religious Studies
  - 1B6, 1E6, 1F6, 1G3, 1H3

- Russian
  - 1Z6

- Serbo-Croatian
  - 1Z6

- Sociology
  - 1A6

- Spanish
  - 1A6, 1Z6

- Ukrainian
  - 1Z6

*These courses are not acceptable for the 6-unit liberal studies elective required in Engineering I.

†These courses are not acceptable for the 6 units of Humanities, Social Sciences, or Science electives required in Natural Sciences I.
# Degrees by Programme

<table>
<thead>
<tr>
<th>Subject</th>
<th>Bachelor's Degree</th>
<th>Major Degree</th>
<th>Honours Degree</th>
<th>Combined Honours Degree</th>
<th>Professional Degree</th>
<th>Course Areas Not Offered As Degrees</th>
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*degree programme is available through a combination of evening and summer study.
The Arts and Science Programme has been designed for students who wish to use their university years to further their intellectual growth through a study of the methods of inquiry, and the significant achievements in both arts and sciences. The programme also allows for substantial specialization in a discipline or problem area through the use of electives. A.N. Whitehead expressed the philosophy of the Arts and Science Programme when he wrote:

What education has to impart is an intimate sense for the power of ideas, for the beauty of ideas, and for the structure of ideas, together with a particular body of knowledge which has peculiar reference to the life of the being possessing it.

(The Aims of Education and Other Essays, 1929).

The core curriculum consists of courses offered by the Council of Instructors of the Arts and Science programme, together with other courses offered by Departments. The core curriculum is designed to meet three major objectives:

1. to increase understanding of biological and physical sciences, behavioural sciences, technology, and the arts;
2. to develop skill in the use of the written and spoken word, and in quantitative reasoning; and
3. to foster the art of practical inquiry into problems of public concern.

Meeting the last of these objectives is the aim of inquiry seminars which begin in Level I and continue in upper levels. To investigate with skill and insight a serious public issue, such as world population growth or the problems of public concern. Moreover, acquiring skill in such investigations requires practice in formulating issues, searching out evidence, and bringing the insights of academic disciplines to bear on the interpretation of evidence. For these reasons, developing the art of practical inquiry is an important goal of the Arts and Science programme.

Students in this Programme who wish to prepare for graduate study in an academic discipline should consult with the appropriate Department concerning requirements. In general, preparation for graduate study may be accomplished by combining the honours core Arts and Science curriculum with a concentration of electives in the intended area of graduate study.

Combined honours programmes which are available in many subjects (see specific programme descriptions below), combine the core curriculum of the Arts and Science programme with a prescribed set of courses in a particular subject. Completion of a combined honours programme can be expected to satisfy course requirements for admission to graduate study in the particular subject. Students are advised, however, to contact the Department in which they are contemplating graduate study to obtain information on admission requirements. In the physical and biological sciences, e.g. physics, chemistry, biology, and in certain other subjects, combined honours programmes with Arts and Science are not available. It is nevertheless possible to meet admission requirements in certain combined honours programmes with Arts and Science for further study in a particular subject. Prospective graduate students would be expected to be achieved a B+ or 8.5 GPA in those electives in order to satisfy admission requirements. Interested students should seek the guidance of the Department and be prepared to take some courses beyond those required for honours graduation, in order to qualify fully for graduate study.

Students who plan to seek employment directly upon graduation may wish to consider concentrating their electives in work related subjects such as economics, psychology, computer science, business or applied mathematics.

**Academic Regulations**

Students enrolled in an Arts and Science Programme, in addition to meeting the General Academic Regulations of the University, (see the Academic Regulations section of this calendar) are also subject to the requirements described below.

The Programme begins in Level I and leads to the degree, Bachelor of Arts and Science (B.Arts Sc.) on completion of Level III or B.Arts Sc. (Honours) on completion of Level IV. The four-level Programme provides an increased opportunity for specialization through electives and through an individual study or thesis course. Continuation in the Programme requires honours level performance, and the requirements for Level III are the same whether or not Level IV is undertaken.

Registration in Level I of the Arts and Science Programme is limited to approximately fifty students.

**Inquiry Seminar Requirements**

Inquiry seminars are comprised of Arts and Science 1C6 and a variety of topics offered as Arts and Science 3C6. Arts and Science 1C6 must be completed in Level I.

Students intending to complete the B.Arts Sc. (Honours) degree are required to complete 12 units of upper level inquiry seminars as either two topics of Arts and Science 3C6, or one topic of Arts and Science 3C6 and an additional 5 units in a course or courses approved by the Director that study another age or culture.

Students intending to complete the B.Arts Sc. degree are required to complete 6 units of an upper level inquiry seminar as one topic of Arts and Science 3C6. An additional 6 units (one topic) of inquiry seminar may be taken as an elective.

**Combined Honours**

Students in the Arts and Science Programme may undertake combined honours programmes in many disciplines within the Social Sciences or Humanities. Combined programmes that are already established are described below. Students are encouraged to consult the Director of the Arts and Science Programme for consideration of other possible combinations.

Combined honours programmes with subjects from the Faculty of Science may also be taken in Mathematics or Computer Science. The requirements for these programmes are described below.

**Registration:** Registration in each level of any combined honours programme requires the written approval of the Director of the Arts and Science Programme and the appropriate Departmental Counsellors.

**Individual Study/Thesis:** Students in the B.Arts Sc. (Honours) Programme are required to complete either Individual Study or Thesis (Arts and Science 4A6, or 4C6). This requirement can be, and in some cases must be, met in the combined discipline.

**Level I Standing**

Level I standing is computed as a weighted average of the best 80% of the 30 units of Level I work. Continuation beyond Level I requires a weighted average of at least 7.0. In the case of some combined honours programmes, the weighted average must include specified courses. These courses are indicated in the programme descriptions below.

**Continuation Beyond Level II**

For students in the B.Arts Sc. (Honours) and B.Arts Sc. Programmes, continuation beyond Level II requires a Cumulative Area Average (CAA) of at least 7.0.

For students in a combined programme of Arts and Science and Another Subject, continuation beyond Level II requires an overall CAA of at least 7.0 in all courses taken in Levels II, III and IV, and a CAA of at least 7.0 in the work taken in the combined discipline.
Area Courses
All courses completed by students who are in Level II, III or IV are Area courses unless designated as extra at the time of registration, or otherwise stated in the programme descriptions below.

Programme Probation
A student whose Cumulative Area Average is less than 7.0 but no lower than 6.5, and who has not been placed on probation before, may be granted Programme Probation, at the discretion of the Director. A student whose Cumulative Area Average is less than 6.5, will not be granted Programme Probation.

Graduation Average
The Graduation Average for all Arts and Science programmes will be the single Graduation Average will be computed.

Area Courses and CAA Calculation:
The Anthropology CAA is calculated on Level II, III and IV Anthropology courses.

Level I: 30-33 units
R Arts and Science 1A6, 1B6, 1C6, 1D6; Anthropology 1A3 and 1Z3, or 1B6 and 1A3 or 1Z3.

Level II, III, IV: 90 units
R Arts and Science 2A6, 2D6, 3A6, 3B6, 3D6; 12 units of Arts and Science 3C6; Arts and Science 4A6 or 4C6, or Anthropology 4G3, which may be repeated if on a different topic, or extended to 6 units on the same topic; Biology 1A6; six units from Statistics 2R6 or Psychology 2R6, Statistics 2D6, 2M3, Computer Science 1B3 or 1H3, Mathematics 1B3; 30 units of Anthropology Area courses including Anthropology 2F3, 3S6 and 413 and at least 9 units of Level IV Anthropology courses.

HONOURS ARTS AND SCIENCE AND COMPUTER SCIENCE
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30-33 units of Level I work including Arts and Science 1D6 or Mathematics 1A6, and one of Mathematics 1B3, 1B4, or 1G4.

Programme Notes:
Because of resource limitations, enrollment in Computer Science and all joint programmes involving Computer Science is limited. Students intending to enroll in this programme should consult the Department of Computer Science and Systems.

Area Courses and Calculation of CAA:
The Computer Science CAA is calculated on Level II, III, IV Computer Science courses except 2A3, 2N3, 2P3, 313, 413.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6; Mathematics 1B3; Computer Science 1B3 or 1H3.

Level II: 33 units
R Arts and Science 2A6, 2D6; Biology 1A6; Statistics 2D3 or 2M3; Mathematics 2F3; Computer Science 1C3, 2B3, 2L3.

Level III: 33 units
R Arts and Science 3A6, 3B6, 3C6; Computer Science 3A3, 3B3, 3C3, 3D3, 3T3.

Level IV: 30 units
R Arts and Science 3D6, 3C6; Computer Science 4G6 and 9 additional units of Level III or IV Computer Science courses.

E 3 units of electives.

HONOURS ARTS AND SCIENCE AND ECONOMICS
(There are two options of study for this combined programme described as Option A or Option B.)

Admission:
Option A requires a Level I standing of at least 7.0, with at least 7.0 in Economics 1A6.
Option B requires a Level II Cumulative Area Average of at least 7.0, with at least 7.0 in Economics 1A6.

Programme Note:
For both Options A and B, a Single Graduation Average will be calculated on the basis of all Level II, III and IV Economics courses and all Level III and IV Arts and Science courses, and Arts and Science 2A6 and 2D6.

Arts and Science Programme
(B.Arts Sc.(Honours) and B.Arts Sc.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6; Biology 1A6. (Biology 1A6 must be completed by the end of Level II.)
E Electives to make a total of 30 units.

Level II: 30 units
R Arts and Science 2A6, 2D6; Arts and Science 3C6 (may be taken in Level III); six units from Statistics 2R6 or Psychology 2R6, Statistics 2D3, 2M3, Computer Science 1B3 or 1H3, Mathematics 1B3; Biology 1A6 (if not completed in Level I).
E Electives to make a total of 30 units.

Level III: 30 units
R Arts and Science 3B6, either 3A6 or 3D6, and 3C6 (if not already completed).
E Electives to make a total of 30 units. Students enrolled in B.Arts Sc. may include an additional topic of Arts and Science 3C6 as an elective if one topic was completed in Level II.

Level IV: 30 units
R Arts and Science 3A6 or 3D6 (whichever not completed in Level III); an additional topic from Arts and Science 3C6, if not completed, or a course or courses approved by the Director; 6 to 12 units from Arts and Science 4A6, 4A12, 4C6, 4C12.
E Electives to make a total of 30 units.

Combined Honours: Arts and Science Programme and Another Subject
Combined programmes that are already established are described below. Students are encouraged to consult the Director of the Arts and Science Programme for consideration of other possible combinations.

HONOURS ARTS AND SCIENCE AND ANTHROPOLOGY

Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30-33 units of Level I work including Arts and Science 1D6 or Mathematics 1A6, and one of Mathematics 1B3, 1B4, or 1G4.

Programme Notes:
The Anthropology component includes a study of the four major subfields of Social/Cultural Anthropology, Physical/Biological Anthropology, Archaeology, and Linguistics.

AT least 3 units above Level I is required in each major subfield. Students may specialize in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites. Students should consult with the Departmental Counsellor concerning the specific courses related to each subfield.

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ARTS AND SCIENCE PROGRAMME

Option A:

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
Economics 1A6.

Level II: 30 units
R Arts and Science 2A6, 2D6; Biology 1A6;
Economics 2L6, 2M6.

Level III: 30 units
R Arts and Science 3A6, 3B6, 3C6;
one of Economics 306, or Statistics 2R6; 6 additional units of
Economics.

Level IV: 30 units
R Arts and Science 3D6 and 3C6;
Economics 3A3, 3AA3, 4M6 and 6 additional units of Economics.

Option B:

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6; Biology 1A6.

Level II: 30 units
R Arts and Science 2A6, 2D6; Economics 1A6; Statistics 2R6.

E 6 units of electives

Level III: 30 units
R Arts and Science 3A6, 3B6, 3C6;
Economics 2L6, 2M6.

Level IV: 30 units
R Arts and Science 3C6, 3D6;
Economics 3A3, 3AA3, 4M6 and 6 additional units of Economics.

HONOURS ARTS AND SCIENCE AND ENGLISH

Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including at least 7.0 in English 1A6 or
1B6.

Programme Notes:
Completion of the English component of this combined programme
requires a minimum of 6 units of work from five of the six English sub-
fields. Students should consult with the Departmental Counsellor con-
cerning the specific courses related to each subfield.

Area Courses and Calculation of CAA:
All Arts and Science courses, and English 2B6, 2G6, 2H6, 2I6, 2J6,
3D3, 3DD3, 3I3, 3K6, 3Q3, 3QQ3, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3,

Level I: 30 units
R Arts and Science IIA6, 1B6, 1C6, 1D6;
English 1A6 or 1B6.

Levels II, III and IV: 90 units
R Arts and Science 2A6, 2D6, 3B6, 3D6, and 4A6 or 4C6; 12 units
from Arts and Science 3C6;
Biology 1A6; 6 units from Statistics 2R6 or Psychology 2R6, Statistics
2D3, 2M3, either Computer Science 1B3 or 1H3, Mathematics 1B3;
36 units of English Area courses, including 12 units Level II, 12 units
Level III and 12 units Level IV.

HONOURS ARTS AND SCIENCE AND FRENCH

Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including at least B — in French 1A6 or
at least B in French 1B6.

Area Courses and Calculation of CAA:
The French CAA is calculated on all Level II, III, IV French courses,
except French 3Y3.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
French 1A6 or 1B6.

Levels II, III and IV: 90 units
R Arts and Science 2A6, 2D6, 3B6, 3D6; 12 units from Arts and Sci-
ce 3C6; Arts and Science 4A6 or 4C6 or 6 additional units of
approved Level IV French courses;
Biology 1A6; 6 units from Statistics 2R6 or Psychology 2R6, Statistics
2D3, 2M3, either Computer Science 1B3 or 1H3, Mathematics 1B3;
30 units of French including 12 units French Language Practice
including 2A3, 3C3, 4A3, 18 units French/Francophone Literature
including one of 2J3, 2J3, one of 2W3, 2W3, one of 3K3, 3K3,
one of 3Q3, 3QQ3; and two 3-unit Level IV French courses
approved as replacement for Arts and Science 4A6 or 4C6.

E 6 units of electives.

HONOURS ARTS AND SCIENCE AND GEOGRAPHY

Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including at least 7.0 in 6 units of Level
I Geography.

Programme Notes:
Students will normally select Area courses in Geography from one of
the two major subfields of Physical Geography or Human Geography.
Students should consult with the Departmental Counsellor concerning
the specific courses related to each subfield.

Area Courses and CAA Calculation:
The Geography CAA is calculated on Level II, III and IV Geography
courses.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
Geography 1A6 or 1B6.

Level II, III, IV: 90 units
R Arts and Science 2A6, 2D6, 3A6, 3B6, 3D6; 12 units of Arts and
Science 3C6; Biology 1A6;
42 units of Geography Area courses including Geography 2L3 and
2L3, and 24 units from Levels III and IV Geography courses, includ-
ing Geography 4C6.

HONOURS ARTS AND SCIENCE AND HISTORY

Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including at least 7.0 in any Level I History
course.

Programme Notes:
1. By the end of Level III, students must take at least 6 units in each of
three of the following six fields of History: European, Ancient, Asian,
Canadian, British, and the Americas (excluding Canada).

2. No more than 12 units of Level IV History seminars may be taken
in any session. No Level IV seminars may be taken before comple-
tion of 12 units of History beyond Level I.

Area Courses and Calculation of CAA:
The History CAA is calculated on all Level II, III, IV History courses.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
6 units of Level I History.

Levels II, III and IV: 90 units
R Arts and Science 2A6, 2D6, 3A6, 3B6, 3D6; 12 units from Arts and
Science 3C6;
Biology 1A6; 6 units from Statistics 2R6 or Psychology 2R6, Statistics
2D3, 2M3, either Computer Science 1B3 or 1H3, Mathematics 1B3;
36 units of History courses including 12 units of Level II courses, 12
units of Level III courses, and 12 units of Level IV courses.

HONOURS ARTS AND SCIENCE AND MATHEMATICS

Continuation Beyond Level I
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including Arts and Science 1D6 or Math-
ematics 1A6, and one of Mathematics 1B3, 1B4, or 1G4.
Area Courses and Calculation of CAA:
The Mathematics CAA is calculated on all Level II, III, IV Mathematics courses.

Level I: 30-33 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
Mathematics 1B3;
Biology 1A6 (may be taken in Level II).
E 3 units of electives, if Biology 1A6 not taken in Level I.

Level II: 30-36 units
R Arts and Science 2A6, 2D6;
Statistics 2D3 or 2M3; Mathematics 2A6, 2B6, 2F3;
Biology 1A6 (if not completed in Level I).

Level III: 33-36 units
R Arts and Science 3A6, 3B6, 3C6;
Mathematics 3A6, 3E6 and one of 2C3, 3B3, 3F6, 3H3, 3L6, 3P3, 3Q3, Statistics 3D6.

Level IV: 30-36 units
R Arts and Science 3D6, 3C6, one of 4A6 or 4C6;
one of Mathematics 2C3, 3B3, 3F6, 3H3, 3L6, 3P3, 3Q3, and 9 to
12 additional units of Mathematics or Statistics from Mathematics
4A6, 4B6, 4C3, 4E3, 4J3, 4K3, 4Q6, 4S3, 4V6, Statistics 4M3.

HONOURS ARTS AND SCIENCE AND POLITICAL SCIENCE
Admission:
Admission requires a Level II Cumulative Area Average of at least 7.0,
with a grade of at least B – in 6 units of Political Science courses.

Programme Notes:
1. Political Science 2F6 and 2O6 will be included in calculating the
Graduation Average if taken after Level II.

Area Courses and Calculation of CAA:
The Political Science CAA is calculated on all Level II, III, IV Political Science courses.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6; Biology 1A6.

Levels II, III and IV: 90 units
R Arts and Science 2A6, 2D6, 3A6, 3B6, 3D6; 12 units from Arts and
Science 3C6; Arts and Science 4A6 or 4C6. Political Science 4I6 or
4Z6 may replace Arts and Science 4A6 or 4C6.
6 units from Statistics 2R6 or Psychology 2R6, Statistics 2D3, 2M3,
either Computer Science 1B3 or 1H3, Mathematics 1B3;
36 units of Political Science courses of which only 12 units may be
Level II and at least 6 units must be Level IV.
E 6 units of electives if Political Science 4I6 or 4Z6 is taken in place
of Arts and Science 4A6 or 4C6.

HONOURS ARTS AND SCIENCE AND PSYCHOLOGY
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80%
of the 30 units of Level I work including at least B in Psychology 1A6.

Programme Notes:
1. Students must meet a laboratory requirement by completing one of
Psychology 2U3, 3C6, 3E3, 3QQ3, 3S3, 3V3, 4G3, 4QQ3.
2. Psychology 2R6 will be included in the Graduation Average if taken
after Level II.

Area Courses and Calculation of CAA:
The Psychology CAA is calculated on all Level II, III, IV Psychology courses.

Level I: 30 units
R Arts and Science 1A6, 1B6, 1C6, 1D6;
Psychology 1A6.

Levels II, III and IV: 90 units
R Arts and Science 2A6, 2D6, 3A6, 3B6, 3D6; 12 units from Arts and
Science 3C6;
Biology 1A6;
Psychology 2H3, 2R6, 2T3, 3W6, 4D6, 6 units Level III Psychology
and 6 units Level III or IV Psychology.
E 6 units of electives.
Faculty of Business

G.W. Torrance/B.A.Sc., M.B.A., Ph.D., P.Eng., Dean of Business
A.W. Richardson/B.Sc., M.B.A., Ph.D., C.M.A., Associate Dean of Business (Academic Programmes)
C. Bentzen-Bilkvist/B.A., Undergraduate Student Advisor
B. Pegg, Programme Assistant

The Faculty of Business offers three programmes, each of which spans four levels of study. The Honours Commerce programme, which leads to the Honours Bachelor of Commerce (Honours B.Com.) degree, provides substantial concentration in business subjects beyond the essential core of studies. The Honours Commerce and Economics programme, which is offered in conjunction with the Department of Economics, leads to the Honours Bachelor of Commerce and Arts (Honours B.Com. & Arts) degree. This programme combines extensive amounts of work in both Commerce and Economics. The Commerce programme, which leads to the Bachelor of Commerce (B.Com.) degree, contains the essential grounding in business subjects and promotes the broadening of horizons through studies in Social Sciences, Humanities and Science. These three programmes are referred to collectively as the Commerce programmes.

In addition, the Faculty of Business participates in a five-level programme for the Bachelor of Engineering and Management (B.Eng.Mgt.) degree. This programme provides a full course of study in Engineering and includes a complete core of business subjects. Details concerning the B.Eng.Mgt. programme and its academic regulations are given in the Faculty of Engineering section of this Calendar.

Also, the Faculty of Business participates in the B.A. programme in Labour Studies which is described in the Faculty of Social Sciences section of this Calendar.

The Commerce Programmes

In Level I, a student who wishes to pursue any of the Commerce programmes establishes a foundation in computer science, economics, mathematics and psychology or sociology, and takes additional elective work. While this course of study is prescribed in Business I, a student who establishes a similar background in the Level I programme of another Faculty may also be considered for admission to Level II (Commerce II). Such a student should see the Undergraduate Student Advisor of the Faculty of Business.

A student must gain admission to Commerce II in order to proceed towards the Honours B.Com., Honours B.Com. & Arts, or B.Com. degrees. In Level II a wide range of business subjects (accounting, finance, marketing, organizational behaviour, and statistical analysis for business) are introduced and further coursework in economics is required. Elective work is taken from non-Commerce courses.

The Commerce programmes diverge at Level III. While the same core of required Commerce courses is completed in Levels III and IV, the mix of work taken over these levels differs. In Levels III and IV of the Honours Commerce programme, about three-quarters of the work is in Commerce courses, with the remainder of the load coming from electives outside the Faculty. The Honours Commerce and Economics programme contains approximately equal amounts of work in Commerce and Economics over Levels III and IV, with few electives outside these disciplines. In Levels III and IV of the Commerce programme, about one-half of the course work is in each of Commerce subjects and non-Commerce electives.

Part-Time Studies

The Commerce programmes may be taken through part-time studies. A part-time student is permitted to take a maximum of 18 units in any Winter Session (September to April) and a maximum of 12 units in any Summer session (May to August). It should be noted that Level IV Commerce courses are rarely offered in evennings or in summer sessions.

Continuing Students

Graduates of McMaster’s Honours Commerce and Honours Commerce and Economics programmes may take up to 6 units of Level IV commerce courses with permission of the Associate Dean (Academic Programmes). With this exception, Commerce courses are not open to Continuing Students. Such students are eligible for courses designated Business.

Second Undergraduate Degree

A student with an undergraduate degree will not be admitted to any of the Commerce programmes. Such a student may wish to apply for admission to the M.B.A. programme.

Credit Towards the M.B.A. and Professional Designations

If appropriate academic standing has been attained in undergraduate courses, credit may be given toward the Master of Business Administrations degree. Normally, this will reduce the M.B.A. programme to one additional academic year beyond the Honours B.Com., Honours B.Com. & Arts, B.Com. and B.Eng.Mgt. degrees.

Credit toward a variety of professional designations can be obtained within the Commerce programmes and the Engineering and Management programme. The professional accounting designations C.A., C.M.A. and C.G.A. are awarded by the Institute of Chartered Accountants of Ontario, the Society of Management Accountants of Ontario and the Certified General Accountants Association of Ontario, respectively, while the designation C.P.M. is awarded by the Ontario Personnel Association.

In the Honours Commerce programme, all the educational requirements and exemptions for the three professional accounting designations, that can be fulfilled during University study, may be obtained by selecting appropriate elective courses and taking the allowed extra courses. For example, 39 of the 45 credits of designated course work for academic prequalification for the C.A. designation can be completed within the Honours Commerce programme; the remaining 6 units of credit may be taken at McMaster as extra courses while studying in the Honours Commerce programme or upon its completion. The requirements for the designation C.P.M. can be substantially fulfilled in the Honours Commerce programme.

In the other programmes, the possibility of obtaining credit towards professional designations is more limited. For example, 30 credits towards the C.A. designation may be obtained in the Commerce programme; a further 6 units may be taken as Extra courses (see Extra courses below).

Information concerning credit towards these professional designations can be obtained from the Office of the Undergraduate Student Advisor of the Faculty of Business.

Academic Regulations

A student enrolled in any of the Commerce programmes, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations:

The programmes and academic regulations specified in this calendar apply in their entirety to students entering Level I in September, 1982 or thereafter. Any students who entered Level I previously should refer to Transitional Arrangements for Programmes and Academic Regulations, Faculty of Business. Copies of this document are available from the Office of the Undergraduate Student Advisor (KTH-118).
Cumulative Commerce Average
The Cumulative Area Average for the Commerce programmes is termed the Cumulative Commerce Average (CCA) and is the weighted average of grades in all courses, including non-Commerce courses, attempted and repeated subsequent to admission to Commerce Level II or readmission to the Commerce programme, excepting those courses designated at registration as Extra.

Work Load
A full-time student must complete a 30-unit load in each Winter Session. Advanced Economics credit earned during Summer Sessions may be used to reduce this load requirement. Such reductions will be applied as late as possible in a student's programme. In any Winter Session, a student may not register for more than 30 units (including Extra courses) without the approval of the Associate Dean (Academic Programmes). Such approval will not be given to a student with a Cumulative Commerce Average below 9.0.

Continuation in Programme
A student who maintains a Cumulative Commerce Average of at least 7.0, with no more than 6 units of F grades, may continue in the Honours Commerce programme. A student who maintains a CCA of at least 7.0, with no more than 6 units of F grades, and maintains at least a 7.0 cumulative weighted grade-point average in all Economics courses taken beyond Economics 1A6, may continue in the Honours Commerce and Economics programme. A student who maintains a CCA of at least 4.0, with no more than 6 units of F grades, may continue in the Commerce programme.

A student whose Cumulative Commerce Average is less than 4.0 or who has more than 6 units of F grades in the CCA may not continue in any of the Commerce programmes.

There is no probationary status in any of the Commerce programmes.

Change of Programme
A student may transfer between Commerce programmes prior to entering Level IV, provided that after consultation with the Undergraduate Student Advisor of the Faculty of Business, it has been determined that the academic requirements of the new programme have been met, and an acceptable revised programme of work can be established. This revised programme of work must be approved by the Associate Dean (Academic Programmes).

Transfer from the Honours Commerce and Economics programme into Economics programmes should be discussed with the Department of Economics.

Repeated Courses
Any failed course (F grade) must be repeated if it is an explicitly required course for the programme, or must be repeated or replaced if it is not explicitly required. Repetitions of courses in which passing grades have been attained are designated as Extra courses.

Extra Courses
Courses in addition to those which constitute the student's programme must be designated Extra at registration and the grades obtained in such courses affect neither eligibility for continuation in the programme nor graduation standing. In addition, the units are not included in those required for graduation. The designation Extra can neither be added nor removed retroactively. A maximum of 6 units of Extra Commerce courses may be taken only upon successful completion of Level III of any of the Commerce programmes. No Extra courses may be scheduled in a manner which would delay completion of a student's programme.

Level of Registration
A student is required to register in the lowest Level for which more than 6 units of work is incomplete. Work of the next higher Level may be undertaken only when necessary to fill a programme load.

Re-admission
A student who is ineligible to continue in a Commerce programme may apply for re-admission to Commerce after not less than one year. Application for re-admission must be made in writing to the Associate Dean (Academic Programmes) by April 30 of the year for which re-admission is desired. This application should explain why the student would expect to succeed in the programme if re-admitted.

Re-admission is not guaranteed.
A student who is re-admitted after having become ineligible to con-
E Electives from non-Commerce courses to make a total of 30 units. 
(A student who wishes to proceed in the Honours Commerce and 
Economics programme must take elective work from other than 
Commerce and Economics courses, and is advised to elect Mathemat­
ics 2L3 as preparation for Economics 3A3 in Level III.)

HONOURS COMMERCE (Honours B.Com.)
Requirements for continuation towards the Honours B.Com. degree are 
specified above in Academic Regulations.

Level III: 30 units
R Commerce 3AA3, 3FA3, 3MA3, 3QA3, 3QB3; Commerce 3BA3 or 
3BB3; six additional units from among Commerce 3AB3, 3BA3, 
3BB3, 3FB3, 3MB3.
E 6 units of electives from non-Commerce courses.

Level IV: 30 units
R Commerce 4PA3, 4QA3; 15 or 18 additional units from Groups 1 
to 6 below. No more than 12 units can be taken in Level IV from 
any one Group. (See Group listing below.)
E 6 or 9 units of electives from non-Commerce courses beyond Level 
I.
Group 1 (Accounting) Commerce 3AB3, 4AA3, 4AB3, 4AC3, 
4AD3, 4AE3, 4AF3.
Group 2 (Personnel and 
Industrial Relations) Commerce 3BA3, 3BB3, 4BA3, 4BB3, 
4BC3, 4BD3, 4BE3.
Group 3 (Finance) Commerce 3FB3, 4FA3, 4FB3, 4FC3.
Group 4 (Marketing and 
International Business) Commerce 3MB3, 4MB3, 4MC3, 
4MD3.

HONOURS COMMERCE AND ECONOMICS (Honours B.Com. & 
Arts)
Requirements for continuation towards the Honours B.Com. & Arts 
degree are specified above in Academic Regulations.

Level III: 30 units
R Commerce 3AA3, 3FA3, 3MA3, 3QA3, 3QB3; Commerce 3BA3 or 
3BB3; Economics 3A3, 3AA3; six additional units in Economics.

Level IV: 30 units
R Commerce 4PA3, 4QA3; six additional units in Commerce; twelve 
units in economics including one of Economics 2K3, 3I3, 3M3 or 
3R3 if not taken previously.
E 6 units of electives from other than Commerce and Economics 
courses.

COMMERCE (B.Com.)
Requirements for continuation towards the B.Com. degree are specified 
above in Academic Regulations.

Level III: 30 units
R Commerce 3AA3, 3FA3, 3MA3, 3QA3, 3QB3; Commerce 3BA3 or 
3BB3.
E 12 units of electives from non-Commerce courses.

Level IV: 30 units
R Commerce 4PA3, 4QA3; 9 additional units from Groups 1 to 6 
above. No more than 6 units can be taken from any one Group.
E 15 units of electives from non-Commerce courses beyond Level I.

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### STRUCTURE OF PROGRAMMES

<table>
<thead>
<tr>
<th>LEVEL I</th>
<th>Required - courses are common for all students. Electives - as appropriate for programme and student interest.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 units</td>
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<tr>
<td></td>
<td>Required - Introductory courses in computer science, economics, mathematics and sociology or</td>
</tr>
<tr>
<td></td>
<td>psychology</td>
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<td></td>
<td>Electives - Chosen from courses offered in Humanities, Science and the Social Sciences</td>
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<tr>
<td></td>
<td>21 units</td>
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<td></td>
<td>9 units</td>
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<td></td>
<td>30 units</td>
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<tr>
<td>LEVEL II</td>
<td>Required - Commerce courses in accounting, finance, marketing, organizational behaviour,</td>
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<tr>
<td></td>
<td>statistical analysis</td>
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<tr>
<td></td>
<td>Electives - Intermediate level courses in Economics</td>
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<tr>
<td></td>
<td>15 units</td>
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<td>6 units</td>
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<td>9 units</td>
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<td></td>
<td>30 units</td>
</tr>
<tr>
<td>LEVEL III</td>
<td>Required - Commerce courses in accounting, finance, marketing, managerial decision theory,</td>
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<tr>
<td></td>
<td>information systems, and personnel or industrial relations</td>
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<tr>
<td></td>
<td>Electives --&gt;</td>
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<tr>
<td></td>
<td>18 units</td>
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<tr>
<td></td>
<td>12 units of Non-Commerce electives</td>
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<tr>
<td></td>
<td>30 units</td>
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<td>6 units of Commerce electives</td>
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<tr>
<td></td>
<td>6 units of Non-Commerce electives</td>
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<tr>
<td></td>
<td>30 units</td>
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<tr>
<td>LEVEL IV</td>
<td>Required - Commerce courses in Business Policy and Production Operations</td>
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<tr>
<td></td>
<td>Electives --&gt;</td>
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<td></td>
<td>6 units</td>
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<td></td>
<td>9 units of Commerce electives</td>
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<td></td>
<td>15 units of Non-Commerce electives</td>
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<td>30 units</td>
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<td>15-18 units of Commerce electives</td>
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<td></td>
<td>6-9 units of Non-Commerce electives</td>
</tr>
<tr>
<td></td>
<td>30 units</td>
</tr>
</tbody>
</table>

### THE FACULTY OF BUSINESS OFFERS THREE UNDERGRADUATE PROGRAMMES EACH SPANNING FOUR LEVELS OF STUDY

<table>
<thead>
<tr>
<th>B. COMMERCE</th>
<th>HONOURS B.COMMERCE</th>
<th>HONOURS B.COMMERCE &amp; ARTS (ECONOMICS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 units</td>
<td>120 units</td>
<td>120 units</td>
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</tbody>
</table>

* A unit represents one class hour per week for a 13 week term.
Faculty of Engineering

A.C. Heidebrecht/B.Sc., M.S., Ph.D., P.Eng., Dean of Engineering
M.B. Ives/B.Sc., Ph.D., F.A.S.M., P.Eng., Associate Dean of Engineering
R.D. Findlay/B.A.Sc., M.A.Sc., Ph.D., P.Eng., Assistant Dean of Engineering
(Professional Affairs)
J. Zywina, Undergraduate Student Advisor

An engineer, as originally defined, meant an ingenious person. The engineer today is concerned with the creation of devices, systems, and structures for human use. In this role of creator and innovator, the engineer finds resourcefulness and capacity for invention at the heart of the process of engineering. Modern society is challenged to advance from heedless exploitation of our world to an era of exercising beneficial control and the useful management of both the products and wastes of our industries. Engineering education at McMaster provides a host of choices which lead to this creative and fulfilling role in society.

Four-year programmes are offered leading to the Bachelor of Engineering Degree in the following fields of specialization:

- Ceramic Engineering
- Chemical Engineering
- Civil Engineering and Engineering Mechanics
- Computer Engineering
- Electrical Engineering
- Engineering Physics
- Manufacturing Engineering
- Materials Engineering
- Mechanical Engineering
- Metallurgical Engineering

A five-year programme, also leading to the Bachelor of Engineering Degree, is offered in:

- Civil Engineering and Computer Systems

In addition, and in conjunction with the Faculty of Business, five-year programmes leading to the Bachelor of Engineering and Management degree are offered in:

- Chemical Engineering and Management
- Civil Engineering and Management
- Computer Engineering and Management
- Electrical Engineering and Management
- Engineering Physics and Management
- Mechanical Engineering and Management

McMaster baccalaureate degree programmes in Engineering are accredited by the Canadian Accreditation Board of the Canadian Council of Professional Engineers (CAB), except the new programmes in Civil Engineering & Computer Systems and in Materials Engineering which, in accordance with CAB procedures, will not be submitted for evaluation until the first graduating class is in their final year. Provincial Engineering Associations accept the accreditation as a major requirement for admission to the qualification Professional Engineer.

At McMaster, Engineering students take a common Level I programme comprising Mathematics, Physics, Chemistry, Engineering Design, Computation and a liberal studies elective. The specialized programmes are entered at Level II. Students interested in one of the Engineering and Management programmes must take Economics 1A6 as their elective in Level I.

Programmes offered by the Faculty of Engineering include two types of elective courses, which are governed by regulations, as follows:

- **Liberal Studies Electives** are broadening courses which are not in subjects that are cognate with Engineering programmes (with the exception of Economics 1A6 for Engineering and Management programmes).

- A total of 18 units of liberal studies electives is required in all B.Eng. programmes. Of these, 6 units must be English literature courses, and 6 other units selected from courses that are designated as being above Level I.

- The Associate Dean of Engineering must authorize each student's liberal studies elective courses from an approved list, published each spring and available from his office.

- **Technical Electives** are Engineering or Applied Science courses in subjects relevant to the particular Engineering programme. Both the appropriate Department Chairman and the Associate Dean of Engineering must approve each student's technical elective courses.

### Academic Regulations

Students enrolled in Engineering programmes, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations:

**Engineering I**

A student in Engineering I whose University Average (UA) is less than 4.0 is required to withdraw from Engineering. A student in Engineering I whose University Average is greater than 4.0 but who has an F grade may be required to withdraw from Engineering.

**Admission to Level II Engineering Programmes**

Students completing Engineering I will, insofar as is possible, be given a free choice of Level II programme. However, there may be restrictions on enrolments in certain Level II programmes, and both the University Average at the completion of Engineering I, and the number of units attempted before such completion, may be used to determine individual student eligibility for such programmes. Effective September 1987, passing the McMaster Test of Writing Competence will also be required.

**Cumulative Engineering Average**

The Cumulative Area Average for Engineering programmes is termed the Cumulative Engineering Average (CEA), and is the weighted average of all courses attempted and repeated subsequent to admission to the first Engineering programme, at Level II or above, with the exception that the CEA begins anew at readmission after being ineligible to continue in a programme. Those courses required in Engineering I or designated as Extra are excluded from the CEA.

**Continuation in Programme**

A student who obtains a Cumulative Engineering Average of at least 4.0, with no F grades, may continue in an Engineering programme. A student whose Cumulative Engineering Average is at least 3.5, but less than 4.0, or is at least 4.0 and includes any F grade in the most recent Reviewing period, and who has not previously been placed on probation, may, at the discretion of the Faculty and subject to the availability of space, continue in Programme Probation.

A student whose Cumulative Engineering Average is less than 4.0 and who has not been granted probation, or whose Cumulative Engineering Average is less than 3.5, is ineligible to continue in engineering.

**The McMaster Test of Writing Competence**

Commencing in September 1987 students admitted to McMaster University, on or after September 1986, must have passed the McMaster Test of Writing Competence before they will be permitted to register in any programme in the Faculty of Engineering other than Engineering I.

**Repeated Courses**

All failed courses (grade 'F') must be repeated if they are required courses for the Engineering programme or may be replaced if they are not courses explicitly required. Courses may be repeated only following failure (F) or inability to achieve prerequisite standing for a required course or approved technical elective course.

**Extra Courses**

Courses in addition to those which constitute the degree programme in which the student is registered may be designated Extra at registration and the grades obtained in such courses will neither be included in the
FACULTY OF ENGINEERING

Cumulative Engineering Average nor the units in those required for graduation. The designation Extra cannot be removed retroactively.

Level of Registration
A student is required to register in the lowest Level for which more than six units of work is incomplete. Work of a higher Level may be undertaken only with the permission of the Associate Dean of Engineering.

Work Load
The Faculty of Engineering has set a minimum Winter Session work load of 34 units for all full-time students, excepting those in their graduating session. In order to qualify for most scholarships, students should register in the full load of work prescribed by programme and level. In any Winter Session, a student may not register for more units than specified for the programme and level of registration without the approval of the Associate Dean of Engineering.

Readmission to Engineering
A student who is ineligible to continue may apply for readmission to Engineering after not less than one year of practical work experience. Application for readmission must be made in writing to the Associate Dean of Engineering and will require a grade of at least C to be considered for admission.

A student who is readmitted after being ineligible to continue at a given Level must repeat all the courses of that Level, unless specific course exemptions are granted explicitly in the letter of readmission. The computation of the Cumulative Engineering Average begins anew at such readmission.

Programme Changes
It is the responsibility of the student to ensure that the programme of work undertaken meets the degree requirements for that programme. All programme changes must be made through the office of the Associate Dean of Engineering and will be subject to the deadline dates established by the University (see Sessional Dates section of this calendar).

Graduation
A minimum Graduation Average of 4.0 is required for Graduation from all B.Eng. and B.Eng.Mgt. programmes. Honours standing at graduation will be granted to a student whose Graduation Average (GA), based on all Level III, IV, and V courses (i.e. those labelled 3--, 4-- or 5--) and not designated Extra, is at least 10.0. This same Graduation Average will be used to determine a Programme Standing for all students fulfilling the graduation requirements in May of each year.

Engineering I Programme: 37 units
R Chemistry 1A6; Engineering 1C4, 1D3; Mathematics 1H5, 1N6; Physics 1D3, 1E4.
E 6 units liberal studies elective. Students intending to enter an Engineering and Management Programme should take Economics 1A6, and will require a grade of at least C to be considered for admission.

Programmes for the B.Eng. and B.Eng.Mgt. Degrees

ADMISSION:
Admission to Level II Engineering programmes is by selection but, as a minimum, requires completion of Engineering I with a University Average of at least 4.0. In addition, admission to any B.Eng.Mgt. programme requires the completion of Economics 1A6 with a minimum grade of C.

CERAMIC ENGINEERING (B.ENG.)
Admission:
See Admission described at the beginning of the programme listing.

Programme Notes:
1. Level II Ceramic Engineering is identical to Level II Metallurgical Engineering. Transfer to Level III Metallurgical Engineering can therefore be made without course deficiency.
2. Attention is drawn to Materials 4A1, which requires an essay based on employment in the summer before entering Level IV.

Level II: 36 units
R Chemistry 2T6; Engineering 2M4, 2O3, 2P4; Materials 2C4, 2F3; Mathematics 2M6; 6 units approved English literature.

Level III: 37 units
R Ceramics 3A4; Chemical Engineering 2O4; Chemistry 2W3; Geology 2B4; Materials 3B4, 3D6, 3E5; Mathematics 3V6.

Level IV: 37-38 units (1986/87 only)
R Ceramics 4L4, 4P4; Engineering 4B3 or Chemical Engineering 4N4; Materials 3P3, 4A1, 4E3, 4K4.
E 6 units liberal studies elective and 9 units Level III or IV approved technical electives, which may include Chemical Engineering 3P3 and Engineering 3Q3.

Level IV: 36-37 units (commencing 1987/88)
R Ceramics 4L4, 4R3, 4S3; Engineering 4B3 or Chemical Engineering 4N4; Materials 3P3, 4A1, 4E3, 4K4.
E 6 units liberal studies elective; 6 units approved Level III or IV technical elective.

CHEMICAL ENGINEERING (B.ENG.)
Admission:
See Admission described at the beginning of the programme listing.

Level II: 38 units
R Chemical Engineering 2C2, 2D4, 2F4, 2G3, 2O4; Chemistry 2M5; Engineering 2R4; Mathematics 2M6; 6 units approved English literature.

Level III: 34 units
R Chemical Engineering 3A4, 3D3, 3E3, 3G3, 3K3, 3L2, 3M4, 3P3, Chemistry 2O6; Statistics 3N3.

Level IV: 35 units
R Chemical Engineering 4K3, 4L2, 4M3, 4N4, either 4W4 or 4Y4; Engineering 2M4; one of Chemical Engineering 4D3, Chemistry 3I3, Engineering 4U3.
E 6 units liberal studies elective; 6 units approved Level III or IV technical electives.

CHEMICAL ENGINEERING AND MANAGEMENT
(B.ENG.MGT.)
Admission:
See Admission described at the beginning of the programme listing.

Level II: 35 units
R Chemical Engineering 2C2, 2D4, 2F4, 2O4; either Chemical Engineering 2G3 or Commerce 3Q83; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Mathematics 2M6.

Level III: 36 units
R Chemical Engineering 3A4, 3D3, 3E3, 3M4; Chemistry 2O6; Commerce 2FA3, 3AA3; Engineering 2R4; 6 units approved English literature.

Level IV: 37 units
R Chemical Engineering 3G3, 3K3, 3L2, 3P3, 4M3; Commerce 2MA3, 3FA3, 3BA3 or 3BB3, 4PA3, 4QA3; Engineering 2M4, 4A1; Statistics 3V3.

Level V: 38 units (1986-87 only)
R Chemical Engineering 4K3, 4L2, 4M3, 4N4, and 4W4 or 4Y4; one of Chemical Engineering 4D3, Chemistry 3I3, Engineering 4U3; Commerce 3MA3, 4PA3; Engineering 5A1.
E 6 units of Commerce selected from all Level III and IV Commerce courses; 6 units Level III or IV approved technical electives.

Level V: 35 units (commencing 1987/88)
R Chemical Engineering 4K3, 4L2, 4N4, and 4W4 or 4Y4; one of Chemical Engineering 4D3, Chemistry 3I3, Engineering 4U3; Commerce 3MA3; Engineering 5A1.
E 6 units of Commerce selected from all Level III or IV Commerce courses; 6 units approved technical electives; 3 units approved Engineering and Management electives.

CIVIL ENGINEERING AND COMPUTER SYSTEMS (B.ENG.)
(The offering of this programme is contingent upon approval by the Senate of McMaster University, and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean of the Faculty of Engineering.)

Admission:
See Admission described at the beginning of the programme listing.

Level II: 36 units
R Computer Science 1C3, 2B3, 2L3; Civil Engineering 2A2, 2C4, 2E2, 2O3; Engineering 2P4; 6 units English literature; Mathematics 2M6.

Level III: 35 units
R Computer Science 3E3, 3P3; Civil Engineering 2B2, 2D3, 3K3, 3M4, 3O4; Engineering 2C3, 2Q4, 3P3; Mathematics 3Q3.

Level IV: 37 units
R Computer Science 3D3, 3T3; Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4; 3 units Civil Engineering Level IV elective; Mathematics 3J4.

E 6 units liberal studies elective.

Level V: 36-38 units
R Computer Science 3A3, 4G6, 4L3; 18 to 20 units Civil Engineering Level IV courses; Engineering 4B3, 4C3.

CIVIL ENGINEERING AND ENGINEERING MECHANICS (B.ENG.)

Admission:
See Admission described at the beginning of the programme listing.

Programme Notes:
Level IV Civil Engineering courses must be selected in accordance with regulations which require a specified minimum content of engineering design and synthesis. Before the end of Level III, students must complete a Civil Engineering electives form, and ensure that it has been approved by the Department before completing a Level IV Registration Form.

Level II: 39 units
R Civil Engineering 2A2, 2B2, 2C4, 2O3; Engineering 2C3, 2P4, 2Q4; Mathematics 2M6; 6 units approved English literature.

Level III: 36 units
R Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4, 3K3, 3M4, 3O4; Engineering 3P3; Mathematics 3J4.

Level IV: 34-36 units
R Engineering 4B3; 25 to 27 units chosen from Level IV Civil Engineering courses.

E 6 units liberal studies elective.

CIVIL ENGINEERING AND MANAGEMENT (B.ENG.MGT.)

Admission:
See Admission described at the beginning of the programme listing.

Programme Notes:
Level IV Civil Engineering courses must be selected in accordance with regulations which require a specified minimum content of engineering design and synthesis. Before the end of Level III, students must complete a Civil Engineering electives form, and ensure that it has been approved by the Department before completing a Level IV Registration Form.

Level II: 39 units
R Civil Engineering 2A2, 2B2, 2C4, 2O3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Engineering 2P4; Mathematics 2M6; 6 units approved English literature.

Level III: 39 units
R Civil Engineering 2D3, 2E2, 3K3, 3M4, 3O4; Commerce 2FA3, 2MA3, 3AA3; Engineering 2C3, 2Q4, 3P3; Mathematics 3J4.

Level IV: 40 units (1986-87 only)
R Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4; 3 units of Level IV Civil Engineering; Commerce 2MA3, 3FA3, 3AA3, 3BA3 or 3BB3, 4QA3; Engineering 4A1; Statistics 3Y3.

Level IV: 37-38 units (commencing 1987-88)
R Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4; 3 or 4 units Level IV Civil Engineering courses; Commerce 3FA3, 3BA3 or 3BB3, 4PA3, 4QA3; Engineering 4A1; Statistics 3Y3.

Level V: 37-38 units
R 20 to 21 units of Level IV Civil Engineering; Commerce 3MA3, 4PA3; Engineering 5A1.

E 6 units Commerce electives selected from Level III and IV Commerce courses; liberal studies or approved technical electives to make a total of 37 units. (In 1988-89, Commerce 4PA3 will be replaced by 3 units Engineering and Management electives.)

COMPUTER ENGINEERING (B.ENG.)

Admission:
See Admission described at the beginning of the programme listing.

Level II: 39 units
R Computer Science 2B3, 2L3; Electrical Engineering 2B4, 2D3, 2F3, 2K3; Engineering 2O3, 2S3; Mathematics 2P4, 2Q4; 6 units approved English literature.

Level III: 38 units
R Computer Science 3A3; Electrical Engineering 2H3, 3B4, 3C4, 3H3, 3K4, 3T4, 3M3; Mathematics 2P4, 2Q4.

Level IV: 36-37 units (1986-87 only)
R Computer Science 3C3, 4L3; Electrical Engineering 3V3, 4J4, 4S4, 4T4; Engineering 4B3.

E 6 units liberal studies elective; 6 or 7 units from Computer Science 4E3, 4W3, and Level III or IV Electrical Engineering or Engineering Physics.

Level IV: 35-36 units (commencing 1987-88)
R Computer Science 3C3, 4L3; Electrical Engineering 4J4, 4S4, 4T4; Engineering 4B3.

E 6 units approved liberal studies electives; 8 or 9 units from Computer Science 4E3, 4W3, and Level III or IV Electrical Engineering or Engineering Physics.

COMPUTER ENGINEERING AND MANAGEMENT (B.ENG.MGT.)

Admission:
See Admission described at the beginning of the programme listing.

Level II: 39 units
R Commerce 2AA3, 2BA3; Computer Science 2B3, 2L3; Electrical Engineering 2B4, 2D3, 2F3, 2K3; Engineering 2O3, 2S3; Mathematics 2P4, 2Q4.

Level III: 38 units
R Commerce 2FA3, 3AA3; Economics 2G3, 2H3; Electrical Engineering 2H3, 3B4, 3C4, 3H3; Mathematics 3K3; Statistics 3X3; 6 units approved English literature.

Level IV: 38 units
R Commerce 2MA3, 3FA3, and 3BA3 or 3BB3; Computer Science 3A3, 3C3; Electrical Engineering 3K4, 3T4, 3U4, 3V3, 4SA; Engineering 4A1; Statistics 3Y3.

Level V: 36-37 units (1986-87 only)
R Commerce 3MA3, 4PA3, 4QA3 and either 3FA3 or one of 3BA3 and 3BB3, whichever not completed; Computer Science 4L3; Electrical Engineering 3V3, 4S4, 4T4; Engineering 5A1.

FACULTY OF ENGINEERING
E 6 units Commerce electives selected from Level III and IV Commerce courses; 3 or 4 approved elective units from Computer Science 4E3, 4W3, and Level III or IV Electrical Engineering or Engineering Physics.

**Level V:** 37-38 units (commencing 1987-88)
R Commerce 3MA3, 4PA3, 4QA3; Computer Science 4L3; Electrical Engineering 4J4, 4T4; Engineering 5A1.
E 6 units Commerce electives selected from Level III and IV Commerce courses; 7 or 8 units approved electives from Computer Science 4E3, 4W3, and Level III or IV Electrical Engineering or Engineering Physics; 3 units Engineering and Management electives.

**ELECTRICAL ENGINEERING (B.ENG.)**

**Admission:**
See *Admission* described at the beginning of the programme listing.

**Level II:** 36 units
R Electrical Engineering 2B4, 2D3, 2F3, 2H3, 2K3; Engineering 2O3, 2S3; Mathematics 2P4, 2Q4; 6 units approved English literature.

**Level III:** 36 units
R Electrical Engineering 3B4, 3C4, 3H3, 3K4, 3N4, 3S5, 3T4, 3U4; Mathematics 3K3; Statistics 3X3.

**Level IV:** 36-37 units
R Electrical Engineering 4J4; Engineering 4B3; 12 units of Electrical Engineering Level IV courses.
E 6 units liberal studies elective; 11 to 12 units Level III or IV approved technical electives.

**ELECTRICAL ENGINEERING AND MANAGEMENT (B.ENG.MGT.)**

**Admission:**
See *Admission* described at the beginning of the programme listing.

**Level II:** 39 units
R Commerce 2A3, 2BA3; Economics 2G3, 2H3; Electrical Engineering 2B4, 2D3, 2F3, 2H3, 2K3; Engineering 2O3; Mathematics 2P4, 2Q4.

**Level III:** 37 units
R Commerce 2FA3, 3AA3; Electrical Engineering 3B4, 3C4, 3H3, 3T4, 3U4; Mathematics 3K3; Statistics 3X3; 6 units approved English literature.

**Level IV:** 36-38 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Electrical Engineering 3K4, 3N4, 3S3; Engineering 2S3, 4A1; Statistics 3Y3.
E 9 to 11 units approved Level III or IV technical electives.

**Level V:** 37-38 units
R Commerce 3MA3, 4PA3, 4QA3; Electrical Engineering 4J4; Engineering 5A1.
E 6 units Commerce electives selected from Level III and IV Commerce courses; 17 or 18 units Level III or IV approved technical electives, of which at least 11 units must be selected from Electrical Engineering Level IV courses. (In 1987-88, the technical electives will include 3 units of Engineering and Management electives.)

**ENGINEERING PHYSICS (B.ENG.)**

**Admission:**
See *Admission* described at the beginning of the programme listing.

**Programme Notes:**
The following areas and courses are suggested as technical electives for Level IV:

- **Biomedical Engineering**
  - Electrical Engineering 4U4, Engineering 4X3, Engineering Physics 3X3, 4Y3.
- **Computer Systems**
- **Lasers and Electro-Optics**
  - Engineering Physics 4G3, 4K3, 4S4.
- **Nuclear Engineering**
  - Engineering Physics 4D3, 4L3, 4N3.
- **Solid State Electronics**
  - Engineering Physics 4E3, 4F3.

**Level II:** 37 units
R Engineering 203, 2P4, 2W4; Engineering Physics 2A3, 2E4; Mathematics 2P4, 2Q4; Physics 2C5; 6 units approved English literature.

**Level III:** 37 units
R Chemical Engineering 204 or Mechanical Engineering 304; Engineering Physics 3D3, 3E3, 3F3; Mathematics 3C3, 3D3, 3Q3; Physics 3B6, 3M6.
E Liberal studies elective (which may be deferred to Level IV), or approved technical electives to make a total of 37 units.

**Level IV:** 36-38 units
R Engineering 4B3; Engineering Physics 4C2, 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4D3, 4E3, 4F3, 4G3, 4N3, 4S4, 4W3, Physics 4D6.
E 6 units liberal studies elective (if not completed in Level III); approved Level III or IV technical electives to make a total of 36 to 38 units.

**ENGINEERING PHYSICS AND MANAGEMENT (B.ENG.MGT.)**

**Admission:**
See *Admission* described at the beginning of the programme listing.

**Level II:** 38 units
R Commerce 2A3, 2BA3; Economics 2G3, 2H3; Engineering 2O3, 2P4, 2W4; Engineering Physics 2A3, 2E4; Mathematics 2P4, 2Q4.

**Level III:** 38 units
R Commerce 2FA3, 3AA3, 2MA3; Engineering Physics 3E3, 3F3; Mathematics 3C3, 3D3; Physics 2C5, 2B6; 6 units approved English literature.

**Level IV:** 37 units (1986-87 only)
R Chemical Engineering 204 or Mechanical Engineering 304; Commerce 3FA3, 4QA3, 3BA3 or 3BB3; Engineering 4A1; Engineering Physics 3D3, 3E3, 3F3, 4C2; Mathematics 3Q3; Physics 3M6; Statistics 3Y3.

**Level IV:** 35 units (commencing 1987-88)
R Chemical Engineering 204 or Mechanical Engineering 304; Commerce 3FA3, 4QA3, and 3BA3 or 3BB3; Engineering 4A1; Engineering Physics 3D3, 4C2, 4U4; Mathematics 3Q3; Physics 3M6; Statistics 3Y3.

**Level V:** 40 units
R Commerce 3MA3, 4PA3; Engineering 5A1; Engineering Physics 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4D3, 4E3, 4F3, 4G3, 4N3, 4S4, 4W3, Physics 4D6.
E 6 units Commerce electives selected from Level III and IV Commerce courses; approved technical electives to make a total of 40 units. (Commencing in 1988-89, Engineering Physics 4U4 will be replaced by 3 units Engineering and Management electives.)

**MANUFACTURING ENGINEERING (B.ENG.)**

**Admission:**
See *Admission* described at the beginning of the programme listing.

**Level II:** 37 units
R Engineering 2M4, 2O3, 2P4, 2Q4, 2W4; Manufacturing Engineering 2C3; Mathematics 2M6; Mechanical Engineering 2A3; 6 units approved English literature.

**Level III:** 38 units
R Engineering 3M3, 3N3; Manufacturing Engineering 2M3; Mathematics 3V6; Mechanical Engineering 3A3, 3C3, 3E4, 3O4, 3R3. Either Engineering 3R3 and Mechanical Engineering 4X3 or, 6 units liberal studies elective.

**Level IV:** 39 units
R Engineering 4C3, 4J3; Manufacturing Engineering 4A3, 4M4, 4P2; Mechanical Engineering 4C3, 4D3, 4Q3, 4R3, 4T3, 4Z3.
E Either 6 units liberal studies elective, or Engineering 3R3 and Mechanical Engineering 4X3, whichever was not completed in Level III.

**MATERIALS ENGINEERING (B.ENG.)**

(The offering of this programme is contingent upon approval by the Senate of McMaster University, and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean of the Faculty of Engineering.)
Admission:
See Admission described at the beginning of the programme listings.

Programme Notes:
This programme is designed to permit choices of electives in Level IV which will allow study in depth of various types of modern engineering materials (e.g. electronic materials, amorphous solids, high performance alloys and ceramics.)

Level II: 38 units
R Chemistry 2T6; Engineering 2M4, 2O3, 2P4; 6 units approved English literature; Materials 2C4, 2F3; Mathematics 2P4, 2Q4.

Level III: 34 units
R Chemistry 2W3; Engineering 3Q3; Materials 3B4, 3D6, 3E6; Mathematics 3C3, 3D3; Physics 3M6.

Level IV: 33 units
R Engineering 4B3; Materials 3P3, 4A1, 4E3, 4K4; Metallurgy 4L4.
E 6 units approved liberal studies electives; 9 units approved Level III or IV technical electives.

MECHANICAL ENGINEERING (B.ENG.)

Admission:
See Admission described at the beginning of the programme listing.

Level II: 37 units
R Engineering 2M4, 2P4, 2W4; Mathematics 2M6; Mechanical Engineering 2A3, 2B3, 2C3; 6 units approved English literature.

Level III: 37 units
R Engineering 2O3, 3M3, 3N3; Mathematics 3V6; Mechanical Engineering 3A3, 3C3, 3D3, 3E4, 3M2, 3O4, 3R3.

Level IV: 36-39 units
R Mechanical Engineering 4G3, 4M4, 4P2, 4Q3, 4R3, 4S3; Engineering 4B3 or Mechanical Engineering 4C3.
E 6 units liberal studies elective; three of the following courses: Chemical Engineering 4T3, Civil Engineering 3K3, Electrical Engineering 3S3, Engineering 3P3, 3Q3, 3R3, 4J3, 4X3, Engineering Physics 4D3, 3X3, Mechanical Engineering 4A3, 4D3, 4F3, 4L3, 4T3, 4U3, 4V3, 4W3, 4X3, 4Y3, 4Z3. Manufacturing Engineering 4A3 may be substituted, with the permission of the Department. Electives must be chosen so that no more than 21 units are taken in any one term.

MECHANICAL ENGINEERING AND MANAGEMENT (B.ENG.MGT.)

Admission:
See Admission described at the beginning of the programme listing.

Level II: 39 units
R Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Engineering 2M4; 2P4, 2W4; Mathematics 2M6; Mechanical Engineering 2A3, 6 units approved English literature.

Level III: 37 units
R Commerce 2FA3, 3AA3; Engineering 2O3, 2Q4, 3M3; Mathematics 3V6; Mechanical Engineering 2C3, 3D3, 3M2, 3O4, 3R3.

Level IV: 37-38 units (1986-87 only)
R Commerce 2MA3, 3FA4, 3BA3 or 3BB3; Engineering 2O3, 3M3, 4A1; Mechanical Engineering 3A3, 3C3, 3E4, 4C3, 4P2, 4R3, 4S3; Statistics 3Y3.
E 3 or 4 units Level III or IV approved technical electives.

Level IV: 37-38 units (commencing 1987-88)
R Commerce 2MA3, 3FA3, and 3BA3 or 3BB3; Engineering 4A1; Mechanical Engineering 3A3, 3C3, 3E4, 4C3, 4P2, 4R3, 4S3; Statistics 3Y3.
E 3 or 4 units Level III or IV approved technical electives.

Level V: 38 units
R Commerce 3MA3, 4PA3; Engineering 5A1; Mechanical Engineering 4G3, 4M4, 4Q3, 4R3, 4S3.
E 6 units Commerce electives selected from Level III and IV Commerce courses; additional approved Level III or IV technical electives, which must include at least 9 units of Mechanical Engineering, to make a total of 38 units. (In 1988-89, Mechanical Engineering 4R3, 4S3 will be replaced by 3 units Engineering and Management electives.)

METALLURGICAL ENGINEERING (B.ENG.)

Admission:
See Admission described at the beginning of the programme listing.

Programme Notes:
1. Level II Metallurgical Engineering is identical to Level II Ceramic Engineering. Transfer to Level III Ceramic Engineering can therefore be made without course deficiency.
2. Attention is drawn to Materials 4Al, which requires an essay based on employment in the summer before entering Level IV.

Level II: 36 units
R Chemistry 2T6; Engineering 2M4, 2O3, 2P4; Materials 2C4, 2F3; Mathematics 2M6; 6 units approved English literature.

Level III: 35 units
R Chemical Engineering 2W3; Materials 3B4, 3D6, 3E5, 3P3; Mathematics 3V6; Metallurgy 3C3.

Level IV: 37 units
R Engineering 3M3 or 3N3, 4B3; Materials 4A1, 4E3, 4K4; Metallurgy 4C4, 4L4.
E 6 units liberal studies elective; 9 units Level III or IV approved technical electives.
Faculty of Health Sciences

D. R. McCalla, B.Sc., M.Sc., Ph.D., F.C.I.C./Vice-President (Health Sciences)
G. H. Flight, M.D., F.R.C.S.(C)/(Acting) Dean (Health Sciences)
V. R. Neufeld, M.D., F.R.C.P.(C)/Associate Dean (Health Services)
E. French, B.Sc., Ph.D./Associate Dean (Nursing)
G. H. Flight, M.D., F.R.C.S.(C)/Associate Dean (Health Services)
B. Underdown, Ph.D./Associate Dean (Research Services)

For information concerning Health Sciences programmes and admission requirements, contact:
E. Rhodes, Assistant Registrar,
Health Science Complex, Room 1B7,
Telephone (416) 525-9140, ext. 2114

The concept of Health Sciences Education is based on the view that health is a broad subject encompassing not only the problems of ill-health but also the impact of biology, environment and the way of life on health. Each of the health professionals has specific educational requirements, but by training together in shared facilities there exists an opportunity to establish effective interprofessional working relationships.

The programmes in the Faculty attempt to meet these goals through a variety of teaching/learning approaches. Emphasis is placed on problem-based, small-group learning experiences. Other approaches to learning, including interdisciplinary educational experiences, are used where appropriate.

In July 1974, the School of Nursing and the School of Medicine were brought together to form the Faculty of Health Sciences. The Faculty offers the following undergraduate degree programmes: Doctor of Medicine, Bachelor of Science in Nursing, Bachelor of Health Science (Occupational Therapy or Physiotherapy).

In addition to its undergraduate programmes the Faculty of Health Sciences also has the responsibility for the Postgraduate (Internship and Residency) Education programmes, and through the School of Graduate Studies, offers M.Sc. and Ph.D. programmes in: Growth and Development, Blood and Cardiovascular systems, Neuroscience, an M.Sc. programme in Design Measurement and Evaluation, and an Interprofessional M.H.Sc. programme for experienced health professionals who wish advanced preparation as clinicians, educators, and programme developers.

Interprofessional programmes, postprofessional in nature and leading to an academic diploma are offered through the Continuing Health Sciences Education programme. These include: Behavioural Sciences, Occupational Health and Safety.

The Faculty of Health Sciences collaborates with the Division of Health Sciences at Mohawk College in educational programmes for other health professions based at the College.

Research programmes encompassing the broad spectrum of health have been established including basic and applied research and various aspects of health care delivery. The graduate programmes in medical science are related to the various areas of health research.

The Health Sciences Centre at McMaster provides educational and research facilities for medicine, nursing and other health professions. It includes a teaching hospital (The McMaster University Medical Centre, a division of the Chedoke-McMaster Hospitals) with extensive ambulatory clinics for primary and specialized aspects of patient care. The building has been designed to bring into close proximity the programmes for the various health professions and to integrate the facilities for education, research and patient care in the Faculty of Health Sciences.

In addition to the Health Sciences Centre, education, research and clinical programmes are based at the Hamilton General Hospital, the Henderson General Hospital, the Hamilton Psychiatric Hospital, St. Joseph's Hospital and the Chedoke division of the Chedoke-McMaster Hospitals. Extensive use is made of community hospitals. A satellite programme has been developed with institutions in Northwestern Ontario.

In accord with the plan to co-ordinate the development of specialized health services among the Hamilton and District hospitals, the Postgraduate Education programmes in medicine have been developed on a regional basis.

Admission and Registration

Application to any programme in the Faculty of Health Sciences implies acceptance on the part of the applicant of the admission policies and procedures, and the methods by which applicants are chosen for the Health Sciences programmes.

Registration in any programme in the Faculty of Health Sciences implies acceptance on the part of the student of the objectives of that programme and the methods by which progress toward the achievement of those objectives is evaluated.

The following describes the regulations governing admission and registration in the Health Sciences programmes, and should be considered in conjunction with specific admission requirements described on the following pages for the School of Medicine (M.D.), the School of Nursing (B.Sc.N.), and the Occupational Therapy and Physiotherapy programme (B.H.Sc.).

The following application deadlines are strictly adhered to. Deadline dates are for consideration of admission to a programme in the following September.

Programme Deadline
Medicine (M.D.) November 1
Nursing (B.Sc.N.)
Non-Grade 13 applicants February 15
Grade 13 applicants May 1
Occupational Therapy/Physiotherapy (B.H.Sc.) April 1

The University reserves the right to change the admission requirements at any time without notice.

As places in the degree programmes of the Faculty of Health Sciences are limited, admission is by selection of applicants, and possession of published minimum requirements does not guarantee admission. The University, therefore, reserves the right to grant admission to a limited number of students, and to refuse admission to any student whose academic performance or general conduct has been unsatisfactory, or who has withdrawn from the programme for a period in excess of one academic year.

An evaluation of Unsatisfactory in the School of Medicine, signifies that the student has failed to meet these objectives and the University may, at its option, because of the Unsatisfactory evaluation, require the student to withdraw from the School at any time.

The University reserves the right to require the withdrawal of a student should his or her conduct so warrant.

Falsification of Admission Information

An applicant, by supplying false or misleading information which, at the time, or subsequently, is found to be false, will be withdrawn from consideration. Any student admitted to the programme having submitted false evidence will be asked to withdraw.

Health Regulations for Admission

Before registration, students must file with the University evidence of a recent health examination and chest X-ray. More detailed medical information will be required upon acceptance into the programme.

For students in the M.D. programme a further health examination is provided by the University before commencing the Clerkship.
Clinical Course Requirements
Where, in the opinion of the faculty, the performance of the student in clinical practice may jeopardize or endanger the welfare of the patient or the patient's family, the student may be removed from clinical experience any time during the academic year, until continuation in the course is reviewed.

Information and Counselling
A member of faculty is selected for each student in the September of entry to a degree programme and provides each student with advice on evaluations, electives and other educational needs throughout the programme. In the M.D. programme, the advisor is also responsible for the collation of all evaluations and completion of the final transcript. Changes in advisors are entertained as each student becomes acquainted with faculty well enough to choose his or her own advisor.

Students who have difficulty assessing their academic backgrounds in relation to the admission requirements should write to the Assistant Registrar (Health Sciences) for a ruling about their individual application.

Transportation
Students are responsible for expenses involved in transporting themselves to community agencies, making home visits, or in connection with clinical study.

The School of Medicine
The School of Medicine, established in 1965, offers major programmes in undergraduate, postgraduate and graduate medical education. The clinical programmes use not only the teaching hospital and extensive ambulatory care and research facilities at the McMaster University Medical Centre division of the Chedoke-McMaster Hospitals, but also the clinical teaching units at each of the major Hamilton hospitals and community health care centres.

The undergraduate medical programme for the M.D. degree was initiated in 1969, graduating its first students in May of 1972. At present, 100 students are admitted to the programme each year. The academic programme operates on an eleven months-a-year basis and students qualify for the M.D. degree at the end of the third academic year. The curriculum has been designed to involve medical students with a broad range of human health problems throughout their education and to prepare them for effective working relationships with patients, colleagues, and society.

Postgraduate training programmes have been established in: Anesthesia, Community Medicine, Family Medicine, Internal Medicine, Laboratory Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, Radiology, and Surgery.

More details on these programmes are provided in Postgraduate Medical Education at McMaster, available from the Assistant Registrar (Health Sciences).

A Northern Ontario medical programme has been developed in cooperation with the Thunder Bay Medical Society and physicians in towns in Northwestern Ontario. Clinical training opportunities exist in community hospitals adjacent to Hamilton. Excellent clinical experience in these settings is part of both the undergraduate and postgraduate medical programmes.

Graduate programmes leading to the M.Sc. and Ph.D. degrees are offered in Biochemistry and in Medical Sciences. Graduate studies are based on the health research programmes in the school, with special emphasis on: Blood and Cardiovascular Disorders, Growth and Development, Neurosciences, and Design, Measurement and Evaluation. An M.H.Sc. (Health Care Practice) programme is interprofessional in nature and is for experienced health professionals who wish advanced preparation as clinicians.

THE MEDICAL PROGRAMME
The three-year programme in Medicine uses an approach to learning that should apply throughout the physician's career. The components have been organized in a relevant and logical manner with early exposure to patients. Flexibility is ensured to allow for the variety of student backgrounds and career goals.

General Objectives
The aim of the M.D. programme is to provide students with a general professional education as physicians. The programme enables students to build on previous education and experience, using available learning resources and opportunities. The competencies achieved by graduates will qualify them to proceed to further postgraduate training. While most graduates will be involved directly with the care of individual patients, it is expected that some will choose careers concerned with the health of populations and the development of new knowledge.

The overriding objective to be achieved is the demonstrated ability to identify, analyze and manage clinical problems in order to provide effective, efficient and humane patient care.

Enabling objectives consisting of knowledge, skills and personal qualities to be achieved are the following.

Knowledge: To acquire and put into practice concepts and information required to understand and manage health care problems. The study of human structure, function and behaviour will be guided by an analysis of the determinants of health and illness. A spectrum of factors will be considered in both the external and internal environments of individuals, when deciding on preventive, therapeutic, rehabilitative and supportive management.

Skills: To acquire and use the following skills:
1. Critical Appraisal Skills: The application of certain rules of evidence to clinical, investigational and published data, in order to determine their validity and applicability.
2. Clinical Skills: The ability to acquire, interpret, synthesize and record clinical information in managing the health problems of patients, considering their physical, social and emotional function. Included is the use of the clinical reasoning process.
3. Self-Directed Learning Skills: The ability to identify areas of deficiency in one's own performance, find appropriate educational resources, evaluate personal learning progress, and use new knowledge and skills in the care of patients.

Personal Qualities: To recognize, develop and maintain the personal qualities required for a career as a health professional. Acquiring the authority to intervene in the lives of patients carries with it the obligation to act responsibly:
1. toward oneself: to recognize and acknowledge personal assets, emotional reactions, and limitations in one's own knowledge, skills and attitudes, and to build on one's assets and to overcome areas of limitation;
2. toward patients and their families: to be able, under appropriate supervision, to take responsibility for the assessment and care of patients and their families;
3. toward colleagues: to contribute to productive communication and co-operation among colleagues engaged in learning, research, or health care;
4. toward the community: to contribute to the maintenance and improvement of the health of the general population.

Learning Methods
To achieve the objectives of the M.D. programme students are introduced to patients with health problems within the first level of the curriculum. In this way, students understand the relevance of what they are learning, maintain a high degree of motivation and begin to understand the importance of responsible professional attitudes.

The students are presented with a series of major biomedical problems requiring for their solution the understanding of underlying physical and biological and behavioural principles, the appropriate collection of data and the critical appraisal of evidence. In each problem area, the student may select the most appropriate problems to ensure the understanding and application of fundamental concepts. This flexibility provides an opportunity for early consideration of individual interests and goals. The faculty function as learning resource personnel or guides to learning in the particular parts of the programme. Learning by a process of inquiry is stressed. Small group learning resources are utilized in the fashion most appropriate to achieve the programme's goals.

The class is divided into small groups, each with a tutor. In the tutorial session students present and discuss what they have learned and tutors assist in identifying their strengths and weaknesses and in proposing ways to overcome the latter.
HEALTH SCIENCES

Students admitted to the M.D. programme have the responsibility and privilege of taking an active role in the planning and evaluation of the education programme. Through representation on many policy-making and implementation committees, students can influence decisions regarding philosophy, faculty recruitment, and curriculum design. It is expected that all students will participate in the continuing reappraisal and improvement of the programme. Such participation is a hallmark of the School.

Student Evaluation Methods
The evaluation format has been designed to complement learning in the M.D. programme. Evaluation methods have been developed to measure how well the student achieves the stated educational objectives in the various units of the programme. Continual evaluation of the student occurs within the tutorial setting with input from students, their peers, and the tutor. Two problem-solving exercises are required in each unit. At the completion of the unit, the tutor is responsible for the final summary statement of student learning progress. The tutor prepares a written summary of observation of the student’s performance in the tutorials and associated activities. A copy of the evaluation summary is given to the student and to the student advisor while the original is kept in the student’s evaluation file.

The Curriculum Plan
The M.D. curriculum comprises 6 units, an Elective Programme and Revision Time. The curriculum plan showing the relative proportion of time accorded to these units in the 2 2/3 calendar years is illustrated below.

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<tr>
<th>UNIT 1</th>
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<td>UNIT 4</td>
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<td>UNIT 5</td>
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<td>UNIT 6</td>
<td>THE CLERKSHIP</td>
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<td>THE CLERKSHIP</td>
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Unit 6 includes 16 weeks of elective time, plus 4 weeks of holiday time.

Programme Outline for Unit 1: The goal of Unit 1 is to provide an introduction to the M.D. programme, emphasizing a global view of the determinants of health and illness. Factors from both the external and the internal environment will be considered, as they determine the clinical presentation in an individual. Concepts and information from three knowledge perspectives will be studied: the population perspective, the behavioural perspective, and the biological perspective. Students will begin to acquire basic skills of critical appraisal, clinical skills and learning skills.

Programme Outline for Units 2-4: These 12-week units are concerned with the systematic study of basic concepts using the health care problem as a basis. A comprehensive analysis of human structure, function and behaviour is organized around organ systems of the body, as follows:

- Unit 2: Cardiovascular, Respiratory and Renal Systems
- Unit 3: Hematologic, Gastroenterologic and Endocrine Systems
- Unit 4: Neurologic, Locomotor and Behavioural Systems

Each unit will include the analysis of integrating problems such as breathlessness, edema, chest pain, fatigue and so on. There will be a continued progressive emphasis on critical appraisal of evidence, on clinical skills and learning skills.

Programme Outline for Unit 5: This 12-week unit is organized on the overall theme of The Life Cycle. Health care problems will be presented dealing with patients along the conception to death continuum. Major themes will include human reproduction, growth and development, biomedical ethics, human sexuality, aging, death and dying. Students will have an opportunity to consolidate their clinical learning and critical appraisal skills in anticipation of the clerkship. There will be opportunities to make field trips to a variety of health care settings and agencies.

Programme Outline for Unit 6: The Clerkship: This year-long component of the programme is based on participation in the direct care of patients, and the management of health and illness. All prior objectives apply, but the health care problems are actual patients. Students will need to learn both contemporary medicine, as well as becoming self-sufficient and able to sense when today’s medicine becomes out-of-date.

The Clerkship Programme consists of present of three sixteen-week blocks. One sixteen-week block is spent in Medicine and Surgery. One sixteen-week block is spent in the clinical practice of Family Medicine, Psychiatry, Pediatrics, and Obstetrics and Gynecology. The third sixteen-week block is elective time of which one-half must be spent in clinical medicine. The compulsory components of the clerkship are carried out in designated teaching practices and in the teaching hospitals in the Hamilton region, which include McMaster University Medical Centre, Hamilton General Hospital, Henderson General Hospital, St. Joseph’s Hospital and Chedoke Hospital. The elective experience can be carried out in various activities utilizing local and regional resources.

Electives: Electives are an integral part of the undergraduate curriculum at McMaster University. They may be considered the epitome of self-directed learning since students must define goals for electives which are appropriate for their own needs. The responsibility for planning electives rests entirely with students and their faculty advisors. Electives are equal in status to other units of the curriculum. All elective experiences must be evaluated and these evaluations form part of the student’s record.

The two types of electives in the M.D. under-graduate programme are:

1. Block Electives: The Block Electives programme is intended to enable students of varying backgrounds and experiences to pursue their own interests and design full-time programmes to advance their individual goals. Specifically, the student may use the programme for one or more of the following:
   a. to pursue portions of the M.D. programme in greater depth;
   b. to undertake scholastic endeavour in a subject of special interest which may lie outside the normal curriculum;
   c. to pursue areas of academic deflciency;
   d. to examine health delivery systems outside the Hamilton District.

The periods which have been set aside for block electives include post-Unit 2 (6 weeks), post-Unit 4 (6 weeks), and during Unit 6 (16 weeks).

2. Horizontal Electives: These are undertaken concurrently with other parts of the curriculum. The Community Physicians’ Elective is offered to Unit I medical students. Medical students selecting this option have the opportunity, early in their undergraduate training, to develop a continuing personal relationship with local practising physician who accepts the student into his or her family care setting to provide clinical experience over several months. Most students choosing this elective spend one-half days, weekly, in community physicians’ practices.

Regulations for Licence to Practise
A degree in medicine does not in itself confer the right to practise medicine in any part of Canada. To acquire this right, university graduates in medicine must hold a certificate of the College of Physicians and Surgeons of the province in which they elect to engage in practice. Students in Ontario medical schools are not required to register as students with the College of Physicians and Surgeons of Ontario. Students intending to practise outside Ontario are urged to consult the licensing body of that province regarding registration.

The College of Physicians and Surgeons of Ontario does not conduct a licensing examination. It, however, issues enabling certificates that
allow the final year student in an Ontario medical school the right to take the Medical Council of Canada examinations. After having passed this examination the graduate must provide evidence of having completed one year's acceptable postgraduate experience in a hospital approved by the College of Physicians and Surgeons of Ontario before being licenced to practise in this province.

Canadian Intern Matching Service
The Matching Service is a clearing-house designed to help final year Canadian medical students obtain the first post-M.D. year programme of their choice, and to help programme directors obtain the students of their choice. It provides an orderly method for students to decide where to train and for programme directors to decide which applicants they wish to enrol. For both students and directors, it removes the factors that generate unfair pressures and premature decisions. The deadline for receipt of completed applications is October 15.

Further information is available from the Office of the Assistant Registrar (Health Sciences).

ADMISSION POLICY FOR THE MEDICAL PROGRAMME
The admission policy is subject to annual review. For current policies and procedures, applicants must consult the latest edition of the Ontario Medical School Application Service (OMSAS) Instruction booklet, or write to the Office of the Assistant Registrar (Health Sciences).

The School of Medicine considers that the type of medical student selected will have a significant influence in achieving the objectives of the school, namely producing doctors who meet current and anticipated health needs both at the individual and community level. In meeting these needs, the student will require the ability to examine physical, biological and behavioural mechanisms of health problems and develop personal characteristics and attitudes required for a career in medicine. Faculty members, students in course, and members of the community are involved in the review of applications.

Application Procedures
Application material may be obtained from the Medical Admissions Office, McMaster University Health Sciences Centre, Hamilton, Ontario, L8N 3Z5, (Room 1587), or from the Ontario Medical School Application Service (OMSAS), Box 1328, Guelph, Ontario N1H 7P4.

Completed application forms, the application fee and requested documents must be received by the Ontario Medical Schools Application Service, in Guelph, by November 1, for consideration for admission in the following September.

In view of the detailed nature of the selection process, applications, including the autobiographic sketch and letter, transcripts and references, received after the specified deadline, will not be considered.

Only the academic record of work completed and citizenship status (if applicable) existing by the deadline date of November 1 will be considered.

Eligibility
Before registering in the M.D. programme in September, students must have completed a minimum of three (3) full years in a recognized university and have at least an overall second class (B) average in their university career. Two of the three years must be at a level beyond the first year/Level 1. An applicant who offers work from a CEGEP in the province of Quebec is expected to have at least two additional years of university.

A year is defined as the block of work approved by Faculty, and specified in the programme descriptions in their university calendar. It is the candidate's responsibility to document, from their university calendar upon request, that the block of work submitted equates to a year as previously defined. In the computation of eligibility averages, the years completed most recently, prior to application may be given additional weight.

Eligibility will be given to applicants not meeting the above criteria, but who have completed the requirements for a Baccalaureate degree prior to November 1 of the year in which they make application for admission.

Applicants who do not meet these academic requirements will not be accepted for admission, unless they qualify for consideration as a Special Applicant as described below.

For further information regarding the interpretation of three full years of university work, contact the Assistant Registrar (Health Sciences).

Criteria for Selection
Both academic and personal qualities will be taken into account. Academic achievement will be assessed on the basis of course grades available at the time of application. The years completed most recently prior to application may be given additional weight.

Personal qualities will be assessed on the basis of all or some of the following:

a. A letter written by the applicant.
b. An autobiographic sketch.
c. References (three).
d. Individual interview.
e. Simulated tutorial exercise (Group Interview).

Approximately 400 applicants who are assessed highest in academic achievement (based upon undergraduate work) and personal qualities (assessed on the basis of the autobiographic sketch and applicants' letters) will be invited to Hamilton for an interview. At this stage Geographic Weighting (see below) is applied. Because each interview is with representatives of faculty, student body and community, it is necessary for applicants to attend on the dates selected.

Applicants are responsible for their own travel expenses. Interviews are held in late March/April. All candidates will be informed in March whether or not they are invited for an interview.

From those interviewed, the incoming medical class of 100 will be selected. Those candidates interviewed will be advised on the last working day in May whether or not they are accepted for admission in the following September.

Previous Academic Experience
There are no course prerequisites. No preference is given to applications from any particular academic background. All post-secondary courses must be reported by the candidate.

Graduate Studies
The academic record of applicants engaged in graduate studies will be considered, where appropriate, in order to make a candidate eligible for consideration for admission.

Admission with Advanced Standing
As the McMaster M.D. curriculum does not parallel that of most other medical schools, applications for transfer with advanced standing are considered only in exceptional circumstances.

All applicants are considered for Year 1.

Geographic Weighting
Some weighting according to bona-fide place of residence will be used in the following priority:

a. Hamilton Health Region and Northwestern Ontario (defined as west of Wawa to the Manitoba boundary)
b. The rest of Ontario.
c. The rest of Canada.
d. Other countries.

To qualify for (a) or (b) above, an applicant must be a Canadian citizen (or permanent resident by the deadline date for application) and have resided for at least 3 years in the area since the age of 14 or attended a university in the area for at least 3 years. An applicant who is a Canadian Citizen (or a permanent resident by the deadline date for application) but who does not meet the residence or university requirements for (a) or (b) qualifies for (c). An applicant who does not meet the requirements of (a), (b) or (c) qualifies for (d). While the application of those qualifying for (d) are considered, these applicants are selected only when their suitability is judged on all criteria to be clearly superior to that of other candidates. Geographic status is determined from the Autobiographic Sketch. McMaster applicants are requested to note, if possible, their assessment of their geographic status in this section of the application material provided by OMSAS.

Special Applicants
Any applicant who is, or has been, a full-time post-secondary student must apply by the regular procedures.

Successful Special Applicants, who will be exceptionally mature, competent and motivated, will:
HEALTH SCIENCES

a. have completed a minimum of four full-credit university courses with the equivalent or an overall grade point average of 8 on the McMaster grading scale as described in the Ontario Medical School Application Instruction booklet. These courses would usually be taken in extension programs;

b. have been employed or active in the community for at least seven years since leaving high school;

c. have made an exceptional contribution to society. In this, the applicant is expected to have shown creativity, initiative and leadership;

d. be residents of Ontario (see Geographic Weighting above)

Applicants who consider themselves eligible for consideration in this category must contact the Assistant Registrar (Health Sciences) before making a formal application.

Application for Deferral of Registration

Application for deferred registration may be granted only under exceptional circumstances. Deferred registration applications may be made in writing, if the applicant can show that there are special circumstances which prevent his or her registration as of the specified deadline.

FINANCIAL INFORMATION

Financial difficulties are among the most frequent problems experienced by students in undergraduate medical schools. At McMaster, these are intensified by the lack of opportunity for summer employment as well as by the relative scarcity of financial assistance funds available to the medical school.

In this situation, it is incumbent on students admitted to the M.D. programme to clarify immediately their personal financial situation and to secure or identify sufficient support to meet their financial obligations over the subsequent three years. The School of Medicine cannot assume this responsibility and students may have to draw on their savings, accept assistance from their families, spouses, and banks, or face the prospect of withdrawing from the programme.

The approximate annual expenses (1984-85) for a student in McMaster's M.D. programme were as follows:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic fees</td>
<td>$2421</td>
</tr>
<tr>
<td>Room/boarding</td>
<td>3640</td>
</tr>
<tr>
<td>Meals/board</td>
<td>3439</td>
</tr>
<tr>
<td>Books</td>
<td>700</td>
</tr>
<tr>
<td>Equipment (diagnostic)</td>
<td>700</td>
</tr>
<tr>
<td>Household supplies, laundry &amp; miscellaneous</td>
<td>1100</td>
</tr>
<tr>
<td>Transportation</td>
<td>1000</td>
</tr>
<tr>
<td>Total (approximately)</td>
<td>$13000</td>
</tr>
</tbody>
</table>

In addition to Government financial assistance programmes, the following are available:

Abbott Memorial Scholarship Loan Fund This fund was established by the Federation of Medical Women of Canada. Small loans are available to any female medical student or first-year intern. In special cases, a loan up to $1,000 may be made to a student for recognized postgraduate training. Loans are payable within five years of date of issue, after which time interest will be charged at a rate of 5% compounded annually. Information regarding these loans may be obtained from the Secretariat, Federation of Medical Women of Canada, Box 8244, Ottawa, Ontario K1G 3H7.

Medical Officer Training Plan The Department of National Defence administers a programme for medical students known as the Canadian Forces Medical Officer Training Plan. Under this plan, students may be subsidized (tuition plus pay) throughout their undergraduate medical studies and internship. To qualify for enrolment a student must be acceptable without condition in a course in medicine in a Canadian university or in an accredited internship.

Further information on this programme and on the career opportunities in medicine in the Canadian Armed Forces may be obtained from local Canadian Forces Recruiting Centres. In Hamilton the Recruiting Centre is at 150 Main Street West. Telephone (416) 523-2751.

Final Year Clerkship Stipend The Ontario Hospital Services Commission will make a grant of $3,000 to each student, payable in 24 instalments of $125 per month, for educational development within a teaching hospital for the equivalent of 40 weeks in the final year.

In relation to the Ontario Student Assistance Program, the O.H.S.C. grant will be taken into account in assessing the amounts of the awards for those students who are eligible.

Other Funds The School of Medicine administers a small loan and bursaries programme to assist some medical students who may be in need. Unfortunately, these funds are limited and cannot be relied on to meet a major portion of any student’s financial obligations. The source of these funds includes: The Ontario Medical Association Bursaries and Loan Fund; The William Andrew Vanderburgh Sr. Memorial Fund; and the Ripley Estate Bursary and Loan Fund.

For further information, contact Dr. R.G. Butler, c/o the Student Affairs Office, at extn. 2271.

Academic Awards The School of Medicine has in the past indicated its preparedness to recognize students who distinguish themselves and the University by virtue of their scholarship and their contribution to the university community. At the same time, the School has indicated that the terms of reference for such awards should neither compromise the spirit of co-operative scholarship which characterizes its M.D. programme nor replace its priority of concern for financial assistance awards.

A small, but growing number of estates and agencies have donated funds to the University and the School of Medicine for purposes of recognizing scholastic merit among medical students. In order to meet the requirements of these awards within the spirit of co-operative scholarship, these funds are administered by the School’s Student Financial Aid Committee to support individual students in their pursuit of specific elective projects and activities.

Students are required to submit an application through the Student Affairs Office, outlining the nature of their work and the need for funds. For further information, contact Dr. R.G. Butler, at extn. 2271.

The School of Nursing

In 1942, McMaster University began its first programme in Nursing, which was operated co-operatively by the University and the Hamilton General Hospital. Since the establishment of McMaster University’s School of Nursing in 1946, students have received a Bachelor of Science in Nursing degree upon graduation. The programme has functioned completely under the supervision of the University, while enjoying the full co-operation of community hospitals and agencies in the operation of its clinical courses. In July, 1974, the Schools of Nursing and Medicine became the Faculty of Health Sciences.

Applicants often wish to discuss the implications of embarking upon a degree programme in nursing. During the school year Health Sciences Information Sessions are presented. Information about these sessions may be obtained from the Student Liaison Office (Gilmour Hall, Room 102, Ext. 4287). Any applicant wishing to discuss aspects of the admission process to the B.Sc.N. programme should write to the Assistant Registrar (Health Sciences) for information or make an appointment for an interview (Health Sciences Centre, Room 187, Ext. 2115). In addition, applicants may wish to discuss their career goals in nursing with a faculty member of the School of Nursing. Appointments can be arranged through the Assistant Registrar’s office.

Applicants who are accepted into the programme are invited each June to attend counselling sessions before making their decision to accept or decline the offer. This is done in order that they may assess for themselves their suitability for the McMaster Nursing programme.

Details of these counselling sessions are forwarded with the letters of acceptance.

THE B.Sc.N. PROGRAMME

The School of Nursing is committed to education, research, and service. As students progress in the B.Sc.N. programme, they will find an ever increasing emphasis on interpersonal skills, independent learning, and leadership qualities. Although these skills and attitudes may not be assessed prior to admission, applicants should evaluate their own potential for developing abilities to interact with others and to assume leadership roles.

Learning takes place in an environment conducive to openness and sharing among faculty and students. Emphasis on small group tutorials and self-directed learning promotes the development of self-evaluation skills and problem-solving abilities. Extensive audio-visual, laboratory
and library resources support a belief in the importance of independent study. Experiences in controlled settings, such as the use of simulated and library resources support a belief in the importance of independent assessment of the achievement of clinical, course, and programme objectives.

**Objectives of the B.Sc.N. Programme**

The aim of the B.Sc.N. programme is to provide students with a broad university education as nurses which will enable them to function as beginning practitioners in primary, secondary and tertiary health care settings. The programme will enable graduates to respond to the existing and changing nursing and health needs of society.

The central competence to be achieved is the ability to use systematically biologic and psychosocial knowledge in the understanding and nursing management of patients' health and health care problems.

In order to achieve this goal, the following will be demonstrated.

**Knowledge:**
1. identify the important influences on the health status of individuals and groups;
2. identify and implement practices which promote improved health;
3. identify and define health/illness problems at the individual, family and community level;
4. understand the underlying biophysical and psychosocial mechanisms of health/illness problems;
5. define the physical, emotional and/or social aspects of health problems;
6. understand major influences on the health care system, most specifically on the provision of nursing services throughout that system.

**Skills:**
1. critically appraise information from a variety of sources: health care research, humanities, behavioural and biological sciences; and integrate this information and evidence with the theories and practice of nursing;
2. provide nursing care in a variety of health care settings;
3. continue to recognize personal learning needs, select appropriate learning resources and evaluate personal progress.

**Personal Qualities:**
1. maintain and further develop such personal characteristics as:
   a. awareness of personal assets, potential and limitations;
   b. awareness of own and others contribution to patient care;
   c. responsibility for effecting change;
   d. ability to relate to and show concern for other individuals;
   e. demonstration of ethical behaviour and professional accountability in health care practice;
2. function as a contributing member of multidisciplinary groups in the identification, resolution and management of health problems.

**ADMISSION POLICY AND PROCEDURE**

As places in the B.Sc.N. programme are limited admission is by selection of applicants, and possession of published minimum requirements does not ensure admission.

There are 2 streams of study for the completion of the B.Sc.N degree. The Basic (A) Stream requires four years of study, and is available to: applicants directly from Ontario Grade 13, or with qualifications equivalent to Grade 13; applicants with other qualifications including Mature students and university/college students. Diploma Registered Nurses in Ontario, enter the Diploma R.N. (B) Stream.

The requirements and application deadlines vary depending on the applicant’s background. Please note carefully the sections that follow as to procedures and requirements.

**Grade 13 or Equivalent Applicants:** The majority of places for Level 1 are held by Grade 13 or equivalent students. The selection method is by academic qualifications. Either interim or final grades provide the academic base calculated the first part of June.

**Applicants with other Qualifications:** The selection method is based on academic qualifications, a personal qualities’ score and interview score.

Applicants achieving the minimum academic qualifications are invited to write an autobiographical letter. The letter is assessed by teams of assessors normally representing the faculty and student or alumni constituencies. The scores awarded to the applicants are final. A portion of applicants with the highest letter scores are invited to interview in May. Applicants are responsible for their own travel expenses. Failure to attend the interview will result in cancellation of the application. The scores awarded by the assessors are final.

All applicants will be informed of the admission decision in mid-June. Where courses were in progress from the time of application to September registration, the offer of admission will be conditional upon the applicant achieving an overall B average. Failure to meet the condition will result in withdrawal of the offer of admission.

**Admission Procedure**

Applications for all studies beginning in September must be postmarked no later than midnight of the previous May 1 for Grade 13 applicants and February 15 for applicants with other qualifications.

Applicants currently in Grade 13 apply through the Ontario Universities’ Application Centre. Application forms are available in secondary school guidance offices.

Applicants with other qualifications should write to the Assistant Registrar (Health Sciences) for an application form.

All application forms must be completed and forwarded to the Ontario Universities’ Application Centre. Transcripts from the secondary schools and any post-secondary educational courses either completed or in progress must be included with the application by the deadline date.

Students enrolled in other programs at McMaster University wishing to be considered for transfer to the B.Sc.N. programme should apply through the Office of the Assistant Registrar (Health Sciences) by February 15th.

**Admission Requirements**

**A. Applicants to the Basic Stream from Secondary Schools**

1. **Applicants from Ontario Schools:** To be eligible for consideration, Ontario candidates must have completed:
   i. Grade 12 Mathematics (advanced level);
   ii. one Grade 13 credit in each of Chemistry and English;
   iii. one Grade 13 credit in Mathematics or Biology or Physics;
   iv. additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma. At least two of the additional Grade 13 credits must be selected from English, French, other languages, Calculus, Functions and Relations, Algebra, Biology, Physics, Geography, History and Music.

   The Grade 13 admission academic average will be calculated on the best six of the required Grade 13 subjects.

2. **Applicants with qualifications equivalent to Grade 13:** Applicants from other provinces and countries must achieve the qualifications listed above in their secondary school graduation year. Those students who qualify in January for admission based on their secondary school graduation year grades and who choose to take university courses beginning in January will be considered for the B.Sc.N. programme as a Grade 13 applicant. The application will be among the Grade 13 applications for the following September.

**B. Applicants to the Basic Stream with Other Qualifications**

1. **Mature Applicants:** Applicants who do not meet the stated admission requirements will normally be considered if they:
   i. are at least 21 years old or will be in the calendar year in which they propose to commence university;
   ii. have not attended secondary school on a full-time basis for at least 2 years;
   iii. obtain a satisfactory standing in the mature applicant test (held in June and August) or achieve a minimum of C average in a university academic course taken within the past 3 years;
   iv. are proficient in the English language or have achieved a standing satisfactory to the university in the University of Michigan English Language Test;
   v. have completed or plan to have completed successfully Grade 13 Chemistry and English or equivalent prior to enrolment in the programme; and
vi. provide an autobiographical letter.

Such applicants may be asked to come to the University for a selection interview.

2. University Students and College Students: Applicants who have completed or are currently enrolled in university or college courses will be considered if they:
   i. achieve a minimum of a second class standing in their current programme;
   ii. are proficient in the English Language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test;
   iii. have completed or plan to have successfully completed Grade 13 Chemistry and English, or equivalent prior to enrolment in the programme; and
   iv. provide an autobiographical letter.

Such applicants may be asked to come to the University for a selection interview.

Applicants currently enrolled in a diploma nursing programme will be considered on the above conditions. The University does not credit diploma nursing courses. Any nurse holding or being eligible for nursing registration prior to the date of entry will not be considered for admission below D. Diploma Registered Nurses wishing to be considered for admission to the Basic Stream of the Undergraduate B.Sc.N. programme. (See below D. Diploma Registered Nurses.)

C. Admission Above Level I

Students wishing to be considered for transfer from other nursing degree programmes should write to the Assistant Registrar (Health Sciences). Students who have completed university work other than in a nursing degree programme wishing to transfer into nursing will be considered on an individual basis. If accepted, they may receive credit for, or exemptions from, some elective work on the basis of courses already completed, but they may be required to make up deficiencies. In some cases, it may be possible for deficiencies to be removed during the summer prior to registration. Such students are advised to secure counselling from the School of Nursing for possible advance standing.

D. Diploma Registered Nurses

Applicants who are diploma registered nurses normally should satisfy the following conditions:

1. have current Certificate of Competence as a Registered Nurse in Ontario or be eligible to write the Registration Examinations, and
2. show evidence of at least two years full-time, or equivalent, nursing practice within the five years prior to the date of entry; and
3. can demonstrate evidence of educational achievement within the past five years, e.g. University courses with at least B standing, College courses (full year) with at least B standing, in addition to successful completion of the basic diploma nursing programme; and
4. provide three letters of reference which address performance and ability as a health professional and their potential for success in this programme; and
5. provide an autobiographical letter.

Applicants who are assessed highest on the above criteria will be invited for an interview to assess:

a. reasons for applying to this programme,
   b. reasons for continuing education,
   c. self-assessment abilities, and
   d. interpersonal qualities.

E. Part-time Students

Students will be permitted to enter, proceed through and graduate from the B.Sc.N. programme on a part-time basis. University and programme rights and responsibilities governing the full-time undergraduate students will govern the part-time student.

As enrolment is limited, places reserved for part-time students at each level will be restricted. Nursing courses are available only during the day. Electives may be taken either in the day or evening.

Guidelines have been established for part-time study. Applicants are advised to secure counselling from the B.Sc.N. programme before engaging in part-time study.

ACADEMIC REGULATIONS

In addition to meeting the General Academic Regulations of the University, students enrolled in the B.Sc.N. programme shall be subject to the following programme regulations.

Registration in the B.Sc.N. Programme implies acceptance on the part of the student of the objectives of that Programme and the methods by which progress toward the achievement of those objectives is evaluated.

Since the academic regulations are continually reviewed, we reserve the right to change the regulations in this section of the Calendar.

The University also reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. Where, in the opinion of faculty, the performance of the student in clinical nursing practice may jeopardize or endanger the welfare of the patient, or the patient's family, the student may be removed from clinical experience any time during the academic year until continuation in the course is reviewed. The clinical activities associated with any clinical course must be successfully achieved for attainment of a passing grade in the course.

Level I Nursing

A student in Level I must:

1. achieve a University Average (UA) of at least 2.5; and
2. achieve an average of at least 4.0 in the Nursing and required Health Science courses; and
3. achieve a grade of at least C– in the Nursing and required Health Science courses with the exception that a grade of D–, D, or D+ is permissible in one Health Science course.

A student who fails to meet these requirements may not continue in the programme but may seek readmission by writing to the B.Sc.N. Programme Chairman.

Area Courses:
The Area courses consist of all the Nursing and Health Science courses above Level I.

The following courses are designated clinical courses:

Basic (A) Stream: Nursing 2L6, 2H4, 3X7, 3Y7, 4J7, 4K7.
Diploma Registered Nurses (B) Stream:

Nurses 3L5, 3M5, 3N8, 4S5, 4T5, 4Z8.

A grade of at least C– is required in all Area courses with the exception that a grade of D–, D, or D+ is permissible in a non-clinical Area course only once beyond Level I. In order to meet these requirements an Area course may be repeated only once. If a student fails to meet the minimum grade requirements after repeating the course, he or she may not continue in the Nursing programme.

A course for which credit has been granted may be repeated only when approval is granted by the B.Sc.N. Programme Chairman.

Cumulative Area Average (CAA)
The Cumulative Area Average (CAA) for the B.Sc.N. programme is the weighted average of all the Nursing and required Health Sciences courses attempted and repeated beyond Level I, and is used to determine whether a student may continue in the programme, may continue on Programme Probation or may not continue in the programme.

Continuation in the Programme
To continue in the B.Sc.N. programme a student must obtain a University Average (UA) of at least 2.5 and a Cumulative Area Average of at least 4.0. A student whose CAA is at least 3.5 may, at the discretion of the Faculty, proceed in the programme and will be placed on Programme Probation. A student may be placed on Programme Probation only once during the total programme.

Failure
A student whose Cumulative Area Average is less than 3.5, or a student whose CAA is less than 4.0 and who has not been granted Programme Probation may not continue in the programme. A student who fails to obtain a Cumulative Area Average of 4.0 at the completion of the period on Programme Probation, may not continue in the B.Sc.N. programme.

A student may normally repeat a Level of work only once.

Extra Courses
Courses in addition to those which constitute the B.Sc.N. programme may be designated Extra at registration. The grades obtained in such courses will not be included in the CAA nor will the units be included in those required for graduation. The designation Extra cannot be added or removed retroactively.
Level of Registration
Level describes where a student is placed in the programme. A student is required to register in that Level for which more than 6 units of work is incomplete. Work of a higher Level may be undertaken, if prerequisites are met, with the permission of the Programme Chairman.

Selection of Electives
After a student has completed Level I he or she may take no more than 18 units of courses beginning with the digit 1.

Graduation Average (GA)
The Graduation Average (GA) for the B.Sc.N. programme is based on the best 36 units or best 80% of all Level III and Level IV Area courses, whichever is greater. The GA is used to determine whether a student may graduate from the programme.

CURRICULUM FOR THE B.SC.N. PROGRAMME
Basic (A) Stream
The Faculty has planned the curriculum so that the study of nursing, the physiological, psychological and social sciences, and the humanities are interrelated and span the entire programme. In Level I, the amount of nursing experience is relatively small; the major proportion of study is in the behavioural and natural sciences. The nursing component increases progressively through Levels II, III, and IV, as the study of natural sciences is completed. Normally, because of timetable constraints, courses must be taken in the Level indicated in the curriculum.

Six units in Sociology or Anthropology are required by the end of Level II. In at least one of Levels I, II, III, or IV, six units of elective are to be chosen from the Humanities, and six additional units from one of Psychology, Sociology, or Anthropology are to be chosen at or above Level II.

Level I: 32 units
- R Health Sciences 1A6, 1B7; Nursing 1F7; Psychology 1A6.
- E 6 units.

Level II: 38 units
- Terms 1 and 2: 34 units
  - R Health Sciences 2B8; Nursing 2L6, 2M5;
  - E 15 units.
- Term 3: 4 units
  - R Nursing 2H4.

Level III: 33 units
- R Health Sciences 3A4, 3B4; Nursing 3S8, 3X7, 3Y7.
- E 3 units.

Level IV: 32 units
- R Health Sciences 4L4; Nursing 4A2, 4E6, 4J7, 4K7.
- E 6 units.

Diploma R.N. (B) Stream
The programme of study for Diploma Registered Nurses, is integrated with existing course offerings. The practice of nursing in diverse clinical settings will occur in all academic terms. The curriculum is designed to build on the existing knowledge and skills of the students, to prevent duplication of learning experiences and to prepare the students to function in the expanded role in community and institutional settings.

The curriculum is planned for two full calendar years if taken on a full-time basis. If taken on a part-time basis, students are normally allowed six years to complete the programme requirements.

Each level of the programme will consist of eight months of academic study with concurrent clinical practice, followed by 6 to 8 weeks of concentrated clinical practice in one setting. The concentrated experience is designed to provide the student with the opportunity to develop areas of specific interest and to demonstrate decision-making capacity in those areas such as e.g. primary care, oncology, gerontology, etc.

Twenty-four (24) units of electives are to be selected from disciplines of the student's choice, of which a minimum of 6 units are to be chosen from courses designated as Level II or above.

Level III: 55 units
- Terms 1 and 2: 35 units
  - R Health Sciences 1A6, 1B7, 3A4; Nursing 3L5, 3M5, 3S8.
  - Term 3: 14 units
  - R Nursing 3N8.

E 6 units.

Summer Term
E 6 units.

Level IV: 54 units
- Terms 1 and 2: 34 units
  - R Health Sciences 2B8, 3B4, 4L4; Nursing 4A2, 4E6, 4S5, 4T5.
- Term 3: 14 units
  - R Nursing 4Z8.
  - E 6 units.
- Summer Term
  - E 6 units.

Occupational Therapy and Physiotherapy Programme
The Bachelor of Health Science Programme is available to diploma graduates of the Mohawk College programmes in Occupational Therapy or Physiotherapy and diploma graduates in Occupational Therapy and/or Physiotherapy from other institutions. Through an emphasis on the synthesis of the theoretical and clinical components of practice, the programme provides an opportunity for increased academic and scholarly preparation. In this way, the student will acquire an improved understanding of the health care problems of clients. This degree programme is offered under the auspices of Continuing Health Science (Post Professional) Education within the Faculty of Health Sciences.

Further professional development is offered through the various Master and Doctoral programmes in the Faculty of Health Sciences.

OBJECTIVES OF THE B.H.Sc. PROGRAMME
The Programme is designed to further the development of an occupational therapist or physiotherapist who will be able to:
1. Understand the physical, biological and behavioural mechanisms of health problems including aspects such as molecular, individual, family and community.
2. Understand the political, economical, sociocultural and epidemiological factors which influence health policies and the systems and models of health care delivery.
3. Examine in depth, issues related to the responsibilities of the professionals of Occupational Therapy and Physiotherapy in the delivery of health services.
4. Analyze and critique the scientific bases of the professions of Occupational Therapy and Physiotherapy, and critically evaluate emerging data related to these professions.
5. Plan and complete an investigation into a specific area of clinical practice. Principles of scientific inquiry and clinical reasoning will be emphasized.

ADMISSION POLICY AND PROCEDURE
Applicants from Mohawk College Programmes in Occupational Therapy and Physiotherapy
The Faculty of Health Sciences, McMaster University, participates with the Faculty of Health Sciences at Mohawk College in the diploma programmes of Mohawk College in Occupational Therapy and Physiotherapy. To be considered for admission to the B.H.Sc. Programme, graduates from the Mohawk programmes should present:
1. Mohawk College Diploma of Occupational Therapy or Physiotherapy with the certificate from McMaster University.
2. Official transcripts from Mohawk College.
3. All transcripts from other post-secondary institutions attended.
4. A letter outlining the candidate's learning objectives. Guidelines are available from the Assistant Registrar (Health Sciences).
5. A personal interview may also be required.

Applicants currently in Year III of the Occupational Therapy or Physiotherapy Programmes at Mohawk College should present:
1. Official transcript of marks of work completed (to date) at Mohawk.

E 6 units.
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2. A letter from the Programme Chairman assessing the student's potential to graduate.
3. All transcripts from other post-secondary institutions attended.
4. A letter outlining the student's learning objectives. Guidelines are available from the Assistant Registrar (Health Sciences).
5. A personal interview may also be required.

Admission Procedures

Application forms are available from the Assistant Registrar (Health Sciences), McMaster University. These should be completed and forwarded to McMaster University in accordance with the instructions.

Applications and a letter outlining learning objectives must be post-marked no later than April 1 for the classes beginning in September. Official transcripts of marks from Mohawk College must be provided by the student.

It is the applicant's responsibility to ensure that all application documentation is received by April 1.

All applicants will be informed of the admission decision by June 1.

Applicants with Diplomas in Occupational Therapy and/or Physiotherapy from Other Institutions

Successful applicants register in the Faculty of Health Sciences and must complete a minimum of 31 units of required study in the Pre-programme Phase at McMaster University before being eligible for admission to the B.H.Sc. Programme.

Admission is by selection as enrolment is limited. Possession of these published minimum requirements does not guarantee admission.

The Admissions Committee will review professional education, course transcripts, and clinical experience, and in its recommendation may require work in addition to the 31 units of required study.

To be considered for admission to the Pre-programme Phase, graduates presenting diplomas from institutions other than Mohawk College should present:
1. Diploma of Occupational Therapy and/or Physiotherapy.
2. Official transcripts from the diploma-granting institution.
3. Eligibility to practise in the jurisdiction which provided the professional training must be shown. The candidate must have successfully completed professional training which is judged to be the equivalent to the diploma component of the Mohawk/McMaster diploma programmes.
4. Canadian citizenship or landed immigrant status.
5. A letter outlining the candidate's learning objectives. Guidelines are available from the Assistant Registrar (Health Sciences).
6. An interview.

ACADEMIC REGULATIONS

Registration in the Bachelor of Health Science Programme implies acceptance on the part of the student of the objectives of that programme and the methods by which progress toward the achievement of those objectives is evaluated. The University reserves the right to cancel the academic privileges of any student at any time that the student's scholastic record or conduct warrant doing so. Where, in the opinion of the faculty, the performance of the student in a clinical setting may jeopardize or endanger the welfare or safety of the patient or the patient's family, the student may be removed from the clinical setting any time during the academic year, until continuation in the course is reviewed.

Graduation

In order to graduate, a student must obtain a Cumulative Area Average of at least 4.0 in all courses taken. Graduation standing will be determined on the basis of the C.A.A.

Dean's Honour List

The requirements for being named to the Dean's Honour List are as follows:

i. for graduates of the Mohawk College programme, a Graduation Average of at least 9.5, and an Average of at least 3.2 on the Mohawk scale, in the final year of the occupational therapy or physiotherapy diploma programme; or

ii. for students in the Pre-programme Phase, a University Average of at least 9.5 on at least 30 units of work; or

iii. for graduating students who completed the Pre-programme Phase, an average of at least 9.5 on the 19 units of degree work, and an average of at least 9.5 in the Pre-programme Phase on previous session(s) sufficient to include at least 11 units.

Occasional Students

Applicants holding a diploma in occupational therapy or physiotherapy may register as occasional students in Health Sciences and take up to six/seven units of core courses in the B.H.Sc. Programme.

Preference in required courses will be given first to students in the B.H.Sc. Programme and the B.H.Sc. Pre-programme Phase, and then to occasional and continuing students if space is available.

To be considered for admission as an Occasional Student in Health Sciences, applicants must present the following documentation:

1. Diploma of occupational therapy and/or physiotherapy, including an official transcript of marks.
2. All other official transcripts from post-secondary institutions attended.
3. A letter outlining the applicant's academic plans and reasons for applying as an occasional student to the Faculty of Health Sciences.
4. Students who are currently registered in the diploma programmes of occupational therapy or physiotherapy at Mohawk College may seek entry to another faculty as Occasional Students (see the Admissions Requirements section in this calendar). Such students may not take Health Science courses although those who plan to enter the B.H.Sc. Programme later are encouraged to discuss their course selection with the Admission Chairman of the B.H.Sc. Programme.

Continuing Students

Continuing students are those who hold a university degree in occupational therapy or physiotherapy, and who are not proceeding to an advanced degree, but wish to take one or more undergraduate classes.

Continuing students may take Health Science courses at the discretion of the B.H.Sc. Student Studies Chairman and the instructor(s) concerned.

Preference in required courses will be given first to students in the B.H.Sc. Programme and the B.H.Sc. Pre-programme Phase, and then to continuing and occasional students if space is available.

THE B.H.Sc. PRE-PROGRAMME PHASE REQUIREMENTS AND CURRICULUM

The Pre-programme Phase is for applicants with diplomas in occupational therapy and/or physiotherapy programmes from other institutions. It consists of a minimum of 31 units of study completed entirely at McMaster University. Additional course work to a maximum of 43 units may be required at the discretion of the Admissions Committee.

The Pre-programme Phase may be completed either full-time or part-time. Under normal circumstances, the Pre-programme Phase should be completed in one year as a full-time student, or three years as a part-time student.

The student must attain a University Average of at least 4.0, and a minimum grade of C- in each course taken in the Pre-Programme Phase.

Students who do not meet the requirements on a first attempt will be reviewed by the Student Studies Chairman, and will require permission to continue in the Programme.

The programme of required study consists of 31 units as follows:
R Health Sciences 3A4 and 3C3, 24 units chosen from the Faculties of Science, Social Science, Humanities or Health Sciences.

Upon successful completion of this Pre-programme Phase the student is admitted to the B.H.Sc. Programme.

THE B.H.Sc. PROGRAMME REQUIREMENTS AND CURRICULUM

The Programme consists of 19 units of study completed entirely at McMaster University, to include four Level IV required courses, and one or more undergraduate elective courses designated as Level III or Level IV.

All courses required for the 19 units of credit in the programme are Area courses.

The student must attain a Cumulative Area Average (C.A.A.) of at least 4.0. A minimum C- is required in each course in the programme.
A student who fails to obtain a CAA of at least 4.0, or who obtains one or more grades below C-, may continue in the programme only with the permission of the Student Studies Chairman.

Course Load
The Programme is available in a modified full-load or part-time format. Full-load students will normally complete a minimum of 10 units of course work between September and December. The remaining course work may be completed in subsequent terms. Full-load students are advised not to carry a course load of greater than 16 units in one term. Written permission from the Student Studies Chairman is required to take a course load greater than 16 units in one term.

Students may choose to complete the programme on a part-time basis. Elective courses will be selected from courses available during the day or evening throughout the year. Required courses usually are available in Term I of the Winter Session (September to December) during the day. Under normal circumstances, part-time students are expected to complete the programme within three years. Permission of the Student Studies Chairman is required to alter this time limit.

Students who have completed electives on a part-time basis may transfer to full-load status to complete the required courses during Term I of the Winter Session. Requests for transfers must be received by April 1 of the year in which the student seeks to register.

Repetition of a Course
To repeat a course for which credit has been obtained, approval of the Student Studies Chairman is required. Any course in which less than C- standing is achieved may be repeated only once. The grades of all attempts appear on the transcript and enter into the computation of the Cumulative Area Average.

Sequence of Courses
For students who request to study Health Sciences 4C3/4D3, priority will be given as follows:

a. B.H.Sc. students who have completed Health Sciences 4A3 and/or Health Sciences 4B4.
b. B.H.Sc. students
c. Other students

Enrolment in these courses is limited and where numbers warrant, a special allocation process will be implemented. Students who are not placed in their first choice will be offered a place in those courses that are not full.

The same clinical study area must be selected for Health Sciences 4C3 and Health Sciences 4D3. Permission of the instructor is required to register in Health Sciences 4D3 in a different term from Health Sciences 4C3.

Cancellation of a Required Course
The B.H.Sc. Programme offers all required courses within one academic year. Whenever possible, the Programme offers all the listed areas of clinical study (Health Sciences 4C3/4D3). If there is insufficient enrolment in any of the required courses (minimum of 5) the Programme reserves the right to withdraw the course, and re-schedule or replace the course within that academic year.

B.H.Sc. Programme
Level IV: 19 units
R Health Sciences 4A3, 4B4, 4C3, 4D3.
E 6 units of Level III or IV courses chosen from Faculties within McMaster University. These courses are chosen in consultation with the Advisor. The student must meet the prerequisite requirements for the elective courses.
Faculty of Humanities

D.P. Gagan/B.A., M.A., Ph.D., Dean of Humanities
G.A. Warner/B.A., L. ès L., D. de l’U., Associate Dean of Humanities (Studies)
P.A. Kalnin/B.A., Assistant to the Associate Dean
S.A. Richard/Student Advisor

The humanities tell us how men and women of our own and other civilizations have grappled with life’s enduring, fundamental questions: What is justice? What should be loved? What deserves to be defended? What is courage? What is noble? What is base? Why do civilizations flourish? Why do they decline?...

Mankind’s answers to compelling questions are available to us through the written and spoken word -- books, manuscripts, letters, plays, and oral traditions -- and also in non-literary forms, which John Ruskin called the book of art. Within them are expressions of human greatness and of pathos and tragedy. In order to tap the consciousness of civilization, one must confront these texts and works of art.

William J. Bennett

The humanistic disciplines -- philosophy, languages and literature, history, music, art and drama -- are those fields of critical enquiry which help us to know ourselves through an understanding of humanity’s creative and intellectual traditions, its moral and aesthetic values and its spiritual and material aspirations, and through the realization of human memory. The task of the humanistic scholar is to cultivate an appreciation for traditional learning, and to generate new ideas about the nature of human conditions; to discover, through historical perspective, the processes which link past and present; and to bring to bear on the problems of an age of rapid and often unsettling transformation perceptions informed by values which make us more, rather than less, human and civilized.

The attainment of precise knowledge and fresh insights through lectures, class discussions, reflection, analysis and writing is the essence of study in the Faculty of Humanities’ nine academic departments and three interdepartmental programmes. These are:

Department of Art & Art History
Department of Classics (Greek, Latin, Classical Civilization)
Department of English
Department of German
Department of History
Department of Music
Department of Philosophy
Department of Romance Languages (French, Italian, Spanish)
Department of Slavic Studies
Department of Drama

Programmes and Degrees

A. LEVEL I PROGRAMMES

Admission Requirements

Students intending to qualify, after Level I, for admission to a degree programme in one of the Humanities disciplines should complete Humanities I. Students intending to enrol in a degree programme in Music should complete Music I, although students may enter a B.A. programme in Music from Humanities I.

The admission requirements for Humanities I and Music I are described in the Admissions section of the Calendar.

Level I Programme Requirements

Students admitted to Humanities I must complete 30 units of work as follows:

R 18 units representing three (3) of the following four (4) areas of study:

a. Historical and Philosophical Studies
   Classical Civilization 1A6
   History 1C6, 1D6, 1L6
   Philosophy 1B6, 1D6

b. Languages other than English
   French 1A6, 1B6, 1Z6
   German 1A6, 1Z6
   Greek 1Z6
   Italian 1A6, 1Z6, 1ZZ6
   Latin 1Z6
   Polish 1Z6
   Russian 1Z6
   Serbo-Croatian 1Z6
   Spanish 1A6, 1Z6
   Ukrainian 1Z6

c. The Arts
   Art 1F6
   Art History 1A6
   Dramatic Arts 1A6
   Music 1A6, 1B6, 1C2, 1CC2, 1D2, 1DD2

   English 1A6, 1B6, 1C6
   Comparative Literature 1A6

D 12 units of which at least 6 should be selected from courses offered by a Faculty other than Humanities. Suggested elective courses offered by the Faculty of Humanities include Humanities 2B6 and Canadian Studies 1A6.

No Humanities I student may take more than 6 units of work in any single subject.

May not be offered every year.

**Portfolio Required: If you intend to take Art 1F6 you must present a portfolio and be interviewed by the Department of Art and Art History by the end of April. The portfolio should contain a variety of original works in different media, including works derived from both first-hand observation and the imagination. During the interview you will be asked to do some drawing as an additional means of demonstrating your skills and interests. Late applications will be considered if places are available in the class.

***Students wishing to take Music courses other than Music 1A6 must make arrangements with the Music Department for qualifying tests.

Students admitted to Music I (General) must complete 32 units of work as follows:

R Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4, 1G2

E 12 units normally representing two (2) of the following four (4) areas of study:

a. Historical and Philosophical Studies
   Classical Civilization 1A6
   History 1C6, 1D6, 1L6
   Philosophy 1B6, 1D6

b. Languages other than English
   French 1A6, 1B6, 1Z6
   German 1A6, 1Z6
   Greek 1Z6
   Italian 1A6, 1Z6, 1ZZ6
   Latin 1Z6
   Polish 1Z6
   Russian 1Z6
   Serbo-Croatian 1Z6
   Spanish 1A6, 1Z6
   Ukrainian 1Z6
c. The Arts
   Art 1F6*
   Art History 1A6
   Dramatic Arts 1A6

d. English/Comparative Literature
   English 1A6, 1B6, 1C6
   Comparative Literature 1A6

*May not be offered every year.

**Portfolio Required: If you intend to take Art 1F6 you must present a portfolio and be interviewed by the Department of Art and Art History by the end of April. The portfolio should contain a variety of original works in different media, including works derived from both first-hand observation and the imagination. During the interview you will be asked to do some drawing as an additional means of demonstrating your skills and interests. Late applications will be considered if places are available in the class.

The Faculty of Humanities will also be offering the programme Honours Music (Performance), pending approval by the Senate of McMaster University and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.

The full programme description for Honours Music (Performance) can be found further on in this section under Programmes for the B.A., B.A. (Honours) and B.Mus. Degrees, Department of Music.

Music I (Performance) will require 31 units as follows:
R Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E6, 1F3, 1G2
E 6 units from the Faculty of Humanities, excluding Music.

B. DEGREE PROGRAMMES

Upon successful completion of Humanities I, a student may be admitted to a programme of study leading toward a Bachelor of Arts degree. (Completion of Music I may lead to a Bachelor of Music or Bachelor of Arts degree.) There are four ways to complete a Bachelor's degree in the Faculty of Humanities.

1. Single honours programme: three years of study, beyond Level I, concentrated in the work of a single discipline (e.g. History). After three years of Music study beyond Music I, students receive a B. Mus. degree.

2. Combined honours programme: three years of study, beyond Level I, concentrated in the work of two disciplines (e.g. French and German, English and Philosophy). In fact, a student can combine study in any two Humanities disciplines, or one Humanities discipline and a subject from another Faculty where appropriate (e.g. History and Political Science, Philosophy and Biology).

3. B.A. Programme: two years of study, beyond Level I, concentrated in the work of a single discipline. The only exception to the single discipline is the B.A. in Canadian Studies and another subject.

4. Humanities Interdisciplinary B.A. programme: two years of work, beyond Humanities I, in one of five thematic modules of study representing the interplay of the insights from several related disciplines. These modules are: Ancient Studies, Comparative Literature, Contemporary Studies, Creative Arts, and Linguistics.

The content and the requirements of single honours, combined honours and other B.A. programmes are found further on in this Calendar under the title Programmes for the B.A., B.A. (Honours) and B.Mus. Degrees.

There are a number of Humanities courses which may be taken as electives without prerequisites. Individual course descriptions, by Department, are given under the section entitled Courses by Department.

Not only are students from other Faculties able to take individual courses which have an open prerequisite, but they are also able to transfer into any of the degree programmes offered by the Faculty of Humanities. For the majority of programmes in the Faculty, admission may be gained after the successful completion of any Level I programme at the university, providing this includes the necessary programme requisites as outlined in the admission statement for each Humanities programme as described under Programmes for the B.A., B.A. (Honours) and B.Mus. Degrees.

Second Language Proficiency

Students embarking on Humanities programmes should be aware that most graduate schools require, for admission, proficiency in at least one, and frequently two, languages other than English. In this Faculty, proficiency in at least one language other than English is regarded as an essential tool for students interested in English Literature, Comparative Literature, or Dramatic Arts. Students entering a Canadian Studies programme should have a reading knowledge of French. Generally, proficiency in more than one language is a hallmark of most highly-qualified Humanities' graduates seeking the widest range of post-graduation academic and employment opportunities.

Part-Time Study

Students wishing to enter any programme offered by the Faculty of Humanities and pursue a programme on a part-time basis should consult the appropriate Departmental Counsellor(s) before making their plans.

It is anticipated that at least the following Honours programmes in the Humanities will be available to those part-time students who are unable to take any of their work in the regular Winter Day Session:

- Art History; Classical Studies; Dramatic Arts; English; History; Philosophy; Russian.

For part-time students who are unable to attend the regular Winter Day Session, the following B.A. programmes are available:

- Humanities Interdisciplinary B.A.; Art; Art History; Classical Studies; Dramatic Arts; English; French; History; Italian; Philosophy.

Academic Regulations

Students enrolled in Humanities programmes, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations and Policies.

Registration and Course Changes

It is the responsibility of the student to ensure that the programme of work undertaken meets the requirements for the degree. In the Faculty of Humanities, students are required to preregister in March for the following Winter Session. When registering or making changes to course selection, students must seek the written approval of the appropriate Departmental Counsellor and the Dean of Studies. Dates for final registration and course changes appear in the Sessional Dates at the beginning of this Calendar and are rigidly adhered to.

Cross-listed Courses

Any student for whom a cross-listed course is an Area course under one of its listings must register for it under that listing. For example, Art History 2B3 is cross-listed as Classical Civilization 2B3, so students in an Art History programme wishing to register for this course must register for it under the label Art History 2B3. Such courses will then be used in calculating the student's Cumulative Area Average and possibly the Graduation Average.

Deadlines

The Faculty of Humanities will not consider applications for admission after the dates stated in this Calendar. Registrations after the stated deadlines will not be accepted unless documentation is provided showing good cause and including permission of instructors to enter classes late. Dropping and adding of courses will be permitted only within the periods stated in this Calendar.

Withdrawal

Students who wish to withdraw from the University are required to advise the Dean of Studies Office in writing. Students must surrender their identity cards to the Dean of Studies to ensure the processing of any fee refunds. Students who fail to withdraw formally by any course(s) by the stated deadlines will remain registered whether or not they attend classes and will be assigned a grade.

Readmission

A student who May Not Continue Without Permission may apply for readmission. Applications for readmission in September must be made in writing, to the Associate Dean of Humanities (Studies), by July 15.
Students who apply after the July deadline will only be considered for readmission in January.

Applications should explain the reasons for the student's inadequate performance and should include relevant documentary evidence, for example a letter from a physician outlining any medical condition that might have affected the student's academic performance or final grades. Readmission cases will be carefully screened and the evidence considered will include the student's academic performance before and after admission to McMaster, as well as the nature of the reasons cited in the application letter and the accompanying documentation.

**Readmission is not guaranteed.**

Students will not be considered for readmission to Humanities I from other Faculties unless their pre-University work meets the current admission requirements of the Faculty of Humanities.

The computation of Cumulative Area Averages begins anew at readmission.

**Academic Regulations Pertaining to the Department of Music**

The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the **Cumulative Music Average** and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music programme, a student must maintain a CMA of at least 7.0.

The Graduation Average will be computed on a minimum of 39 units of Area courses for the B.Mus. degree in Education, on a minimum of 42 units of Area courses for the B.Mus. degree in History and Theory, and on a minimum of 41 units of Area courses for the B.Mus. degree in Performance.

Normally, students with an undergraduate degree in Music will not be admitted to a B.Mus. degree programme as a second undergraduate degree.

**Third Year Study Elsewhere**

Students enrolled in Honours Programmes, single or combined, involving French, German, Italian or Spanish, may apply to take part in McMaster University's Third Year Study Elsewhere programme at an appropriate university in France, Germany, Italy, Spain or the province of Quebec. Students may choose to spend one or two terms in this programme according to their wishes and needed needs. The programmes at the host universities are specially designed to suit students at the Third Year Level, and consist principally of advanced and intensive language studies, with a high cultural and literary content.

To be eligible to take part in this programme, students are expected to complete Level II with a weighted average of at least 8.0 in their language component. No fees are payable to McMaster University for the Third Year Study Elsewhere Programme, but students must pay all travel, study and living expenses. For students who may be in need of financial assistance, O.S.A.P. (The Ontario Student Aid Programme) and O.S.A.P. loans are available for this programme. Furthermore, McMaster University offers some bursaries to those in need of help with travel expenses to Europe.

Students must maintain links through correspondence with their departmental advisors at McMaster University while they are engaged in study elsewhere, and all credit for work completed is confirmed after departments have reviewed the student's academic achievement following their return and entry into their final year of study. The maximum credit available in this way is fifteen units per term or thirty units for a full year of study, equivalent to Level III. In certain cases, students may be recommended for the Deans' Honour List on the basis of work undertaken in the programme.

Note: Students who are enrolled in a Combined Honours Programme involving a language and a non-language component (such as History or Political Science) can usually be granted permission to take part in Third Year Study Elsewhere for at least one term by special arrangement, provided they make early application.

**Summer Immersion Programmes in French**

The government-sponsored summer language bursary programme offers university students the opportunity to take French courses at a large number of accredited institutions. Students who wish to attend another university in order to participate in a language immersion programme must make a petition in writing to the Dean of Studies after being placed in the appropriate level of study. Detailed course descriptions must be submitted so that an assessment may be made and Letters of Permission may be issued on the students' behalf. Students not registered in a programme in French may take up to 12 units of credit in this manner. Students registered in a programme in French may take a maximum of six units of credit as elective work only.

**Programmes for the B.A., B.A. (Honours) and B.Mus. Degrees**

**HUMANITIES INTERDISCIPLINARY B.A.**

This programme affords students the opportunity to earn a B.A. degree encompassing formal instruction in the work of more than one Humanities department. Students choose to pursue, beyond Level I, one of five programmes of study structured around a thematic area of concentration to which the work of several departments may contribute. In selecting their Humanities I programmes students should be aware of the prerequisites for entry into particular Level II programmes.

**Admission:**

Completion of Humanities I with a University Average of at least 4.0. Any student whose Level I programme contains fewer than 12 units of Humanities work and who is interested in entering this programme should consult the Committee of Instruction for ways of meeting the admission and programme requirements. Students are strongly advised to take History I D6 in their Level I programme.

Note: Students entering this programme from another programme or from another university must complete a minimum of 30 units of work while registered in the programme.

**Area Courses:**

- Humanities 2B6, 3B6 plus all courses required in the selected theme of study.
- Levels II and III: 60 units
  - R Humanities 2B6 and 3B6; 30 units of Area courses relating to the selected theme.
  - E 18 units of electives.

**Themes of Study**

Within this programme, there are five themes of study: Ancient Studies, Comparative Literature, Contemporary Studies, Creative Arts, and Linguistics as set out below. Every student must concentrate his/her courses in one of these themes. Before selecting courses, students are required to arrange for counselling with the Coordinator of the Committee of Instruction for the Humanities Interdisciplinary B.A. programme. Students should note that not every course relevant to their theme may be available to them in a given year.

The courses relevant to each theme of study are as follows:

**I. Ancient Studies**

Students interested in this theme should include Classical Civilization I A6 in their Level I programmes.

- R History 2L6 and 24 units from:
  - Art and Archaeology: Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
  - History: 3L3, 3M3, 3N3, 3O3, 3P3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W3, 3X3.
  - Philosophy: 2A6, 3E3, 3J3.
  - Religious Studies: 2K3.
  - Language: One of Hebrew, Greek, Latin.

No more than 12 units of Required work (excluding languages) may be taken from any single department's offerings.

**II. Comparative Literature**

Students interested in this theme should include Comparative Literature I A6 in their Level I programmes.

- R 30 units of Area courses to be comprised as follows:
Students interested in this theme should include at least one of Dramatic Arts 1A6 or Music 1A6 in their Level I programmes.

**III. Contemporary Studies**

**R** 30 units with at least 9 each from two of the following:
- Historical and Philosophical Studies
  - English 2C3, 2F6, 3H3, 3I3, 3L3, 3N6, 3P3, 3Q3, 3R3, 4E3
  - French 2W3, 2WW3, 3Z3
  - German 2A3, 2F3, 2H3, 4X3
  - Italian 3M3, 3P3, 4J3
  - Russian 3K6

**R** 24 units of electives, 12 of which may be from Art and Art History.

**E** 18 units of elective.

No more than 12 units of Required work may be taken from any single department's offerings.

*Students should pay close attention to course prerequisites.

**IV. Creative Arts**

Students interested in this theme should include at least one of Dramatic Arts 1A6 or Music 1A6 in their Level I programmes.

**R** Philosophy 2H3 and

9 units from:
- Art History 2B3, 2C3, 2G3, 2M3, 2N3, 203, 2P3, 2Q3, 3B3, 3D3, 3E3, 3G3, 3L3, 3M3, 3Q3, 3R3, 3S3, 3A3, 4C3, 4M3, 4N3, 4R3, and Art 1C3

9 units from:
- Dramatic Arts 2A6, 2B6, 2C3, 2E3, 2F3, 2FF3, 2J3, 2X6, 3A6, 3BB3, 3C3, 3DD3, 3K6, 3P3, 3Q3, 3R3, 3RR3, 3XX3, 3Y3, 4D3

9 units from:
- Music 2A6, 3A3, 3AA3, 3T3, 3U3; and additional courses available (subject to successful completion of qualifying tests) from:
  - Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2H4

**V. Linguistics**

Students interested in this theme should include Linguistic 1A6 and 6 units of a language other than English in their Level I programmes.

**R** 12 units of one language other than English (the same language taken in Level I), and

12 units from:
- Linguistics 2L3, 2M3, 2Q3, 2T3, 3I3, 3M3, 3Y3, 4K3

In selecting these courses students must ensure that they take at least 6 units in each of two national literatures in addition to English.

Students who meet the prerequisites for literature courses in languages other than English offered by the Departments of Classics, German, Romance Languages or Slavic Studies may take such courses with the approval of the Department offering the course(s).

Suggested related electives:
- Comparative Literature 2C6, 2CC3, 2D3, 2G3, 4A3, 4B3
- Comparative Literature 2B3, 3A6, 3E3, 3F3, 3I3, 3J3, 3Q3, 3QQ3, 4D3
- German 2H3, 2J3, 2M3
- Italian 2I6
- Russian 2A6, 3D3, 3E3, 3K6, 3T3

Department of Art and Art History

**HONOURS ART**

**Admission:**
Completion of any Level I programme with a weighted average of at least 7.0 in Art History 1A6 and Art 1F6, including a grade of at least B – in Art 1F6.

**Programme Notes:**
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Students in Honours Art must complete Art 2A4, 2B4, 2C3, 2F4 before registering in Level III or IV Art courses. Normally Art 3F6 will be taken concurrently with any one of Art 3A6, 3B6, 3E6, 4A6.
3. Nine units of Level III or IV Art History, designated at the time of registration for Level IV, will be included in the Graduation Average.

**Area Courses:**
- All Level II, III and IV Art courses, excluding Art 2E3 and 2G3.

**Levels II, III and IV: 90 units**

**R** 42 units of Art including Art 2A4, 2B4, 2C3, 2F4, 3C3, 3F6 and 4B12 and 6 additional units of Level III or IV Art; 18 units of Art History, 9 of which must be Level III and IV.

6 units Humanities, excluding Art and Art History, or other non-departmental offerings approved by the Chairman of the Department and the Associate Dean of Humanities.

E 24 units of electives, 12 of which may be from Art and Art History.

**HONOURS ART HISTORY**

**Admission:**
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work including a grade of at least B – in Art History 1A6.

**Programme Notes:**
No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

**Area Courses:**
- All Level II, III and IV Art History courses.

**Levels II, III and IV: 90 units**

**R** 54 units of Art History, including Art History 3V3, 4O6 and 27 other units of Levels III and IV Art History;
- 12 units Humanities, excluding Art and Art History, or other non-Art and Art History offerings, approved by the Chairman of the Department and the Associate Dean of Humanities.

E 24 units elective, of which 12 may be from departmental offerings, but no more than 12 of which may be Art History.

**COMBINED HONOURS IN ART HISTORY AND ANOTHER SUBJECT**

**Admission:**
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Art History 1A6.

**Programme Notes:**
No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

**Area Courses:**
- All Level II, III and IV Art History courses.
Levels II, III and IV: 90 units minimum
R 33 units of Art History which must include at least 9 units of Level II Art History and 24 units of Levels III and IV Art History, including Art History 3V3 and at least one Level IV course in Art History; 3 additional units of Art History.
E To the combined total of a minimum of 72 units of Area work beyond Level I, the student must add elective work to make up an overall total of at least 90 units.

B.A. IN ART AND ART HISTORY
Admission:
Completion of any Level I program with a grade of at least C – in Art History 1A6 and, for those students wishing to register a studio component, a grade of at least C – in Art 1F6.
Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Graduates of this programme who have taken no Art courses beyond Level I will receive a B.A. in Art History and, in Level III, will be registered in the Art History programme only.
Area Courses:
All Level II, III and IV Art courses excluding Art 2E3 and 2G3; all Level II, III and IV Art History courses.
Levels II and III: 60 units
R 30 units of Art and/or Art History beyond Level I including at least 15 units of Art History; at least 9 units of Level III or IV Area courses; 6 units of Humanities.
E 24 units elective, of which 12 may be Art and/or Art History.

Canadian Studies

HONOURS FRENCH AND CANADIAN STUDIES
(See Department of Romance Languages, French)

HONOURS POLITICAL SCIENCE AND CANADIAN STUDIES
(See Faculty of Social Sciences, Political Science)

COMBINED HONOURS IN CANADIAN STUDIES AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Canadian Studies 1A6 and satisfaction of the admission requirements for the Honours B.A. programme in the other subject. Students who have not taken Canadian Studies 1A6 in Level I will be required to include it in Level II of their programme and should consult the Chairman of the Committee of Instruction.
Programme Notes:
1. No student may register in any Level of this programme without the approval of the Chairman of the Canadian Studies Committee of Instruction, which should be obtained before completing registration forms in March.
2. Language Requirement: Before proceeding to Level III of the programme, the student in the combined B.A. programme in Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a grade of at least D in French 1A6 or IB6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French.
3. Only one Cumulative Area Average and Graduation Average is calculated.
Area Courses:
All Level II and III Canadian Studies courses, and all Canadian Area courses: Anthropology 3A3, 3F3; Art History 3B3; Dramatic Arts 3BB3; Economics 2K3, 3C6, 3F3; English 2C3, 2G6, 32Z; French 2F3, 2FF3, 3A3A, 3BB3, 4U3; Geography 2E3, 3D3, 4U3, 4Z3; History 2J6, 3C3, 3V6, 4N6; Music 3T3; Political Science 2G6, 3D6, 3G3, 316, 4S6; Religious Studies 3B3, 3BB3; Sociology 2H6, 3BB3, 3Q3, 403.
Other courses may qualify as Canadian Studies Area courses. Students wishing to register in a course not on the list should consult with the Chairman of the Committee of Instruction.

Levels II and III: 60 units minimum
R Canadian Studies 1A6 (if not completed in Level I); Canadian Studies 2A3, 2B3, 3E3, 3F3, 4E6; 18 units from courses designated as Canadian Area courses listed above, including at least 12 units beyond Level II.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN CANADIAN STUDIES AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a grade of at least C – in Canadian Studies 1A6 and satisfaction of the admission requirements for the B.A. programme in the other subject.
Programme Notes:
1. No student may register in any Level of this programme without the approval of the Chairman of the Canadian Studies Committee of Instruction, which should be obtained before completing registration forms in March.
2. Language Requirement: Before proceeding to Level III of the programme, the student in the combined B.A. programme in Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a grade of at least D in French 1A6 or IB6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French.
3. Only one Cumulative Area Average and Graduation Average is calculated.
Area Courses:
All Level II and III Canadian Studies courses, and all Canadian Area courses: Anthropology 3A3, 3F3; Art History 3B3; Dramatic Arts 3BB3; Economics 2K3, 3C6, 3F3; English 2C3, 2G6, 32Z; French 2F3, 2FF3, 3A3A, 3BB3, 4U3; Geography 2E3, 3D3, 4U3, 4Z3; History 2J6, 3C3, 3V6, 4N6; Music 3T3; Political Science 2G6, 3D6, 3G3, 316, 4S6; Religious Studies 3B3, 3BB3; Sociology 2H6, 3BB3, 3Q3, 403.
Other courses may qualify as Canadian Studies Area courses. Students wishing to register in a course not on the list should consult with the Chairman of the Committee of Instruction.

Levels II and III: 60 units minimum
R Canadian Studies 2A3, 2B3, 3E3, 3F3, and 12 units from courses designated as Canadian Area courses listed above; the Area requirements of the B.A. programme of the other subject.
E To the approximate total of 48 units of Area work in the two components of the combined B.A. programme, students must add elective work to make a minimum overall total of 60 units beyond Level I.

Department of Classics

HONOURS CLASSICAL STUDIES
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Classical Civilization 1A6. (Students are encouraged to include at least one of Greek 126 or Latin 126 in their Level I programme.)
Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

2. Programme Groups: (at least 12 units must be taken from each of the two Programme Groups and at least 3 units from each of the other two Programme Groups)
   a. Classical Area Courses: Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
   b. Greek and Roman Literature in Translation Classical Civilization 2E3, 3C3, 3I3, 4A3.
   d. Ancient History Classical Civilization 3L3, 3M3, 4D6, 4J6, 4L6.

3. Classical Civilization 2B3, 2C3, 2D3, 2E3, 2G6, 2U3, 2V3, and all Level II Greek and Level II Latin courses will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV courses in Classical Civilization, Greek, and Latin. Greek 1Z6 and Latin 1Z6, if not completed in the Level I programme.

Levels II, III and IV: 90 units
R Classical Civilization 2D3, 2G6, 4F3; 30 additional units of courses listed above under Programme Groups, including at least 15 units of Level III and IV courses; 12 units of Greek (including Greek 1Z6, if not completed in the Level I programme); 12 units of Latin (including Latin 1Z6, if not completed in the Level I programme); 6 additional units of Classical Civilization, Greek, or Latin.

E 18 units elective, 6 of which may be from Classical Civilization, Greek, and Latin.

COMBINED HONOURS IN CLASSICAL STUDIES AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a grade of at least 7.0 in 12 units of Level I work, including a Grade of at least B – in Classical Civilization 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

2. Programme Groups: (at least 6 units must be taken from each of the three Programme Groups; students are encouraged to take at least 6 units of Greek or Latin)
   a. Classical Archaeology and Art History Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
   b. Greek and Roman Literature in Translation Classical Civilization 2E3, 3C3, 3I3, 4A3.
   c. Greek and Latin Language and Literature Greek 1Z6 (if not completed in the Level I programme); 2C3, 2E3, 2F3, 2Q3, 2R3, 3M3, 3N3, 3Q3, 4L3, 4M3, 4Q3; Latin 1Z6 (if not completed in the Level I programme), Latin 2B3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R3, 3D3, 3L3, 3Q3, 4A3, 4M3, 4Q3.
   e. Ancient History Classical Civilization 3L3, 3M3, 4D6, 4J6, 4L6.

3. With the approval of the Departmental Counsellor, courses offered by other departments in Ancient Philosophy and Ancient Religious Studies may be substituted for courses in Classical Civilization.

4. Classical Civilization 2B3, 2C3, 2D3, 2E3, 2G6, 2U3, 2V3, and all Level II Greek and Level II Latin courses will be included in calculating the Graduation Average.

Area Courses:
All Classical Civilization, Greek, and Latin courses listed above under Programme Groups.

Levels II, III, and IV: 90 units minimum
R Classical Civilization 2D3, 2G6, 4F3; 24 additional units from courses listed above under Programme Groups, including at least 6 units from each of any three Programme Groups.

E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN CLASSICAL STUDIES
Admission:
Completion of any Level I programme with a grade of at least C – in Classical Civilization 1A6. With the approval of the Departmental Counsellor, one of Greek 1Z6, Latin 1Z6 or History 1L6 with a grade of at least C – may be substituted for Classical Civilization 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

2. Programme Groups: (at least 3 units must be taken from each of the three Programme Groups; students are encouraged to take at least 6 units of Greek or Latin)
   a. Classical Archaeology and Art History Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
   b. Greek and Roman Literature Classical Civilization 2E3, 3C3, 3I3, 4A3; Greek 2C3, 2E3, 2D3, 3Q3, 3R3, 3M3, 3N3, 3Q3, 4L3, 4M3, 4Q3; Latin 2B3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R3, 3D3, 3L3, 3Q3, 4A3, 4M3, 4Q3.

3. Students in the B.A. programme in Classical Studies who achieve a weighted average of at least 7.0 in 12 units of Level II Area Courses may be admitted to Honours Classical Studies in Level III.

Area Courses:
All Classical Civilization, Greek, and Latin courses listed above under Programme Groups.

Levels II and III: 60 units
R Classical Civilization 2G6, 18 units from courses listed above under Programme Groups; including at least 3 units from each Programme Group; 12 units from the Faculty of Humanities.

E 24 units elective, 12 of which may be from courses listed above under Programme Groups.

HONOURS CLASSICS
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Greek 1Z6 and a grade of at least B in Latin 1Z6. (Students with Grade 13 Greek or Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.) Students are encouraged to include Classical Civilization 1A6 in their Level I programme.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

2. Greek 2E3 and Latin 2G3 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Greek, Latin and Classical Civilization courses.
FACULTY OF HUMANITIES

Levels II, III and IV: 92 units
R Greek 2C3, 2E3, 2F3, 2Q3, 2R3, Latin 2B3, 2E3, 2G3, 2Q3, 2R3, 32 units of Levels III and IV Greek and Latin, including Greek 3Q3, 3R2, 4Q3, 4R2 and Latin 3Q3, 3R2, 4Q3, 4R2; Classical Civilization 2G6 and 6 additional units of Classical Civilization.
E 18 units of elective, 6 of which may be from Latin and Greek.

COMBINED HONOURS IN GREEK AND ANOTHER SUBJECT
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Greek 126. (Students with Grade 13 Greek are eligible for advanced study and should consult the Department of Classics.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Greek 2E3 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Greek Courses.

Levels II, III and IV: 90 units minimum
R Greek 2C3, 2E3, 2F3, 2Q3, 2R3, 3M3, 3N3, 3Q3, 3R2, 4L3, 4M3, 4Q3, 4R2.
E To the minimum total of 73 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

COMBINED HONOURS IN LATIN AND ANOTHER SUBJECT
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Latin 126. (Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Latin 2G3 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Latin courses.

Levels II, III and IV: 90 units minimum
R Latin 2B3, 2E3, 2G3, 2Q3, 2R3, 3D3, 3L3, 3Q3, 3R2, 4A3, 4M3, 4Q3, 4R2.
E To the minimum total of 73 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN LATIN
Admission: Completion of any Level I programme with a grade of at least B in Latin 126. (Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Students in the B.A. programme in Latin who achieve a weighted average of at least 7.0 in 12 units of Level II Latin courses may be admitted to Combined Honours in Latin and another subject in Level III.

Area Courses:
All Level II, III and IV Latin courses.

Levels II and III: 60 units
R Latin 2B3, 2E3, 2G3, 2Q3, 2R3, 3Q3 or 4Q3, 3R2 or 4R2 and 6 additional units of Level III or IV Latin, Classical Civilization 2G6 and 6 additional units of Classical Civilization.
E Electives, 12 of which may be Latin, to make a total of at least 60 units overall.

Dramatic Arts

HONOURS DRAMATIC ARTS
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Dramatic Arts 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the approval of the Chairman of the Committee on Dramatic Arts, which should be obtained before completing registration forms in March.
2. Students wishing to graduate in Honours Dramatic Arts must have successfully completed 6 units of non-introductory work in a language other than English. The Committee strongly advises students to fulfill this requirement before Level III.

Area Courses:
All Level II, III and IV Dramatic Arts courses.

Levels II, III and IV: 90 units minimum
R Dramatic Arts 2A6, 2C3, 2E3, 3A6, 3D3, one of 3C3, 3P3, 3K6, 4A6, one of 4E3, 4F3; plus 6 additional units of Level II Dramatic Arts and 9 additional units of Level III or IV Dramatic Arts; 12 units Humanities, excluding Dramatic Arts, or other non-Dramatic Arts courses approved by the Chairman of the Committee of Instruction and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Dramatic Arts.

COMBINED HONOURS IN DRAMATIC ARTS AND ANOTHER SUBJECT
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Dramatic Arts 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the approval of the Chairman of the Committee on Dramatic Arts, which should be obtained before completing registration forms in March.
2. Students must have a working knowledge of a language other than English (at least high school Grade 13 or university 126). Those who do not meet this requirement should consult the Chairman of the Committee. Students who meet the prerequisites for courses on drama in languages other than English offered by the Departments of Classics, German, Romance Languages or Slavic Studies may take up to 6 units of such courses as a part of their Dramatic Arts R-group with the approval of the Chairman of the Committee.

Area Courses:
All Level II, III and IV Dramatic Arts courses.

Levels II, III and IV: 90 units minimum
R Dramatic Arts 2A6, 2C3, 2E3, 3A6, 3D3, one of 3C3, 3P3, 3K6, 4A6, one of 4E3, 4F3; plus 6 additional units of Level II Dramatic Arts and 9 additional units of Level III or IV Dramatic Arts; 12 units Humanities, excluding Dramatic Arts, or other non-Dramatic Arts courses approved by the Chairman of the Committee of Instruction and the Associate Dean of Humanities.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN DRAMATIC ARTS
Admission: Completion of any Level I programme including 12 units from the Faculty of Humanities with a grade of at least C in Dramatic Arts 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the approval of the Chairman of the Committee on Dramatic Arts, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV Dramatic Arts courses.
Levels II and III: 60 units
R Dramatic Arts 2A6, 2C3, 2E3, 3K6, one of 3C3, 3P3, plus 3 additional units of Level III or IV Dramatic Arts; 12 units from the Faculty of Humanities.
E 24 units, of which 12 may be Dramatic Arts.

Department of English

ARTS AND SCIENCE PROGRAMME AND ENGLISH (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS ENGLISH

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in English 1A6, 1B6 or 1C6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Students wishing to graduate in Honours English should plan their programmes in consultation with the Departmental Counsellor, so as to cover as many of the following courses as possible. A minimum of 6 units of work from each of the six indicated fields must be taken.

Field I: Medieval
English 3D3, 3DD3, 4E6

Field II: Renaissance
English 3I3, 3K6, 3T3

Field III: 17th and 18th Centuries
English 3V6, 4B6

Field IV: 19th and 20th Centuries
English 216, 4L3, 4M3

Field V: North American
English 2G6, 2H6

Field VI: Studies in Language, Criticism and Genre
English 2B6, 2V6, 3Q3, 3QQ3, 4N6

3. Students wishing to graduate in Honours English must have successfully completed 6 units of a language other than English or of other courses approved for this purpose by the Department of English: Linguistics 1A6, 2L3, 2M3, 3I3, 3M3, English 2V6. The Department strongly advises students to fulfill this requirement before Level III.

Note: Students who wish to take English 2V6 in fulfillment of the language requirement must register in the course as English 2V6, in which case it may not be used to fulfill the English Area requirements.

Area Courses:
English 2B6, 2G6, 2H6, 2I6, 2V6, 3D3, 3DD3, 3I3, 3K6, 3Q3, 3QQ3, 4T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6.

The English component of a Combined Honours programme will be as follows:

Levels II, III and IV: 90 units minimum
R 36 units of English Area courses, including 12 units of Level II, 12 units of Level III and 12 units of Level IV.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN ENGLISH

Admission:
Completion of any Level I programme with a grade of at least C – in English 1A6, 1B6 or 1C6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Students wishing to graduate in the B.A. programme in English should plan their programmes in consultation with the Departmental Counsellor, so as to take a minimum of 6 units of work from at least five of the six fields indicated below.

Field I: Medieval
English 3D3, 3DD3, 4E6

Field II: Renaissance
English 3I3, 3K6, 3T3

Field III: 17th and 18th Centuries
English 3V6, 4B6

Field IV: 19th and 20th Centuries
English 216, 4L3, 4M3

Field V: North American
English 2G6, 2H6

Field VI: Studies in Language, Criticism and Genre
English 2B6, 2V6, 3Q3, 3QQ3, 4N6

3. Students wishing to graduate in the B.A. programme in English must have successfully completed 6 units of a language other than English or of other courses approved for this purpose by the Department of English: Linguistics 1A6, 2L3, 2M3, 3I3, 3M3, English 2V6. The Department strongly advises students to fulfill this requirement before Level III.

Note: Students who wish to take English 2V6 in fulfillment of the language requirement must register in the course as English 2V6, in which case it may not be used to fulfill the English Area requirements.

Area Courses:
English 2B6, 2G6, 2H6, 2I6, 2V6, 3D3, 3DD3, 3I3, 3K6, 3Q3, 3QQ3, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6.
FACULTY OF HUMANITIES

Levels II and III: 60 units
R 12 units from English 2B6, 2G6, 2H6, 2I6, 2V6; 18 units from English 3D3, 3DD3, 3I3, 3K6, 3Q3, 3QQ3, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6; 6 units Humanities.
E 24 units, 12 of which may be from English.

Department of German

HONOURS GERMAN
Alternative A (for students entering with German 1A6)
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in German 1A6.
Programme Notes: 1. No student may register in any Level of this programme without the Departmental Counselor’s approval, which should be obtained before completing registration forms in March.
2. With the approval of the Department and of the Associate Dean of Humanities, Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.
Area Courses:
History 3J6 and all Level II, III and IV German courses, excluding German 2H3, 2J3, 2K3, 2L3 and 2Z6.
Levels II, III and IV: 90 units
R 48 units of German including German 3A3, 3B3, 4G3, 15 additional units of Level III and IV literature and/or philology courses and 24 additional units of German which must include 6 units at Level III and IV; History 3J6,
12 units Humanities, excluding German, or other non-German courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 9 of which may be from German.
Alternative B (for students entering with German 1Z6)
Admission: Completion of any Level I programme with a weighted average of 7.0 in 12 units of Level I work, including a grade of at least A in German 1Z6.
Programme Notes: 1. No student may register in any Level of this programme without the Departmental Counselor’s approval, which should be obtained before completing registration forms in March.
2. German 2A3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.
3. With the approval of the Department and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.
Area Courses:
History 3J6 and all Level II, III and IV German courses, excluding German 2H3, 2J3, 2K3, 2L3 and 2Z6.
Levels II, III and IV: 90 units
R German 2A3, 2E3, 2F3, 2G3, 2V6, 2Z6, 3A3, 3B3, 4G3; 9 additional units of German, at least 6 of which must include Level III and IV literature and/or philology courses.
E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.
Programme Notes: 1. No student may register in any Level of this programme without the Departmental Counselor’s approval, which should be obtained before completing registration forms in March.
2. German 2A3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.
3. Students wishing to include a study of German and Austrian history in their programmes are advised to take History 3J6 as an elective.
Alternative B (for students entering with German 1Z6)
Admission: Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least A in German 1Z6.
Programme Notes: 1. No student may register in any Level of this programme without the Departmental Counselor’s approval, which should be obtained before completing registration forms in March.
2. German 2A3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.
3. Students wishing to include a study of German and Austrian history in their programmes are advised to take History 3J6 as an elective.
4. With the approval of the Department and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.
Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3, 2L3 and 2Z6.
Levels II, III and IV: 90 units
R German 2A3, 2F3, 3A3, 3B3, 4G3; 24 additional units of German, at least 15 of which must include Level III and IV literature and/or philology courses.
E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS GERMAN AND POLITICAL SCIENCE
Alternative A (for students entering with German 1A6)
Admission: Completion of any Level I programme with a grade of at least B in German 1A6 and in Political Science 1A6.
Programme Notes: 1. No student may register in any Level of this programme without the Departmental Counselor’s approval, which should be obtained before completing registration forms in March.
2. With the approval of the Departments of German and Political Science and of the Associate Deans of Humanities and Social Sciences, Level III of Honours German and Political Science may be replaced by courses of study at a university in a German-speaking country. Students who plan to spend their third year abroad must have a minimum of B Cumulative Area Averages in each of German and Political Science in their second year.
Area Courses:
History 3J6 and all Level II, III and IV German courses, excluding 2H3, 2J3, 2K3, 2L3 and 2Z6. All Level II, III and IV Political Science courses.
Levels II, III and IV: 90 units
R German 2A3, 2F3, 3A3, 3B3, 4G3; 24 additional units of German, at least 15 of which must include Level III and IV literature and/or philology courses; History 3J6; Political Science 2P6, 9 to 12 units from Political Science 2E6, 3M6, 3PP3, 3QQ3, 3RR3, 3X6; at least 6 units of Level IV Political Science; 6 to 9 additional units of Political Science, to make a total of 36 units of Area courses in Political Science, only 12 of which may be from Level II courses.
E 15 units.

Alternative B (for students entering with German 1Z6)

Admission: Completion of any Level I programme with a grade of at least A – in German 1Z6 and B – in Political Science 1A6.

Programme Notes:
1. No student may register in any level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. German 2A3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.
3. With the approval of the Departments of German and Political Science and of the Associate Deans of Humanities and Social Sciences, Level III of Honours German and Political Science may be replaced by courses of study at a university in a German-speaking country. Students who plan to spend their third year abroad must have a minimum of B Cumulative Area Averages in each of German and Political Science in their second year.

Area Courses:
History 3J6 and all Level II, III and IV German courses excluding 2H3, 2J3, 2K3 and 2L3. All Level II, III and IV Political Science courses.

Levels II, III and IV: 90 units
R German 2A3, 2E3, 2F3, 2G3, 2Y6, 2Z6, 3A3, 3B3, 4G3; 9 additional units of German, at least 6 of which must include Level III and IV literature and/or philology courses and at least one Level IV German course; History 3J6; Political Science 2P6, 9 to 12 units from Political Science 2E6, 3M6, 3PP3, 3QQ3, 3RR3, 3X6; at least 6 units of Level IV Political Science; 6 to 9 additional units of Political Science, to make a total of 36 units of Area courses in Political Science, only 12 of which may be from Level II courses.
E 15 units.

B.A. IN GERMAN

Alternative A (for students entering with German 1A6)

Admission: Completion of any Level I programme with a grade of at least C – in German 1A6.

Programme Notes:
No student may register in any level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV German courses, excluding German 2H3, 2J3, 2K3, 2L3 and 226.

Levels II and III: 60 units
R 24 units of German, including German 2A3, 2F3, 3A3, 3B3; and 12 units from the Faculty of Humanities or 12 units of work approved by the Department.
E 24 units, 12 of which may be from German. Students are strongly advised to take History 3J6 as an elective.

Alternative B (for students entering with German 1Z6)

Admission: Completion of any Level I programme with a grade of at least A – in German 1Z6 and permission of the Department.

Programme Notes:
No student may register in any level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3 and 2L3.

Levels II and III: 90 units minimum
R 12 units of Level II History; 12 units of Level III History; 12 units of Level IV History.

Department of History

ARTS AND SCIENCE PROGRAMME AND HISTORY (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS HISTORY
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work acceptable to the Department, including a grade of at least B – in any Level I History course.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. In selecting courses, students must ensure that they take at least 6 units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and the Americas (excluding Canada). This requirement must be satisfied by the end of Level III.
3. No Level IV seminar may be taken before completion of 12 units of History beyond Level I; no more than 12 units of Level IV History seminars should be taken in any session.

Area Courses:
All Level II, III and IV History courses.

Levels II, III and IV: 90 units
R History 2J6 and 12 additional units of Level II History; 18 units of Level III History and 18 units of Level IV History; 12 units Humanities, excluding History, or other non-History courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from History courses approved by the Department.

COMBINED HONOURS IN HISTORY AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in any Level I History course.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. In selecting courses, students must ensure that they take at least 6 units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and the Americas (excluding Canada). This requirement must be satisfied by the end of Level III.
3. No Level IV seminar may be taken before completion of 12 units of History beyond Level I.

Area Courses:
All Level II, III and IV History courses.
To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond the Level I programme.

**B.A. IN HISTORY**

**Admission:**
Completion of any Level I programme with a grade of at least C– in any Level I History course.

**Programme Notes:**
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. History students who achieve a Cumulative Area Average of at least 7.0 in their Level II History courses in the B.A. programme may be admitted to Honours History in Level III.
3. In selecting courses, students must ensure that they take at least 6 units in each of three of the following six fields of History: European, Ancient, Asian, Canadian, British, and the Americas (excluding Canada).
4. With the approval of the Departmental Counsellor, 6 units of Level III History may be replaced by Level IV History if the student has completed at least 12 units of History beyond Level I and has a minimum CAA of 7.0.

**Area Courses:**
All Level II, III and IV History courses.

**Levels II and III: 60 units**

- R History 2J6 and 6 additional units of Level II History; 12 units of Level III History; 12 units from the Faculty of Humanities, excluding History.
- E 24 units elective, 12 of which may be History courses above Level I.

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**Department of Music**

Completion of a Music degree requires considerable daytime attendance.

**HONOURS PROGRAMMES FOR THE B.MUS. DEGREE**

**Programme A: Honours Music (Education)**

**Admission:**
Completion of Music I (General) with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4; successful completion of Music 1G2.

**Programme Notes:**
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.
3. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3B3, 3BB3, 3C4, 3H4, 3K3, 3L3, 3M4, 3N3, 3O3, 3R3, 3B3, 4BB3, 4C4, 4H3, 4I3, 4J3, 4L3, 4M4, 4N3, 4O3, 4P3, 4Q3.
4. Students must complete the minimum of 24 units of non-Music electives as follows:
   - 12 units by the end of Level I
   - 18 units by the end of Level II
   - 24 units by the end of Level III
5. The Graduation Average will be computed on a minimum of 42 units of Area courses.

**Area Courses:**
Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E4, 2H4, 3AA3, 3E4, 3J4, 3K3, 3L3, 3M4, 3N3, 3O3, 3T3, 3U3, 4E4, 4K3, 4L3, 4M4, 4N3, 4O3, 4P3.

**Levels II, III and IV: 92 units**

- R Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E4, 2G2, 2H4, 3F4, 3G2, 3J4, 4E4, 4G2; and 27 units from Music 3AA3, 3K3, 3L3, 3M4, 3N3, 3O3, 3T3, 3U3, 4K3, 4L3, 4M4, 4N3, 4O3, 4P3 (only one of 3T3, 3U3 may be taken for R-credit).
- E 24 units, 12 of which may be from Music.

**Programme B: Honours Music (History and Theory)**

**Admission:**
Completion of Music I (General) with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4; successful completion of Music 1G2.

**Programme Notes:**
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.
3. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3B3, 3BB3, 3C4, 3H4, 3K3, 3L3, 3M4, 3N3, 3O3, 3R3, 4B3, 4BB3, 4C4, 4H3, 4I3, 4J3, 4L3, 4M4, 4N3, 4O3, 4P3, 4Q3, 4Z2, 4Z3.
4. Students must complete the minimum of 24 units of non-Music electives as follows:
   - 12 units by the end of Level I
   - 18 units by the end of Level II
   - 24 units by the end of Level III
5. The Graduation Average will be computed on a minimum of 42 units of Area courses.

**Area Courses:**
Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E4, 2H4, 3B3, 3BB3, 3C4, 3E4, 3H4, 3J4, 3R3, 3T3, 3U3, 4B3, 4BB3, 4C4, 4E4, 4H3, 4I3, 4S3, 4Z2, 4Z3.

**Levels II, III and IV: 91 units**

- R Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E4, 2G2, 2H4, 3C4, 3E4, 3H4, 3J4, 3R3, 4C4, 4E4; 9 units from Music 3B3, 3BB3, 4B3, 4BB3; 6 units from Music 3T3, 3U3, 4H3, 4I3 (only one of 3T3, 3U3 may be taken for R-credit).
- E 24 units, 12 of which may be from Music.

**Programme C: Honours Music (Performance)**

(The offering of this programme is contingent upon approval by the Senate of McMaster University and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.)

**Admission:**
Completion of Music I (Performance) with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E6; evidence of outstanding performing ability; and successful completion of Music 1G2.

**Programme Notes:**
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.
3. Continuation to each successive level of this programme requires evidence of outstanding performing ability and potential.
4. Music I (General) students contemplating entrance to this programme in Level II should apply to the Department before March 15 of the year preceding the one in which they expect to take Level II courses. They will be required to achieve the same standards as those students registered in Music I (Performance) proceeding to Level II of this programme.
5. Students must complete the minimum of 18 units of non-Music electives as follows:
   6 units by the end of Level I
   12 units by the end of Level II
   18 units by the end of Level III

Note: Students must complete 12 units of electives representing two of the four areas of study listed as Humanities electives under Programmes and Degrees, A. Level I Programmes, Music I (General).

This will normally be done by the end of Level II.

6. The Graduation Average will be computed on a minimum of 41 units of Area courses.

**Area Courses:**

**Alternative A:** Music Education and Another Admission:

| Subject | 3M3, 3E4, 3G2, 3T3, Music 283, 2883, 2C2, 2CC3, 2L3, 3L3, 3M4, 3N3, 303, 3R3, 4B3, 4BB3, 4C4, 4H3, 4I3, 4K3, 4L3, 4M4, 4N3, 403, 4P3, 4S5, 4Z3, 423, 42Z3.
|---|---|

**Levels I, II and IV:** 93 units

R Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E6, 2F3, 2G2, 2H4, 2I6, 3EE3, 3H4, 3J4, 3K3, 3L3, 3M4, 3N3, 303, 3R3, 4B3, 4BB3, 4C4, 4H3, 4I3, 4K3, 4L3, 4M4, 4N3, 403, 4P3, 4S3, 423, 42Z3.

7. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3B3, 3BB3, 3C4, 3H4, 3K3, 3L3, 3M4, 3N3, 303, 3R3, 4B3, 4BB3, 4C4, 4H3, 4I3, 4K3, 4L3, 4M4, 4N3, 403, 4P3, 4S3, 423, 42Z3.

4. The Department recommends that students enrol in at least one ensemble course as an elective. (The ensemble courses are Music 2G2, 3G2, and 4G2.)

5. Music 2H4 will be included in calculating the Graduation Average.

**Area Courses:**

**Alternative B:** Music History and Theory and Another Admission:

| Subject | 202, 2002, 2G2, 2H4, 3J4” 3Q3, 4E6, 4EE4, 4F3, 4G2, and either 4P3, 4S3, 4Z3, 4ZZ3.
|---|---|

**Levels II, III and IV:** 90 units

R Music 2B3, 2BB3, 2C2, 2CC3, 2D2, 2DD2, 2E6, 2H4, 3C2, 4E4, 4F3, 4G2, 4H3, 4I3, 4K3, 4L3, 4M4, 4N3, 4R3, 4S3, 423.

8. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average, and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.

9. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3B3, 3BB3, 3C4, 3H4, 3K3, 3L3, 3M4, 3N3, 303, 3R3, 4B3, 4BB3, 4C4, 4H3, 4I3, 4K3, 4L4, 4M4, 4N3, 403, 4P3, 4S3, 423, 42Z3.

**Area Courses:**

**Levels II and III:** 62 units

R Music 1C2, 1CC2, 1D2, 1DD2, 1E4, 1G2, 2A6, 2E4, 2H4; 10 units of Level III or IV Area courses.

E 24 units, 12 of which may be from Music.

**Alternative B** (for students entering from any Level I programme other than Music I)

**Admission:**

Completion of any Level I programme with a grade of at least C in Music 1A6; a successful music audition.

**Programme Notes:**

1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

2. Students must complete the minimum of 24 units of non-Music electives as follows:

   12 units by the end of Level I
   18 units by the end of Level II
   24 units by the end of Level III

**Area Courses:**

All Level II, III and IV Music courses, except Music 2G2, 3G2, 4G2, and those courses open only to students registered in Honours Music, Programme C (Performance).

**Levels II and III:** 60 units

R Either Music 2A6 or Music 2B3 and 2BB3; Music 2E4, 2H4; 12 additional units of Area courses including at least 6 units beyond Level II; 10 units from the Faculty of Humanities, which may include Music.

E 24 units, 12 of which may be from Music.
Subject: Combined Honours in Philosophy and Another Subject

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work acceptable to the Department of Philosophy.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Philosophy 2C6 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Philosophy courses.

Levels II, III and IV: 90 units
R Philosophy 2A6; one of 2B3, 2R3; 2C6, 3A6, 3G3, 3O3, 4H3 and 24 additional units of Philosophy, at least 21 units of which must be Level III or IV Philosophy courses;
12 units Humanities excluding Philosophy or other non-Philosophy courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Philosophy beyond Level I.

HONOURS PHILOSOPHY AND BIOLOGY

Admission:
Completion of any Level I programme with a grade of at least B – in Philosophy 1B6 or Philosophy 1D6, and Biology 1A6 or 1G6 with a grade of at least B – and 6 units of Level I Mathematics. Students are cautioned to observe that Chemistry 1A6 is the normal prerequisite for Biology 2B3 and Biology 2C3, which are required courses in the programme.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. The degree programme has unified Area courses; therefore, only a single Cumulative Area Average and Graduation Average is calculated. Students are advised to note carefully the prerequisites for all courses listed in this programme.

Area Courses:
All Level II, III and IV Philosophy courses; Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H3, 3HH3, 3I3, 3J3, 3N6, 3O3, 3Q3, 4E3; Biology 2C6.

Levels II, III and IV: 90 units
R Biology 2B3, 2C3, 2E3, 2F3; 24 units from Biology 3F6, 3H3, 3HH3, 3I3, 3J3, 3N6, 3O3, 3Q3, 4E3, including at least one Level IV Biology course (Chemistry 2O6 may replace 6 units of the above Biology courses); Philosophy, 2A6; one of 2B3, 2R3, 2C6; one of 2D3, 2G3; 2M; one of 3G3, 3M3; 3N6; 3O3; 3W3; 4W3, additional Level III or Level IV Philosophy courses to make a total of 42 units of Philosophy.
E 12 units elective.

HONOURS PHILOSOPHY AND MATHEMATICS

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in Mathematics 1A6 and Mathematics 1B3 or 1B4, and a grade of at least B – in 6 units of work acceptable to the Department of Philosophy.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. The degree programme has unified Area courses; therefore, only a single Cumulative Area Average and Graduation Average is calculated.

Area Courses:
All Level II, III and IV Mathematics and Philosophy courses.

Levels II, III and IV: 90 units
R Mathematics 2A6, 2B6, 2F3, 3A6, 3E6; 9 units from Mathematics 2C3, 3B3, 3L6, 3P3, 4B6; 6 units from Mathematics 4A6, 4E3, 4K3, 4I3; Philosophy 2A6; one of Philosophy 2B3, 2R3; 2C6; 24 units of Level III or Level IV Philosophy (including at least one Level IV Philosophy course).
E 9 units elective.

B.A. IN PHILOSOPHY

Admission:
Completion of any Level I programme with a grade of at least C – in a Level I course acceptable to the Department.

Programme Notes:
No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV Philosophy courses.

Levels II and III: 60 units
R Philosophy 2A6, 2C6; 12 units of Philosophy, including at least 6 units of Level III or IV Philosophy, 12 units from the Faculty of Humanities or 12 units approved by the Department. If no Philosophy course was taken in Level I, 6 units of Philosophy must be included in the 12 units taken from the Faculty of Humanities.
E 24 units, 12 of which may be from Philosophy.

Department of Romance Languages

ARTS AND SCIENCE PROGRAMME AND FRENCH (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS FRENCH
Programme A: Language and Literature
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in French 1A6. (French 1B6 with a grade of at least B may be substituted for French 1A6 with permission of the Department.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Upon completion of 60 units of work (including at least 12 units of required Level II French Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), Level III of Honours French may be replaced by courses of study at a French-language university.

Area Courses:
All Level II, III and IV courses in-French, except 3Y3.

Levels II, III and IV: 90 units
R 15 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 24 units of French/Francophone Literature and Civilization courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, three three-unit Level IV French courses; 15 additional units of French (The overall total must include a minimum of 36 units of Level III and IV French Area Courses.)
12 units Humanities, excluding French, or other non-French courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units elective, 12 of which may be French.

Programme B: Language and Linguistics
Admission:
Completion of any Level I programme (including a Level I English course and Linguistics IA6) with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in French IA6. (French IB6 with a grade of at least B may be substituted for French IA6.) Students who are interested in entering this programme, but lack Linguistics IA6 or a Level I English course, should consult the Department for ways of meeting the programme requirements.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. French 2G3 and 2H3 will be included in calculating the Graduation Average.
3. Upon completion of 60 units of work (including 18 units of required Level II French Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), Level III of Honours French may be replaced by courses of study at a French-language university.

Area Courses:
All Level II, III and IV courses in French, except French 3Y3.

Levels II, III and IV: 90 units
R French 2A3, 3C3, 4A3; French 2G3, 3CC3, 4B3, 4BB3; 15 units of French/Francophone Literature or Civilization courses, including one of French 2J3, 2JJ3 and one of French 2W3, 2WW3 and at least 3 units of Level III or IV French; French 2H3 plus 12 units of French Linguistics courses to be selected from French 3B3, 3E3, 3G3, 3I3, 3R3, 4C3, 4E3, 4X3, 4Z3; 12 units of English beyond Level I (to be determined in consultation with the Departmental Counsellor).
E 27 units, 12 of which may be French.

COMBINED HONOURS IN FRENCH AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in French IA6. (French IB6 with a grade of at least B may be substituted for French IA6.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Upon completion of 60 units of work (including at least 12 units of required Level II French Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), up to 15 units of Level III French may be replaced by courses of study at a French-language university.

The French component of a Combined Honours Programme will be as follows:

Area Courses:
All Level II, III and IV courses in French, except 3Y3.

Levels II, III and IV: 90 units minimum
R 12 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 18 units of French/Francophone Literature courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, three three-unit Level IV French courses; 6 additional units of French. (The overall total must include a minimum of 24 units of Level III and IV French Area courses.)
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS FRENCH AND CANADIAN STUDIES
Admission:
Completion of any Level I programme with a grade of at least B – in French 1A6 (French 1B6 with a grade of at least B may be substituted for French 1A6 with permission of the Department), and a grade of at least B – in Canadian Studies 1A6. (Students who have not taken Canadian Studies 1A6 in Level I will be required to include it in Level II of their programme.)

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Upon completion of 60 units of work (including at least 12 units of required Level II French Area courses), and with the approval of the Department of Romance Languages, the Canadian Studies Committee of Instruction, and the Associate Dean of Humanities (Studies), Level III of Honours French and Canadian Studies may be replaced by courses of study at a Canadian francophone or Canadian bilingual university.

Area Courses:
All Level II, III and IV courses in French, except 3Y3, and all Level II, III and IV courses in Canadian Studies and in Canadian Area courses.

Levels II, III and IV: 90 units
R 15 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 12 units of French Canadian Civilization and Literature courses, including French 2F3 and 2FF3; 12 units of French Area courses, excluding French-Canadian and Language Practice courses; Canadian Studies 2A3, 2B3, 3E3, 3F3, 4E6; 15 units of Canadian Area courses, excluding French courses. (The overall total must include a minimum of 24 units of Level III and IV French Area courses.)
E 18 units elective.

B.A. IN FRENCH
Admission:
Completion of any Level I programme with a grade of at least C – in French IA6. (French IB6, with a grade of at least C may be substituted for French IA6 with permission of the Department.)

Programme Notes:
No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV French courses, except 3Y3.
Levels II and III: 60 units

R 9 units of French Language Practice courses, including French 2A3 and 3C3; 9 units of French/Francophone Literature and Civilization courses, including one of French 2J3, 2JJ3, one of French 2W3, 2W4; 2W3, 2W4, one of French 3K3, 3KK3, 3Q3, 3QQ3; 9 additional units of French; 9 units from the Faculty of Humanities.

E 24 units elective, 12 of which may be from French.

HONOURS ITALIAN

Alternative A (for students entering with Italian 1A6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B3s in Italian 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Upon completion of 60 units of work (including 12 units of Level II Italian Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), Level III of Honours Italian may be replaced by courses of study at an Italian university.

Area Courses:
History 3A3 and all Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Upon completion of 60 units of work (including at least 12 units of Level II Italian Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), up to 15 units of Level III Italian work may be replaced by courses of study at an Italian university.

Area Courses:
History 3A3 and all Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Levels II, III and IV: 90 units minimum

R Italian 2D6, 2E6, 3D4, 3R6; 3L3 or 3O3; 4L4, 4M4, 4P3; 3 units of Level II or IV Italian; History 3A3.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

Alternative B (for students entering with Italian 1Z6 or 1ZZ6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Italian 1Z6 or 1ZZ6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Recommended Distribution of Italian Area Courses for students following Alternative B

Level II
Italian 2E6, 226.

Level III
Italian 2D6, 3R6 and additional units of Levels III and IV Italian to total 13 to 16 units.

Level IV
Italian 3D4, 4L4, 4P3 and additional units of Levels III and IV Italian to total 17 to 19 units.

3. Upon completion of 60 units of work (including at least 12 units of Level II Italian Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), up to 15 units of Level III Italian work may be replaced by courses of study at an Italian university.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Levels II, III and IV: 90 units minimum

R Italian 2D6, 2E6, 226, 3D4; 3L3 or 3O3; 3R6, 4L4, 4P3; 6 to 8 units of Level III or IV Italian.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN ITALIAN

Alternative A (for students entering with Italian 1A6)

Admission:
Completion of any Level I programme with a grade of at least C – in Italian 1A6.

Programme Notes:
No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 216.
Levels II and III:  61 units
R  Italian 2D6, 2E6, 3D4, 3R6, and 3 additional units of Level III or IV Italian literature;
   12 units from the Faculty of Humanities, including 6 units of English, if not previously completed.
E  24 units elective, 12 of which may be Italian.

Alternative B (for students entering with Italian 1Z6 or 1ZZ6)

Admission:
Completion of any Level I programme with a grade of at least B – in Italian 1Z6 or 1ZZ6.

Programme Notes:
No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 2I6.

Levels II and III:  60 units
R  Italian 2D6, 2E6, 2Z6, 3R6, and 3 additional units of Level III or IV Italian literature;
   9 units from the Faculty of Humanities, including 6 units of English, if not previously completed.
E  24 units elective, 12 of which may be Italian.

HONOURS SPANISH

Alternative A (for students entering with Spanish 1A6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Spanish 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Students who take Spanish 1Z6 during their first level of university are strongly urged to take Spanish 1A6 during the following summer in order to follow Alternative A of the Honours Spanish programme. Students who are unable to take Spanish 1A6 during the summer and who enter the programme with Spanish 1Z6 only must follow Alternative B.
3. Upon completion of all Level II Spanish Area courses, with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), Level III of Honours Spanish may be replaced by courses of study at a university abroad.

Area Courses:
All Level II, III and IV Spanish courses, and History 3AA3, 3XX3 and 3YY3.

Levels II, III and IV:  90 units
R  Spanish 2A4, 2B3, 2C3, 2E6; one of History 3AA3, 3XX3 or 3YY3; Spanish 3A4; 4A4 or 4X4; 30 units of Level IV Spanish Literature courses.
   9 units Humanities (excluding Spanish) or other non-Spanish courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E  24 units, 12 of which may be from Spanish.

Alternative B (for students entering with Spanish 1Z6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Spanish 1Z6.

Programme Notes:
1. Spanish 2E6 will be included in calculating the Graduation Average. 
2. Three units of Level IV Literature may be taken in Term II of the session in which Spanish 2E6 is being taken. The following is a recommended distribution of Area courses:
   Level II  Spanish 1A6, 2B3, 2C3; one of History 3AA3, 3XX3 or 3YY3.
   Level III Spanish 2A4, 2E6, 3A4; and 6 units of Level IV Spanish Literature in Term II.
   Level IV Spanish 4A4 or 4X4; and 18 units of Level IV Spanish Literature.
3. Study at a university abroad in Level III is not available to Alternative B programme students.

Area Courses:
Spanish 1A6, all Level II, III and IV Spanish courses, and History 3AA3, 3XX3 and 3YY3.

Levels II, III and IV:  90 units
R  Spanish 1A6, 2A4, 2B3, 2C3, 2E6; one of History 3AA3, 3XX3 or 3YY3; Spanish 3A4; Spanish 4A4 or 4X4; 24 units of Level IV Spanish Literature courses.
   9 units Humanities (excluding Spanish) or other non-Spanish courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E  24 units, 12 of which may be from Spanish.

COMBINED HONOURS IN SPANISH AND ANOTHER SUBJECT

Alternative A (for students entering with Spanish 1A6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Spanish 1A6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Students who take Spanish 1Z6 during their first level of university are strongly urged to take Spanish 1A6 during the following summer in order to follow Alternative A of the Combined Honours programme. Students who are unable to take Spanish 1A6 during the summer and who enter the programme with Spanish 1Z6 only must follow Alternative B.
3. Upon completion of all Level II Spanish Area courses, with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), up to 15 units of Level III Spanish may be replaced by courses of study at a university abroad.

Area Courses:
All Level II, III and IV Spanish courses.

Levels II, III and IV:  90 units minimum
R  Spanish 2A4, 2E6; either Spanish 2B3 or 2C3; Spanish 3A4; Spanish 4A4 or 4X4; 18 units of Level IV Spanish Literature courses.
E  To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

Alternative B (for students entering with Spanish 1Z6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Spanish 1Z6.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
2. Three units of Level IV Literature may be taken in Term II of the session in which Spanish 2E6 is being taken. The following is a recommended distribution of Spanish Area courses:
   Level II  Spanish 1A6; 2B3 or 2C3.
   Level III Spanish 2A4, 2E6, 3A4; and 3 units of Level IV Spanish Literature in Term II.
   Level IV Spanish 4A4 or 4X4; and 12 units of Level IV Spanish Literature courses.

Area Courses:
Spanish 1A6, all Level II, III and IV Spanish courses.
FACULTY OF HUMANITIES

Levels II, III and IV: 90 units minimum
R Spanish 1A6; 2B3 or 2C3; 2A4; 2E6, 3A4; 4A4 or 4X4; 15 units of Level IV Spanish Literature courses.
E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN SPANISH
Admission:
Completion of any Level I programme with a grade of at least C– in Spanish 1A6.

Programme Notes:
No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III and IV Spanish courses.

Levels II and III: 60 units
R Spanish 2A4, 2E6; either 2B3 or 2C3; 3A4; 9 units of Level IV Spanish Literature courses; 10 units from the Faculty of Humanities.
E 24 units, 9 of which may be Spanish.

Department of Slavic Studies

HONOURS RUSSIAN STUDIES
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Russian 126.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Area Courses:
All Level II, III, and IV Russian courses; History 3H6, 4O6; Political Science 2K6, 4J6.

Levels II, III and IV: 90 units
R Russian 2A6, 2C6, 3C6, 3K6, 4C6; two of 4G3, 413, 4J3, 4K3; History 3H6; Political Science 2K6; 6 additional units of Area courses; 12 units Humanities excluding Russian or other non-Russian courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Area courses.

COMBINED HONOURS IN RUSSIAN AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Russian 126.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Russian 2A6 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Russian and Political Science courses.

Levels II, III and IV: 90 units
R Russian 2A6, 2C6, 3C6, 3K6, 4C6, two of 4G3, 413, 4J3, 4K3.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS RUSSIAN AND POLITICAL SCIENCE
Admission:
Completion of Humanities I or Social Sciences I with a weighted average of at least 7.0 in Russian 126 and 6 units acceptable to the Department of Political Science, including a grade of at least B – in Russian 126. A Level I course in Political Science is recommended.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Russian 2A6 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Russian and Political Science courses.

Levels II, III and IV: 90 units
R Russian 2A6, 2C6, 3C6, 3K6, 4C6; two of 4G3, 413, 4J3, 4K3; Political Science 2K6, 3M6, 4.16 and 6 additional units of Level II and 12 additional units beyond Level II in Political Science.
E 12 units.

B.A. IN RUSSIAN
Admission:
Completion of any Level I programme with a grade of at least C– in Russian 126.

Programme Notes:
1. No student may register in any Level of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
2. Students in the B.A. programme in Russian who achieve a weighted average of at least 7.0 in Russian 2C6, and either 2A6 or 3K6 may be allowed to transfer to Honours Russian Studies.

Area Courses:
All Level II, III and IV Russian courses.

Levels II and III: 60 units
R Russian 2A6, 2C6, 3C6, 3K6; one of 4G3, 413, 4J3, 4K3, 3 additional units of Area courses; and 6 units Humanities.
E 24 units, 12 of which may be from Russian.
Faculty of Science

R.F. Childs/B.Sc., Ph.D., Dean of Science
D.E.N. Jensen/M.A., Ph.D., Associate Dean of Science (Studies)
A.J. Yanwood/B.Sc., Ph.D., Associate Dean of Science (Studies)
E. Calligan/Student Advisor
J. Schwindt/Student Advisor
J. Wood/B.A., Programmes Assistant

The Faculty of Science provides studies through the following Departments:
- Biochemistry
- Biology
- Chemistry
- Computer Science and Systems
- Geography
- Geology
- Mathematics and Statistics
- Materials Science and Engineering
- Physics
- Psychology

All Departments offer four-level Honours B.Sc. programmes which prepare students for graduate studies, Ontario Teacher’s Certificate, and industry. A number of Departments offer Combined Honours degrees. An Honours Degree in Molecular Biology and Biotechnology is organized by a Committee of Instruction involving the Faculties of Health Sciences and Science.

Three-level B.Sc. programmes, which provide a science education, but are less extensive and less demanding than the Honours programmes, are also offered by all Departments except Biochemistry and Materials Science and Engineering. A three-level B.Sc. in Science programme is also available.

Some Departments offer Major programmes as well (which are indicated in the list above by a star). Major programmes require four levels and offer in-depth studies suitable for students who are seeking employment immediately upon graduation. Some of the Major programmes can also lead to an Ontario Teacher’s Certificate. Major programmes are also distinguished from Honours programmes by being less specialized and somewhat less demanding.

Academic Regulations

The programmes of the Faculty are set out by Level, and the Academic Regulations of the University specify that courses must be taken in the sequence specified in the programmes. This means that students in the Faculty of Science must have completed or be registered in the remaining courses for one Level before they may register in courses for the next Level.

For all Honours and Major programmes in the Faculty of Science which combine the work of two disciplines, a single Cumulative Area Average and a single Graduation Average will be computed.

Students enrolled in a programme in the Faculty of Science, in addition to meeting the General Academic Regulations, shall be subject to the following Faculty of Science Regulations.

Course Selection

It is the responsibility of the student to ensure that the selection of courses meets the degree requirements for the programme in which the student is registered and that the stated prerequisite courses were completed with a mark of at least D+.

Programme and Course Changes

All programme and course changes must be made through the Office of the Deans of Science (Studies) and are subject to the deadline dates established by the University. (See Sessional Dates section of this Calendar.)

Beyond the September deadline date, first-term courses may be cancelled up to the October deadline but may not be replaced by second-term courses; beyond the January deadline date, second-term courses may not be replaced. Students who cancel a full-year course by the January deadline date may add a second-term course provided that their second-term work load is not thereby increased.

Up to the end of Level III, students may be permitted to transfer between B.Sc. and Major, and Major and Honours, programmes, on the recommendation of the Department concerned and with the approval of an Associate Dean (Studies).

Extra Courses

Extra courses are courses taken in addition to those required for the degree programme in which the student is registered. Permission to take extra courses must be obtained from the Office of the Deans of Science (Studies) and such courses must be designated Extra at the time of registration. The grades obtained in extra courses will be included in neither the Cumulative Area Average nor the number of units required for graduation.

Major Programmes:

The following describes the change in regulations for Major programmes in the Faculty of Science. (Students in Honours, Combined Honours, and B.A. programmes should note the appropriate University-wide regulations in the section Academic Regulations.)

Admission: Students seeking admission to a Major programme before September 1987, will require a weighted average of 4.0 in Level I courses, or a grade of at least C- in a specified course.

Students seeking admission after August 1987, will require a weighted average of 5.0 in Level I courses, or a grade of at least C in a specified course.

The relevant courses are specified, under Admission, in each programme description.

Continuation in a Major Programme: (For students admitted to a Major programme before September 1987.) If you obtain a Cumulative Area Average of 4.0, you may continue in a Major programme. If you fail to obtain a Cumulative Area Average of 4.0, but have an average of at least 3.5, you may continue on Programme Probation for one year. You may be on Programme Probation only once. If you fail to obtain a Cumulative Area Average of 3.5 you may not continue in the programme and must seek entry to another programme.

(For students admitted to a Major programme after August 1987.) If you obtain a Cumulative Area Average of 5.0, you may continue in a Major programme. If you fail to obtain a Cumulative Area Average of 5.0, but have an average of at least 4.5, you may continue on Programme Probation for one reviewing period. You may be on Programme Probation only once. If you fail to obtain a Cumulative Area Average of 4.5 you may not continue in the programme and must seek entry to another programme.

Graduation: Graduation standing in Major degree programmes is awarded in three classes. For first-class standing, a minimum Graduation Average of 9.5 is required; for second-class standing 7.0; and for third-class standing 4.0 for those who entered a Major programme before September 1987, and 5.0 for those who were admitted to a Major programme after August 1987.

Re-admission to the Faculty of Science

A student who is ineligible to continue in the Faculty of Science may apply for re-admission. Application for re-admission must be made in writing by June 15 to the Chairman of the Committee on Re-admissions, Office of the Deans of Science (Studies), and should include an explanation of the student’s previous academic performance and reasons why the student would expect to succeed in the programme if re-admitted. If the student has been Required to Withdraw for one calendar year, a letter of reference from an employer may be required.

Readmission is not guaranteed.
Limited Enrolment

Because of resource limitations, the University reserves the right to limit enrolment in any programme or course to the number which can be effectively taught. In the Faculty of Science, enrolment will be by selection, based on academic achievement. Students should consult with the Departments concerned if there are any questions about entry to limited enrolment programmes.

Limited Enrolment in Computer Science: Beginning in May, 1982, an enrolment target of a total of 50 students in Level II of Computer Science and joint Computer Science programmes in the Faculties of Science and Social Sciences has been set.

In order to implement this target, enrolment in Computer Science 2L3 is limited to 70 students registered in Mathematical Sciences II, Computer Science II, Computer Science and Economics II, Arts and Science II. In addition to this number there will be approximately 50 to 70 students from the Engineering Faculty registered in Computer Engineering or Computer Engineering and Management.

Selection will take place at the end of Level I; the criteria will be the student's University Average and application to enrol in a programme leading to a Computer Science degree.

Once students are admitted to Level II of Computer Science, Computer Science and Economics or Mathematical Sciences including Computer Science 2L3, they will be allowed to complete the desired degree programme in Computer Science, subject to maintaining the required standing.

Students completing McMaster Level I programmes and seeking entry to the programme will be given preference over students seeking to transfer from other programmes or other universities.

Limited Enrolment in Geology: Enrolment in Level II of Geology and joint Geology programmes (B.A. and B.Sc.) is limited to 50 students. In order to enrol in any of the Geology or joint Geology programmes at or above Level II, students must submit a Registration Form to the Office of the Registrar prior to June 30 of the year in which enrolment is sought.

Beginning in 1984 the selection will take place at the end of Level I. The criteria are i) application to enrol in a programme leading to a Geology degree, ii) satisfying the admission requirements for the programme, and iii) the University Average based on a minimum of 30 units of Level I courses.

A maximum of 50 students will be admitted. Forty places will be reserved for McMaster students and the further 10 places will be filled by competition between McMaster students and students transferring from other universities. A small number of transfer students will be considered for Levels III and IV provided they have completed the necessary courses at the lower levels. Some candidates for a second degree will be accepted within the total number of places available.

The Faculty will endeavour to complete this selection procedure and inform all applicants by the end of July.

Level I Programme

NATURAL SCIENCES I: 30 units

Mathematics 1A6
One or two of a) or b):
  a) Chemistry 1A6
  b) Physics 1A6 or 1B6 or 1C6
Additional selections from c.) to j.) to make a total of 30 units:
  c) Biology 1A6
  d) Computer Science 1B3 or 1B3 and 1C3
  e) Geography 1A6
  f) Geology 1A3 and/or 1C3
  g) Materials Science 1A3 or 1A3 and 1B3
  h) Mathematics 1B3
  i) Psychology 1A6
  j) 3 or 6 units of Level I Humanities and/or Social Sciences.

With the exception of Mathematics, no more than one full-year course may be taken from any subject.

With the permission of the Dean of Studies, well-prepared students may be permitted to elect up to six additional units.

The choice in the programme that a first level student may elect is considerable and should be made carefully with the Level II admission requirements of a specific programme in mind. A suitable choice of Level I options will allow successful students to enter Level II of any one of several programmes.

Students who complete Natural Sciences I with high standing but who lack a Level I course required for entry into the desired Level II programme may be permitted entry to that programme after consultation with an Associate Dean (Studies) and the appropriate Departmental Chairman.

Department of Biochemistry

HONOURS BIOCHEMISTRY

This programme fulfills the academic requirements for professional membership in the Chemical Institute of Canada. General Biochemistry and Biotechnology and Genetic options are available at Level IV.

Admission:

Completion of Natural Sciences I, including Mathematics 1A6 with a weighted average of at least 7.0 in one of Chemistry 1A6, 1A7 and either Mathematics 1A6, or one of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7. Biology 1A6 must be completed before entry into Level III; it's election in Level I is recommended. The election of one of Physics 1A6, 1B6, 1C6, in Level I or II is recommended.

Area Courses:

Biochemistry 2A3, 3B3, 3C3, 3H3, 3L4, 3L6, 4B6, 4C3, 4D3, 4E3, 4G3, 4I3, 4L3, 4M3, 4N3, 4O3, 4P3, 4Q3; Biology 2B3, 2C3, 2D3, 3O3, 3P3, 3S6, 4B3, 4B4, 4R6, 4I3, 4O3, 4P2, 4P6, 4V3; Chemistry 2A3, 2A4, 2B6, 2C3, 2N3, 2N4, 2Q5, 2Q6, 2S8, 2T5, 2T6, 3D3, 3D6, 3E4, 3E6, 4A3, 4D3, 4K6.

Level II: 30 units

R Biochemistry 2A3, Chemistry 2B6, 2N3 and one of Chemistry 2Q6 or 2T6; Biology 2C3 and 1A6 (if not completed); 3 units above Level I from any Science discipline. Election of Biology 2B3 in Level II is recommended for students who have completed Biology 1A6.

E Electives to make a total of 30 units. Chemistry 2C3 and Computer Science 1B3 are recommended.

Level III: 30 units

R Biochemistry 3B3, 3C3, 3L6; Chemistry 3D3 or 3D6; Biology 2C3 (if not completed); 6 to 9 units from Biology 2B3 (if not completed) and Level III or IV Biochemistry, Biology or Chemistry courses to make a total of 24 units.

(For students planning to enter the Biotechnology and Genetic Engineering Option, Biology 2B3 and 303 must be completed by the end of Level III; Biology 3E3 is recommended.)

E 6 units, excluding Biochemistry.

Level IV (General Biochemistry Option): 30 units

R One of Biochemistry 4B6, or 4L3 and 4P3, or 4G3 and 4L3; Biochemistry 4E3, 4I3, 4M3 and 6 units of Level IV Biochemistry; 3 units of Level II and IV courses from any Science discipline.

E 6 units.

Level IV (Biotechnology and Genetic Engineering Option): 30 units

A CAA of at least 8.0 on completion of Level III is required for admission.

R Biochemistry 4D3, 4E3, 4G3, 4I3, 4M3; 4B6 or 4P3; 3 units of Level IV Biochemistry; 3 to 6 units of Level III or IV courses from any Science discipline (Biology 303 must be selected if not taken at Level III). Biology 4I3 and 4V3 are recommended.

E Electives to make a total of 30 units.

HONOURS BIOCHEMISTRY AND CHEMISTRY

This programme fulfills the academic requirements for professional membership in the Chemical Institute of Canada.
FACULTY OF SCIENCE

Department of Biology

HONOURS BIOLOGY

Admission:
Completion of Natural Sciences I, including Chemistry IA6 or IA7, Mathematics IA6, IB3 or IG4, and one of Biology IA6, Physics IA6, IA7, IB6, IB7, IC6, IC7, with an average of at least 7.0 in Mathematics IA6 and either Chemistry IA6 or IA7. Election of both Biology and Physics is highly recommended.

Area Courses:
Biochemistry 2A3, 3B3, 3C3, 3L2, 3L3, 3L4, 3L6, 4B6, 4D3, 4E3, 4I3, 4M3, 4N3, 4Q3, 4Q5, 4U6; Chemistry 2A3, 2A4, 2B6, 2S8, 2T5, 2T6, 3A3, 3A4, 3D3, 3D6, 3E6, 3L3, 3U3, 4A3, 4D3, 4G6, 4K6, 4U6.

Level II: 33 units
- R Biochemistry 2A3; Chemistry 2A3, 2B6, 2C3, 2T6; Mathematics 2N3; Biology 1A6, and one of Physics 1A6, IA7, IB6, IB7, IC6, IC7, if not completed in Level I; courses in a Science discipline to make a total of 30 units. Students considering Level III Honours Biochemistry should elect Biology 2C3. Students considering Level III Honours Chemistry should elect Physics 2A3.
- E Electives to make a total of 33 units.

Level III: 33 units
- R Biochemistry 3B3, 3C3; one of Biochemistry 3L3, 3L6; one of Chemistry 3D3, 3D6; one of Chemistry 3A3 or 3E6; Chemistry 3U3.
- E Electives to make a total of 33 units.

Level IV: 33 units
- R Biochemistry 4E3, 4I3 and 4M3, and one of Biochemistry 4D3, 4Q3, 4Q5; one of Biochemistry 4B6, or 4U6 (same as Chemistry 4U6); Chemistry 4G6; one of Chemistry 3A3, 3E6, 4K6; 3 units of Level III or IV Chemistry.
- E Electives to make a total of 33 units.

BIOCHEMISTRY MAJOR

Admission:
Completion of Natural Sciences I, including Mathematics IA6 with a weighted average of at least 4.0 in one of Chemistry IA6, IA7, and either Mathematics IA6 or one of Physics IA6, IA7, IB6, IB7, IC6, IC7. Biology IA6 must be completed before entry into Level III and its election in Level I is recommended. The election of one of Physics IA6, IB6, IC6 in Level I or II is also recommended.

Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

Area Courses:
Biochemistry 2A3, 3B3, 3C3, 3H3, 3L4, 3L6, 4B6, 4C3, 4D3, 4E3, 4G3, 4I3, 4L3, 4M3, 4N3, 4Q3, 4Q5; Biology 2B3, 2C3, 3O3, 3P3, 3D4, 4B6, 4I3, 4P2, 4P6, 4V3; Chemistry 2B6, 2F3, 2F4, 3N3, 2N4, 2O6, 2Q5, 2Q6, 2S8, 3D3, 3D6, 3E4, 3E6, 3F3, 3A3, 4D3, 4K5, 4K6.

Level II: 30 units
- R Biochemistry 2A3; Chemistry 2Q6; one of Chemistry 2B6, 2O6; one of Chemistry 2F3, 2N3; Biology 2C3 or IA6 (if not completed in Level I); courses from any Science discipline, to make a total of 24 units. Election of both Biology 2B3 and 2C3 is recommended. Students planning to take Chemistry 3F3 must have completed Chemistry 2O6 or 2Q6.
- E 6 units.

Level III: 30 units
- R Biochemistry 3B3, 3C3, 3L6; one of Chemistry 3D3, 3D6, 3F3; 6 units from Area courses including at least 3 units of Level III or IV Biochemistry, Biology or Chemistry; Biology 2C3 (if not completed); and courses from any Science discipline to make a total of 24 units.
- E 6 units, excluding Biochemistry.

Level IV: 30 units
- R Biochemistry 4L3; one of Biochemistry 4E3, 4I3, 4M3, and 9 units of Level IV Biochemistry and Area courses to make a total of 24 units. Students with a CAA of at least 7.0 are eligible to take Biochemistry 4P3; students with a CAA of at least 8.0 are eligible to take Biochemistry 4G3.
- E 6 units.
FACULTY OF SCIENCE

Level III: 33 units
R Geology 3D6; Biology 2C3, 2D3; Chemistry 2D3 and Biochemistry 2E3; 12 units from Geology 3C6, 4S3, 4U3, Biology 3F6, 3M6 or 3M3, 3S6, 3U6.
E 3 units elective.

Level IV: 31-34 units
R Geology 3E2; Biology 3J3, 18 to 20 units from Biology 3A6, 3D3, 3E3, 3F6, 3M6 or 3M3, 3S6, 3U6, 4D3, 4F4, 4C8, 4Z3 and Geology 3C6, 4M3, 4MM3, 4D3, 4F3, 4G6, 4S3, 4U6 which must include at least 6 units from Biology and at least 6 units from Geology. Only one of Biology 4F4, 4C8 and Geology 4G6 may be taken.
E Electives to make a total of 31 to 34 units (Geology 2D6 is recommended).

HONOURS BIOLOGY AND PHILOSOPHY

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7 with at least B– in Biology 1A6 and at least B– in Philosophy 1B6 or 1D6.

Programme Notes:
1. Students are advised to note carefully the prerequisites for all courses listed in this programme. No student may register in any level of this programme without the approval of the Chairman of the Biology Department. Students are advised to consult the Chairman for counselling in March.
2. Philosophy 2A6, 2C6, 2M3 will be included in calculating the Graduation Average, if they are taken in Level III.

Area Courses:
Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H3, 3HH3, 3H6, 3I3, 3J3, 3N6, 3O3, 3Q3, 4E3, 4F4, 4Q3; Biochemistry 3B3, 3G6; all Levels II, III and IV Philosophy courses.

Level II: 33 units
R Biology 2B3, 2C3, 2E3; Philosophy 2B3 or 2R3, 2D3 or 2G3, 2A6 or 2C6, 2M3; either Chemistry 2D3 or both Chemistry 2D3 and Biochemistry 2E3.

Level III: 33 units
R 12 units from Biology 3F6, 3H3, 3HH3, 3I3, 3J3, 3N6, 3O3, 3Q3, Biology 3G6; Philosophy 3O3, 2A6 or 2C6, 3M3 or 3W3 and 3 additional units from Philosophy.
E 6 units elective (Chemistry 2Q6 is recommended).

Level IV: 33 units
R Philosophy 4W3; 12 units from Levels III and IV Biology Area courses, or Biochemistry 3B3 or 3G6; 12 units of Philosophy including 3G3 or 3N6, 3M3 or 3W3, 3L3 or 303, and 3S3.
E 6 units elective.

HONOURS BIOLOGY AND PSYCHOLOGY

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7, one of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7, with at least B– in Biology 1A6 and at least B– in Philosophy 1A6.

Programme Notes:
1. Students must complete a minimum of one laboratory course in Psychology and one in Levels III or IV Biology. A minimum of 18 units from Psychology and 18 units from Biology must be included in the total required courses for Levels III and IV combined.
2. Enrolment is limited for the Psychology laboratory courses. Permission of the department must be obtained by March 1.
3. Psychology 3W6 must be completed in Level III or IV.
4. Biology 2E3 will be included in calculating the Graduation Average.

Area Courses:
Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H3, 3HH3, 3H6, 3I3, 3J3, 3K3, 3N6, 3O3, 3Q3, 3U3, 4A3, 4C8, 4E3, 4F4, 4I3, 4P6, 4Q3; Psychology 2H3, 2R6, 2T3, 3B3, 3D3D, 3E3, 3F6, 3G3, 3H3, 3K6, 3N6, 3P3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W6, 3X3, 3Y3, 4D6, 4F3, 4G3, 4H3, 4Q3, 4X3; Statistics 2R6.

Level II: 33 units
R Biology 2B3 and 2C3; Psychology 2T3 and 2H3; Statistics 2R6 or Psychology 2R6; Chemistry 2O6.
E 9 units elective. Students are advised to take English 3A3 and Chemistry 2Q6 as electives in Levels II and III, and Biochemistry 2A3 as an elective in Level II.

Level III: 33 units
R 12 units from Biology 2E3, 3H3, 3HH3, 3F6, 3I3, 3J3, 3N6, 3O3, 3P3, 3U6; 12 units from Psychology 3E3, 3F6, 3G3, 3H3, 3K3, 3N6, 3P3, 3S3, 3T3, 3U3, 3V3, 3X3, 3Z3; Psychology 3W6 must be completed in Levels III or IV; Biochemistry 3G6 or 3B3.
E 3 to 6 units elective, excluding Biology or Psychology, to make a total of 33 units.

Level IV: 33-34 units
R One of Biology 4F4, 4C8, Psychology 4D6; 18 to 22 units (with at least 9 units from Biology and 9 units from Psychology, including Psychology 3W6 if not completed) from Levels III and IV Biology Area courses and Levels III and IV Psychology Area courses.
E Electives to make a total of 33 to 34 units.

BIOLOGY MAJOR

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7, with at least C– in Biology 1A6 or IB7, and at least C– in one of Mathematics 1A6, Chemistry 1A6 or 1A7, Physics 1B6 or IB7, 1A6 or IB7, 1C6 or IB7. One of Physics 1B6 or IB7, 1A6 or 1A7, 1C6 or 1C7 is strongly recommended in Level I.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Students in Levels III and IV of this programme should select Area courses in consultation with the Chairman of the Department of Biology.

Area Courses:
All Levels II, III and IV Biology courses, except Biology 4C8; Biochemistry 3B3, 3G6.

Level II: 30 units
R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 2O6.
E 9 units elective, at least 3 units of which may not be from Biology or Biochemistry.

Level III: 30 units
R 18 units of Area courses.
E 12 units elective, at least 3 units of which may not be from Biology or Biochemistry.

Level IV: 30-31 units
R 18 to 19 units of Area courses.
E 12 units elective, at least 3 units of which may not be from Biology or Biochemistry.

B.Sc. IN BIOLOGY

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7, and at least a grade of C– in Biology 1A6. One of Physics 1A6 or 1A7, 1B6 or IB7, is strongly recommended in Level I.

Area Courses:
All Levels II and III Biology courses.

Level II: 30 units
R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 2D3; Biochemistry 2E3; Computer Science 1B3 (if not completed).
E 6 to 9 units, of which 6 must be from the Faculties of Social Sciences or Humanities.

Level III: 30 units
R 18 units of Level III Biology Area courses; Statistics 2R6.
E 6 units from the Faculties of Social Sciences or Humanities.
Department of Chemistry

HONOURS BIOCHEMISTRY AND CHEMISTRY
(See Department of Biochemistry)

HONOURS APPLIED CHEMISTRY
This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A6 or 1A7, and Mathematics 1A6 and 1B3 or 1G4. A grade of at least B – must be achieved in Chemistry 1A6 or 1A7, and one of Mathematics 1A6, 1B3, 1G4, Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7. One of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4.

Programme Notes:
1. Recommended electives throughout the programme include Engineering 203, Materials 4D3, 4E3; Metallurgy 2C3, 3C3, 4C4, 4N5; Chemical Engineering 3D3, 3P3, 4K3, 4N4; Business 3W6, 3X3, 3Y3, 3Z3; Physics 2A3.
2. Level III students in 1986-87, with credit in Chemistry 2S8, will take Chemistry 3D6 rather than 3D3.

Area Courses:
Chemistry 2A3, 2A4, 2B6, 2C3, 2S8, 3A3, 3A4, 3D3, 3D6, 3E6, 3I3, 3L3, 3U3, 4A3, 4C3, 4D3, 4G6, 4G7, 4K6, 4P3, 4R3, 4S3, 4T6, 4T4; Chemical Engineering 2D4, 2F4, 3K3, 3M4.

Level II: 32 units
R Chemistry 2A3, 2B6, 2C3; Chemical Engineering 2D4, 2F4; Computer Science 183 (if not completed); Mathematics 2N3.
E 6 to 9 units elective, excluding Chemistry, to make a total of 32 units.

Level III: 31 units
R Chemistry 3D3, 3E6, 3I3, 3L3, 3U3; Chemical Engineering 3M4.
E Electives, excluding Chemistry, to make a total of 31 units.

Level IV: 30 units
R Chemistry 3A3, 4G6 or 4T6; either Chemistry 4K6 or Chemical Engineering 3K3; 6 units of Level IV Area courses; an additional 3 units from Level III or IV Science or Engineering courses.
E Electives to make a total of 30 units.

HONOURS CHEMISTRY
This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A6 or 1A7, and Mathematics 1A6 and 1B3 or 1G4. A grade of at least B – must be achieved in Chemistry 1A6 or 1A7 and one of Mathematics 1A6, 1B3, 1G4, Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7. One of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4.

Programme Notes:
1. For students interested in physical chemistry, recommended electives throughout the programme include Mathematics 3C3, 3D3 and Statistics 2M3.
2. Level III students in 1986-87, with credit in Chemistry 2S8, will take Chemistry 3D6 rather than 3D3.

Area Courses:
Chemistry 2A3, 2A4, 2B6, 2C3, 2S8, 2T5, 2T6, 2X1, 3A3, 3A4, 3D3, 3D6, 3E6, 3I3, 3L3, 3U3, 4A3, 4B3, 4C3, 4D3, 4G6, 4G7, 4K6, 4P3, 4Q3, 4R3, 4S3, 4T3.

Level II: 30 units
R Chemistry 2A3, 2B6, 2C3, 2T6; Mathematics 2N3; Physics 2A3; Computer Science 1B3, if not completed in Level I.

E 3 to 6 units elective, excluding Chemistry, to make a total of 30 units.

Level III: 30 units
R Chemistry 3A3, 3D3, 3E6, 3L3, 3U3.
E Electives, at least 6 of which may not be Chemistry, to make a total of 30 units.

Level IV: 30 units
R Chemistry 4G6, 4K6, and 6 units of Level IV Area courses; an additional 6 units elective to make a total of 30 units.

HONOURS CHEMISTRY AND GEOLOGY
This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A6 or 1A7, Geology 1A3 or 1C3, Mathematics 1A6 and 1B3 or 1G4, with a grade of at least B – in each of Chemistry 1A6 or 1A7 and Geology 1A3 or 1C3. The selection of Physics 1A6 or 1A7 is recommended.

Programme Notes:
1. Geology 2D5/2D6 will be included in calculating the Graduation Average.
2. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Chemistry 2A3, 2A4, 2B6, 2C3, 2S8, 2T5, 2T6, 3A3, 3A4, 3E6, 3L3, 3U3, 4C3, 4P3, 4R3, 4S3; Geology 2B6, 2C6, 2D5, 2D6, 3C6, 3G4, 4B6, 4BB3, 4M3, 4M6, 4MM3, 4Q4, 4Q6.

Level II: 33 units
R Chemistry 2B6, 2C3, 2T6; Geology 2B6, 2C6, Mathematics 2N3.
E 3 units elective, excluding Chemistry and Geology.

Level III: 33 units
R Chemistry 2A3, 3E6, 3U3; Geology 2D6, 3C6, 3E2, 3G4. Attention is drawn to Geology 3E2 which is scheduled outside of regular term.
E 3 units elective.

Level IV: 30 units
R 21 units selected as follows: Chemistry 3A3; 18 units of Levels III and IV Chemistry and Geology to include at least 6 units of Area courses from each.
E 9 units elective to make a total of 30 units.

HONOURS CHEMISTRY AND PHYSICS
This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences 1, including Mathematics 1A6 and 1B3 or 1G4, Chemistry 1A6 or 1A7 and Physics 1A6 or 1A7, with a grade of at least B – in Chemistry 1A6 or 1A7, Physics 1A6 or 1A7, and one of Mathematics 1A6 or 1B3 or 1G4. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4; (ii) one of Physics 1B6, 1B7, 1C6, 1C7, instead of 1A6 or 1A7. However, Physics 1A6 or 1A7 and Mathematics 1B3 or 1G4 are strongly recommended.

Programme Notes:
Chemistry 2A3 or 2A4 will be included in calculating the Graduation Average.

Area Courses:
Chemistry 2A3, 2A4, 2B6, 2C3, 2S8, 2T5, 2T6, 3E6, 4B3, 4C3, 4G6, 4K6, 4Q3, 4Y3; Physics 2B6, 2C5, 3B6, 3K4, 3M6, 3N3, 4F3, 4J4, 4K3, 4Q4.

Level II: 35 units
R Chemistry 2B6, 2C3, 2T6; Physics 2B6, 2C5, Mathematics 2G3, 2O3.
E 3 units to make a total of 35 units. Computer Science 1B3 is recommended if not taken in Level I.

Level III: 33-34 units
R Chemistry 2A3, 3E6; Physics 3M6; 6 to 10 units from Physics 3B6, 3K4, 3N3; Mathematics 3C3, 3D3.

FACULTY OF SCIENCE
FACULTY OF SCIENCE

E Electives to make a total of 33 to 34 units.

Level IV: 31-34 units
R At least 25 units of Level III and Level IV Chemistry and Physics, which must include: Chemistry 4G6 or Physics 4J4 or Physics 4K4; Physics 4F3; Chemistry 4K6; Chemistry 4Y3 or Physics 3K4, if not taken in Level III.
E 6 to 9 units, to make a total of 31 to 34 units.

CHEMISTRY MAJOR
This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7 and Mathematics 1A6 and 1B3 or 1G4. A grade of at least C must be achieved in Chemistry 1A6 or 1A7 and one of Mathematics 1A6, 1B3, 1G4, Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7. One of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations. Major Programmes.
2. Recommended electives throughout the programme include Computer Science 1C3.
3. With departmental permission, Chemistry 4G6 can be substituted for Chemistry 4T6. Only Level IV students with a CAA of at least 8.5 will be considered, and only if sufficient projects are available.
4. Level III students in 1986-87 must also complete Chemistry 2K3, and either Mathematics 2N3 or 2G3 and 2P3.

Area Courses:
Chemistry 2F3, 2F4, 2K3, 206, 208, 2P4, 2P6, 2R2, 3B3, 3B4, 3F3, 3G3, 3I3, 3K3, 3K6, 3Q3, 3Q4, 4A3, 4B3, 4C3, 4D3, 4G6, 4K6, 4P3, 4Q3, 4R3, 4S3, 4T6, 4Y3.

Level II: 30 units
R Chemistry 2F3, 2K3, 206, 2P6, Mathematics 2N3; Computer Science 1B3 if not completed in Level I.
E 6 to 9 units elective, excluding Chemistry, to make a total of 30 units.

Level III: 30 units
R Chemistry 3B3, 3F3, 3G3, 3I3, 3K3, 3Q3;
E Electives, excluding Chemistry, to make a total of 30 units.

Level IV: 30 units
R Chemistry 4K6, 4T6 and 6 units of Level IV Area courses; Physics 2A3.
E 9 units elective to make a total of 30 units.

B.Sc. IN CHEMISTRY

Admission:
Completion of Natural Sciences I, including Chemistry 1A6 or 1A7 and Mathematics 1A6, Mathematics 1B3 or 1G4, and one of Physics 1A6, 1A7, 1B6, 1B7, 1C6 or 1C7 must be taken before Level III. The election of Mathematics 1B3 or 1G4 and one of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7 as part of Natural Sciences I is strongly recommended.

Programme Notes:
Level III students in 1986-87 must also complete Chemistry 2K3.

Area Courses:
Chemistry 2F3, 2F4, 2K3, 206, 208, 2P4, 2P6, 2R2, 3B3, 3B4, 3F3, 3G3, 3I3, 3K3, 3K6, 3Q3, 3Q4.

Level II: 30 units
R Chemistry 2F3, 2K3, 206, 2P6; Computer Science 1B3, if not completed in Level I.
E 9 to 12 units elective, to make a total of 30 units.

Level III: 30 units
R Chemistry 3B3, 3I3, 3K3, 3Q3; Mathematics 2G3 or 2N3, if not taken previously.
E Electives, at least 6 units of which may not be Chemistry, to make a total of 30 units.

Department of Computer Science and Systems

Because of resource limitations, enrolment in Computer Science and all joint programmes involving Computer Science is limited. Students intending to enter any Computer Science programme should consult the Department.

HONOURS MATHEMATICS AND MATHEMATICS MAJOR
AND B.SC. IN MATHEMATICS
(See Mathematics and Statistics)

HONOURS STATISTICS AND STATISTICS MAJOR
(See Mathematics and Statistics)

HONOURS ECONOMICS AND COMPUTER SCIENCE
(See Faculty of Social Sciences, Department of Economics)

HONOURS ARTS AND SCIENCE PROGRAMME AND
COMPUTER SCIENCE (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS COMPUTER SCIENCE
Admission:
Completion of Natural Sciences I including Computer Science 1B3 or 1H3 and a weighted average of at least 7.0 in Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4, and 6 units acceptable to the Department of Computer Science and Systems.

Programme Notes:
1. Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G4, 1G6, 1B3, 1B4 and 6 units acceptable to the Department with a weighted average of at least 7.0 and who have completed one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.
2. It is recommended that students choose a coherent set of electives. The following possibilities should be noted:
   - Numerical Analysis Mathematics 2A6, 3Q3, 4Q6.
   - Computer Science Computer Science 4J3, 4X3;
   - Theory Mathematics 4C3, 4J3, 4S3.
   - Hardware Option Mathematics 2A6, 2C3; Physics 2B6, 3B6, 4D6.

Area Courses:
All Level II, III and IV Computer Science courses (except 2A3, 2N3, 2P3, 3I3, 4J3); Mathematics 2A5, 2A6, 2B4, 2B6, 2C3, 2C4, 2F3, 2F4, 3E4, 3E6, 3L3, 3L4, 3Q3, 3Q4, 3R3, 4C3, 4C4, 4H3, 4J3, 4Q6, 4S3, 4S4, 4W3, 4W4; Statistics 2D3, 2D4, and all Level III and IV Statistics courses; Physics 2B6, 3B6, 4D6.

Level II: 30 units
R Computer Science 1C3 (if not completed), 2B3, 2L3; Statistics 2D3; Mathematics 2F3, one of Mathematics 2A6, 2B6, 2C3.
E Electives to make a total of 30 units, at least 6 of which must not be from either the Department of Computer Science and Systems, or the Department of Mathematics and Statistics.

Level III: 30 units
R Computer Science 3A3, 3B3, 3C3, 3D3, 3T3; Statistics 2M3; 6 units of Mathematics or Statistics Area Courses beyond Level II.
E. Electives to make a total of 30 units.

Level IV: 30 units
R Computer Science 4G6; 9 units from Level IV Computer Science courses, and Level III and IV Mathematics courses; 6 units of Area courses.
E. Electives to make a total of 30 units, which may include Mathematics 2A6, 2B6, 2C3.

HONOURS COMPUTER SCIENCE AND MATHEMATICS
Admission:
Completion of Level II Honours Mathematics, including Computer Science 2B3, 2L3, or completion of Level II Honours Computer Science including Mathematics 2A5 or 2A6, and 2B4 or 2B6.

Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4W3, 4X3; Mathematics 2C3, 2C4, 2F3, 2F4, 3A6, 3E4, 3E6, 3F6, 3G3, 3L4, 3L6, 3Q3, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4C3, 4C4, 4G3, 4Q6, 4S3, 4S4; Statistics 3D6, 3M3, 3S3, 3U3, 4H3, 4K3, 4M3, 4R3, 4S3, 4T3, 4U3, 4V3, 4X3, 4Z3.

Levels III and IV: 60 units
R Computer Science 3A3, 3D3, 4G6, 6 units of Computer Science Area courses; Mathematics 2C3 (if not completed), 2F3 (if not completed), 2F4, and one of Mathematics 4A6, 4C3, 4J3, 4Q6, 4S3, 6 units of Mathematics or Statistics Area courses; 6 units of Area courses.
E. Electives to make a total of 60 units, at least 6 of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

HONOURS COMPUTER SCIENCE AND PSYCHOLOGY
Admission:
Completion of Natural Sciences I with at least a B – in each of Computer Science 1B3, Psychology 1A6, Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4.

Area courses:
All Computer Science and Psychology courses above Level I, except Computer Science 2A3, 2N3, 2P3, and 413; Statistics 2D3; Mathematics 4S3.

Level II: 30 units
R Computer Science 1C3 (if not already completed), 2B3, 2L3; Psychology 2T3, 2H3, Statistics 2D3; Mathematics 2F3 and 2B6; 3 additional units Level II Psychology.
E. Electives to make a total of 30 units.

Level III: 30 units
R Computer Science 3A3, 3B3, 3D3; Psychology 3W6; 6 additional units from Levels III or IV Computer Science; 6 additional units from Level III Psychology.
E. 3 units elective.

Level IV: 30 units
R Computer Science 4G6 or Psychology 4D6 (the project or thesis topic must be approved by the Chairmen of both departments); Computer Science 4W3; Mathematics 4S3; 6 additional units Levels III or IV Computer Science; 9 additional units Levels III or IV Psychology.
E. 3 units elective.

HONOURS COMPUTER SCIENCE AND STATISTICS
Admission:
Completion of Level II of Honours Mathematics, including Computer Science 1C3, 2B3, 2L3, or Level II of Honours Computer Science, including Mathematics 2A5 or 2A6, and 2B4 or 2B6.

Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4W3, 4X3, 4Z3; Mathematics 2C3, 2C4, 3Q3, 3Q4, 3R3, 3S3, 3T3, 4C3, 4H3, 4K3, 4P3, 4Q6, 4R3, 4Q3, 4Q6, Statistics 2M3 or 3M3, and all Level III and IV Statistics courses.

Levels III and IV: 60 units
R Computer Science 3A3, 4G6; Mathematics 2C3 (if not completed), 3T3; Statistics 3D6, 2M3 (if not completed); 6 units of Mathematics Area courses; 6 units of Statistics Area courses; 12 units of Computer Science Area courses; 3 units of Area courses.
E. Electives to make a total of 60 units, at least 6 of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

COMPUTER SCIENCE MAJOR
Admission:
Completion of Natural Sciences I, including Computer Science 1B3 or 1H3, with a weighted average of at least 4.0 in Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4, and 6 units acceptable to the Department of Computer Science and Systems.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G4, 1G6, 1B3 or 1B4, and 6 units acceptable to the Department with a weighted average of at least 4.0, and who have completed one of Computer Science 1A3, 1B3, 1H3, or Engineering ID3, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.
3. It is recommended that students choose a coherent set of electives. The following possibilities should be noted:
   Numerical Analysis Option
   Mathematics 2G3, 2O3, 3Q3, 4Q6.
   Computer Science
   Computer Science 4J3, 4K3;
   Theory
   Mathematics 4C3, 4J3, 4S3.
   Hardware Option
   Mathematics 2G3, 2O3; Physics 2B6, 3B6, 4D6.

Area Courses:
All Level II, III, and IV Computer Science courses (except 2N3, 2P3); Mathematics 2G3, 2J6, 2O3, 3E4, 3E6, 3L4, 3Q4, 3R3, 4C3, 4C4, 4F3, 4Q6, 4S3, 4S4; Statistics 2D3, 2D4, 2M3, 3M3, and all Level III and IV Statistics courses; Physics 2B6, 3B6, 4D6.

Level II: 30 units
R Computer Science 1C3 (if not completed), 2B3, 2L3, Statistics 2D3; Mathematics 2J6; two of Mathematics 2G3, 2K3, 2O3.
E. Electives to make a total of 30 units, at least 6 of which must not be from either the Department of Computer Science, or the Department of Mathematics and Statistics.

Level III: 30 units
R Computer Science 3A3, 3B3, 3C3, 3D3; Statistics 2M3 or 3M3; 6 units of Area Courses of which at least 3 units must be Mathematics or Statistics courses beyond Level II.
E. Electives to make a total of 30 units, at least 6 of which must not be from either the Department of Computer Science, or the Department of Mathematics and Statistics.

Level IV: 30 units
R Computer Science 3T3, 4G6; 9 units of Computer Science courses beyond Level II; 3 to 6 units from Area courses.
E. Electives to make a total of 30 units.

COMPUTER SCIENCE AND MATHEMATICS MAJOR
Admission:
Completion of Level II Mathematical Sciences Major, including Computer Science 2B3, 2L3, Statistics 2D3 or 2D4 or Level II Computer Science Major including Mathematics 2G3 and 2O3.

Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
Area Courses:
Computer Science 2A3, 3A3, 3B3, 3C3, 3D3, 3E3, 3I3, 3P3, 3T3, 4E3, 4F3, 4G6, 4I3, 4J3, 4L3, 4M3, 4N3, 4P3, 4Q3, 4R3, 4S3, 4T3, 4U3, 4V3, 4W3, 5A3, 5B3, 5C3, 5D3, 5E3, 5F3, 5G3, 5H3, 5I3, 5J3, 5K3, 5L3, 5M3, 5N3, 5O3, 5P3, 5Q3, 5R3, 5S3, 5T3, 6Q6, 6R6, 6S6, 6T6; Mathematics 3E4, 3E6, 3F6, 3I4, 3L6, 3O6, 3P6, 3Q4, 3R3, 3S3, 3T3, 4C3, 4C4, 4G3, 4J3, 4K3, 4K4, 4Q6, 4Q5, 4S3, 4S4, 4T3, 3D6, 2M3 or 3M3, 3S3, 3U3, 4H3, 4J3, 4K3, 4M3, 4R3, 4S3, 4T3, 4U3, 4Z3.

Levels III and IV: 60 units
R Computer Science 3A3, 3D3, 4G6, 6 units of Computer Science Area courses; Mathematics 3Q6, 6 units from 3Q3, 3T3, 4C3, 4J3, 4Q3, 4Q6, 4S3; 6 units of Mathematics or Statistics Area Courses; 6 additional units of Area Courses.
E Electives to make a total of 60 units, at least 6 units of which must not be from either the Department of Mathematics and Statistics, or the Department of Computer Science and Systems.

COMPUTER SCIENCE AND STATISTICS MAJOR

Admission:
Completion of Level II of Mathematics Major, including Statistics 2D3 or 2D4, and Computer Science 2B3, 2L3, or Level II of Computer Science Major, including Mathematics 2G3, 2O3.

Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4X3, 4W3; Mathematics 3Q3, 3Q4, 3R3, 3T3, 4G3, 4Q3, 4Q6; Statistics 2M3 or 3M3, and all Level III and IV Statistics Courses.

Levels III and IV: 60 units
R Computer Science 3A3, 4G6; Mathematics 3T3; Statistics 3D6, 2M3 or 3M3 (if not completed); 12 units of Computer Science Area courses; 6 units of Statistics Area Courses; 6 units of Statistics or Mathematics Area Courses; 3 units of Area Courses.
E Electives to make a total of 60 units, at least 6 units of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

B.Sc. IN COMPUTER SCIENCE

Admission:
Completion of any Level I programme including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 and with an average of at least 4.0 in Mathematics 1A6, and in 6 other units acceptable to the Department of Computer Science and Systems.

Programme Notes:
1. It is recommended that students should choose their electives so that 18 units of Level II and Level III courses are in a single subject. Economics 1A6 and Business 3W6 are recommended.
2. It is recommended that students elect Statistics 2M3 in Level III.

Area Courses:
All Level II, III and IV Computer Science courses (except 2N3, 2P3); all Level II, III and IV Mathematics and Statistics courses; Business 3W6.

Level II: 30 units
R Computer Science 1C3 (if not completed), 2A3, 2B3, 2L3; 3 units of any Mathematics or Statistics courses.
E Electives to make a total of 30 units, at least 6 units of which must not be from either the Department of Computer Science and Systems, or the Department of Mathematics and Statistics.

Level III: 30 units
R Computer Science 3A3, 3D3, 3I3, 3R6 and one of Computer Science 3E3, 3T3, 4I3.
E 12 units, at least 6 of which must not be from either the Department of Computer Science and Systems, or the Department of Mathematics and Statistics.

Department of Geography

HONOURS GEOGRAPHY (B.A.) AND B.A. IN GEOGRAPHY, AND HONOURS GEOGRAPHY AND GEOLOGY (B.A.)
(See B.A. Programmes in Geography, Faculty of Social Sciences, Department of Geography)

HONOURS ECONOMICS AND GEOGRAPHY (B.A.)
(See Faculty of Social Sciences, Department of Economics)

HONOURS HISTORY AND GEOGRAPHY (B.A.)
(See Faculty of Humanities, Department of History)

HONOURS ARTS AND SCIENCE PROGRAMME AND GEOGRAPHY (B.A.)
(See Arts and Science Programme)

HONOURS GEOGRAPHY (B.Sc.)

Admission:
Completion of Natural Sciences I, with at least a B – in Geography IA6, and an average of at least 7.0 in that and 6 additional units of Mathematics, Geology, Chemistry, Physics or Biology.

Programme Notes:
No student may register in any Level of this programme without the approval of a Departmental Counsellor, which must be obtained before completing registration forms in March.

Area Courses:
Geography 2F3, 2K3, 2L3, 2L6, 2M3, 2T3, 2W3, 3E3, 3F3, 3I3, 3K3, 3L3, 3M3, 3Q3, 3P3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4H3, 4I3, 4K3, 4M3, 4P3, 4Q3, 4R3, 4V3, 4W3.

Level II: 30-33 units
R Geography 2F3, 2K3, 2L3, 2L6, 2M3, 2T3, 2W3.
E Electives to make a total of 30 to 33 units.

Level III: 30 units
R Geography 3E3 and 3O3; 12 units from Geography 3F3, 3K3, 3M3, 3P3, 3W3.
E Electives to make a total of 30 to 33 units, 6 of which may not be in Geography.

Level IV: 30 units
R Geography 4C6, and at least 12 additional units of Level IV Area courses.
E Electives to make a total of 30 units, 6 of which may not be from Geography.

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)

Admission:
Completion of Natural Sciences I, including Geography 1A6, Geology 1A3 or 1C3, and Mathematics 1A6 with a grade of at least B – in both Geography 1A6 and Geology 1A3 or 1C3, Chemistry 1A6 or 1A7 must be completed by the end of Level II.

Programme Notes:
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which must be obtained before completing registration forms in March.
2. Geology 2D6/2D5 will be included in calculating the Graduation Average.
3. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geography 2F3, 2K3, 2L3, 2L6, 2M3, 2T3, 2W3, 3E3, 3F3, 3I3, 3K3, 3L3, 3M3, 3Q3, 3P3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4H3, 4I3, 4K3, 4M3, 4P3, 4Q3, 4R3, 4V3, 4W3; Geography 2B6, 2C6, 2D5, 2D6, 3C6, 4E6, 4M3, 4M6, 4T3.
Level II: 33 units
R Geography 2LL3, 2L3, 2T3, and one of Geography 2F3, 2K3, 2W3; Geography 2B6, 2C6, and 3 to 6 units of Natural Science or Engineering approved by the Departments.
E Electives, excluding Geography and Geology, to make a total of 33 units.

Level III: 35 units
R Geography 3E3, 3M3, 3O3, and one of 3F3, 3K3, 3P3, 3W3; Geography 2D6, 3C6, 3E2.
E 9 units electives, at least 3 of which may not be Geography or Geology.

Level IV: 30-33 units
R Six units of Level IV Geography Area courses; 6 units of Level IV Geography Area courses, or Level III or IV Geology courses.
E Electives to make a total of 30 to 33 units. Geography 3G4 is strongly recommended.

B.Sc. IN GEOGRAPHY

Admission:
Completion of Natural Sciences I, with a grade of at least C- in Geography 1A6, and an average of at least 4.0 in that and another six units of Science.

Programme Notes:
No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

Area Courses:

Level II: 30 units
R Geography 2L3 and 15 units of Level II Area courses.
E 12 units of electives.

Level III: 30 units
R 18 units of Level III Area courses.
E 12 units, 6 of which may not be in Geography.

Department of Geology

Because of resource limitations, enrolment in Geology and joint Geography programmes is limited. Students wishing to enter any of these programmes should consult the Department.

HONOURS BIOLOGY AND GEOLOGY
(See Department of Biology)

HONOURS CHEMISTRY AND GEOLOGY
(See Department of Chemistry)

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(See Faculty of Science, Department of Geography)

HONOURS GEOGRAPHY AND GEOLOGY (B.A.)
(See Faculty of Social Sciences, Department of Geography)

HONOURS GEOLOGY

Admission:
Completion of Natural Sciences I including one of Geography 1A3, 1C3 or 1A6, and Mathematics 1A6 and Chemistry 1A6 or 1A7, and one of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7. A grade of B- must be obtained in Geography 1A3 or 1C3 or 1A6 and one other course listed.

Programme Notes:
1. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.
2. Materials 3D3, a prerequisite to Geology 4B3, should be taken in Level III.

Area Courses:
Geology 2B6, 2C6, 2D5, 2D6, 213, 3C6, 3D6, 3G4, 4B6, 4BB3, 4E6, 4K6, 4M6, 4M3, 4MM3, 4T3.

Level II: 33 units
R Geography 2B6, 2C6, 2D6, 213; Chemistry 2F6; Biology 2E3.
E 3 units elective, excluding Geology.

Level III: 30 units
R Geography 3C6, 3D6, 3E2, 3G4; 6 units Science and/or Engineering courses.
E 6 units elective, excluding Geology.

Level IV: 30 units
R Geography 4BB3, 4M3 and 4MM3, 4E6 or 4K6, 6 units of Level IV Geology.
E 9 units of electives.

HONOURS GEOLOGY AND PHYSICS

Admission:
Completion of Natural Sciences I, including one of Geography 1A3, 1C3 or 1A6, Physics 1A6 or 1A7, and Chemistry 1A6 or 1A7, and Mathematics 1A6 and 1G4 or 1B3, with a grade of at least B- in each of Geography 1A3 or 1C3 or 1A6, and Physics 1A6 or 1A7. Students will also be considered for admission if they have completed one of Physics 1B6, 1B7, 1C6 or 1C7 instead of Physics 1A6 or 1A7; however, Physics 1A6 is strongly recommended.

Programme Notes:
1. Geology 2D5/2D6 will be included in calculating the Graduation Average.
2. For students who entered this programme before September 1986, Geography 3J3 is an Area course.
3. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geology 2B6, 2C6, 2D5, 2D6, 213, 3A3, 3B3, 3C6, 4E6; Physics 2B6, 2C5, 3G3, 3M6, 4B4, 4K3, 4S3; Mathematics 3C6, 3C3, 3D3.

Level II: 35 units
R Geography 2B6, 2C6, 213; Physics 2B6, 2C5; Mathematics 2G3, 2O3.
E 3 units excluding Geology and Physics. Computer Science 1B3 is strongly recommended.

Level III: 35 units
R Geography 2D6, 3A3 or 3B3, 3E2; Physics 2H3 or one of Chemistry 2P6, 2T6; Physics 3M6; Physics 3G3 or 4S3; Mathematics 3C6.
E 3 to 6 units of electives to make a total of 35 units.

Level IV: 31-34 units
R Geography 3C6, 3A3 or 3B3, whichever not already completed; Physics 4B4, 4K3; one of Physics 3G3, 4S3, whichever not already completed; 6 additional units of Level III or IV Geology or Physics.
E 6 to 9 units of electives.

GEOLGY MAJOR

Admission:
Completion of Natural Sciences I, including one of Geography 1A3, 1C3 or 1A6, Mathematics 1A6, Chemistry 1A6 or 1A7, and one of Physics 1A6, 1A7, 1B6, 1B7, 1C6 or 1C7. A grade of at least C- must be obtained in Geography 1A3 or 1C3 or 1A6 and one other course listed.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Geology 2D5/2D6 will be included in calculating the Graduation Average.
FACULTY OF SCIENCE

3. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

4. Materials 3D3, a prerequisite to Geology 4B3, should be taken in Level III.

Area Courses:
Geology 2B6, 2C6, 2D5, 2D6, 2I3, 3C6, 3D6, 3G4, 4B6, 4BB3, 4E6, 4K6, 4M6, 4M3, 4MM3, 4T3.

Level II: 30 units
R Geology 2B6, 2C6, 2I3; Chemistry 2P6; Biology 2E3.
E 6 units elective which may not be Geology.

Level III: 30 units
R Geology 2D6, 3C6, 3E2, 3G4;
E 12 units elective, 6 of which may not be Geology. Geology 2W3 is strongly recommended.

Level IV: 30 units
R Geology 3D6, 4BB3, 4E6, 4M3 and 4MM3.
E 9 units of electives.

GEOLOGY AND PHYSICS MAJOR

Admission:
Completion of Natural Sciences I, including one of Geology 1A3, 1C3 or 1A6, Physics 1A6 or 1A7, Chemistry 1A6 or 1A7, Mathematics 1A6 and 1G4 or 1B3 with a grade of at least C – in each of Geology 1A3 or 1C3 or 1A6 and Physics 1A6 or 1A7. Students will also be considered for admission if they have completed one of Physics 1A6, 1A7, 1B6, 1B7, 1C6 or 1C7; however, Physics 1A6 is strongly recommended.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Geology 2D5/2D6 will be included in calculating the Graduation Average.
3. For students who entered this programme before September 1986, Geology 3J3 is an Area course.
4. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geology 2B6, 2C6, 2D5, 2D6, 2I3, 3A3, 3B3, 3C6, 4E6; Physics 2B6, 2G3, and all Levels III and IV Physics courses.

Level II: 33 units
R Geology 2B6, 2C6, 2I3; Physics 2B6, 2G3; Mathematics 2G3, 2O3.
E 3 units excluding Physics and Geology. Computer Science 1B3 is strongly recommended.

Level III: 32 units
R Geology 2D6, 3E2; Geology 3A3 or 3B3; Physics 2H3, or one of Chemistry 2P6 or 2T6; Physics 3P3; Physics 3G3 or 4S3; 3 units of Geology or Physics.
E 6 to 9 units of electives to make a total of 32 units.

Level IV: 30 units
R Geology 3A3 or 3B3, whichever not already completed; Geology 3C6; Physics 3G3 or 4S3, whichever not already completed; 9 units of Level II or IV Geology or Physics, of which 6 units must be Level III or IV Physics.
E 9 units of electives to make a total of 30 units.

B.Sc. IN GEOLOGY

Admission:
Completion of Natural Sciences I including one of Geology 1A3, 1C3 or 1A6, Chemistry 1A6 or 1A7 and Mathematics 1A6, with a grade of at least C – in Geology 1A3 or 1C3 or 1A6.

Programme Notes:
1. Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geology 2B6, 2C6, 2D5, 2D6, 3C6, 3D6, 3G4.

Level II: 30 units
R Geology 2B6, 2C6; Biology 2E3.
E 15 units elective, at least 6 of which may not be Geology (Chemistry 2P6 is strongly recommended).

Level III: 30 units
R Geology 2D6, 3C6; 3D6 or 3G4; 3E2
E Electives to make a total of 30 units, 6 of which may not be Geology. Geology 3D6 or 3G4, whichever not already completed as an R-group course is strongly recommended.

Department of Materials Science and Engineering

HONOURS MATERIALS SCIENCE

Admission:
Completion of Natural Sciences I, including Mathematics 1A6, and one of 1B3, 1B4 or 1G4, Chemistry 1A6 or 1A7, and Physics 1A6 or 1A7 with a weighted average of at least 7.0 in Chemistry 1A6 or 1A7 and one of Mathematics 1A6, 1B3, 1G4, or Physics 1A6 or 1A7.

Programme Notes:
Attention is drawn to Materials 4A1, which requires an essay based on employment in the summer between Levels III and IV.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T5, 2T6; Engineering 2O3, 3Q3, and 4J3; Engineering Physics 4E3, 4F3; Mathematics 2A5, 2A6, 2C3, 2C4, 2G3, and 2O3; Physics 4K3.

Level II: 35 units
R Chemistry 2T6; Computer Science 1B3 (unless completed); Mathematics 2G3, 2O3; Engineering 2O3 (unless Materials 1A6, or 1A3 and 1B3 completed); Materials 2C4, 2F3; Physics 2B6; Engineering 2P4 or 2R4.

Level III: 34 units
R Materials 3B4, 3D6, 3E6; Mathematics 3C3, 3D3; Physics 3M6.
E Six units electives.

Level IV: 30 units
R Materials 4A1, 4E3, 4K4; Metallurgy 4L4; 12 units of Level III or IV Area Courses.
E Six units electives, which may not be selected from courses in Ceramics, Chemistry, Computer Science, Engineering Physics, Mathematics, Materials, Metallurgy, Physics or Statistics.

MATERIALS SCIENCE MAJOR

Admission:
Completion of Natural Sciences I, including Mathematics 1A6, and one of 1B3, 1B4 or 1G4, and Chemistry 1A6 or 1A7, with a weighted average of at least 4.0 in Mathematics 1A6 and Chemistry 1A6 or 1A7. Physics 1A6 or 1A7 must be taken in Level I or II; its election in Level I is strongly recommended.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Attention is drawn to Materials 4A1, which requires an essay based on employment in the summer between Levels III and IV.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T5, 2T6; Engineering 2O3, 3Q3, and 4J3; Mathematics 2A5, 2A6, 2C3, 2C4, 2G3, and 2O3; Engineering Physics 4E3, 4F3; Physics 4K3.

Levels II & III: 60 units
R Chemistry 2T6; Computer Science 1B3 (unless completed); Mathematics 2G3, 2O3, 3V6; Engineering 2O3 (unless Materials 1A3 and 1B3 completed); Engineering 2P4 or 2R4; Materials 2C4, 2F3, 3B4, 3D6, 3E6; Physics 1A6 (unless completed), 2B6.

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Department of Mathematics and Statistics

HONOURS COMPUTER SCIENCE AND COMPUTER SCIENCE MAJOR AND B.SC. IN COMPUTER SCIENCE
(See Computer Science and Systems)

HONOURS COMPUTER SCIENCE AND MATHEMATICS, AND COMPUTER SCIENCE AND MATHEMATICS MAJOR
(See Computer Science and Systems)

HONOURS COMPUTER SCIENCE AND STATISTICS AND COMPUTER SCIENCE AND STATISTICS MAJOR
(See Computer Science and Systems)

HONOURS ECONOMICS AND MATHEMATICS
(see Faculty of Social Sciences, Department of Economics)

HONOURS PHILOSOPHY AND MATHEMATICS
(See Faculty of Humanities, Department of Philosophy)

HONOURS ARTS AND SCIENCE PROGRAMME AND
COMPUTER SCIENCE (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS MATHEMATICS
(common Level II programme)

Admission:
Completion of any Level I programme, with a weighted average of at least 7.0 in Mathematics IA6, and one of 1G4, 1B3, 1B4, and 6 units acceptable to the Department of Mathematics and Statistics.

For students intending to enter Honours Computer Science and Mathematics, or Honours Computer Science and Statistics, one of Computer Science IA3, IB3, IH3, or Engineering ID3 is required in Level I.

Programme Notes:
1. This is a common Level II Programme from which the student, by a suitable selection of required and elective courses, may enter the Honours programmes in Computer Science, Computer Science and Mathematics, Computer Science and Statistics, Mathematics, Statistics, and Theoretical Physics and Applied Mathematics.

2. Choice of required courses and electives: Students should carefully choose their required and elective courses to be eligible for the programme of choice.

For the Computer Science Programme and the Joint programme with Computer Science, the student must elect Computer Science 2B3 and 2L3. (These are restricted enrolment courses.) Students interested in Statistics must take Statistics 2D3 and should take Statistics 2M3. A course in Computer Science is recommended.

Students interested in Theoretical Physics and Applied Mathematics must elect Physics 2B6 and 2C5.

Students interested in Pure Mathematics should take Mathematics 2C3 and 2F3.

FACULTY OF SCIENCE

3. Students not eligible for Computer Science 2B3 and 2L3, but interested in obtaining some competence in Computer Science are advised that the following courses are available:

Computer Science 2P3 followed by Computer Science 3D3, 3P3, 3T3, 4W3;

Computer Science 2A3 followed by Computer Science 3L3, 4L3, and Computer Science 1B3, 1C3, 2N3 for the students interested in acquiring a minimal basic acquaintance with computing.

4. The Department of Mathematics and Statistics requires that all Honours students entering Level III or IV must have their programmes approved by the Chairman or designate.

Area Courses:

Computer Science 2B3, 2L3, 2P3; Mathematics 2A5, 2A6, 2B4, 2B6, 2C3, 2C4, 2F3, 2F4, Statistics 2D3, 2D4, 2M3, 3M3; Physics 2C5.

Level II: 30 units


E 9 units electives.

HONOURS MATHEMATICS

Admission:
Completion of Level II Honours Mathematics, including Mathematics 2C3 or 2C4, or Level II Honours Computer Science, including Mathematics 2A5 or 2A6, 2B4 or 2B6.

Area Courses:

Mathematics 2F3, 2F4; all Level III and IV Mathematics and Statistics courses.

The following Area Courses are recommended for those who wish to pursue a career in Mathematics: Mathematics 3B4, 3B6, 3F6, 3H3, 3H4, 3P3, 3P4, 3L4, 3L6, 3B4, 3B6, 3E3, 3E6, 3I3, 4K3, 4K4, 4V6.

Levels III and IV: 60 units

R Mathematics 2C3, 2F3 (must be completed by the end of Level III); Mathematics 3A6, 3E6, 4A6; 24 units of Area courses.

E Electives to make a total of 60 units, at least 6 of which must not be from the Department of Mathematics and Statistics.

HONOURS STATISTICS

Admission:
Completion of Level II Honours Mathematics, including Statistics 2D3 or 2D4, or Level II Honours Computer Science, including Mathematics 2A5 or 2A6, and 2B4 or 2B6. Students are strongly urged to complete Computer Science 1B3 or 1H3 before entering Level III.

Area Courses:

Computer Science 2A3, 2B3, 2L3, 2P3, 3A3, 3P3; Mathematics 2C3, 2C4, 3A6, 3E4, 3E6, 3F6, 3P6, 3Q3, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4G3, 4K3, 4K4, 4Q6, 4Q3; all Level III and IV Statistics courses.

Levels III and IV: 60 units

R Mathematics 2C3 (must be completed by the end of Level III), and 3A6 or 3O6, 3T3; Statistics 3D6, 2M3 or 3M3 (if not completed), 4M3; 9 units of Statistics Area Courses; 15 units of Area Courses.

E Electives to make a total of 60 units, of which at least 6 units must not be from courses in the Department of Mathematics and Statistics.

MATHEMATICS MAJOR
(common Level II programme)

Admission:
Completion of any Level I programme, with an average of at least 4.0 in Mathematics IA6, and one of 1B3, 1B4, 1G4, and 6 units acceptable to the Department of Mathematics and Statistics.

For students intending to enter Computer Science Major, Computer Science and Mathematics Major, or Computer Science and Statistics, one of Computer Science IA3, IB3, 1H3, or Engineering ID3 is required in Level I.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. This is a common Level II Programme from which the student, by a suitable selection of required and elective courses, may enter the major programme in Computer Science, Computer Science and Mathematics, Computer Science and Statistics, Mathematics, Statistics.

3. **Choice of required courses and electives:** Students should carefully choose their required and elective courses to be eligible for the programme of choice.

   For the Computer Science programme and the joint programme with Computer Science, the student must elect Computer Science 2B3 and 2L3. [These are restricted enrolment courses.]

   Students interested in Statistics must take Statistics 2D3 and should take Statistics 2M3. A course in Computer Science is recommended.

**Area Courses:**
- Computer Science 2A3, 2B3, 2L3, 2P3; Mathematics 2G3, 2J6, 2K3, 2O3; Statistics 2D3, 2D4, 2M3, 3M3.

**Level II: 30 units**
- **R Mathematics** 2G3, 2J6, 2O3; one of Statistics 2D3, 2M3.
- **E Electives to make a total of 30 units,** at least 6 of which must not be from the Department of Mathematics and Statistics.

**MATHEMATICS MAJOR**

**Admission:**
Completion of Level II Mathematics Major, including Statistics 2D3 or 2D4, or Level II Computer Science Major including Mathematics 2G3 and 2O3.

**Programme Notes:**
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

**Area Courses:**
- All Levels III and IV Mathematics and Statistics courses.

**Levels III and IV: 60 units**
- **R Mathematics** 3O6, 3T3, 403; 24 units of Area courses.
- **E Electives to make a total of 60 units,** at least 6 of which must not be from the Department of Mathematics and Statistics.

**STATISTICS MAJOR**

**Admission:**
Completion of Level II Mathematics Major, including Statistics 2D3 or 2D4, or Level II Computer Science Major including Mathematics 2G3 and 2O3. Students are strongly urged to complete Computer Science 1B3 or 1H3 before entering Level III.

**Programme Notes:**
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

**Area Courses:**
- Computer Science 2A3, 2P3, 313, 3D3, 3P3, 3T3, 413, 4W3; Mathematics 306, 3Q3, 3R3, 3S3, 3T3, 3X3, 3Y3, 4C3, 4C4, 4G3, 4J3, 4O3, 4Q6; Statistics 2M3; all Level III and IV Statistics courses.

**Levels III and IV: 60 units**
- **R Mathematics** 3O6, 3T3, 4O3; Statistics 3D6, 2M3 and 3M3 (if not completed); 9 units of Statistics Area courses; 9 units of Area courses.
- **E Electives to make a total of 60 units at least 6 of which must not be** from the Departments of Mathematics and Statistics.

**B.Sc. IN MATHEMATICS**

**Admission:**
Completion of any Level I Programme, with a weighted average of at least 4.0 in Mathematics IA6 and one of Mathematics 1B3 or 1B4, 1G4.

**Area Courses:**
- Mathematics 2G3, 2J6, 2K3, 2O3; Computer Science 2A3, 2P3, 3P3; Statistics 2D3, 2D4, 2M3; all Level III Mathematics and Statistics courses.

**Levels II and III: 60 units**
- **R Mathematics** 2G3, 2J6, 2O3, 3O6; one of Mathematics 3B3, 3E6, 3T3; 6 units of Area courses.
- **E Electives to make a total of 60 units,** at least 12 units of which must not be from the Department of Mathematics and Statistics.

**Molecular Biology and Biotechnology**

**HONOURS MOLECULAR BIOLOGY AND BIOTECHNOLOGY**

This Honours degree programme is administered, within the Faculty of Science, jointly by the Departments of Biochemistry, Biology and Pathology, through a Committee of Instruction. The programme also draws on the new McMaster Institute for Molecular Biology and Biotechnology, established July 1, 1986, as a teaching resource. Information and counselling may be obtained from the Programme Co-ordinator for the Molecular Biology and Biotechnology programme.

**Admission:**
Completion of Natural Sciences I including Biology IA6, Chemistry IA6, one of Physics IA6, IB7, IB7 or IC6, IC7 with at least a B— in Biology IA6, Chemistry IA6, IA7 and in one of Mathematics IA6 or Physics IA6, IB7, IB7, IC6, IC7. The inclusion of Computer Science 1B3 in Level I is strongly recommended.

**Programme Notes:**
Level IV programme registrations must be approved by the Programme Co-ordinator for Molecular Biology and Biotechnology.

**Area Courses:**
- Biochemistry 2A3, 3B3, 3C3, 4B3, 4D3, 4J3, 4O3, 4P3; Biology 2B3, 4B3, 4J3, 4K3, 4L3, 4M3, 4N3, 4O3, 4P3, 4Q3, 4R3, 4S3, 4T3, 4U3, 4V3; Chemistry 2B6, 2M3, 3Q6, 3D3; Molecular Biology 3A6, 4A3, 4B3, 4C3, 4D3, 4E3, 4F3, 4G3.

**Level II: 33 Units** (Beginning September 1986)
- **R Biochemistry** 2A3; Biology 2B3, 2C3, one of Biology 2D3 and 2E3; Chemistry 2B6, 2N3, 2Q6; Computer Science 1B3 (if not completed).
- **E Electives to make a total of 33 units.**

**Level III: 33 Units** (Beginning September 1987)
- **R Biochemistry** 3B3, 3C3 or 3G6, (if Biochemistry 2A3 not completed); Molecular Biology 3A6; Biology 3H3, 3N6, 3O3; Chemistry 3D3.
- **E 6 units,** of which may not be Biology or Biochemistry, Biology 3E3, 3H13 are recommended.

**Level IV: 30-32 Units** (Beginning September 1988)
- **R Either Molecular Biology 4A3 or one of Biochemistry 4P3, Biology 4F4, or one of Biochemistry 4F6, Biology 4C8; Molecular Biology 4B3, 4C3, 4D3; 9 units chosen from Biochemistry 413, 4M3, 4O3; Biology 4H3, 4I3, 4V3; Molecular Biology 4E3, 4F3, 4G3.
- Students who have opted in either Biochemistry 4B6 or Biology 4C8 for a thesis topic which is outside of the Molecular Biology discipline will be required to take Molecular Biology 4A3.
- **E 6 units of electives.**

**Department of Physics**

**HONOURS CHEMISTRY AND PHYSICS**
(See Department of Chemistry)

**HONOURS GEOLOGY AND PHYSICS**
(See Department of Geology)

**HONOURS PHYSICS**

**Admission:**
Completion of Natural Sciences I, including Mathematics IA6, 1G4 or IB3, Physics IA6 or IA7 and Chemistry IA6 or IA7, with a weighted average of at least 7.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or IB3; (ii) one of Physics 1B6, 1B7, 1C6,
1C7, instead of 1A6 or 1A7. However, Physics 1A6 is strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

**Programme Notes:**

Students who have completed Level II of Honours Physics are eligible to proceed to Level III of Honours Physics, Honours Applied Physics, and Honours Theoretical Physics and Applied Mathematics. They may also be considered for admission to Level III of Honours Materials Science, preferably if Materials 1A6 or 1A3 and 1B3, or Engineering 203, has been completed in Level II.

**Area Courses:**

- Mathematics 2A6, 2A6, 3C3, 3C3, 4A2, 4B4, 4C3, 4C4, 4D6, 4E3, 4F3, 4J4, 4K3; Mathematics 2A5, 2A6, 3C3, 3D3, 3C6.

**Level II: 32-35 units**

R Physics 2B6, 2C5, 2H3; Mathematics 2A6, 2C3; Computer Science 1B3.

E Electives to make a total of 32 to 35 units, at least 6 of which must not be from Physics.

**Level III: 32-35 units**

R Physics 3H4, 3K4, 3M6; Mathematics 3C3, 3D3; 3 to 6 units of Level III or IV courses from the Faculty of Science. At least one of Physics 3B6 or 4D6 must be completed in either Level III or IV. Students will generally find that more choices are offered by the timetable if Physics 3B6 is taken in Level III and if Physics 4D6 is taken in Level IV.

E 6 units, excluding Physics and Engineering Physics.

**Level IV: 31-34 units**

R Physics 4A2, 4B4, 4F3, 4J4; two of Physics 3A3, 3X3, 3Y3, 4C3, 4D6, 4E3, 4K3; 6 units of Level III or IV courses from the Faculty of Science.

E Electives to make a total of 31 to 34 units.

**HONOURS APPLIED PHYSICS**

**Admission:**

Completion of Level II Honours Physics, or Level II Honours Mathematics including Physics 2B6, 2C5.

**Area Courses:**

- Applicable Level II Area courses: Physics 3B6, 3H4, 3M6, 4A2, 4B4, 4D6, 4J4; Mathematics 3C3, 3D3, 3C6; Engineering Physics 4W3.

**Level III: 34-36 units**

R Physics 3B6, 3H4, 3M6, 2H3; Mathematics 3C3, 3D3; additional units chosen from Physics 3K4, 3N3, 3T3, 3X3, 3Y3; Engineering Physics 3D3, 3X4, Mathematics 3Q3 to make a total of 28 to 30 units.

E 6 units, excluding Physics and Engineering Physics.

**Level IV: 32-34 units**

R Physics 4A2, 4B4, 4D6, 4J4; Engineering Physics 4W3; 6 to 8 units of Level III or IV Physics or Engineering Physics.

E Electives to make a total of 32 to 34 units.

**HONOURS APPLIED PHYSICS (HEALTH AND RADIATION OPTION)**

**Admission:**

Completion of Natural Sciences I, including Mathematics 1A6 and 1G4 or 1B3, Physics 1A6 or 1A7 and Chemistry 1A6 or 1A7, with a weighted average of at least 4.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1B3; (ii) one of Physics 1B6, 1B7, 1C6, 1C7 instead of 1A6 or 1A7. However, Physics 1A6 is strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

**Area Courses:**

- Physics 2B6, 2C5, 2H3, 3H4, 3M6, 3T3, 4A2, 4B4, 4D6, 4E3, 4Q4, 4R3, 4T3; Mathematics 2A5, 2A6, 3C3, 3D3, 3C6; Biology 3Q3.

**Level II: 32-35 units**

R Physics 2B6, 2C5, 2H3; Mathematics 2A6, 2C3; Computer Science 1B3 and Biology 1A6 (if not completed); one of Computer Science 2P3, 2N3.

E Electives to make a total of 32 to 35 units. Chemistry 2D3 is strongly recommended.

**Level III: 31-34 units**

R Physics 3H4, 3M6, 3T3; Mathematics 3C3, 3D3; Biology 3Q3; two of Physics 3B6, Mathematics 3Q3, Chemistry 2F3.

E Electives to make a total of 31-34 units.

**Level IV: 34 units**

R Physics 4A2, 4B4, 4D6, 4E3, 4Q4, 4R3, 4T3; Engineering Physics 4W3; one of Engineering 4X3, Engineering Physics 4Y3. The project of Physics 4Q4 must be taken in the field of Health and Radiation Physics.

E Electives to make a total of 34 units.

**HONOURS THEORETICAL PHYSICS AND APPLIED MATHEMATICS**

**Admission:**

Completion of Level II Honours Physics, or Level II Honours Mathematics including Physics 2B6, 2C5.

**Area Courses:**

- Applicable Level II Area courses: Physics 3K4, 3M6, 4A2, 4B4, 4C4, 4F3, Mathematics 3A6, 3C3, 3D3, 3C6, 3O6, 3T3, 4A6, 4D3, 4D4, 4O3.

**Level III: 31-34 units**

R Mathematics 3C3, 3D3; one of Mathematics 3A6, 3O6; Physics 3K4, 3M6, 4C3 (in 1987-88), 4H3 (if not completed); 3 to 6 units from Physics 3A3, 3N3, 3X3, 3Y3, Mathematics 3Q3.

E Electives to make a total of 31 to 34 units.

**Level IV: 33-36 units**

R Mathematics 3Q3 (if not completed), 4D3, Physics 4A2, 4B4, 4C3 (if not completed), 4F3, Mathematics 4A6 or both 3T3 and 4O3; 3 to 9 units of Level III or IV Mathematics or Physics.

E Electives to make a total of 33 to 36 units.

**PHYSICS MAJOR (GENERAL OPTION)**

**Admission:**

Completion of Natural Sciences I, including Mathematics 1A6, and 1G4 or 1B3, Physics 1A6 or 1A7, and Chemistry 1A6 or 1A7 with a weighted average of at least 4.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1B3; (ii) one of Physics 1B6, 1B7, 1C6, 1C7 instead of 1A6 or 1A7. However, Physics 1A6 is strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

**Programme Notes:**

Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

**Area Courses:**

- Physics 2B6, 2C5, 2G3, 2H3, and all Levels III and IV Physics courses; Mathematics 2G3, 2O3; Engineering Physics 3D3, 3F3, 4D3, 4E3, 4F3, 4G3, 4K3, 4N3, 4S4, 4W3.

**Level II: 30-32 units**

R Physics 2B6, 2H3; one of 2G3, 2C5; Mathematics 2G3, 2O3; Computer Science 1B3, if not completed.

E Electives to make a total of 30 to 32 units, at least 6 of which must not be Physics.

**Level III: 29-32 units**

R Physics 3H4; either Physics 3M6, and Mathematics 3C3 and 3D3, and 3 to 4 units from Levels III and IV, or Physics 3O3, 3Q3, and Mathematics 3C3, and 6 to 7 units from Levels III and IV Physics.
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E Electives to make a total of 29 to 32 units, at least 6 of which must not be from Physics or Engineering Physics.

Level IV: 30-32 units
R Physics 4A2, 4J4; 8 to 10 units of Level III and IV Physics which must include one of Physics 3B6 or 4D6 if neither has been completed; 6 units of Level III or IV Area courses.
E Electives to make a total of 30 to 32 units.

PHYSICS MAJOR (HEALTH AND RADIATION PHYSICS OPTION)

Admission:
Completion of Natural Sciences I, including Mathematics 1A6, 1G4 or 1B3, Physics 1A6 or 1A7, Chemistry 1A6 or 1A7, one of Biology 1A6, Computer Science 1B3, with a weighted average of at least 4.0 in Physics, one of the Mathematics courses, and any other required course. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1B3; (ii) one of Physics 1B6, 1B7, 1C6, 1C7; one of 1A6 or 1A7. However, Physics 1A6 is strongly recommended.

Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

Area Courses:
Physics 2B6, 2C5, 2G3, 2H3 and all Levels III and IV Physics courses; Mathematics 2G3, 2O3; Biology 3Q3; Engineering 4X3; Engineering Physics 4Y3.

Level II: 30-32 units
R Physics 2B6, 2H3; one of 2C5, 2G3; Mathematics 2G3, 2O3; Computer Science 1B3 and Biology 1A6 if not completed; one of Computer Science 2N3, 2P3.
E Electives to make a total of 30 to 32 units. Chemistry 2D3 is strongly recommended.

Level III: 31-34 units
R Physics 3B6, 3H4, 3O3, 3Q3, 3T3; Mathematics 3C3; Biology 3Q3; Chemistry 2F3.
E Electives to make a total of 31 to 34 units.

Level IV: 30-32 units
R Physics 4A2, 4D6, 4E3, 4Q4, 4R3, 4T3; one of Engineering 4X3, Engineering Physics 4Y3. The project of 4Q4 must be taken in the field of Health and Radiation Physics.
E Electives to make a total of 30 to 32 units.

B.Sc. IN PHYSICS

Admission:
Completion of Natural Sciences I, including Physics 1A6 or 1A7, Mathematics 1A6, and 1G4 or 1B3, Chemistry 1A6 or 1A7, with at least C− in Physics. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1B3; (ii) one of Physics 1B6, 1B7, 1C6, 1C7; one of 1A6 or 1A7. However, Physics 1A6 is strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

Area Courses:
Physics 2B6, 2G3, 2H3 and all Levels III and IV Physics courses; Mathematics 2G3; Chemistry 2P4, 2R2, 2P6.

Level II: 30 units
R Physics 2B6, 2G3; either Physics 2H3 or Chemistry 2P6; Mathematics 2G3, 2O3; Computer Science 1B3 (if not completed).
E Electives to make a total of 30 units, at least 6 of which must not be from Physics.

Level III: 29-31 units
R Physics 3H4, 3O3; 6 to 9 units of Levels III and IV Physics.
Level II: 30 units
R Either Psychology 2T3 and 2H3 or 2D6; Psychology 2R6; one of English 1A6, 1B6, 1C6, or 3A3; 6 units chosen from Biochemistry, Biology, Chemistry, Mathematical Sciences or Physics.
E Electives to make a total of 30 units, at least 3 of which must not be from Psychology.

Level III: 30 units
R 12 units of Level III Psychology; 6 units beyond Level I chosen from Biochemistry, Biology, Chemistry, Mathematical Sciences or Physics.
E Electives to make a total of 30 units, at least 6 of which must not be from Psychology.

Science
B.Sc. IN SCIENCE
For students who enter this programme from September 1987 the following will prevail.

Admission:
Completion of Natural Sciences I, including Mathematics 1A6 or 1F6, and two of Chemistry 1A6, 1A7, Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7, Biology 1A6, Psychology 1A6 with an average of at least 4.0 in two of the specified courses. Chemistry 1A6 or 1A7, one of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7, one of Biology 1A6 or Psychology 1A6, and one of Geography 1A6, Geology 1A3, 1C3 must be completed before Level III. The completion of all the requirements in Level I is strongly recommended.

Programme Notes:
1. * Science courses: Courses referred to as Science courses and marked with * are those courses offered by the Departments of Biochemistry, Biology, Chemistry, Computer Science and Systems, Geology, Materials Science and Engineering, Mathematics and Statistics, Physics, Psychology, and courses offered by the Department of Geography which are classified as Science courses.
2. In Levels II and III combined, not more than 14 units of Level I work may be taken and not more than 18 units of R-group courses may be taken in any one Department.

Area Courses:
All Level II and III Science courses*.

Levels II and III: 60 units
R 18 units of Level II Science courses*, 12 units of Level III Science courses*, one of English 1A6, 1B6, 1C6, Humanities 1C3, Philosophy 1B6, 1D6; 6 additional units from the Faculties of Humanities or Social Sciences.
No more than 18 units of R-group courses may be taken in any one Department.
E Electives to make a total of 60 units.

For students who enter this programme before September 1987, the following will prevail.

Admission:
Completion of Natural Sciences I, including at least two courses from Level I Biology, Chemistry and Physics, and with a weighted average of at least 4.0 in two or more Mathematics or Science courses. Chemistry 1A7 or 1C8 and one of Physics 1B7, 1A7, 1C7, 1C8 must be taken in Level I or II. The election of both in Level I is strongly recommended.

Programme Notes:
1. * Science courses: Courses referred to as Science courses and marked with * are those courses offered by the Departments of Biochemistry, Biology, Chemistry, Computer Science and Systems, Geology, Materials Science and Engineering, Mathematics and Statistics, Physics, Psychology, and courses offered by the Department of Geography which are classified as Science courses.
2. In Levels II and III combined, not more than 14 units of Level I work may be taken and not more than 18 units of R-group courses may be taken in any one Department.

Area Courses:
All Level II and III Science courses*.

Levels II: 30 units
R 18 units of Level II and III Sciences courses*, including a Level I Chemistry (if not completed) and a Level I Physics (if not completed).
E 12 units, at least 6 of which are not Area courses.

Level III: 30 units
R 18 units of Level II and III Science courses*, at least 12 units of which must be from Level III.
E 12 units, at least 6 of which are not Area courses.
The social sciences are concerned with the systematic study of activities of human relationships in societies which range from the primitive to the post-industrial. There is also growing interest among social scientists in the interaction between people and their natural and artificial environments. Developments in theory and refinements of method have, in recent years, given great impetus to social science studies and research.

The Faculty of Social Sciences includes the following departments or programmes:

- Anthropology
- Economics
- Labour Studies
- Physical Science
- Religious Studies
- Social Work
- Sociology
- Geography
- Psychology

The Faculty offers Bachelor of Arts, Honours Bachelor of Arts and Professional programmes. The Honours programmes provide a richer concentration in the particular field, as well as an extended time of study, and are normally a requirement for those who contemplate proceeding to graduate studies. In many cases, students may combine work in two departments and be graduated with a Combined Honours Degree in the two subjects. The Faculty of Social Sciences is participating fully in helping interested students combine concentration in a social science area with concentration in Canadian Studies, in Arts and Science, or any discipline in the Faculty of Humanities.

The two schools, Social Work and Physical Education, offer programmes of study which lead to the B.A./B.S.W. degrees in the one case, and the B.P.E. degree in the other. The B.S.W. degree may be attained separately by those who have already received one undergraduate degree.

Students are strongly advised to take advantage of the extensive counselling services provided by the Faculty. New students in particular should plan a programme of study that will allow them a number of options when they enter Level II.

Academic Regulations

Students enrolled in a programme in the Faculty of Social Sciences, in addition to meeting the Academic Regulations of the University, shall be subject to the following regulations of the Faculty of Social Sciences.

McMaster Test of Writing Competence

A student admitted to McMaster University in 1986 or later, and who has completed 60 units of any programme, must also have passed the McMaster Test of Writing Competence, before continuing in any Social Sciences Programme.

Humanities Requirements

Students registered in programmes in the Faculty of Social Sciences, except for those registered in the Bachelor of Physical Education programme and the B.A./B.S.W. programme, are required to complete 6 units of courses chosen from the Faculty of Humanities before graduation, preferably before Level II.

Students registered in B.A. programmes in Economics and Psychology will fulfill this requirement by completing the English requirement for their programme. Students in the B.A. Psychology programme should note the additional Science or Humanities requirements for that programme.

Deadlines

The Faculty of Social Sciences will not normally consider applications for admission, admission to a second degree or continuing studies, registration, or dropping and adding of courses after the deadlines stated in this Calendar under Application Procedures and Sessional Dates unless written documentation is provided showing good cause, as determined by the Faculty Admissions, Study and Reviewing Committee.

Course Selection and Changes

A student must ensure that the selection of courses meets the degree requirements for the programme in which the student is registered, that any prerequisites have been met, and that written permission of the instructor has been obtained if required. Considerable inconveniences can result for a student whose registration does not meet the requirements.

All registrations, programme and course changes must be approved by the Associate Dean (Studies), and are subject to the deadline dates established by the University.

Courses in Physical Education and Social Work Available for Undergraduate Credit

Several courses offered by the School of Physical Education and the School of Social Work may be taken by students in B.A. programmes as electives for undergraduate credit. These courses are:

- Physical Education 3J3, 3P3, 3Q3, 4E3, 4G3, 4J3, 4L3, 4M3
- Social Work 3C3, 3G3, 3H3, 3J3, 4J3, 4M3, 4Q3.

Students who are in the Bachelor of Physical Education programme may take as electives up to 6 units of Physical Education courses from the list above.

Re-admission

A student who is ineligible to continue at the University may apply for re-admission to the Faculty of Social Sciences. Application for re-admission must be made in writing to the Associate Dean (Studies) before the application deadline for the session in which the student seeks to be re-admitted. The letter of application should include an explanation of the student's academic performance and reasons why the student would expect to succeed if re-admitted. Further guidelines for the letter of application may be obtained from the Office of the Associate Dean (Studies).

In considering a student's request for re-admission, the Faculty's Admissions, Study and Reviewing Committee will use several criteria, including the student's academic record before and after admission to McMaster, the letter of application and the student's ability in English.

Students are advised that re-admission is a privilege given only to those who are able to show good reasons for an expectation of improved academic performance. In the case of students who have been Required to Withdraw, re-admission will not be considered for a session beginning within 12 months of this requirement, except in extraordinary circumstances. If a student is applying for re-admission after the 12-month withdrawal period, a letter of reference from an employer may be required.

Re-admission is not automatic or guaranteed.

Combined Honours Programmes

Subject to possible timetable restrictions, and provided that the student meets the requirements for entry into each of the relevant Honours Programmes, a student may combine work in any two departments, and be graduated with a Combined Honours degree in the two subjects.

All Combined Honours programmes must be approved by both Departments concerned as well as by the Associate Dean(s) (Studies).
These programmes will normally include approximately 36 units of work beyond Level I in each Department (normally 12 units of work per Level in each). For special requirements in Honours programmes, and for taking extra units, either as extra work or as make-up work, see the University's statement on Academic Regulations in this Calendar.

Bachelor of Arts Programmes

For special requirements in Bachelor of Arts programmes, and for taking extra units, either as extra work or as make-up work, see the University's statement on Academic Regulations in this Calendar.

A student must obtain at least 4.0 in the required Level I work in the area in which the student wishes to concentrate in Level II.

There is no provision for combined degrees in the 3-Level Bachelor's Degree programmes except for Canadian Studies and Another Subject, (described in the Faculty of Humanities section of the Calendar), and Gerontology and Another Subject, (described in the Faculty of Social Sciences section of the Calendar). The other subject may be from the Faculty of Social Sciences or the Faculty of Humanities.

Part-time Studies

Subject to limitations of course offerings, a student may pursue on a part-time basis any programme in the Faculty of Social Sciences. Normally, students will arrange their programme of studies in consultation with a Student Advisor in the Office of the Associate Dean (Studies) and with the Undergraduate Advisor of the appropriate Department.

Level I Programmes

SOCIAL SCIENCES I: 30 units

R 12 units from: Anthropology 1A3, 1Z3 and/or IB6; Canadian Studies 1A6; Economics 1A6; Geography 1A6 or IB6; Labour Studies 1A3 or 1AA3; Political Science 1A6; Psychology 1A6; Religious Studies 1B6, 1E6, 1F6, 1G3, or 1H3; Sociology 1A6.

Students registered in programmes in the Faculty of Social Sciences are required to complete 6 units of courses chosen from the Faculty of Humanities as stated above, as Academic Regulations, Humanities Requirement. It is recommended that this requirement be completed in Level I.

Students may take more than 12 units of work in the Faculty of Social Sciences if they wish, subject to the conditions outlined in E (Electives) below.

E 18 units elective. Normally, a student will take only 6 units of work in any one discipline. In special circumstances, a student may be permitted to take up to 12 units in one discipline.

PHYSICAL EDUCATION I: 32 UNITS

R Physical Education 1A6, 1B3, 1E3, 1F3; Practicum: 2 units; Biology 1J3.

E 12 units.

Department of Anthropology

HONOURS ARTS AND SCIENCE PROGRAMME AND ANTHROPOLOGY (B.Arts Sc.)

(See Arts and Science Programme)

Programme Notes: (Applicable to all Anthropology programmes) Anthropology includes the four major subfields of Social/Cultural Anthropology, Physical/Biological Anthropology, Archaeology, and Linguistics. Students may specialize in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites (see course listings by department in the Calendar).

Cultural/Social Anthropology: Anthropology 2B3, 2C3, 2F3, 2G3, 2H3, 2I3, 2P3, 2Q3, 2R3, 2X3, 2Z3, 3A3, 3B3, 3C3, 3D3, 3E3, 3F3, 3G3, 3H3, 3J3, 3J6, 3L3, 3P3, 3Q3, 3S6, 3T3, 3V3, 3X3, 3Z3, 4A3, 413, 4N3, 4Y3.

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Physical/Biological Anthropology: Anthropology 2D3, 2E3, 2J3, 2K3, 3Z3, 3N6, 3O6, 4O3, 4P3, 4Q3 (relevant courses are also offered by Biology and Physical Education).

Archaeology: Anthropology 2A3, 2N3, 2O3, 3K3, 3U3, 4E3, 4F3, 4M3 (relevant courses are also offered by History and Classics).

Linguistics: Anthropology 2L3, 2M3, 2Q3, 2T3, 3H3, 3T3, 3Y3, 4K3.

Other courses: Courses not distinguished by subfield include the reading courses 2W3, 3W3, 4G3 as well as the seminar course 4B3.

In planning your programme, it is important to take note of the prerequisites of certain of the higher level courses.

HONOURS ANTHROPOLOGY

Admission:

Completion of 30 units with an average of at least 7.0 in Anthropology 1A3 and 1Z3, or an average of at least 7.0 in Anthropology 1B6 and 1A3 or 1Z3.

Programme Notes:

1. See subfield descriptions above.

2. Honours students are required to take at least 3 units above Level I in each of the four Anthropology subfields. This requirement is in effect for students entering Level II in 1984-85 or later.

3. The Graduation Average is computed on all Level II, III and IV Anthropology courses taken.

Area Courses:

All Level II, III and IV Anthropology: Sociology 2Y3, Philosophy 2R3.

Levels II, III and IV: 90 units

R 36 units of Anthropology Area courses, including Anthropology 2F3, 3S6 and 413, Sociology 2Y3, Philosophy 2R3, and at least 9 units of Level IV Anthropology courses.

E Electives to make a total of 90 units.

B.A. IN ANTHROPOLOGY

Admission:

Completion of 30 units with an average of at least 4.0 in Anthropology 1A3 and 1Z3, or an average of at least 4.0 in Anthropology 1B6 and 1A3 or 1Z3.

Area Courses:

All Level II, III and IV Anthropology courses.

Levels II and III: 60 units

R 24 units of Anthropology beyond Level I, including Anthropology 2F3.

E Electives to make a total of 60 units.

Canadian Studies

(See Faculty of Humanities, Canadian Studies)

Department of Economics

HONOURS COMMERCE AND ECONOMICS

In conjunction with the Faculty of Business, a programme is offered in Honours Commerce and Economics. Since students register in the Faculty of Business, details concerning admission, the programme of study and academic requirements are given in the Faculty of Business section of the Calendar.

HONOURS ARTS AND SCIENCE PROGRAMME AND ECONOMICS (B.Arts Sc.)

(See Arts and Science Programme)

A combined honours programme is offered for students in the Arts and Science Programme. The academic requirements and programme of study are given in the Arts and Science Programme section of the Calendar.
FACULTY OF SOCIAL SCIENCES

HONOURS ECONOMICS
Admission:
Completion of any Level I programme with an average of at least 7.0 in Economics 1A6 and 6 units of Mathematics (or another 6 units acceptable to the Department), including a grade of at least B− in Economics 1A6.

Programme Notes:
1. English Requirement: Students entering this programme in September 1985 or later are required to successfully complete one of English 1A6, 1B6, 1C6, or 2E6 by the end of Level II. It is strongly recommended that one of these English courses be included in the student's Level I programme.

2. Mathematics Requirement: One course from each of the following groups must be successfully completed by the end of Level II.
   a. Grade 13 Calculus or Mathematics 1K3.
   b. Mathematics 1A6 or 1M3.
   c. Mathematics 1L3.
   (Students with credit in Mathematics 1F6 or 1G6 have fulfilled the Mathematics requirements. Students with credit in Mathematics 1B3, 1B4 or 1G4 must consult a Departmental adviser.)

3. The Graduation Average is computed on all Level II, III and IV Economics courses. Cumulative Grade 13 Calculus or Mathematics 1K3, Mathematics 1A6 and Mathematics 1B3, 1G4 or 1B4.

E Electives, if needed, to make a total of 90 units. Mathematics 2L3 or equivalent is recommended as preparation for Economics 3A3, 3AA3.

HONOURS ECONOMICS AND COMPUTER SCIENCE
Admission:
Completion of any Level I programme, including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, and including a grade of at least B− in Economics 1A6 and an average of at least 7.0 in Economics 1A6, Mathematics 1A6 and Mathematics 1B3, 1G4 or 1B4.

Programme Notes:
1. Because of resource limitations, enrolment in Honours Economics and Computer Science is limited. Students intending to enter the programme must consult the Department of Computer Science and Systems.

2. English Requirement: See Honours Economics above.

3. The Graduation Average is computed on all Level II, III and IV Economics and Computer Science courses.

Area Courses:
All Level II, III and IV Economics and Computer Science courses.

Levels II, III and IV: 90 units
R At least 36 units of Economics, including Economics 2L6, 2M6, 3A3, 3AA3; one of Economics 2K3, 3I3, 3M3, 3R3; one of Statistics 2D3, 2M3, 3M3; one of Economics 3Q6, Statistics 3D6; Computer Science 3C3, 2B3, 2L3, 3A3, 3D3, 4G6; two of Computer Science 3B3, 3C3, 3E3, 3T3, 6 additional units of Computer Science; and additional English units as described above in Programme Notes, if not completed in Level I.

E Electives to make a total of 90 units. Mathematics 2L3 is recommended as preparation for Economics 3A3, 3AA3.

HONOURS ECONOMICS AND GEOGRAPHY
Admission:
Completion of any Level I programme with a grade of at least B− in each of Economics 1A6 and Geography 1B6.

Programme Notes:
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

2. English Requirement: See Honours Economics above.


4. A single Cumulative Area Average and a single Graduation Average will be computed.

Area Courses:
Geography 2A3, 2B3, 2L3, 2L3, 2R3, 2Y3, 3G3, 3N3, 3Q3, 3Q3, 3T3, 3X3, 4C6, 4F3, 4H3, 4J3, 4N3, 4T3, 4X3, 4Y3; all Level II, III and IV Economics courses.

Level II: 30 units
R Geography 2LL3, 2L3 or Economics 3Q6 (in Level III); 9 units from Geography 2A3, 2B3, 2R3, 2Y3; Economics 2L6, 2M6; one of Economics 2K3, 3I3, 3M3, 3R3 (this requirement may be met in Level III or IV); Mathematics and English requirements as listed above if not completed in Level I.

E Electives to make a total of 30 units.

Level III: 30 units
R Geography 2L3 or Economics 3Q6 (if Geography 2LL3 and 2L3 not taken in Level II), and 6 additional units of Economics.

E Electives to make a total of 30 units.

Level IV: 30 units
R Geography 4C6 and at least 6 other units of Level IV Area courses in Geography; 12 units of Economics.

E 6 units elective.
HONOURS ECONOMICS AND MATHEMATICS

Admission:
Completion of any Level I programme, including a grade of at least B- in Economics 1A6 and an average of at least 7.0 in Mathematics 1A6 and IB3.

Programme Notes:
2. Graduation Average is computed on all Level II, III and IV Economics, Mathematics and Statistics courses.

Area Courses:
All Level II, III and IV Economics, Mathematics and Statistics courses.

HONOURS ECONOMICS

Completion of any Level I programme, including a grade of at least B- in Economics 1A6 and IB3.

Programme Notes:

Area Courses:
All Level II, III and IV Economics, Mathematics and Statistics courses.

Levels II, III and IV: 90 units
R At least 36 units of Economics and 36 units of Mathematical Sciences, selected as follows: Economics 2L6, 2M6, 3A3, 3AA3; one of 2K3, 3I3, 3M3, 3R3; Statistics 2D3; either Economics 306 or Statistics 3D6; Mathematics 2A6, 2B6, 2F3; one of 2C3, 3A6, 3O6; 15 units from Mathematics 3E6, 3F6, 3P3, 3Q3, 3R3, 3S3, 3T3, 4A6, 4C3, 4G3, 4J3, 4K3, 4Q3, Statistics 3D6, 3S3, 3U3, 4H3, 4K3, 4M3.
E Electives to make a total of 90 units.

HONOURS ECONOMICS AND POLITICAL SCIENCE

Admission:
Completion of any Level I programme with an average of at least 7.0 in Economics 1A6 and 6 additional units. Students must obtain a grade of B- in Economics 1A6. A Level I course in Political Science is recommended.

Programme Notes:

Area Courses:
All Economics and Political Science courses.

Level II: 30 units
R Economics 2L6 and 2M6; one of Economics 2K3, 3I3, 3M3, 3R3 (may be postponed to Levels III or IV); 12 units of Level II Political Science (Political Science 2F6 is recommended); Mathematics and English requirements as described above in Programme Notes, if not completed in Level I.
E Electives to make a total of 30 units, at least 3 of which must be outside of Economics and Political Science.

Level III: 30 units
R Economics 3A3, 3AA3 and 3O6; 12 units of Level III or IV Political Science.
E 6 units elective.

Level IV: 30 units
R 12 units of Economics, including 3 units from Economics 2K3, 3I3, 3M3, 3R3 (if not previously completed); 6 units of Level IV Political Science and 6 units of either Level III or IV Political Science.
E 6 units elective.

B.A. IN ECONOMICS

Admission:
Completion of any Level I programme with an average of at least 4.0 in Economics 1A6, Mathematics 1K3, 1L3 and 1M3 (for exceptions to this requirement, see Programme Notes below), including a grade of at least C- in Economics 1A6.

Programme Notes:
1. English Requirement: Students entering this programme in September 1985 or later are required to successfully complete one of English 1A6, 1B6, 1C6, or 2E6 by the end of Level II. It is strongly recommended that one of these English courses be included in the student's Level I programme.
2. Mathematics Requirement: One course from each of the following groups must be successfully completed by the end of Level II.
   a. Grade 13 Calculus or Mathematics 1K3.
   b. Mathematics 1A6 or 1M3. (Students entering Level II in 1984-85 or before are exempt from this requirement.)
   c. Mathematics 1L3.

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(Students with credit in Mathematics 1F6 or 1G6 have fulfilled the Mathematics requirements. Students with credit in Mathematics 1B3, 1B4 or 1G4 must consult a Departmental adviser.)

Area Courses:
All Level II, III and IV Economics courses.

Levels II and III: 60 units
R 24 to 36 units of Economics, including one of Economics 2K3, 3I3, 3M3, 3R3; Economics 2G3 or 2L6; Economics 2H3 or 2M6; Economics 2B3 or 306; additional English and Mathematics requirements as described above in Programme Notes, if not completed in Level I; at least 24 units outside Economics, including Mathematics and other required outside courses taken in Levels II and III.
E Electives to make a total of 60 units.

Department of Geography

HONOURS GEOGRAPHY (B.Sc.) AND B.Sc. IN GEOGRAPHY

AND HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(See B.Sc. Programmes in Geography, Faculty of Science, Department of Geography)

HONOURS ECONOMICS AND GEOGRAPHY (B.A.)
(See Department of Economics)

HONOURS HISTORY AND GEOGRAPHY (B.A.)
(See Faculty of Humanities, Department of History)

HONOURS ARTS AND SCIENCE PROGRAMME AND GEOGRAPHY (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS GEOGRAPHY (B.A.)

Admission:
Completion of any Level I programme with at least a B- in Level I Geography, and an average of at least 7.0 in that and 6 additional units. One of Mathematics 1A6 or 1M3 must be completed by the end of Level II. Its inclusion in the student's Level I programme is strongly recommended. Students are reminded of the Humanities requirement of the Faculty of Social Sciences. (See Faculty of Social Sciences, Humanities Requirement.)

Programme Notes:
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.
2. Students are advised to take Geography 1A6 or 1B6 in Level I and to take Geography 2L3 and 2LL3 in Level II. Geography 3O3 must be taken in Level III. Students should consult the Handbook for Undergraduate Geographers, which may be obtained from the departmental office.

Area Courses:
All Level II, III and IV Geography courses.

Level II: 30 units
R Geography 2L3 and 2LL3, at least 12 units of 2A3, 2B3, 2D3, 2F3, 2K3, 2R3, 2T3, 2W3, 2Y3, and one of Mathematics 1A6 or 1M3 if not taken in Level I.
E Electives to make a total of 30 units. At least 6 units of electives must be in Humanities or Science, excluding Geography.

Level III: 30 units
R Geography 3O3; at least 12 units from Geography 3D3, 3F3, 3G3, 3K3, 3M3, 3P3, 3Q3, 3T3, 3W3, 3X3, 3Z3, and 3 additional units of Level III or IV Geography.
E Electives to make a total of 30 units, 6 of which must not be from Geography.

Level IV: 30 units
R Geography 4C6; at least 12 additional units of Level IV Geography.
E Electives to make a total of 30 units, 6 of which must not be from Geography.

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Admission:
Completion of any Level I programme with a grade of at least B-- in both Geography 1A6 and Geology 1A3 or R At least 6 units from Geography 2A3, 2B3, 2D3, 2F3, 2K3, 2LL3, 2R3, 2T3, 2U3, 2W3, 2Y3; at least 6 additional units of Level II Geography.

Electives to make a total of 30 units, so that at least 18 units from outside of Geography are taken in Levels II and III.

Level III: 30 units
R At least 6 units from Geography 3D3, 3F3, 3G3, 3K3, 3M3, 3P3, 3Q3, 3T3, 3W3, 3X3, 3Z3; at least 6 additional units of Level III Geography.

Electives to make a total of 30 units, so that at least 18 units from outside of Geography are taken in Levels II and III.

Gerontological Studies

The offering of these programmes (Combined Honours Gerontology and Another Subject, and B.A. in Gerontology and Another Subject) is contingent upon approval by the Senate of McMaster University, and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Social Sciences.

COMBINED HONOURS IN GERONTOLOGY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B-- in Gerontology 1A6 or Social Science 2G6, and satisfaction of admission requirements for the Honours B.A. programme in the other subject.

Programme Notes:
1. Enrolment in the programme is limited.
   Application for admission, including a statement explaining the applicant's interest in the programme, should be made to the Chairman of the Committee of Instruction, prior to April 15. The Admissions Committee may wish to interview the applicants.

2. Students who have not taken Gerontology 1A6 or Social Science 2G6 in Level I may be considered for admission to the programme, and should consult the Chairman of the Committee of Instruction.

3. Courses other than those listed below as Area Courses, may qualify as Gerontology Area courses. Students wishing to designate an Area course not on the list of Gerontology Area courses must do so at registration, with the permission of the Chairman of the Committee of Instruction.

4. No Gerontology course may be counted as credit toward the other subject of the combined programme.

5. Students should refer to the Course Listing by Department and take note of the prerequisites required for some of the Area courses.

Area Courses:
All Level II, III and IV Gerontology courses, and all designated Gerontology Area courses; Religious Studies 2A6; Anthropology 2Q3; History 3E3; Philosophy 3C3; Social Work 3C3; Sociology 3G3 and 3X3; Health Sciences 3B3, 4C3 and 4D3; or other designated and approved Area courses. (See Programme Notes above.)

Levels II, III and IV: 90 units
R Gerontology 2A3, 3B3, 3C3; one of Gerontology 2B3 or 3D3; and Gerontology 4A6 (Thesis) or Psychology 4D6; 18 units of Gerontology Area courses; and the Area requirements of the Honours B.A. programme of the other subject.

Electives, beyond Level I, to a total of 90 units.

B.A. IN GERONTOLOGY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a Grade of at least B-- in Gerontology 1A6 or Social Science 2G6, and satisfaction of admission requirements for the B.A. in the other subject.

Programme Notes:
1. Enrolment in the programme is limited.
   Application for admission, including a statement explaining the applicant's interest in the programme, should be made to the Chairman of the Committee of Instruction, prior to April 15. The Admissions Committee may wish to interview the applicants.
2. Students who have not taken Gerontology 1A6 or Social Science 2G6 may be considered for admission to the programme and should consult the Chairman of the Committee of Instruction.

3. Courses other than those listed below as Area Courses, may qualify as Gerontology Area courses. Students wishing to designate an Area course not on the list of Gerontology Area courses must do so at registration, with the permission of the Chairman of the Committee of Instruction.

4. No Gerontology course may be counted as credit toward the other subject of the combined programme.

5. Students should refer to the Course Listing by Department and take note of the prerequisites required for some of the Area courses.

Area Courses:
All Level II and Level III Gerontology courses and the following designated Gerontology Area Courses: Religious Studies 2A6; Anthropology 3Q3; History 3EE3, Philosophy 3C3; Social Work 3C3; Sociology 3G3 and 3X3; Health Sciences 3B4, 4C3 and 4D3; or other designated and approved Area courses. (See Programme Notes above.)

Levels II and III: 60 units
R Gerontology 2A3; 3B3; 3C3; one of 2B3 or 3D3; and 12 units of Gerontology Area Courses; the Area requirements of the B.A. programme of the other subject.
E Electives, beyond Level I, to a total of 60 units.

Labour Studies

B.A. IN LABOUR STUDIES
If the Honours B.A. in Labour Studies and the revised B.A. in Labour Studies are approved (see below), this programme will not be offered.

Admission:
Completion of any Level I programme with an average of at least 4.0 in Labour Studies 1A6 and 1A3, and an average of at least 4.0 in 12 units from Economics 1A6, History 1C6, Mathematics 1K3, 1L3, Political Science 1A6, Psychology 1A6, Sociology 1A6.

Programme Notes:
1. Enrolment in the degree programmes in Labour Studies is limited.
   Application for admission, including a statement explaining the applicant’s interest in the programme, should be made to the Chairman of Instruction, prior to April 15. The Admissions Committee may wish to interview each applicant.
2. Students are strongly advised to select Level I courses which are prerequisites for required courses in Levels II and III, so to maximize choice among these courses. Normally, students will complete all Level II requirements before proceeding to Level III.
3. Students enrolled in the Labour Studies Programme are not eligible for admission to Commerce courses other than those specified in the Labour Studies curricula, even where they have fulfilled the necessary prerequisites (for example, Commerce 3B3A).

Area Courses:
Labour Studies 2A3, 3A3; Commerce 2BA3, 4BC3, 4BD3; Economics 3D3; Political Science 3X6, Social Work 2B6; Sociology 3Y3.

Level II: 30 units
R Labour Studies 2A3, Commerce 2BA3; Social Work 2B6; and 15 to 18 units from Commerce 2AA3, Economics 2B3, 2G3, 2H3, History 2J6, Political Science 2F6, 2G6, Psychology 2C3, Social Work 3H3, 3J3, Sociology 2D6, 2I3, 2V6.
E Electives to make a total of 30 units.

Level III 30 units
R Commerce 4BC3, 4BD3; Labour Studies 3A3; 12 units which must include at least one of Economics 3D3, Political Science 3X6, Sociology 3Y3, and additional units from Commerce 3B3, Economics 3E3, 3S3, History 3K6, Political Science 3Z6, Psychology 3D3, Social Work 3H3, 3J3, Sociology 3F6, 3L3.
E Electives to make a total of 30 units.

HONOURS LABOUR STUDIES
The offering of the following programmes (Honours Labour Studies and the revised B.A. in Labour Studies) is contingent upon approval by the Senate of McMaster University, and the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Social Sciences.

Admission:
Completion of any Level I programme with an average of at least 7.0 in Labour Studies 1A3 and 1A3, and an overall average of at least 7.0 in 12 units, which includes Labour Studies: 1A3 and 1A3, and 6 units from Economics 1A6, History 1C6, Mathematics 1K3, 1M3, Political Science 1A6, Psychology 1A6, Sociology 1A6.

Programme Notes:
1. Enrolment in the degree programmes in Labour Studies is limited.
   Application for admission, including a statement explaining the applicant’s interest in the programme, should be made to the Chairman of Instruction, prior to April 15. The Admissions Committee may wish to interview each applicant.
2. Students must successfully complete Economics 1A6 and Sociology 1A6 by the end of Level II.

Area Courses:
All Level II, III and IV Labour Studies courses, and all Level II and IV Commerce courses.

Level II: 30 units
R Labour Studies 2A6, 2B3, 2C3 and Commerce 2BA3.
E 15 units.

Level III: 30 units
R Labour Studies 3A6, 3B3 or 3I3, 3C3; Commerce 4BC3 and 4BD3.
E 12 units.

Level IV: 30 units
R Labour Studies 3D3 or 3E3, 4A6, 4B3, 4C3, 4D3.
E 12 units.

B.A. IN LABOUR STUDIES
The offering of this program is contingent upon the approvals as noted above under Honours Labour Studies.

Admission:
Completion of any Level I programme with an average of at least 4.0 in Labour Studies 1A3 and 1A3 and an overall average of at least 4.0 in 12 units, which includes Labour Studies 1A3 and 1A3, and 6 units from Economics 1A6, History 1C6, Mathematics 1K3, 1L3, Political Science 1A6, Psychology 1A6 and Sociology 1A6.

Programme Notes:
1. Enrolment in the degree programmes in Labour Studies is limited.
   Application for admission, including a statement explaining the applicant’s interest in the programme, should be made to the Chairman of Instruction, prior to April 15. The Admissions Committee may wish to interview each applicant.
2. Students must successfully complete Economics 1A6 and Sociology 1A6 by the end of Level II.

Area Courses:
All Level II and III Labour Studies courses and all Level II and IV Commerce courses.

Level II: 30 units
R Labour Studies 2A6, 2B3, 2C3 and Commerce 2BA3.
E 15 units.

Level III: 30 units
R Labour Studies 3A6, 3B3 or 3I3, 3C3; Commerce 4BC3 and 4BD3.
E 12 units.

Level IV: 30 units
R Labour Studies 3D3 or 3E3, 4A6, 4B3, 4C3, 4D3.
E 12 units.
FACULTY OF SOCIAL SCIENCES

School of Physical Education and Athletics

PROGRAMME FOR THE B.P.E. DEGREE

The School of Physical Education and Athletics offers a four-year programme leading to the degree of Bachelor of Physical Education (B.P.E.). The programme differs somewhat from the majority of Physical Education programmes in the province in that students begin to take courses leading to the degree in Level I. As a result, the programme is divided into two distinct parts.

During Levels I and II students take a core of nine units required theoretical courses in which they are introduced to the various theoretical sub-disciplines of Physical Education and a core of six units required practicum courses.

During Levels III and IV students are free to select from a variety of Physical Education electives in both the theoretical and practicum areas. These courses, supplemented by the arts and science electives selected by the student, may be grouped in various ways with career and/or graduate study goals in mind.

ACADEMIC REGULATIONS

Students enrolled in Physical Education, in addition to meeting the General Academic Regulations of the University, shall be subject to a number of School regulations.

Continuation in Programme

Students in Physical Education I must:
1. obtain a university average (UA) of at least 4.0 (weighted average of grades in all courses taken).
2. obtain a Cumulative Area Average (CAA) of at least 4.0 calculated as a weighted average of grades in all Physical Education courses taken.
3. obtain a grade of at least D+ in each Area course.

Beyond Level I a student must achieve a minimum grade of D+ in each Area course taken and a CAA of at least 4.0 at each review in order to continue in the programme.

Failure to meet the above requirements leads to one of two conditions:

1. May Not Continue in the Programme: Re-Admission

   A student who is ineligible to continue in the B.P.E. programme may apply for re-admission after not less than one year. Application for re-admission must be made in writing to the Undergraduate Chairperson in March of the year re-admission is desired. A student interested in being re-admitted should endeavour during the interim period of review to complete at least 18 units of university course work with C+ (6.0) grade average.

   Re-admission Is Not Guaranteed.

2. May Continue on Probation: Repeated Courses

   Students who have failed (F grade) any Area course, but who have achieved a CAA of 4.0 at the review period may be permitted to continue on probation subject to the approval of the School of Physical Education Admissions and Review Committee. In such cases the student must repeat any failed Required Area course or replace any failed Elective Area course. Repeated courses to lift the probationary status a minimum grade of C must be obtained in any repeated course, and the CAA must be raised to at least 4.0 for the Level in question.

Work Load

All B.P.E. students must complete a Winter Session work load of 32 units in Level I, and 34 units in each of Levels II, III, and IV. Advanced credit and credit earned during Summer Sessions may be reduced to this load requirement. Such reductions will be applied as late as possible in a student's programme. In any Winter Session, a student may not register for any more than the required number of units without the approval of the Undergraduate Chairperson.

Graduation

The minimum requirement for graduation in the B.P.E. programme is a CAA of 4.0 in at least 60 units of Area courses taken in Levels II, III, and IV. A student may be awarded First, Second, or Third Class standing on the basis of the Graduation Average (GA).

Students require 134 units to graduate. These units are composed of 54 units of elective, 66 units of Physical Education theory, and 14 units of Physical Education practicum.

Area Courses

All Level I, II, III and IV Physical Education courses. Normally, the requirements for each Level must be completed satisfactorily before a student is allowed to proceed to the next Level of the Physical Education programme.

Level I: 32 units

R Physical Education 1A6, 1B3, 1E3, 1F3; Practicum: 2 units; Biology 1J3.
E 12 units, excluding Physical Education.

Level II: 34 units

R Physical Education 2A3, 2B3, 2C6, 2D3, 2F3; Practicum: 4 units.
E 12 units, excluding Physical Education courses.

Level III: 34 units

R 15 units from Level III or IV Physical Education courses; Practicum: 4 units.
E 15 units, excluding Physical Education courses but which may include up to 6 units of Physical Education courses approved for B.A. credit during Levels III and IV inclusive.

Level IV: 34 units

R 15 units from Level III or IV Physical Education; Practicum: 4 units.
E 15 units, excluding Physical Education but which may include up to 6 units of Physical Education courses approved for B.A. credit provided that the 6 unit limit has not been reached during Level III.

B.P.E. AS A SECOND DEGREE

Individuals already holding an undergraduate degree may be admitted to the Physical Education programme. Applications should be made to the Undergraduate Physical Education programme prior to May 15 for the Fall term.

Enrolment is limited and applicants must normally provide evidence of at least second class standing (B-) in their previous university work to be eligible. Only full-time students will be considered.

Students are required to take 80 units of Physical Education courses which consist of 66 units of Physical Education theory and 14 units of Physical Education practicum. Level I and II theory and practicum courses may be taken in sequence and be completed before Level III and IV courses are undertaken.

The B.P.E. degree will be awarded if the student achieves a minimum grade of D+ in each course and maintains a CAA of at least 4.0 (C-).

TRANSFERRING INTO THE SCHOOL OF PHYSICAL EDUCATION

Undergraduate students from McMaster University or any other university seeking to transfer into the B.P.E. program may be admitted. Enrolment is limited and applicants must normally provide evidence of at least second class standing (B-) in their previous university work to be eligible. Only full-time students will be considered.

Department of Political Science

HONOURS ECONOMICS AND POLITICAL SCIENCE
(See Department of Economics)

HONOURS GERMAN AND POLITICAL SCIENCE
(See Faculty of Humanities, Department of German)

HONOURS RUSSIAN AND POLITICAL SCIENCE
(See Faculty of Humanities, Department of Slavic Studies)

HONOURS ARTS AND SCIENCE PROGRAMME AND POLITICAL SCIENCE (B.Arts Sc.)
(See Arts and Science Programme)
HONOURS POLITICAL SCIENCE

Admission:
Completion of any Level I programme with a grade of at least B – in 6 units of Political Science and 6 other units.

Programme Notes:
1. After completion of Level I, students in Honours Political Science must complete not fewer than 48 units and not more than 60 units of Political Science.
2. Recommended Courses: Political Science 2F6 and Political Science 2O6 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis. Political Science 2F6, 2O6 will be included in calculating the Graduation Average if taken in Level III.
3. Prerequisites: All students should note those Level II Political Science courses that are required in order to register in a number of Level III and Level IV courses.

Area Courses:
All Level II, III and IV Political Science courses.

Level II: 30 units
R 12 units of Level II Political Sciences.
E 18 units elective, only 6 of which may be from Political Science.

Level III: 30 units
R 18 units of Level III Political Science; or 12 units Level III Political Science and 6 units of Political Science 2F6 or 2O6.
E 12 units elective, only 6 of which may be from Political Science.

Level IV: 30 units
R Political Science 4Z6; 6 units of Level IV Political Science; 6 units of either Level III or IV Political Science.
E 12 units elective.

COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a grade of at least B – in 6 units of Political Science and a grade of at least B – in 6 units of the combined component.

Programme Notes:
1. During Levels II, III and IV, students in the Combined Honours programme must complete not fewer than 36 units of Political Science, of which only 12 units may be in Level II courses, and at least 6 units should be in Level IV courses.
2. Recommended Courses: Political Science 2F6 and Political Science 2O6 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis. Political Science 2F6, 2O6 will be included in calculating the Graduation Average if taken in Level III.

Area Courses:
All Level II, III and IV Political Science courses for the Political Science component.

COMBINED HONOURS POLITICAL SCIENCE AND CANADIAN STUDIES

Admission:
Completion of any Level I programme with a grade of B – in Political Science 1A6 and a grade of B – in Canadian Studies 1A6.

Programme Notes:
1. Requirements: During Levels II, III and IV, students in the Combined Honours programme must complete not fewer than 36 units of Political Science, of which only 12 units may be Level II courses and at least 6 units should be in Level IV courses.
2. Students should take at least 6 units of Canadian Studies Area courses outside the Faculty of Social Sciences.

3. Language Requirement: Before proceeding to Level III of the programme, the student in Combined Honours Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a mark of at least D in French 1A6 or 1B6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French. Readings in French will be included in Level III and IV seminars.

Area Courses:
All Level II, III and IV Political Science and Canadian Studies courses.

Level II: 30 units
R Canadian Studies 2A3 and 2B3; 6 additional units of Canadian Studies; Political Science 2G6; 6 units of Level II Political Science.
E 6 units elective, excluding Political Science and Canadian Studies.

Level III: 30 units
R Canadian Studies 3E3, 3F3; 6 additional units of Canadian Studies; 6 units from Political Science 3F6, 3DD6, 3EE3, 3FF3, 3GG3, 3HH3, 3II3, 3JJJ3; 6 additional units of Level III Political Science.
E 6 units, excluding Political Science and Canadian Studies.

Level IV: 30 units
R Canadian Studies 4E6; 6 additional units of Canadian Studies; 6 units from Political Science 4O6, 4S6, 4W6; 6 additional units of Level III or IV Political Science.
E 6 units, excluding Political Science and Canadian Studies.

B.A. IN POLITICAL SCIENCE

Admission:
Completion of any Level I programme, with a grade of at least C – in 6 units of Political Science.

Programme Notes:
1. After completion of Level I, students in the B.A. programme must complete not fewer than 24 units and not more than 36 units of Area courses, of which at least 12 units should be at Level III or IV.
2. Prerequisites: All students should be alerted to those Level II Political Science courses that are required in order to register in a number of Level III and IV courses. Students at Level III may take courses at Levels II, III or IV, provided they meet the prerequisites.

Area Courses:
All Level II, III and IV Political Science courses.

Level II: 30 units
R 12 to 18 units of Level II Political Science.
E Electives to make a total of 30 units, with at least 12 units excluding Political Science.

Level III: 30 units
R 12 to 18 units of Level III or IV Political Science.
E Electives to make a total of 30 units.

Department of Psychology

HONOURS PSYCHOLOGY (B.Sc.) AND B.Sc. IN PSYCHOLOGY
(See B.Sc. Programmes in Psychology, Faculty of Science, Department of Psychology)

HONOURS BIOLOGY AND PSYCHOLOGY (B.Sc.)
(See Faculty of Science, Department of Biology)

HONOURS COMPUTER SCIENCE AND PSYCHOLOGY (B.Sc.)
(See Faculty of Science, Department of Computer Science)

HONOURS ARTS AND SCIENCE PROGRAMME AND PSYCHOLOGY (B.Arts Sc.)
(See Arts and Science Programme)
HONOURS PSYCHOLOGY (B.A.)

Admission:
Completion of any Level I programme with a grade of at least B— in Psychology 1A6, at least B— in six additional units, at least C— in English 1A6, 1B6, 1C6, or Humanities 1A6 and, credit in Mathematics 1A6 or 1F6 or at least C— in Mathematics 1M3.

Students who did not complete the English or Mathematics requirements in Level I should obtain the permission of the department to register for Level II Psychology. They may be admitted to the Honours Psychology programme on completion of Level II, subject to the completion of these requirements, and obtaining a CAA of at least 7.0 or greater in the required Level II Psychology courses.

Programme Notes:
1. When Mathematics is delayed to Level II, then Psychology 2R6 must be deferred to Level III and another 6 units of Psychology must be taken to fulfill that Level II requirement.

Psychology 2R6 will be included in calculating the Graduation Average, if it is taken after Level II.

2. At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2U3, 3C6, 3E3, 3QQ3, 3S3, 3V3, 4G3, 4QQ3.

Enrolment in Laboratory courses is limited. Permission of the Department must be obtained by March 1.

Area Courses:
All Psychology courses above Level I, except Psychology 2G3.

Level II: 30 units
R Psychology 2H3, 2R6, 2T3; 3 units of Level II Psychology; 6 units of courses chosen from the Faculty of Science, excluding Psychology and the Mathematics course taken to meet the Admission requirements (e.g. Mathematics 1K3, 1M3).
E Electives to make a total of 30 units, at least 6 of which must not be from Psychology.

Level III: 30 units
R Psychology 3W6; 12 units of Level III Psychology, or 6 units of Level III Psychology and Psychology 2R6 (if not completed). If Psychology 2D6 was completed in Level II, then 6 additional units of Level III Psychology must be substituted for Psychology 3W6.
E Electives to make a total of 30 units, 6 of which must not be from Psychology.

Level IV: 30-31 units
R Psychology 4D6; 12 units of Levels III or IV Psychology.
E Electives to make a total of 30 units.

B.A. IN PSYCHOLOGY

Admission:
Completion of any Level I programme with a grade of at least C— in Psychology 1A6, and at least C— in one of English 1A6, 1B6, 1C6 or Humanities 1A6.

Students who did not complete the English requirement in Level I will be admitted to the programme only with the written approval of a departmental counsellor and must complete the requirement by the end of Level II.

Area Courses:
All Psychology courses above Level I.

Level II: 30 units
R Psychology 2G3, and either 2T3 and 2H3, or 2D6; 3 units of Level II Psychology; Mathematics 1L3, or any other 3 units of Mathematics; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology, English 1A6, 1B6, 1C6 or Humanities 1A6 and the 3 units of Mathematics required by the programme.
E 9 units of electives, 3 of which must not be from Psychology.

Level III: 30 units
R 12 units of Level III Psychology; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology.
E 12 units, 6 of which must not be from Psychology.

Department of Religious Studies

Programme Notes: (Applicable to all Religious Studies programmes)
Religious Studies at McMaster includes three major subfields of Biblical Studies, Western Religious Traditions, and Asian Religions. Students may concentrate in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites. Courses listed below are considered central to the subfield and are strongly recommended for any student wishing such a concentration.

Biblical Studies:
- Hebrew Bible
- Religious Studies 2D6, 2DD3, 2EE3, 3M3
- Christianity
- Religious Studies 2E6, 2FF6, 3O3, 3T3, 3X3

Western Religious Traditions:
- Religious Studies 2I3, 2J3, 2KK3, 2LL3, 3D3, 3MM3, 3NN3

Asian Religions:
- Religious Studies 2J6, 2MM6, 3Q6

For the Social Scientific Study of Religion, the following courses are recommended: Religious Studies 2Y6, 3J6, 3JJ6.

HONOURS RELIGIOUS STUDIES

Admission:
Completion of any Level I programme with an average of 7.0 in 12 units acceptable to the department, preferably including one of the Level I Religious Studies courses.

Programme Notes:
1. All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.

2. The Graduation Average will be computed on the basis of all Religious Studies courses taken in Levels II, III and IV.

3. Students are required to complete at least 48 units of Religious Studies courses or approved substitutes in Levels II, III and IV as specified as Required (R) below, and at least 18 units of Electives (E) outside Religious Studies.

Courses from other departments may, with the written approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses, and will then be designated Area courses.

4. Part-time students should be aware that the required courses in Levels II, III and IV are regularly offered in the evening and/or in the summer. Students who anticipate difficulty in fulfilling departmental requirements should consult a Departmental Undergraduate Advisor as early as possible in their programmes.

Area Courses:
All Level II, III, and IV Religious Studies courses or approved substitutes.

Level II: 30 units
R At least 12 units, including Religious Studies 2GG3 and 2NN3, and 6 additional units of Level II Religious Studies courses.
E Electives to make a total of 30 units.

Level III: 30 units
R At least 18 units, including Religious Studies 3F3; an Undergraduate Advisor will aid each student in the choice of the 15 remaining units. Normally, at least 9 of these 15 units should be Level III Religious Studies courses.
E Electives to make a total of 30 units.

Level IV: 30 units
R At least 18 units, including Religious Studies 4FF3, 4GG3, 6 units of Level IV Advanced Study and 6 additional units of Level II or III Religious Studies courses (or substitute) to be determined in consultation with a Departmental Undergraduate Advisor.
E Electives to make a total of 30 units.

COMBINED HONOURS IN RELIGIOUS STUDIES AND ANOTHER SUBJECT

Programme Notes:
1. All Combined Honours students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.
2. Students in Combined Honours programmes must complete at least
   - 36 units of Religious Studies courses or approved substitutes in Levels II, III and IV, including Religious Studies 2GG3, 2NN3, 3F3, 4FF3,
     4GG3; 6 units of Level II Religious Studies Area courses; 9 units of Level III Religious Studies courses; normally 6 units of Level IV
     Advanced Study.

B.A. IN RELIGIOUS STUDIES

Admission:
Completion of any Level I programme with a grade of C+ in 6 units of work acceptable to the Department. Completion of 6 units of Level I Religious Studies is recommended.

Programme Notes:
1. All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.
2. Students are required to complete at least 30 units of Religious Studies courses or approved substitutes in Levels II and III as specified as Required (R) below, and at least 12 units of Electives (E) outside Religious Studies.
   Courses from other departments may, with the written approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses and will then be designated Area courses.
3. Part-time students should be advised that courses in Levels II and III are regularly offered in the evenings and/or in the summer. Students who anticipate difficulty in fulfilling departmental requirements should consult a Departmental Undergraduate Advisor as early as possible in their programmes.

Area Courses:
All Level II, III and IV Religious Studies courses or approved substitutes.

Level II: 30 units
R At least 12 units, including Religious Studies 2GG3 and 2NN3, and 6 additional units of Level II Religious Studies courses.
E Electives to make a total of 30 units.

Level III: 30 units
R At least 18 units, including Religious Studies 3F3; an Undergraduate Advisor will aid each student in the choice of the 15 remaining units. Normally, at least 9 of these 15 units should be Level III Religious Studies courses.
E Electives to make a total of 30 units.

School of Social Work

COMBINED B.A./B.S.W.

Admission:
Completion of any Level I programme, including Psychology 1A6 and Sociology 1A6, normally with a University Average of at least 6.0 and evidence of personal suitability, which may be evaluated by one or a combination of written statements, tests, or interviews.

An applicant must complete Level I by April of the year in which application is made, or complete it by means of a January/February to June course.

In choosing Level I courses, the student should take care to include those courses that will allow entry to the B.A. programme. Students should consult the relevant sections of the Calendar and/or the Associate Dean of the Faculty.

Enrolment in the Combined B.A./B.S.W. programme is limited. Students who intend to apply for the combined B.A. and B.S.W. programme must consult the School of Social Work prior to application.

All applications for admission to the School of Social Work are considered annually and must be made prior to March 1 for the Fall term. Applicants transferring from other universities must also apply through the Guelph Application Centre for full-time study, or through the Associate Registrar (Admissions) for part-time study.

Programme Notes
1. Course Groupings: There are three groups of courses in the Social Work programme:
   Group I are those which are required core courses;
   Group II are those which are primarily practice oriented;
   Group III are those which are primarily policy oriented. All Group III courses may be taken for B.A. elective credit by undergraduates not in Social Work. Social Work students must take 6 units in each of Levels III and IV from Group III courses for B.A. Elective credit.
   Group I: Social Work 2B6, 2C3, 2D3, 2E3, 3D9, 4D12
   Group II: Social Work 3N3, 3O3, 3P3, 3R3, 4G3, 4H3, 4K3, 4O3, 4P3, 4T3, 4V3, 4W3, 4X3, 4Y3
   Group III: Social Work 3C3, 3G3, 3H3, 3J3, 4J3, 4M3, 4Q3

2. Continuation Beyond Level I: Students must achieve a minimum grade of C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses at each review in order to continue in the programme.

3. Graduation: To qualify for the B.A. and B.S.W. degrees, students must complete a total of at least 48 units of Social Work for credit towards the B.S.W. degree and a total of 90 units of credit towards the B.A. degree.
   The B.S.W. degree will be granted only if the student has achieved a grade of at least C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses. Graduation from the three-year B.A. portion of the programme requires a Graduation Average of at least 4.0.

4. Students are expected to assume the cost of travelling to and from field practice agencies.

Area Courses:
All Social Work Area courses taken for B.S.W. degree. Grades for Social Work courses designated in advance for B.A. credit will not be calculated in the Social Work area average.

Level I: 30 units (B.A.)
B.A. as prescribed above for admission to the programme.

Level II: 36 units
R Social Work 2B6, 2C3, 2D3 and 2E3, all of which must be completed prior to enrolling in Social Work 3D9; courses in the corresponding B.A. programme to total 21 units, including Psychology 2A3 which must be completed prior to enrolling in Social Work 3D9.

Level III: 36 units
R Social Work 3D9, which must be completed prior to enrolling in Social Work 4D12; one of Social Work 3N3 or 3R3; and one other Group II Social Work course to total 15 units; courses in the corresponding B.A. programme to total 21 units, of which 6 units must be from Group III Social Work courses for B.A. credit.

Level IV: 36 units
R Social Work 4D12; one of Social Work 4O3, 4X3, or 4Y3; and one other Group II Social Work course to total 18 units; courses in the corresponding B.A. programme to total 18 units, of which 6 units must be from Group III Social Work courses for B.A. credit.

B.S.W. AS A SECOND DEGREE

Admission:
Completion of an undergraduate degree from a recognized university including introductory Psychology and Sociology, normally with an average of at least 6.0 or its equivalent, and evidence of personal suitability which may be evaluated by one or a combination of written statements, interviews, or tests.

An applicant is required to complete the prerequisite undergraduate degree work by April of the year in which application is made or complete it by means of a January/February to June course.

Enrolment in the B.S.W. Second Degree programme is limited. Students who intend to apply for the B.S.W. as a Second Degree programme must consult the School of Social Work prior to application.

All applications for admission to the School of Social Work are considered annually and must be made prior to March 1 for the Fall
FACULTY OF SOCIAL SCIENCES

Programme Notes:
1. McMaster Work: Students are required to take courses to total 60 units, all of which must be completed at McMaster. If advanced standing is granted, additional courses must be taken at McMaster to total 60 units.
2. Course Groupings: There are three groups of courses in the Social Work programme:
   - Group I are those which are required core courses;
   - Group II are those which are primarily practice oriented;
   - Group III are those which are primarily policy oriented. All Group III courses may be taken for B.A. elective credit by undergraduates not in Social Work. Social Work students must take 12 units from Group III courses.
   - Group I: Social Work 2B6, 2C3, 2D3, 2E3, 3D9, 4D12
   - Group II: Social Work 3N3, 3O3, 3P3, 3R3, 4G3, 4H3, 4K3, 403, 4P3, 4T3, 4V3, 4W3, 4X3, 4Y3
   - Group III: Social Work 3C3, 3G3, 3H3, 3J3, 4J3, 4M3, 4Q3
3. Progression Within Programme: Students must achieve a minimum grade of C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses at each review in order to continue in the programme.
4. Graduation: To qualify for the B.S.W. as a Second Degree, students must complete a total of 60 units of credit at McMaster of which normally 57 units must be in Social Work. The B.S.W. as a Second Degree will be granted only if the student has achieved a grade of at least C+ in each of the Group I required Social Work core courses, and has a Cumulative Area average of at least 6.0 in Social Work courses.
5. Students are expected to assume the cost of travelling to and from field practice agencies.

Area Courses:
All Social Work courses.

Requirements:
R All Group I required Social Work core courses, each with a minimum grade of C+; and Psychology 2A3. Students must complete Social Work 2B6, 2C3, 2D3, 2E3, and Psychology 2A3 prior to enrolling in 3D9. Completion of 3D9 is a prerequisite for Social Work 4D12; one of Social Work 3N3 or 3R3; one of Social Work 4O3, 4X3, or 4Y3; four of Group III Social Work courses; one or two other Group II Social Work courses to total 60 units. (Two courses must be chosen if Psychology 2A3 was completed prior to admission to the B.S.W. Second Degree Programme."

Programme Notes:
1. Level IV courses in Sociology may be taken after completion of 60 units beyond Level I or with the permission of the instructor. A student may take a maximum of 6 units of Level IV independent research (Sociology 4M3/4N3).
2. Students should check both this Calendar and Departmental Handbook for prerequisites and course descriptions.

Area Courses:
All Level II, III and IV Sociology courses.

Levels II, III and IV: 90 units
R 48 units of Sociology, including: Sociology 256 and one of 3A3, 3P3 or 3PP3; Sociology 3H6 and one of 3O3 or 3W3; 30 additional units of Levels II, III and IV Sociology including at least 12 units of Level IV Sociology.
E 42 units.

COMBINED HONOURS IN SOCIOLOGY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme, including a grade of at least B-- in each of Sociology 1A6 and 6 units of the other subject.

Programme Notes:
1. With the approval of both departments concerned, students may arrange to follow a Combined Honours programme in Sociology and another subject in the Faculties of Social Sciences and Humanities. The Sociology component of such programmes is described below.
2. The Sociology component of the Graduation Average is computed on all Level II, III and IV Sociology courses.
3. Level IV courses in Sociology may be taken after completion of 60 units beyond Level I or with the permission of the instructor. A student may take a maximum of 6 units of Level IV independent research (Sociology 4M3/4N3).

Area Courses:
All Level II, III and IV Sociology courses.

Levels II, III and IV: 90 units
R At least 36 units of Sociology including: Sociology 256 and one of 3A3, 3P3 or 3PP3; Sociology 3H6 and one of 3O3 or 3W3; 18 additional units of Level II, III and IV Sociology, including at least 12 units of Level IV Sociology.

B.A. IN SOCIOLOGY

Admission:
Completion of any Level I programme, including Sociology 1A6 with a grade of at least C-.

Area Courses:
All Level II, III and IV Sociology courses.

Levels II and III: 60 units
R 24 units of Sociology, including Sociology 256 and at least one of Sociology 2Y3, 2Z3 or 3H6.
E 36 units.

Department of Sociology

HONOURS SOCIOLOGY

Admission:
Completion of any Level I programme with an average of at least 7.0 in 12 units, including Sociology 1A6 with a grade of at least B--.
Part-time Degree Studies

The University offers a broad range of educational opportunities for students who wish to take degree studies on a part-time basis. In addition to the day time offerings in the summer and winter sessions, a wide selection of evening classes is available in sessions beginning in September, January, April and May. A small selection of courses will be offered on Saturday mornings during the Fall and Winter.

Most of these are open to full- and part-time students alike. The academic programmes for both groups of students are identical, the only difference being that part-time students will progress more slowly through their programmes. All programmes require a degree of specialization in one or two related subjects.

Each student taking degree courses will associate with one of the undergraduate faculties (Business, Humanities, Science and Social Sciences). By so doing, you establish a relationship with the academic counsellors of your Faculty and with the departments concerned with your major intellectual interest. If your interests change, it is often possible to transfer to another department or Faculty.

A variety of programmes is available through a combination of evening and summer study. The section of this Calendar, Degrees and Programmes, lists all the programmes together with those which are completely available through evening and summer study indicated with e.g., B.A.

There are specific regulations that part-time students should be aware of. They are described below. You should also familiarize yourself with the requirements and information found in this Calendar in the following sections: Admissions, Academic Regulations and Sessional Dates as well as the programme descriptions found in specific Faculty sections.

Admission
Applicants who satisfy the normal admission requirements of the University may register for part-time study. Those who do not satisfy these requirements may be admitted as Special Students and given the opportunity to show that they can deal successfully with university work by taking Level 1 courses. Initially, Special Students, with the approval of the appropriate Associate Dean (Studies), may take only 6 units of work per session until 12 to 14 units are completed.

The University welcomes to its courses students who wish to obtain university credit but who do not wish to follow a degree programme. The same conditions and alternatives apply to Occasional Students as those just described. Such students may subsequently transfer to a degree programme. If the courses already completed were relevant to the programme, they could be counted towards the degree requirements.

The University recognizes that many part-time students enter degree study from other forms of post-secondary education. You should contact the appropriate Faculty Office regarding credit recognition for work taken in non-degree (e.g., diploma, certificate, CAAT) programmes.

AVAILABILITY OF COURSES
Although both daytime and evening courses are in principle open to part-time students, part-time students often have other responsibilities which restrict them to the courses offered in the evenings, in the summer, or on weekends. We have, therefore, listed the Winter Session evening and all Summer Session courses which the University intends to offer on the main campus during the next two-year period. This schedule has been carefully planned to make available the required courses for most of the Pass Programmes and some of the Honours Programmes over a five- or six-year period. For those who can arrange to take day courses, the options are greatly enlarged.

Students registered in Summer School should note that they are restricted to taking no more than 12 units in the Summer Session. No more than 6 units may be taken in the Summer Day Session and no more than 3 units during each term of the Summer Day Session.

The University offers a number of first and second level courses for those who wish to study during the January/February-June period. Some of these start in January with classes one night a week until the end of June. Others begin in February, with classes one evening per week and one Saturday morning per month to end at the same time.

In addition to the courses scheduled for the central campus, the University offers a considerable selection of summer and winter evening courses at off-campus centres in Brantford, Burlington, Hagersville, Milton, Oakville, Stoney Creek, and in the Mohawk-McMaster Education Centre at the Hamilton Public Library. Announcements concerning these offerings will be made from time to time through Winter and Summer Part-time Degree Studies brochures and newspaper advertising. These courses are not included in the listing in this Calendar.

CO-ORDINATOR OF PART-TIME DEGREE STUDIES
The Co-ordinator of Part-time Degree Studies, Mr. Gordon Raymond, may be telephoned at 525-9140, extension 4325, Gilmour Hall Room 103, for counselling in regard to the above matters, and to discuss preparation and plans for degree study. His office will be open in the day and certain evenings. More detailed information concerning programmes and course content is provided by the Academic Counsellors within each Faculty as follows:

- Business (extension 4432)
- Humanities (extension 4326)
- Science (extension 2612)
- Social Sciences (extension 4604)

General information on programmes, application procedures and admission regulations is provided by the Registrar’s Office (525-9140, ext. 4796).

Information about non-credit courses and special offerings (e.g., courses for pre-university upgrading) is available through the Centre for Continuing Education (525-9140, ext. 4321).

OFF-CAMPUS CENTRES
In co-operation with the Mohawk College of Applied Arts and Technology, the University operates Education Information Centres in Hagersville and Hamilton and supports the Brantford Centre, which is directed by the Council on Continuing Education for Brantford and Brant County. These centres exist to provide information and assistance in career planning for citizens of all ages and maintain comprehensive collections of Calendars and brochures concerning educational opportunities across Canada. The staff of these centres are also familiar with McMaster’s programmes and can either assist you or help you make contact with the appropriate persons at McMaster.

The Centre in Hagersville is at 1 Main Street South, telephone 1-768-1010.

The Centre in Hamilton is at the Hamilton Central Library just off Jackson Square, telephone 525-9140, extension 2020.

The Education Information Centre in Brantford is located at 115 Colborne Street, mailing address, P.O. Box 113, telephone 519-753-3171.

MAPS
The McMaster Association of Part-time Students (MAPS) maintains an office and student lounge in Room 102 of Kennedy-Taylor Hall, telephone 525-9140, extension 2021 and publishes a newsletter, Link, which is sent to all part-time students. The coffee lounge is open day and evening from Monday to Thursday, and Friday during the day. MAPS Executive Assistant, Ms. Judy Worsley, is available during these hours to help students. All part-time students are invited to use these facilities and to assist their Association in its efforts to improve the quality and range of educational opportunities available to students who can only attend university in the evening.
PART-TIME DEGREE STUDIES

Schedule of Courses
The following plan of programmes and courses is a projection only. It is subject to change according to the availability of instructors and adequate resources.

Courses are arranged alphabetically by department. The various sessions in which courses are offered are identified by the following code:

<table>
<thead>
<tr>
<th>Session</th>
<th>Code</th>
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<tbody>
<tr>
<td>Winter Evening, 1986-87</td>
<td>C</td>
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<tr>
<td>January to June Evening, 1987</td>
<td>D</td>
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<tr>
<td>Summer Evening, 1987</td>
<td>E</td>
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<tr>
<td>Summer Day, 1987</td>
<td>F</td>
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<tr>
<td>Winter Evening, 1987-88</td>
<td>G</td>
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<tr>
<td>January to June Evening, 1988</td>
<td>H</td>
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<tr>
<td>Summer Evening, 1988</td>
<td>I</td>
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<tr>
<td>Summer Day, 1988</td>
<td>J</td>
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<tr>
<td>Summer</td>
<td>S</td>
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</tbody>
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(to be offered in the summer of the year designated, e.g. S'87, but the term has not yet been determined.)

First- and second-term offerings are identified by a 1 or 2, following the letter code, respectively, while a 3 indicates a course that runs throughout both terms. An x indicates that the term has not yet been determined.

Specific dates, and examination times, may be found by referring to the Sessional Dates section, at the front of this Calendar.

ANTHROPOLOGY

1A3 Introduction to Anthropology: Culture and Society C2, E2, F2, G2, I2, J2
1B6 The Study of Language C3, G3
1Z3 Introduction to Anthropology: Human and Cultural Origins C1, E1, F1, G1, I1, J1
2A3 World Prehistory: Paleolithic C1, G1
2B3 Native Peoples of North America J1
2C3 Communal Societies J2
2D3 Genetics and Evolution E1
2E3 Physical Anthropology C1, G1
2F3 Social Anthropology F1, G1, E2
2G3 Folklore Studies E2
2H3 Ecological Anthropology G2
2I3 History of Anthropology C2, I1
2J3 Human Growth and Adaptation C1, I2
2K3 Social Biology G2
2L3 Phonetics I1
2N3 World Prehistory: Neolithic Cultures C1, E1
2O3 New World Prehistory C2, I1
2P3 Peoples of the Pacific C1
2Q3 Linguistics and the Study of Culture C2, G1
2R3 Religion, Magic and Witchcraft C2, G1
2S3 Warfare and Aggression E1
3B3 Ethnology: Europe E1
3D3 Ethnology: Pacific Islands F2, I1
3F3 Contemporary Northern Peoples C2
3G3 Comparative Mythology G2
3H3 Ethnology: Southeast Asia G1
3J3 Syntax C2
3L3 Primitive Systems of Thought G2
3M3 The History of Anthropological Theory C3, G3
3T3 Competition and Conflict J2
3U3 Canadian Prehistory G2
3V3 Comparative Economic Organization E2
3X3 People of India E1
3Z3 Medical Anthropology: The Biomedical Approach I2
4A3 Theories of Social Evolution C2
4B3 Contemporary Anthropological Theory G1
4N3 Anthropology and Education C1
4Y3 Developing Societies G2

ART

1F6 Introduction to Studio Practice C3, G3
2A4 Painting I E3
2C3 Figure Drawing and Superficial Anatomy C3
3C3 Advanced Drawing G3

ART HISTORY

1A6 Introduction to the Study and History of the Visual Arts C2
2N3 Italian Baroque Art and Architecture Gx
2O3 The Origins of Modern Art 1780-1820 Cx
3L3 Venetian Renaissance Painting Gx
3M3 Modern Architecture Gx
3Q3 Master Printmakers Gx
3S3 Art & Civilization at the dawn of the Italian Renaissance 1200-1400 Cx
3W3 The Art of Photography Ex

BUSINESS

3V3 Business Law C1, G1
3W6 Accounting C3
3Y3 Marketing C1
3Z3 Human Resource Management G2

CHEMISTRY

1A6 General Chemistry C3
2F3 Inorganic Chemistry Gx

CLASSICAL CIVILIZATION

1A6 An Introduction to the Civilizations of Greece and Rome C3
2B3 Greek Art Gx
2D3 Greek and Roman Mythology Gx
2F3 Social Life and Thought of the Romans Cx
2Z3 Greek and Roman Religion Gx
3C3 Greek and Roman Epic Gx
3R3 The Greek City: An Archaeological Study Gx
3S3 The Roman City: An Archaeological Study Cx
3V3 Social Life and Thought in Augustan Rome Ex

COMMERCE

2A3A3 Financial Accounting I C2, G2
2B3A3 Organizational Behaviour C1, G2
2FA3 Financial Instruments and Institutions E1, I1
2MA3 Introduction to Marketing C1
2Q3A3 Computer-Augmented Statistical Analysis C2, G2
3AA3 Cost and Managerial Accounting I C1
3BA3 Industrial Relations I1
3BB3 Personnel G1
3FA3 Introduction to Managerial Finance G1
3FB3 Securities Analysis I1
3MA3 Introduction to Marketing Research G2
3QA3 Decision Science for Managers C1
3QB3 Business Data Processing G2
4BC3 Collective Bargaining C1, G1
4BD3 Settlement of Industrial Disputes C2, G2
4PB3 Taxation C1, Ex, G1, Ix
4PC3 Advanced Canadian Income Taxation C2, G2
4PD3 Commercial Law Ex, Ix

COMPARATIVE LITERATURE

1A6 Introduction to the Western Literary Tradition G3

COMPUTER SCIENCE

1A3 Introduction to Computing for Business C1, G1
1B3 Introduction to Computing for Science G1
1H3 Introduction to Computing for Humanities and Social Sciences C2, G2
2P3 Pascal and Problem Solving E1, I1

DRAMATIC ARTS

2A6 An Introduction to the Actors' Craft E3
2C3 Performance and the Idea of Theatre 900-1700 C2, G1
2F3 Opera Gx
2FF3 Studies in Opera C1
2J3 German Drama in Translation C1
2X6 The Art of the Film C3
3C3 Modern European Drama in English Translation C1
3K6 Shakespeare C3
3P3 Modern Drama in English Gx
3R3 The American Cinema I G1
3RB3 The American Cinema II G2
4B3 Topics in Theatre History: Independent Study I C1, C2
4BB3 Topics in Theatre History: Independent Study II G1, G2
4F3 Theatre Historiography G2
ECONOMICS
1A6 Introductory Economics C3, D3, E3, G3, H3, I3
2B3 Analysis of Economic Data I E1
2G3 Intermediate Price Theory C2, G2
2H3 Intermediate Income and Employment Theory C1, E2, G1
2K3 Economic History of Canada C2
2L6 Intermediate Microeconomics E3
3B3 Public Finance C1
3D3 Labour Economics E1
3H3 International Monetary Economics E1
3O6 Economic Statistics G3
3S3 Industrial Organization E1
3T3 Transport Economics C2
3U3 Analysis of Economic Data II E2
3V3 Public Choice and Benefit-Cost Analysis G2
3Z3 Health Economics G1

ENGLISH
1B6 Literature in English: Major Forms C3, D3, E3
2B6 The Development of English Drama E3, I3
2F3 Studies in American Literature D2
2G6 Canadian Literature C3, I3
2H6 American Literature C3, G3
2I6 Modern British Literature C3
2J6 The English Language C3
3A1 Techniques of Expository Writing Cx, H2
3F3 Techniques of Creative Writing lx
3H1H Topics in Poetry Ex
3I3 Studies in 16th-Century Literature C3
3K6 Shakespeare Gx
3P3 Modern Drama in English G1
3Q3 The History and Theory of Criticism G2
3Q03 Modern Critical Theory G2
3T5 Spenser lx
3V6 Studies in 17th-Century Literature C3, G3
4B6 English Literature (1660-1800) E3
4E6 Chaucer and His Contemporaries C3
4L3 Romantic Poetry E1
4M3 Victorian Poetry E2
4N6 The British Novel C3, G3

FRENCH
1B6 Intermediate French C3, F3, G3, J3
1Z6 Beginners' Intensive French C3, D3, E3, G3, H3, I3
2A3 French Language Practice C3, G3
2C3 French Language Practice: Oral C3, G3
2G3 French Language Practice: Elementary Translation Ex
2J3 Nineteenth-Century French Literature II Gx
2W3 Twentieth-Century French Literature I Cx
2WW3 Twentieth-Century French Literature II Ex
3C2 French Language Practice C3
3CC3 French Language Practice: Intermediate Translation lx
3E3 Applied Linguistics and Second Language Learning Cx
3F3 French Language Practice: Oral G3
3K3 Eighteenth-Century French Literature I Cx
3KK3 Eighteenth-Century French Literature II Gx
3Q3 Seventeenth-Century French Literature I lx
4Q3 Topics in Seventeenth-Century French Literature Gx

GEOGRAPHY
3I3 Planetary and Lunar Geology and Geomorphology Cx

Consult Sessional Evening and Summer Brochures for full information on course offerings in Geography.

GERMAN
1Z6 Beginners' Intensive German C3
2J3 German Drama in Translation C1
2Z6 Intermediate Intensive German C3

GREEK
1Z6 Beginners' Intensive Greek G3

HISTORY
1C6 The Modern World: The Era of European Primitivity
1D6 Civilizations of the West G3, C3, E3, I3
2A6 Early Modern Europe 1400-1715 C3
2B6 China: From the Opium War to the Present C3
2H6 United States History G3, I3
2L6 The History of Canada E3, J3
2K6 The History of Science C3
2N5 British History 1500 to the Present F3
3A3 Topics in Modern Italian History, 1815 to the Present Gx
3BB3 The Town in United States History Gx
3C3 The Indian in Eastern Canada Gx
3CC3 Ancient China: Selected Topics in the History of China Prior to 221 B.C. Gx
3EE3 History of Medicine in Canada Gx
3Hi6 The History of Warfare, 1865-1945 C3
3K6 Canada in the Twentieth Century C3, I3
3P3 Religion and Society in Canada Cx
3SS3 Aspects of the Cultural History of England, 1500-1668 Cx

ITALIAN
1A6 Intermediate Italian C3, I3
1Z6 Beginners' Intensive Italian E3, G3
2D6 Advanced Italian C3
3O3 Italian Renaissance Literature Gx
3R3 The Italian Trecento C3
4L4 Introduction to Italian Linguistics C3
4M4 Intensive Composition, Stylistics and Oral Practice in Italian C3
4P3 Dante Gx

LABOUR STUDIES
Consult Sessional Evening and Summer Brochures for full information on course offerings in Labour Studies.

LINGUISTICS
1A6 The Study of Language C3, G3
2L3 Phonetics C3, G3

MATHEMATICS
1A6 Calculus I C3, D3, F3, G3, H3, I3
1K3 Introductory Calculus for the Business and Social Sciences C1, E1, G1, J1
1L3 Linear Algebra and Probability for Business and Social Sciences C1, F2, G2, I1
1M3 Calculus for Business and the Social Sciences C1, F2, G2, J2
2G3 Intermediate Calculus G1, J1
2J6 Linear Algebra and Set Theory C3
2K3 Financial Mathematics C3
2L3 Intermediate Calculus and Differential Equations for Business and the Social Sciences C2
2O3 Differential Equations G2, J2
3R3 Linear Programming C1
3S3 Optimization C2
3T3 Complex Analysis I C1
3Z4 History of Mathematics C3, G3

MUSIC
1A6 Introduction to Music G3
2A6 History of Music C3
3A3 Music Education I C1, G1
3AA3 Music Education II C2, G2

PHILOSOPHY
1B6 Philosophy and Society C3
1D6 Problems in Philosophy E3
2C6 Philosophy During the Scientific Revolution C3
2D3 Moral Issues Gx
2F3 Philosophical Psychology Gx
2G3 Social and Political Issues lx
2R3 Reasoning Gx
3A6 From Kant to Hegel C3
3C3 Advanced Bioethics Gx
3G3 Ethics Cx, lx
Courses by Departments

Anthropology

Faculty as of January 15, 1986

Emoke J.E. Szathmary/Chairman

Professors Emeriti

Ruth B.S. Landes/M.S.W. (New York), Ph.D. (Columbia)
Richard Slobodin/B.A., M.S. (City College of New York), Ph.D. (Columbia)

Professors

David J. Damas/A.B. (Toledo), A.M., Ph.D. (Chicago)
Edward V. Glanville/B.A., Ph.D. (Dublin)
Christopher Hallpike/B. Litt. (Oxford), D.Phil. (Oxford)
William C. Noble/B.A. (Toronto), Ph.D. (Calgary)
Richard J. Preston/M.A., Ph.D. (North Carolina)
Edward S. Rogers/B.A. (Middlebury College), M.A., Ph.D. (New Mexico) /part-time

Emoke J.E. Szathmary/B.A., Ph.D. (Toronto)

Associate Professors

Matthew Cooper/B.A. (Brooklyn College), M.Phil., Ph.D. (Yale)
David R. Counts/B.A. (Texas), Ph.D. (Southern Illinois)
Harvey Feit/B.A. (Queens), M.A., Ph.D. (McGill)
Klaus Jaecklein/Ph.D. (Tuebingen) /part-time
Peter G. Ramsden/B.A. (Toronto), M.A. (Calgary), Ph.D. (Toronto)
William L. Rodman/B.A. (Sydney), M.A., Ph.D. (Chicago)
Charles E. Stortroen/A.B. (Luther), M.A. (Minnesota), Shelley Saunders/B.A., M.A., Ph.D. (Toronto)

Laura Finsten/B.A. (Western), M.A. (Calgary), Ph.D. (Purdue)

CURRICULUM 1986-88

Department Notes:

1. Not all courses are offered in every year. students should consult the department’s brochure, which will be available prior to registration, for a list and description of the courses offered in the current year, and the names of the instructors.

2. The department offers three Level I Anthropology courses. Anthropology 1A3 and 1Z3, which taken together, are designed to provide an introduction to the study of Anthropology.

3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar under Sessional Dates.

4. There are no co-requisite requirements for part-time students.

5. The University reserves the right to limit enrolment in any course.

ANTHROP 1A3 INTRODUCTION TO ANTHROPOLOGY: CULTURE AND SOCIETY

A general introduction to the study of human culture and society in all of its aspects. Examples and illustrations will be drawn largely from non-Western societies.

3 hrs. (lects. and discussion); one term

Prerequisite: Open, except to students who have credit in Anthropology 1A6, 1F3, or 1H3.

ANTHROP 1B6 THE STUDY OF LANGUAGE

A far-reaching survey intended to acquaint the student with the numerous disciplines that deal with language and many of the crucial concepts and techniques developed within them.

3 hrs. (lects. and discussion); two terms

Prerequisite: Open.

Same as Linguistics 1A6.

ANTHROP 1Z3 INTRODUCTION TO ANTHROPOLOGY: HUMAN AND CULTURAL ORIGINS

Emphasis will be on the evolution of man as seen in the fossil record and on the growth and development of human societies in prehistoric times.

3 hrs. (lects. and discussion); one term

Prerequisite: Open, except to students with credit in Anthropology 1A6, 1F3, or 1H3.

ANTHROP 2A3 WORLD PREHISTORY: PALEOLITHIC

A study of human cultures and societies during the Pleistocene, from approximately 2 million to 8000 years ago.

3 hrs. (lects. and discussion); one term

Prerequisite: Six units of Level I Anthropology, or permission of the instructor. Not open to students with credit in Anthropology 2A6.

ANTHROP 2B3 NATIVE PEOPLES OF NORTH AMERICA

A comparative study of selected cultures of this continent, dealing with traditional and modern situations.

3 hrs. (lects. and discussion); one term

Prerequisite: Six units of Level I Anthropology.

ANTHROP 2D3 GENETICS AND EVOLUTION

Introduction to basic genetics and the operation of microevolutionary processes on human populations.

3 hrs. (lects. and discussion); one term

Prerequisite: Anthropology 2E3, or permission of the instructor.

ANTHROP 2E3 PHYSICAL ANTHROPOLOGY

An introduction to the study of human evolution, evolutionary mechanisms, and variability in living species of human and non-human primates.

3 hrs. (lects. and discussion); one term

Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

This course is a prerequisite for advanced courses in Physical Anthropology.

ANTHROP 2F3 SOCIAL ANTHROPOLOGY

An introduction to the anthropological concepts and theory underlying the comparative study of the social institutions of non-literate peoples.

3 hrs. (lects. and discussion); one term

Prerequisite: Registration in B.A. or Honours Anthropology including credit in Anthropology 1A3, or permission of the instructor.

This course is required of all students registered in B.A. or Honours Anthropology in Level II.

ANTHROP 2G3 FOLKLORE STUDIES

The systematic study of oral traditions, folktales, folksongs, jokes, riddles, etc., as well as customs transmitted by oral traditions.

3 hrs. (lects. and discussion); one term

Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

ANTHROP 2H3 ECOLOGICAL ANTHROPOLOGY

An introduction to the study of the interdependence of human societies and their physical and biological environments in anthropological perspective.

3 hrs. (lects. and discussion); one term

Prerequisite: Anthropology 2F3, or permission of the instructor.

ANTHROP 2I3 HISTORY OF ANTHROPOLOGY

Some of the major developments and personalities in the history of anthropology as a discipline, with emphasis upon the English-speaking world.

3 hrs. (lects. and discussion); one term

Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

ANTHROP 2J3 HUMAN GROWTH AND ADAPTATION

Variation in body form and composition examined in the context of growth, evolutionary development and environmental adaptation.

3 hrs. (lects. and discussion); one term

Prerequisite: Anthropology 2D3 or 2E3, or permission of the instructor.

ANTHROP 2K3 SOCIAL BIOLOGY

Bio-social anthropology. The biological and evolutionary background of human social behaviour.

3 hrs. (lects. and discussion); one term

Prerequisite: Anthropology 1Z3, or permission of the instructor.

ANTHROP 2L3 PHONETICS

A study of the sounds of language and the articulatory capabilities of man.

3 hrs. (lects.); one term

Prerequisite: Open.

Same as Linguistics 2L3.
ANTHROPOLOGY

ANTHROP 2M3 PHONOLOGY
A study of the patterns of distinctive sounds in the world's languages.
3 hrs. (lects); one term
Prerequisite: Anthropology or Linguistics 2L3, or permission of the instructor.

ANTHROP 2N3 WORLD PREHISTORY: NEOLITHIC CULTURES
A survey of the development of settled, food-producing human cultures from earliest villages to urban life.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology; or permission of the instructor.

ANTHROP 2O3 NEW WORLD PREHISTORY
A survey of the prehistory of the Americas, from the first traces of human occupation until the arrival of Europeans.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

ANTHROP 2P3 PEOPLES OF THE PACIFIC
An introduction to the ways of life and thought in Pacific island societies. The course will emphasize the material culture, networks of social relations, and systems of belief, of the peoples of Melanesia, Polynesia, and Micronesia.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 1A3.

ANTHROP 2Q3 LINGUISTICS AND THE STUDY OF CULTURE
A study of the major areas in which linguistic and methodical approaches are used to explore anthropological problems: e.g., evolution, world view, socio-linguistics, etc.
3 hrs. (lects.); one term
Prerequisite: Anthropology 2Q3; or permission of the instructor.

ANTHROP 2W3+ SPECIAL TOPICS IN ANTHROPOLOGY
Reading and discussion of selected topics in Anthropology.
One term
Prerequisite: Written permission of the supervising professor. Not open to students who received credit in 2G6 in 1974-75. This course may be repeated in Level II, if on a different topic, to a total of six units.

ANTHROP 2X3 WARFARE AND AGGRESSION
The aim of the course is to assess the extent to which violence is both controlled and an expression of society and culture.
3 hrs. (lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology; or permission of the instructor.

ANTHROP 2Z3 INTRODUCTION TO SOCIAL RESEARCH
This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined.
3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours or B.A. Anthropology and Anthropology 1A3; or permission of the instructor.

ANTHROP 3A3 ANTHROPOLOGICAL APPROACHES TO THE STUDY OF AGING
An examination of the contribution of anthropology to the study of aging with an emphasis on cross-cultural comparisons, and including an assessment of the anthropological literature relating to the biological basis of aging in modern and prehistoric populations.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2G3; or permission of the instructor.

ANTHROP 3H3 ETHNOLOGY: SOUTH EAST ASIA
A comparative ethnohistorical survey of selected societies in Southeast Asia.
3 hrs. (lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology; or permission of the instructor.

ANTHROP 3I3 SYNTAX
A study of the capacity of man to form words into sentences. Emphasis will be on generative transformational grammar.
3 hrs. (lects.); one term
Prerequisite: Open
Same as Linguistics 3I3.

ANTHROP 3J3 ADVANCED SOCIAL ANTHROPOLOGY
Further study of the topics introduced in Anthropology 2F3.
3 hrs. (lects. and discussion); one term
Prerequisite: Enrollment in Honours Anthropology including credit in Anthropology 2F3; or permission of the instructor.

ANTHROP 3J6 PRIMITIVE RELIGION
A critical examination of major anthropological and psychological theories of primitive religion and primitive modes of classification.
2 lects., 1 tut.: two terms
Prerequisite: Open
Same as Religious Studies 3J6.

ANTHROP 3K3 ARCHAEOLOGICAL METHODS
Technique and methodology in the investigation of archaeological material.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level II Archaeology courses; or permission of the instructor.
Enrolment is limited.

ANTHROP 3L3 PRIMITIVE SYSTEMS OF THOUGHT
Selected studies in religion, magic, and systems of knowledge in the cultures of non-literate peoples, and their expressions in myth and ritual.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2F3; or permission of the instructor.

ANTHROP 3M3 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 hrs. (lects.); one term
Prerequisite: Anthropology or Linguistics 3I3; or permission of the instructor.
Same as Linguistics 3M3.

ANTHROP 3N6 HUMAN EVOLUTION
A general consideration of evolutionary trends within the Order Primates. Special emphasis is given to the evolution of the hominids.
3 hrs. (lects. and discussion); two terms
Prerequisite: Anthropology 2D3 or 2E3; or permission of the instructor.

ANTHROP 3P6 HUMAN OSTEOLGY
Identification and analysis of the bones of the human skeleton, with a consideration of disease processes that have affected earlier populations.
3 hrs. (lects and discussion); two terms
Prerequisite: Anthropology 2D3 or 2E3; or permission of the instructor.

ANTHROP 3Q3 RESEARCH METHODS IN CULTURAL ANTHROPOLOGY
Methodologies and techniques of research, especially field study, in sociocultural anthropology.
3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours Anthropology, or permission of the instructor.

ANTHROP 3R3 ANTHROPOLOGICAL APPROACHES TO THE STUDY OF AGING
An examination of the contribution of anthropology to the study of aging with an emphasis on cross-cultural comparisons, and including an assessment of the anthropological literature relating to the biological basis of aging in modern and prehistoric populations.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 1Z3 and 2F3; or permission of the instructor.

ANTHROP 3S6 THE HISTORY OF ANTHROPOLOGICAL THEORY
The development of anthropology as a discipline, with emphasis upon the emergence and refinement of concepts concerning culture, social structure, and sociocultural change.
3 hrs. (lects. and discussion); two terms
Prerequisite: Anthropology 2F3; or permission of the instructor.
This course is required of all students registered in Honours Anthropology.

ANTHROP 3T3 COMPETITION AND CONFLICT
Focus is on the comparative study of political processes and the role which conflict and competition play in social life.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Anthropology.

ANTHROP 3U3 CANADIAN PREHISTORY
A study of the development of native Canadian cultures prior to the arrival of Europeans.
3 hrs. (lects. and discussion); one term
ANTHROP 3V3 COMPARATIVE ECONOMIC ORGANIZATION
An examination of contrasting types of economic organization, with particular reference to societies with a non-industrial base.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Anthropology; or permission of the instructor.

ANTHROP 3W3+ SPECIAL TOPICS IN ANTHROPOLOGY
Reading and discussion of selected topics in Anthropology.
One term
Prerequisite: Written permission of the supervising professor.
This course may be repeated in Level III, if on a different topic, to a total of six units.

ANTHROP 3X3 PEOPLE OF INDIA
Discussion of the ethnology, archaeology, and physical anthropology of selected societies in India.
3 hrs. (lects. and discussion); one term
Prerequisite: At least six units of Anthropology.

ANTHROP 3Y3 HISTORICAL LINGUISTICS
An advanced course covering the techniques for reconstructing ancestral languages. Language families, cognate sets, sound laws, internal and comparative reconstruction, and mechanisms of change will be treated.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2L3 and 2M3, or permission of the instructor.

Same as Linguistics 3Y3.

ANTHROP 3Z3 MEDICAL ANTHROPOLOGY: THE BIOMEDICAL APPROACH
Patterns of stress and disease with emphasis on the modern biomedical approach. Disease in the evolutionary context with emphasis on disease as a failure of adaptation and response.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2E3, or permission of the instructor.

ANTHROP 3ZZ3 MEDICAL ANTHROPOLOGY: SYMBOLIC HEALING
An interdisciplinary approach to traditional systems of healing such as Greek humoral medicine, Chinese, Shamanic, etc. Emphasis will be on cultural and psychological parameters of healing.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2E3, or permission of the instructor.

ANTHROP 4A3 THEORIES OF SOCIAL EVOLUTION
The various theories of social evolution from classical to modern times, but with special attention to Spencer, Marx, sociobiology, and modern anthropological works.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level II or Level III Anthropology, including 2F3, or permission of the instructor.

ANTHROP 4B3 CURRENT PROBLEMS IN ANTHROPOLOGY
The topic varies with each instructor i.e. one class may examine Urban Anthropology and another focus on Recent Advances in Genetics. Consult the department for topics prior to registration.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Anthropology, or permission of the instructor.
This course may be taken twice in one term with different instructors.

ANTHROP 4E3 ADVANCED REGIONAL ARCHAEOLOGY
A study of the field data, methods, and theoretical problems, in the prehistory of selected areas.
3 hrs. (seminar); one term
Prerequisite: Six units of Level III Archaeology courses, or permission of the instructor.

ANTHROP 4F3 ARCHAEOLOGICAL THEORY
A seminar in current topics and issues in archaeology.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level III Archaeology, or permission of the instructor.

ANTHROP 4G3+ INDEPENDENT RESEARCH
Independent study of a research problem through published materials and/or field work. Students will be required to write up the results of their inquiry in scholarly form.
Prerequisite: Registration in Level IV Honours Anthropology, and written permission of the supervising professor.
This course may be repeated, if on a different topic, to a total of six units.

ANTHROP 4H3 CONTEMPORARY ANTHROPOLOGICAL THEORY
Seminar on selected recent developments in anthropological theory.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Anthropology.
This course is required of all students registered in Honours Anthropology.

ANTHROP 4I3 ADVANCED TOPICS IN LINGUISTICS
An advanced course covering topics in linguistic theory with particular emphasis upon their application to a language or a set of languages.
3 hrs. (lects.); one term
Prerequisite: Twelve units of Linguistics above Level I; or permission of the instructor.

Same as Linguistics 4K3.

ANTHROP 4M3 ADVANCED REGIONAL ARCHAEOLOGY II
A study of the field data methods and theoretical problems in the prehistory of selected areas.
3 hrs. (seminar); one term
Prerequisite: Six units of Level III Archaeology courses.

ANTHROP 4N3 ANTHROPOLOGY AND EDUCATION
A comparison of the formal and informal ways in which people learn within their cultural context, and a survey of the uses of anthropology in schools.
3 hrs. (seminar); one term
Prerequisite: Registration in an Honours programme in Social Science; or permission of the instructor.

ANTHROP 4P3 PRIMATE BEHAVIOUR
Consideration of some of the major areas in human genetics, including cyto­genetics, bio-chemical, behavioural, and population genetics.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2D3, or Biology 2C3, or permission of the instructor.

ANTHROP 4Q3 ADVANCED SKELETAL BIOLOGY
Deals with topics in the analysis of prehistoric skeletal populations in more detail, including paleopathology, paleodemography, paleonutrition and the microscopic study of ancient human bone.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 3O6, or permission of the instructor.

ANTHROP 4V3 DEVELOPING SOCIETIES
Topics may include for example, the meaning of development, innovation and technological change, urbanization, and protest movements.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 359, or permission of the instructor.

For Graduate Courses, see Calendar of the School of Graduate Studies.

Art and Art History

Faculty as of January 15, 1986

P.H. Walton/Chairman
Professor
Associate Professor
Donald F. Can/B.A. (Guelph), M.F.A. (Chicago)
Hugh G. Galloway/Dipl. Art (Edinburgh)
Hayden B.J. Magennis/B.A. (Western), M.F.A., Ph.D. (Princeton)
Assistant Professors
Graham Todd.L.C.A.D. Dipl. (Chelsea School of Art), M.F.A. (Guanajuato)
Warren D. Tresidder/B.A. (New South Wales), M.A. (British Columbia), Ph.D. (Michigan)

Art Gallery Curator
Kim G. Ness/B.A. (McMaster), M. Litt. (Edinburgh), M.M.S. (Toronto)

Associate Members
Katherine M.D. Dunbabin/Classics/B.A., D.Phil. (Oxford)
Wayne Whillier/Religious Studies/B.A. (Sir George Williams), Ph.D. (McMaster)
ART AND ART HISTORY

CURRICULUM 1986-88

ART

ART 1C3 THE LANGUAGE OF DRAWING
An introduction to the ideas and methods involved in the development of drawings.
1 studio practice (3 hours); two terms
Prerequisite: Open. Not available to students registered in, or with credit in, Art 1B6, ID6 or IF6. Not to be used by Humanities I students as an R-group course. Enrolment is limited.

ART 1F6 INTRODUCTION TO STUDIO PRACTICE
An exploration of composition by two- and three-dimensional methods.
2 studio practice (3 hrs. each); two terms
Prerequisite: Submission of an acceptable portfolio, and an interview with the Department. Not available to students receiving credit for Art 1A6, 1B6 or ID6.
Portfolio: The portfolio should contain a variety of original works in different media including works derived from both first hand observation and the imagination. During the interview students may be asked to do some drawing as an additional means of demonstrating their skills and interests.
Students are advised to submit their portfolios by the end of April. Enrolment is limited.

ART 2A4 PAINTING I
An introduction to concepts, techniques and ideas related to the development of paintings from motif through organization to completed work.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F6; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art 2A6. Enrolment is limited.

ART 2B4 SCULPTURE I
An introduction to concepts, techniques and ideas related to the development of sculpture from initial maquettes, through organization to completed work.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F6; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art 2B6. Enrolment is limited.

ART 2C3 FIGURE DRAWING AND SUPERFICIAL ANATOMY
1 studio practice (3 hrs.); two terms
Prerequisite: Art 1F6; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 2E3 INTRODUCTORY DESIGN AND COMPOSITION
An appreciation and application of the fundamental principles of design and composition through the study of line, area, colour, texture and volume.
1 studio practice (3 hrs.); two terms
Prerequisite: Open. Not available to students registered in, or with credit in, Art 1B6, ID6 or IF6. Not to be used by Humanities I students as an R-group course. No portfolio required. Enrolment is limited.

ART 2F4 INTRODUCTORY PRINTMAKING
An introduction to methods of intaglio and relief printmaking, lithography and serigraphy.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F6; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art ID6, 3E6 or 4A6. Enrolment is limited.

ART 2G3 STUDIO METHODS IN THE VISUAL ARTS
A studio course which will deal with a specific topic related to drawing, painting, printmaking, or sculpture, offering an examination of a specialized area.
1 studio practice (3 hrs.); two terms
Prerequisite: Departmental permission slip required. Registration in a programme in Art or Art History, or permission of the Department. Available as an elective only. Enrolment is limited.

ART 3A6 PAINTING II
A continuation of subjects explored in Art 2A4.
2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2B4 or 2A6. Departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 3B6 SCULPTURE II
A continuation of subjects explored in Art 2B4.
2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2B4 or 2B6. Departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 3C3 ADVANCED DRAWING
1 studio practice (3 hrs.); two terms
Prerequisite: Art 2C3; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 3D3 IMAGERY AND VISUAL COMMUNICATION
A course to develop the student's ability to make images that communicate definite messages and meanings for purposes other than self-expression.
1 studio practice (3 hrs.); two terms
Prerequisite: Art 2C3, and one of 2A4, 2A6, 2F4; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 3F6 MINOR STUDIO PROJECT
Independent creative work undertaken by the supervision of a faculty member.
Prerequisite: Registration in Level III Honours Art, and a grade of at least B - in the Level II related studio course. Not available to students with credit in Art 4B12 or 4C6.
Normally this course is taken concurrently with, and related to, one of Art 3A6, 3B6, 3E6, 4A6.

ART 4A6 LITHOGRAPHY AND SILK-SCREEN PRINTING
Studio course in the techniques of lithography and silk-screen printing.
2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2F4; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Enrolment is limited.

ART 4B12 MAJOR STUDIO PROJECT
A summation of investigations into painting, sculpture, printmaking or drawing to be conducted under the supervision of two studio faculty members.
Prerequisite: Registration in Level IV Honours Art, and a grade of at least B - in Art 3F6 and its related Level III course.
Students wishing to combine Art 4D3 with Art 4B12 must have a grade of at least A - in a previous course in the chosen field or fields.

ART 4D3 MEDIA RESEARCH
Investigation of studio techniques, under the supervision of a studio faculty member.
Prerequisite: Registration in Level IV Honours Art and a grade of at least B - in the previous course in the chosen field; departmental permission slip required. Not available to students with credit in or registered in Art History 3V3.
Students wishing to combine Art 4D3 with Art 4B12 must have a grade of at least A - in a previous course in the chosen field or fields.

ART HISTORY

ART HIST 1A6 INTRODUCTION TO THE STUDY AND HISTORY OF THE VISUAL ARTS
An examination of the various forms and functions of art and architecture in the Western tradition, with an historical study of the major monuments of that tradition.
3 lects.; two terms
Prerequisite: Open.

ART HIST 2B3 GREEK ART
The architecture, sculpture, and painting of the Greek and Hellenistic worlds.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2B3.

ART HIST 2C3 ROMAN ART
The architecture, sculpture, and painting of the Roman world.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2C3.

ART HIST 2G3 THE ART OF THE MEDIEVAL WORLD
A systematic survey of the history of medieval art between c. 350 and 1400 A.D.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 2K3 and/or 2L3.

ART HIST 2M3 THE ART AND ARCHITECTURE OF THE ITALIAN RENAISSANCE 1400-1580
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2N3 ITALIAN BAROQUE ART AND ARCHITECTURE
An examination of the major trends in Italian art and architecture from 1580-1780.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
ART HIST 203 THE ORIGINS OF MODERN ART 1780-1880
A study of the origin and development of modern styles from Neo-Classicism through Impressionism.
3 lecs.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2P3 MASTERS OF TWENTIETH-CENTURY ART AND ARCHITECTURE
Topics examined will include Post-Impressionism, Fauvism, Cubism, Surrealism, and related developments.
3 lecs.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2Q3 BIBLICAL TRADITIONS IN THE VISUAL ARTS
An examination of selected passages from the Bible and related writings and their treatment in the visual arts of the Middle Ages and the Renaissance.
3 lecs.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 3A3.

ART HIST 3B3 ASPECTS OF CANADIAN ART
A survey of the visual arts in Canada from the earliest explorations and settlements to the present.
3 lecs.; one term
Prerequisite: Open to students in Level II and above. Offered in alternate years.

ART HIST 3D3 FRENCH AND FLEMISH PAINTING 1320-1500
An examination of the development of French and Flemish painting at the end of the Middle Ages.
3 lecs.; one term
Prerequisite: Art History 2M3. Offered in alternate years.

ART HIST 3E3 INNOVATIONS IN ITALIAN BAROQUE PAINTING
A discussion of the formation and character of the Baroque style in Italy in the 17th century. The paintings of Caravaggio and the sculpture of Bernini will be the focus.
3 lecs.; one term
Prerequisite: Art History 2N3. Offered in alternate years.

ART HIST 3G3 LATE ANTIQUE AND EARLY CHRISTIAN ART
The art and architecture of the later Roman Empire, and the birth of Christian Art (A.D. 200-600).
3 lecs.; one term
Prerequisite: Art History 2C3 or 2K3 or Classical Civilization 2C3; or permission of the Department. Same as Classical Civilization 3G3. Alternates with Art History 4L3.

ART HIST 3L3 VENETIAN RENAISSANCE PAINTING
An examination of the works of the major painters of the Renaissance in Venice, including such artists as Giovanni Bellini, Giorgione, and Titian.
3 lecs.; one term
Prerequisite: Art History 2M3. Offered in alternate years.

ART HIST 3M3 MODERN ARCHITECTURE
An examination of the new problems facing the architect in the 19th century, and the Modern Movement in Europe and America in the 20th century.
3 lecs.; one term
Prerequisite: Open to students in Level II and above. Offered in alternate years.

ART HIST 3Q3 MASTER PRINTMAKERS
A study of the work of master printmakers from the 15th century to the present.
3 lecs.; one term
Prerequisite: Open to students in Level III or IV, except students receiving credit for Art History 2J3. Offered in alternate years.

ART HIST 3R3 AMERICAN PAINTING IN THE TWENTIETH CENTURY
A discussion of major figures and trends in American painting of the twentieth century.
3 lecs.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 3S3 ART AND CIVILIZATION AT THE DAWN OF THE ITALIAN RENAISSANCE 1200-1400
A study of Italian art and civilization in the age of transition between the Middle Ages and the Renaissance.
3 lecs.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 4P3. Offered in alternate years.

ART HIST 3V3 SUPERVISED READING
Readings in a field of special interest to the student, under the guidance of a Faculty member.
Prerequisite: Registration in Level III of Honours Art History or Level IV Honours Art and a grade of at least B- in a previous course in the chosen field. Not open to students taking Art 4D3. Not available to students with credit in Art History 4K3.

ART HIST 3W3 THE ART OF PHOTOGRAPHY
An historical and critical discussion of photography and its contribution to modern visual culture.
3 lecs.; one term
Prerequisite: Registration in Level III or IV of any programme and permission of the instructor.

ART HIST 4A3 CATHEDRAL AND ABBEY
The origin and development of church architecture from the Carolingian period to the age of the great cathedrals.
3 lecs.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 2L3. Offered in alternate years.

ART HIST 4C3 THE ART OF THE HIGH RENAISSANCE IN ROME
A study of the art and architecture of Raphael, Michelangelo and their contemporaries in Rome in the early 16th century.
3 lecs.; one term
Prerequisite: Art History 2M3. Offered in alternate years.

ART HIST 4L3 TOPICS IN ANCIENT ART AND ARCHAEOLOGY
1987-88: Greek Painting
A study of the development of ancient Greek painting from the royal and religious themes of Minoan palatial fresco (c.1600 B.C.) through Classical and Hellenistic experiments (to c. 300 B.C.) with perspective, chiaroscuro, and trompe-l'oeil. Evidence will be drawn from Aegean and Greek wallpainting, vase painting, mosaics, and Roman copies of Greek masterpieces. Seminar (3 hrs.); one term.
Prerequisite: Art History 2B3, and registration in Level III or IV of a programme in Art History or Classical Studies, and permission of the instructor. Enrolment is limited. Alternates with Art History 3G3. Same as Classical Civilization 4L3. Art History 4L3 may be repeated, if on a different topic, to a total of six units.

ART HIST 4M3 ASPECTS OF THE ARTS OF MATISSE AND PICASSO
An examination of selected paintings, sculptures and drawings by Henri Matisse and Pablo Picasso.
3 lecs.; one term
Prerequisite: Art History 2P3. Offered in alternate years.

ART HIST 4N3 SEVENTEENTH-CENTURY PAINTING IN FRANCE AND THE LOW COUNTRIES
An examination of painting during the Golden Age of the Arts in France, Flanders and Holland.
The paintings of Rubens, Rembrandt, and Poussin will be discussed in detail.
3 lecs.; one term
Prerequisite: Art History 2N3. Offered in alternate years.

ART HIST 4O6 THESIS
Supervised study of a problem in the history of art of special interest to the student.
Prerequisite: Registration in Level IV of Honours Art History, and a grade of at least B- in a previous course in the chosen field, and permission of the Department.

ART HIST 4P3 PAINTING AND SCULPTURE OF FIFTEENTH-CENTURY ITALY
An examination of the representational arts of the early Renaissance with emphasis on the Florentine contribution.
3 lecs.; one term
Prerequisite: Art History 2M3.

ART HIST 4Q3 INTRODUCTION TO ART GALLERIES AND MUSEUMS
A study of the history and methods of institutions created for the purpose of collecting, preserving, displaying, and interpreting art objects.
3 lecs.; one term
Prerequisite: Departmental permission slip required. Registration in Level III or IV of an Art or Art History programme; or permission of the Department. Enrolment is limited. Offered in alternate years.
ARTS AND SCIENCE

Roy W. Homesty (Sociology)
Asif A. Kubursi (Economics)
Alan Mendelson (Religious Studies)
Richard J. Preston (Anthropology)
Michael L. Ross (English)
William Wallace (Music)

CURRICULUM 1986-88

Department Notes:
1. Prerequisites: The prerequisite for all Level I, II, III and IV courses is registration in the Arts and Science Programme, or permission of the instructor.
2. Limited Enrolment: Enrolment in Level I of the Arts and Science Programme is limited to approximately 50 students. Enrolment in Arts and Science courses is also limited to approximately 50 students.
3. All courses are 3 hrs. (lect., discussion groups, seminars), except Arts and Science 2D6 which includes occasional labs. All courses are two terms.

ARTS & SCI 1A6 WESTERN THOUGHT I
An examination of central themes, from the time of the Greeks to the present, in Western religious, philosophical, and scientific thought. Students will study the formulation of these themes in such thinkers as Plato, Nietzsche, Rousseau, Augustine, and Descartes. Topics considered will include the legitimacy of the state, the scope and limits of reasoning, and the foundations of morality. Though the problems discussed will be formulated in a contemporary idiom the works will be viewed with respect to their historical context.

ARTS & SCI 1B6 WRITING AND INFORMAL LOGIC
The primary aim of this course is to develop the student's critical and analytical skills in dealing with the written word. Students will examine the structure of selected texts, analyze various types of reasoning, and receive individual attention in expository writing.

ARTS & SCI 1C6 INQUIRY
Inquiry seminars are designed to develop skills basic to the systematic investigation of public issues. These skills include those involved in formulating questions, gathering and interpreting evidence from a variety of sources, evaluating arguments, and reaching well-considered conclusions. This course includes lectures and exercises on advanced methods of library research and an introduction to computers.

ARTS & SCI 1D6 CALCULUS
This course aims to provide a thorough understanding of the principles and major applications of differential and integral calculus of functions of one variable, as well as an introduction to multivariate calculus and differential equations. Arts and Science 1D6 serves as an equivalent prerequisite for all upper level Mathematics courses, in which Mathematics 1A6 is a prerequisite.

ARTS & SCI 2A6 WESTERN THOUGHT II
Development of political, economic, social, and psychological thought in the writings of such major figures as Hobbes, Rousseau, Adam Smith, Marx, Weber, Keynes, Freud and Skinner. Attention will be given to their treatment of such topics as the nature of man, the concept of human rights, the role of government in the economy, the motivation of human action, and the applicability of scientific method to political, economic and psychological problems.

ARTS & SCI 2D6 PHYSICAL SCIENCE
Classical mechanics and special relativity highlighting the discoveries of Newton and Einstein. The chemical evidence for atoms; chemical reactions, valence and periodic table. Elementary thermal physics and the laws of thermodynamics. Survey of the important discoveries leading to the quantum theory. Introduction to atomic and molecular structure. Laboratory projects will be undertaken.

ARTS & SCI 3A6 LITERATURE
Literary works drawn from a variety of genres and periods will be examined. The course will focus on the ways in which great writers have treated enduring human ethical concerns. It will attempt to show how literary creativity involves the matching of formal and stylistic mastery, on the one hand, with ethical awareness on the other. The course will require frequent brief written assignments.

ARTS & SCI 3B6 TECHNOLOGY AND SOCIETY
The development of technology, and the socio-economic impact of technology, will be considered in historical perspective. Some essential technological concepts concerned with materials, energy and production systems, and design will be explored from a scientific point of view. Consideration will be given to methods for assessing the impact of technological decisions.

ARTS & SCI 3C6 INQUIRY
The upper level inquiry seminars build on the skills acquired in Arts and Science 1C6, and examine a variety of important public issues. Some are more concerned with scientific, technological, or empirical matters; others emphasise cultural and personal values.

Topics in 1986-87
1. Culture: Censorship
2. The Phenomenon of Work
3. Native Peoples and Northern Settlements
4. An additional topic to be announced

Topics in 1987-88
To be announced

Arts and Science 3C6 may be repeated, if on a different topic, to a total of 12 units.

Permission of the Director is required to take more than 12 units of inquiry seminars beyond Level I.

Students with credit in Arts and Science 3C6 or 3X6 may take 6 additional units of Arts and Science 3C6, provided that the 12 unit limit of inquiry seminars has not been met.

ARTS & SCI 3D6 CREATIVE ARTS
The nature of the graphic arts and music, and their relation to culture and ideas, is examined. Close attention is paid to the creative process as a way of understanding the nature of the artistic product.

ARTS & SCI 4A6 INDIVIDUAL STUDY
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Students intending to register must first consult the Director of the Arts and Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.

Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4A12 INDIVIDUAL STUDY
Same as Arts and Science 4A6.

ARTS & SCI 4C6 THESIS
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Three copies of a completed thesis must be submitted by the end of classes. Students intending to register must first consult the Director of the Arts and Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.

Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4C12 THESIS
Same as Arts and Science 4C6.

Asian Studies

While there is no B.A. programme in Asian Studies, students interested in concentrating in this area may choose from among the following courses offered by various departments. Those desiring further information on specific courses should consult the departmental listing in the Calendar.

Students wishing to pursue Asian Studies may obtain further information from Dr. D. Barrett (History) or Dr. K. Shinohara (Religious Studies).

CURRICULUM 1986-1988

COURSES DEALING STRICTLY WITH ASIAN MATERIAL
Anthropology 3H3 Ethnology: Southeast Asia
Anthropology 3K3 People of India
History 2B6 China: From the Opium War to the Present
History 3B3 Modern Japan
History 3C3 Ancient China
History 3D3 Imperial China
History 3G6 The History of the Indian Sub-Continent
History 4C6 The Revolutionary Movement in Modern China
Political Science 2M6 Introduction to Far Eastern Political Traditions
Political Science 3D3 Comparative Politics: Southeast Asian Systems
Political Science 3M6 The Politics of Modern and Contemporary China
Political Science 3Q6 Politics in Japan
Religious Studies 2J6 India:Its Culture, Social History, Religion and Philosophy
Religious Studies 2M6 East Asian Religions
Religious Studies 2OO3 Religious Traditions of the East
Religious Studies 2T3 Yoga: Theory and Practice
Religious Studies 2VS Indian Art and Religion
Religious Studies 3AA3 Popular Religion in India
Religious Studies 3C3 Divination and Philosophy of I-Ching or the Book of Changes
Religious Studies 3N3 The Individual and Society in Japanese Tradition
Religious Studies 3P3 Indian Philosophy
Religious Studies 3Q6 The Buddhist Tradition
Religious Studies 4A6 Advanced Study in Hindu Religious History
Religious Studies 4B6 Advanced Study in Buddhism and East Asian Religious History
Religious Studies 4E6 Advanced Study in Indian Philosophy

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COURSES WITH A SIGNIFICANT AMOUNT OF ASIAN CONTENT

Economics 3J6 Economic Development
Political Science 20B Culture and Politics of Southern Asia and North Africa
Political Science 4Q6 Developing Political Systems
Religious Studies 1B6 World Religions
Religious Studies 1F6 War and the Problem of Meaning
Religious Studies 1G3 Religion in Cross-Cultural Perspective
Religious Studies 1H3 Religious Realization and Dissent
Religious Studies 2A3 Mysticism in Hindu and Christian Traditions
Religious Studies 2B3 Images of the Divine Feminine
Religious Studies 2C3 Specialists in the Sacred
Religious Studies 2H3 Issues in War and Peace
Religious Studies 2Q3 Cults in North America
Religious Studies 2S3 Women and Religion
Religious Studies 2W3 Religion and Good Government
Religious Studies 2W4 Health, Healing and Religion
Religious Studies 2X6 Religious Foundations of Political Order, East and West
Religious Studies 2Z26 Comparative Ideas of God, Christian and Hindu
Religious Studies 3S3 Monks and Magicians: Approaches to the Study of Religious Biographies
Religious Studies 3X6 Civil Religion, East and West

LANGUAGE COURSES

Sanskrit 3A6 Introduction to Sanskrit Grammar
Sanskrit 4B6 Readings in Sanskrit Texts
(Offered by the Department of Religious Studies)

Biochemistry

Faculty as of January 15, 1986

H.P. Ghosh/Chairman

Professors

Luis A. Branda/B.Sc., B.Sc. (Uruguay)
Derek C. Burke/B.Sc., Ph.D. (Birmingham)/part-time
William W. Chan/M.A., Ph.D. (Cambridge)
Richard M. Epan/A.B. (Johns Hopkins), Ph.D. (Columbia)
Barbara M. Ferrier/B.Sc., Ph.D. (Edinburgh)/part-time
Karl B. Freeman/B.A., Ph.D. (Toronto)
Hara P. Ghosh/M.Sc., Ph.D. (Calcutta)
Ross H. Hall/B.A. (British Columbia), M.A. (Toronto), Ph.D. (Cambridge)
Dennis R. McGaugh/B.Sc. (Alberta), M.Sc. (Saskatchewan), Ph.D. (California Inst. of Technology), F.C.I.C.
Evert Nieboer/M.Sc. (McMaster), Ph.D. (Waterloo)

Associate Professors

Gerhard E. Gerber/B.Sc., Ph.D. (Toronto)
Radhey S. Gupta/M.Sc., Ph.D. (Bombay)

Assistant Professors

A. Bruce Futterer/B.Sc., Ph.D. (Oxford) Calvin B. Harley/B.Sc. (Waterloo), Ph.D. (McMaster)
Richard A. Rachubinski/B.Sc., M.Sc., Ph.D. (McGill)

Associate Members

Shane T. Baysley/Biology B.Sc., Ph.D. (London)
Richard J. Haslam/Pathology M.A., D.Phil. (Oxford)
George D. Sweeney/Medicine M.B., Ch.B., Ph.D. (Cape Town)

CURRICULUM 1986-88

BIOCHEM 2A3 INTRODUCTORY BIOCHEMISTRY
A thematic treatment of biochemistry covering the principles of specificity, energy flow, and regulation. Designed for students intending to proceed to Biochemistry 3B3.
3 lects.; one term
Preerequisite: Credit or registration in one of Chemistry 2B6, 2B6, 2A3, 2A3, 25S. Not open to students who are registered in or have completed Biochemistry 2A3.

BIOCHEM 2E3 ELEMENTARY BIOCHEMISTRY
A treatment of the basic areas of biochemistry, including physiological chemistry. Designed for students who do not intend to pursue biochemistry.
3 lects.; one term
Prequisite: Credit or registration in one of Chemistry 2D3, 2D4, 2B6, 2A3, 25S. Not open to students who are registered in or have completed Biochemistry 2E3.

BIOCHEM 3B3 PRINCIPLES OF BIOCHEMICAL INVESTIGATION
Classical and modern methods of investigation using in vitro and in vivo techniques, isolation of cellular components, determination of structure and characterization of interactions.
3 lects.; one term
Prequisite: Biochemistry 2A3, and credit or registration in one of Chemistry 2G5, 2G6, 2T5, 2T6. Not open to students who are registered in or have completed Biochemistry 3G6.

BIOCHEM 3C3 APPROACH TO BIOCHEMICAL PROBLEMS
Experience will be gained in the solution of biochemical problems.
3 lects.; one term
Prequisite: Biochemistry 3B3. Not open to students who have completed Biochemistry 3G6.

BIOCHEM 3G6 COMPREHENSIVE BIOCHEMISTRY
Major concepts of biochemistry, and modern methods used in biochemical investigations, nature of cellular processes, structure and function of macromolecules, metabolism and its regulation.
3 lects.; two terms
Prequisite: One of Chemistry 2G6, 2G6, 208, 2S8. Not open to students who have completed Biochemistry 3A3, 3B3, or 3C3.

BIOCHEM 3H3 CLINICAL BIOCHEMISTRY
An outline of clinical chemistry, its relation to disease and relevance to health care.
3 lects.; one term
Prequisite: Credit or registration in Biochemistry 3B3 or 3G6.

BIOCHEM 3L6 BIOCHEMISTRY LABORATORY
Illustration of fundamental principles as presented in Biochemistry 3B3.
2 labs. (3); two terms
Prequisite: Credit or registration in Biochemistry 3B3.

BIOCHEM 3L3 BIOCHEMISTRY LABORATORY
Identical to first part of Biochemistry 3L6.
1 lab. (3); one term
Prequisite: Credit or registration in Biochemistry 3B3.

BIOCHEM 4B6 SENIOR THESIS
A thesis based on a project supervised by a member or associate member of the Department of Biochemistry.
3 labs. (3); two terms
Prequisite: In general only students registered in Level IV Biochemistry programs who have a CAA of at least 10.0 will be admitted. Potential registrants should consult the Chairman before June 1st.
Enrollment is limited.

BIOCHEM 4C3 PROBLEMS IN APPLIED BIOCHEMISTRY
Areas of relevance to society are explored from a biochemist's viewpoint. Typical topics are in the areas of nutrition, agriculture, food and pharmaceutical industry and pollution.
3 lects.; one term
Prequisite: Biochemistry 3C3 and a CAA of at least 7.0.

BIOCHEM 4D3 BIOTECHNOLOGY AND GENETIC ENGINEERING
Theory, methods and applications in genetic engineering and biotechnology with emphasis on recombinant DNA, hybridomas, engineered organisms, and fermentation processes.
3 lects.; one term
Prequisite: Biochemistry 3B3 or 3G6.

BIOCHEM 4E3 RECENT DEVELOPMENTS IN MOLECULAR BIOLOGY
Biochemical approaches for studying the possible molecular components and regulatory mechanisms involved in complex biological phenomena, such as cell transformation, carcinogenesis, growth and differentiation.
3 lects.; one term
Prequisite: Biochemistry 3B3 or 3G6.

BIOCHEM 4G3 BIOTECHNOLOGY AND GENETIC ENGINEERING LABORATORY
This lab is complementary to Biochemistry 4D3. Experiments may involve cloning, engineered mutagenesis, DNA sequencing, expression of cloned gene and fermentation.
2 labs. (4); one term
Prequisite: Biochemistry 3B3, one of Biology 3L2, 3L3, 3L4, 3L6, and a CAA of at least 4.0.

BIOCHEM 4I3 STRUCTURAL AND MECHANISTIC ASPECTS OF MACROMOLECULES
Advanced treatment of protein and nucleic acid structure. Mechanism of enzymes and coenzymes including metal ions. Interaction involving macromolecules.
3 lects.; one term
Prequisite: Biochemistry 3B3 and one of Chemistry 3D3, 3D6, 3F3; or permission of the instructor.

BIOCHEM 4L3 ADVANCED BIOCHEMISTRY LABORATORY
Fundamental principles of experimental biochemistry with emphasis on modern methods in enzymology, membrane biochemistry and molecular biology.
2 labs. (4); one term
Prequisite: Biochemistry 3B3 and one of Biology 3L2, 3L3, 3L4, 3L6. Not open to students who are registered in or have completed Biochemistry 4G3.

BIOCHEMISTRY
**BIOCHEMISTRY**

**BIOCHEM 4M3 MEMBRANE STRUCTURE AND FUNCTION**
Chemical structure and molecular organization of membrane constituents. Molecular basis of the biological activity of membranes.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3G6.

**BIOCHEM 4N3 NUTRITION AND METABOLISM**
Relation of diet to metabolism and regulation of metabolism including: nutrition and the immune system; vitamin deficiency and membrane function; physical activity, energy and obesity; drug and nutrient interactions; health implications.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3G6.

**BIOCHEM 4O3 MOLECULAR BIOPHYSICS**
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, X-ray diffraction, optical and magnetic resonance spectroscopy, and their application to proteins and nucleic acids.
3 lects.; one term
Prerequisite: Registration in Level III or IV Honours Biology or Level IV Biology Major (with credit in one of Biochemistry 3B3 or 3G6), or in Level III or IV Honours Biochemistry or Honours Biochemistry and Chemistry, or Level IV Biochemistry Major; or permission of the instructor.
Same as Biology 4O3.

**BIOCHEM 4P3 RESEARCH PROJECT**
A research project will be supervised by a member or associate member of the Department of Biochemistry.
3 labs.(3); one term
Prerequisite: Students must be registered in a Level IV Biochemistry programme and have a CAA of at least 7.0. Permission of the Department required before September 15. Not open to students who have credit or are registered in Biochemistry 4L6, 4U5 or 4U6.

**BIOCHEM 4Q3 BIOCHEMICAL PHARMACOLOGY**
Interactions of drugs with living systems. Drug absorption, distribution, mechanism of action, metabolism and elimination will be discussed.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3G6.

**BIOCHEM 4U6 ADVANCED EXPERIMENTATION**
Fundamental experimental principles of biochemistry and chemistry including modern instrumental methods. Three units selected from Chemistry 4T6 plus Biochemistry 4P3.
2 labs.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L6, 4P3, Chemistry 4T4, 4T6.
Same as Chemistry 4U6.

For Graduate Courses, see Calendar of School of Graduate Studies.

**Bioengineering**

There is no undergraduate degree programme in Bioengineering. Courses in Bioengineering are coordinated by the Bioengineering Committee of the Faculty of Engineering, which is an interdisciplinary committee. Students interested in this area of study should consult the chairman of their department or a member of the Bioengineering Committee. Members in 1985-86 were as follows:

J.L. Brash (Chemical Engineering)
H. deBruin (Medicine)
I.A. Feuerstein (Chemical Engineering)
D.N. Ghista (Medicine)
B. Gowitzke (Physical Education)
L.D. Pengelly (Medicine)

**CURRICULUM 1986-88**
Elective courses in Bioengineering are available through a number of departments. In keeping with the basic definition of Bioengineering, the application of Engineering Principles and Knowledge to Medicine and Biology, the following elective courses offer an opportunity to relate engineering studies to the needs of medicine and biology.

**Biology**

Faculty as of January 15, 1986

S. Mak/Chairman

Professors Emeriti
Douglas M. Davies/B.A., Ph.D. (Toronto), F.E.S.C.
John J. Miller/B.A., Ph.D. (Toronto)

Professors
Stanley T. Bayley/B.Sc., Ph.D. (London)
Douglas Davidson/B.Sc. (Durham), D.Phil. (Oxford)
Frank L. Graham/(Pathology) M.A., Ph.D. (Toronto)
Kenneth A. Kershaw/B.Sc. (Manchester), Ph.D. (N. Wales), D.Sc. (Wales), F.R.S.C.
John N.A. Lent/B.Sc. (British Columbia), M.S., Ph.D. (California, Davis)

For Graduate Courses, see Calendar of School of Graduate Studies.
BIOLOGY 1G6 INTRODUCTION TO BIOLOGY
Basic concepts in cell biology, animal physiology and genetics. The course covers cell structure, organelle function, metabolism, growth, division, endocrinology, muscle function, circulation, excretion, and immunology.
3 lects., or 2 lects., 1 lab.(3); two terms
Prerequisite: At least a 60% average in two Grade 13 science or mathematics courses; or a grade of at least C+ in Physical Education 2C6. Not open to students registered in the Faculty of Science.

BIOLOGY 1J3 HUMAN PHYSIOLOGY
Physiology of respiration, circulation, energy and muscle metabolism and reproduction.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Registration in Physical Education I.

BIOLOGY 2B3 CELL BIOLOGY
The cell as the fundamental unit of life. The origin of life, evolution of prokaryote and eukaryote cells, development of multi-cellularity and cell specialization.
3 lects.; 2 lects., 1 lab.(3); or 2 lects., 1 tut.; one term
Prerequisite: Biology 1A6, or a grade of at least B in Biology 1G6; and one of Chemistry 1A6, 1A7, 1B6, 1B7.

BIOLOGY 2C3 GENETICS
Structure, function and transmission of genes; chromosomal basis of inheritance; mono- and dihybrid crosses; sequential steps in gene function; linkage maps; sex chromosome inheritance.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 1A6, or a grade of at least B in Biology 1G6, and completion of Chemistry 1A6, 1A7, 1B6, 1B7; or registration in Biology 1A6 and in a Biochemistry programme.

BIOLOGY 2D3 THE PLANT KINGDOM
An introduction to the major groups of green plants. Growth and development of vegetative parts and mechanisms of reproduction will be emphasized.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6; or a grade of at least B in Biology 1G6.

BIOLOGY 2E3 THE ANIMAL KINGDOM
An introduction to the major animal groups, with emphasis on structure and function.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6; or a grade of at least B in Biology 1G6.

BIOLOGY 3A6 STRUCTURE, FUNCTION AND DEVELOPMENT OF PLANTS
Ultrastructure, anatomy and development of higher plants in relation to growth conditions and physiological activities.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 and Biology 2D3.

BIOLOGY 3C3 MICROBIOLOGY I
Basic energy-yielding mechanisms; biochemical and genetic regulation of morphogenesis; microbial life under extreme conditions.
3 lects.; one term
Prerequisite: Biology 3E3.

BIOLOGY 3D3 ANIMAL PARASITOLOGY
Parasites of animals, dealing with life histories, host-parasite relationships, and arthropod vectors.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2E3.

BIOLOGY 3E3 MICROBIOLOGY I
2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 206, 208, 203 or 2D4.

BIOLOGY 3F6 COMPARATIVE ANATOMY AND EVOLUTION OF VERTEBRATES
An introduction to the development of structure and function in vertebrates.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3; or permission of the instructor.

BIOLOGY 3H3 SUBCELLULAR STRUCTURE AND FUNCTION
Structure and function of various subcellular components; concept of cellular compartmentalization; mechanism and regulation of gene expression in eukaryotic cells.
3 lects., or 2 lects., 1 lab. (3); one term
Prerequisite: Biology 2B3. Not open to students who have completed Biology 3H6.

BIOLOGY 3H3 CELL PROLIFERATION AND CELL-CELL INTERACTION
Cell growth and proliferation; cell cycle analysis; behaviour of cells in tissue culture; cell-cell recognition and interaction; transport of micro- and macromolecules across membranes; cytoskeleton and cell motility.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 2B3. Not open to students who have completed Biology 3H6.

BIOLOGY 3I3 CYTOGENETICS
Karyotype analysis—morphological and biochemical. Structural changes in chromosomes and their effects on fertility. Chromosome polymorphism in man and other organisms; inversions, translocation, deletions, duplications.
3 lects.; one term
Prerequisite: Biology 2B3 and 2C3.

BIOLOGY 3J3 THE GENETIC BASIS OF EVOLUTION
A survey of the conceptual foundations of evolutionary processes.
3 lects. or 2 lects., 1 tut.; one term
Prerequisite: Biology 2C3.

BIOLOGY 3K6 ANIMAL HISTOLOGY
The structure, function, and organization of cells, tissues, organs and organ systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3; or a grade of at least B in Biology 1G6; or permission of the instructor.

BIOLOGY 3M6 FORM, FUNCTION, AND LIFE HISTORY OF INVERTEBRATES
Development of specialization in form, function, and life cycle during evolution and during the growth of individuals of certain groups.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3. Not open to students who are registered in, or have credit in, Biology 3M3.

BIOLOGY 3M3 INTRODUCTION TO BIOLOGY OF INVERTEBRATES
Analysis of form, function and life cycle in selected groups.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2E3. Not open to students who are registered in, or have credit in, Biology 3M6.

BIOLOGY 3N6 DEVELOPMENTAL BIOLOGY
Comparative and analytical studies of development. Processes of growth, cell differentiation and morphogenesis will be emphasized; similarities between plant and animal development will be discussed.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3, 2C3, 2E3; one of Chemistry 1A6, 1A7, 1B6 or 1B7.

BIOLOGY 303 MICROBIAL GENETICS
The genetics of bacteriophages, bacteria and fungi. Special emphasis will be placed on relationships between microbial genetics and general problems in genetics.
2 lects., 1 tut.; one term
Prerequisite: Biology 2C3.

BIOLOGY 3P3 CELL PHYSIOLOGY
Cell function with emphasis on cell membranes and transport processes. A quantitative physiological interpretation of the electrical properties of cells.
2 lects., 1 tut.; one term
Prerequisite: Biology 2B3 and registration, or credit, in Biochemistry 3B3 or 3G6.

BIOLOGY 3Q3 RADIATION BIOLOGY
The effects of radiation upon biological material at the physical, molecular, cellular, tissue, and organismal levels. Applications of radiation in medicine and industry.
3 lects.; one term
Prerequisite: Biology 1A6; or a grade of at least B in Biology 1G6; and one of Physics 1A6, 1A7, 1B6, 1B7, 1G6, 1C7; or permission of the instructor.

BIOLOGY 356 POPULATION AND COMMUNITY ECOLOGY
Methods of analyzing population and community data; procedures for modelling populations and population processes; intra- and interspecific competition; predator-prey relationships; spatial and temporal patterns in communities.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2D3 and 2F3 and registration, or credit, in Computer Science 1B3 and Statistics 2R6.

BIOLOGY 356 PRINCIPLES OF ANIMAL PHYSIOLOGY
Animal physiological systems including: circulation, respiration, acid-base and electrolyte balance, renal function, nervous and hormonal control systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 or registration in Level III or IV of a non-science programme and a grade of at least B in Biology 1G6 or 1J3 or 1H6. Biochemistry 3G6 is also recommended.

BIOLOGY 4A3 LABORATORY COURSE IN MOLECULAR BIOLOGY
Introduction to basic recombinant DNA techniques: isolation, characterization and expression of genes in E. coli.
2 labs.(3), 1 tut.; one term

103
Prerequisite: Approval must be given by the Chairman in the preceding Spring term. One of Biochemistry 3B3, 3G6. Open to students who have obtained a CAA of at least 9.0 and are registered in Level IV Honours Biology; or permission of the Chairman. Preference will be given to students registered in the Biotechnology and Genetic Engineering Option.

Enrolment is limited to a maximum of 12 students.

**BIOLOGY 4V6 PLANT PHYSIOLOGY**
Principles of physiology and metabolism in plants. Topics include: aspects of photosynthesis, nitrogen assimilation, cell wall biosynthesis, hormone action and biotechnology as related to plants.

2 lec., 1 tut., 1 lab.(3); two terms
Prerequisite: Registration in, or completion of, Biochemistry 3G6; or permission of the instructor.

**BIOLOGY 483 PLANT PHYSIOLOGY**
The regulation of plant metabolism will be considered. There will be a major emphasis on carbon flow, light reactions of photosynthesis and the relationship of these reactions to chloroplast development.

2 lec., 1 tut.; one term
Prerequisite: Registration in or completion of Biochemistry 2A3 or 3G6. Not open to students registered in, or who have completed Biology 4B4 or 4B6. To be given concurrently with 4B6.

**BIOLOGY 4C8 SENIOR THESIS**
A thesis based upon a research project carried out under the direction of a member of the Faculty.
Prerequisite: Approval by the Chairman in the preceding spring term. Open to students who have obtained a CAA of at least 10.0 and are registered in Level IV Honours Biology, Honours Biology and Geology, or Honours Biology and Psychology. Not open to students with credit, or registration, in Biology 4F4.

**BIOLOGY 4D3 PHYSIOLOGICAL ECOLOGY**
Interaction of organisms and microclimate: contrasting strategies of animal and plant physiology in stressful environments. Examples will be chosen from desert, arctic and aquatic systems.

2 lec., 1 lab.(3); one term
Prerequisite: Biology 3S6; or permission of the instructor.

**BIOLOGY 4H3 POPULATION GENETICS**
Experimental and theoretical aspects of the genetic basis of evolutionary changes in populations.

2 lec., one term
Prerequisite: Biology 3J3 and Biology 2C3 and one of Mathematics 1F6, 1A6.

**BIOLOGY 4F4 SENIOR PROJECT**
Students may enlarge their background in a field of specialization through an experimental or library project under the direction of a member of the Faculty.
Prerequisite: Approval by the Chairman in the preceding spring term. Open to students registered in a Level IV Biology programme. Not open to students with credit, or registration, in Biology 4C8.

**BIOLOGY 4H3 PLANT DEVELOPMENT**
An experimental analysis of development in plants: cytological, genetical, and biochemical studies.

3 lec.; one term
Prerequisite: Biology 2D3.

**BIOLOGY 4I3 IMMUNOLOGY**
An introduction to humoral and cellular immunity. The molecular and cellular basis of immunity, and an introduction to immunological techniques.

2 lec., 1 tut.(2); one term
Prerequisite: Registration, or credit, in one of Biochemistry 3B3, 3G6; or permission of the instructor.

**BIOLOGY 4J3 FIELD EXERCISES IN ECOLOGY**
Field projects focusing on local plants and animals in terrestrial and aquatic habitats. Students may propose a specific topic.

1 tut., 1 lab.(3); one term
Prerequisite: Biology 2F3, registration or credit in Biology 3S6; or permission of the instructor.

**BIOLOGY 403 MOLECULAR BIOPHYSICS**
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, X-ray diffraction, optical and magnetic resonance spectroscopy and application to proteins and nucleic acids.

3 lec.; one term
Prerequisite: Registration in: Level III or IV Honours Biology; or Level IV Biology Major (with registration, or credit, in one of Biochemistry 3B3, 3G6); or Level III or IV Honours Biochemistry or Honours Biochemistry and Chemistry; or Level IV Biochemistry Major; or permission of the instructor.

Same as Biochemistry 403.

**BIOLOGY 4P6 MOLECULAR GENETICS**
The following topics will be discussed: recombination, DNA replication and gene expression in eukaryotes and prokaryotes.

2 lec., 1 tut. or 1 lab.(3); two terms
Prerequisite: Biology 3O3 and one of Biochemistry 3B3, 3G6.

**BIOLOGY 4V3 VIROLOGY**
The viruses of animals, bacteria, and plants, with emphasis on the molecular biology of virus replication and the diversity of virus-cell interactions.

2 lec., 1 tut.(2); one term
Prerequisite: Registration, or credit, in Biochemistry 3B3 or 3G6; or permission of the instructor.

**BIOLOGY 4X3 ENVIRONMENTAL PHYSIOLOGY**
Advanced physiology of animals with an emphasis on interactions with and adaptation to the environment.
Prerequisite: One of Biology 3U6, 3Y6 or 4S6. Biochemistry 3G6 is also recommended.

**BIOLOGY 4Z3 SYSTEMATIC BOTANY**
Processes of speciation in higher plants, cytological, mathematical, and biochemical methods in plant classification.

2 lec., 1 lab.(3); one term
Prerequisite: Biology 3D3. Offered in alternate years.

**Business**

**Faculty Notes:**

1. The following courses are offered by the Faculty of Business as electives for students in other Faculties. The Office of the Registrar will implement the selection procedures stated under each course using registration forms received by June 30. If enrolment limits are not reached at that time, eligible students will be registered in the course on a first-come/first-served basis.

2. Business courses are open to students registered in Level III or Level IV of programmes other than Commerce, and Engineering and Management. Business 3W6 and 3Z3 are not open to students registered in the degree programme in Labour Studies.

**BUSINESS 3X3 BUSINESS LAW**
An introduction to the relevance of law to the Canadian Business environment. Basic concepts of the judicial process and legal procedures, contracts, primary sources of law, and other aspects of the relationship between business and law will be examined.

3 lec.; one term
Prerequisite: Economics 1A6. Not open to students who have received credit for Commerce 4P03 or 4P3.

Enrolment Limit: 45 (Selection is made on the basis of performance in the first attempt in Economics 1A6.)

**BUSINESS 3W6 ACCOUNTING**
An introduction to the basic principles and practices of accounting. Major topic areas to be considered include the economic valuation model, the fundamental concepts underlying, and the operation of, the traditional accounting model, external financial reporting and the preparation and use of accounting information for management planning and control.

3 lec.; two terms
Prerequisite: Economics 1A6. Not open to students who have received credit for Commerce 2A3 or 2A3.

Enrolment Limit: 90 (Selection is made on the basis of performance in the first attempt in Economics 1A6.)

**BUSINESS 3X3 BUSINESS FINANCE**
An introduction to the theory and practice of business finance. An examination of the major financial decisions that businesses face: the problems of determining the overall level of sources and uses of funds by the firm, the evaluation of alternative uses of funds (capital budgeting and working capital management), and the choice among alternative sources of funds. Analytical approaches to assist with these decisions are developed.

3 lec.; one term
Prerequisite: Business 3W6, or Commerce 2A3 or 2A3; and Economics 2G3 or 2L6 (Business 3W6 may be taken concurrently with 3X3). Not open to students who have received credit for Commerce 2P03 or 3K3.

Enrolment Limit: 45 (Selection is made on the basis of performance in the first attempt in Economics 2G3 or 2L6.)

**BUSINESS 3Y3 MARKETING**
An introduction to the role that marketing plays in our society and in the Canadian economy. The course will take a macro-marketing viewpoint to deal with theoretical and social aspects of the exchanges that take place between organizations and their publics.

3 lec.; one term
Prerequisite: Economics 1A6. Not open to students who have received credit for Commerce 2A3 or 3K3.

Enrolment Limit: 90 (Selection is made on the basis of performance in the first attempt in Economics 1A6.)

**BUSINESS 3Z3 HUMAN RESOURCE MANAGEMENT**
An introduction to basic concepts, theories and practice in human resource management. Various problems which arise from the employer-employee relationship as well as the techniques designed to handle them will be considered.

3 lec.; one term
Prerequisite: Economics 1A6. Not open to students who have received credit for Commerce 3B3, 3B3, 3F3 or 453.
Enrolment Limit: 45 (Selection is made on the basis of performance in the first attempt in Economics 1A6.)

Canadian Studies

Canadian Studies Programmes at McMaster University are administered by the Faculties of Humanities and Social Sciences and are co-ordinated and supervised by an interdisciplinary Committee of Instruction.

Students planning to register in a programme in Canadian Studies and another subject are to report to the Associate Dean (Studies) responsible for the 'other discipline' (e.g., a student registered in Canadian Studies and English must report to the Associate Dean (Studies) of the Faculty of Humanities; a student in Canadian Studies and Sociology reports to the Associate Dean (Studies) of the Faculty of Social Sciences). In advance of registering, such students must present written approval of the Chairman of the Committee of Instruction of the Canadian Studies Programme.

Committee of Instruction
R.W. Thompson (Economics)/Chairman
J. Adamson (English)
M.M. Ahmed (Romance Languages/French)
H. Aster (Political Science)
C.P.A. Ballstad (English)
C. Bayard (Romance Languages/French)
D.P. Gegan (History)
P.J. George (Economics)
F.A. Hall (Music)
R.J. Henderson (Physical Education)
R.L. Hyman (English)
J.A. Johnson (Economics)
J.M. Jones (Social Work)
K.L. Liaw (Geography)
R. Matthews (Sociology)
W.T. Matthews (History)
E. Nardocchio (Romance Languages/French)
R.J. Preston (Anthropology)
M. Stein (Political Science)
H.E. Turner (History)
P.H. Walton (Art and Art History)
J.C. Weaver (History)

CURRICULUM 1986-88

CDN ST I A6 WAYS OF SEEING: A FRAMEWORK FOR CANADIAN STUDIES
An interdisciplinary study of Canada which examines major phases of regional development in Canada on the basis of the relationship between various economic and cultural centres and their respective peripheries or hinterlands. This course will be 'team-taught' by members of the Faculties of Humanities and Social Sciences.
1 lect.(2 hrs.), 1 tut.; two terms
Prerequisite: Open. Not available to students with credit in Canadian Studies 2A6.

CDN ST I 2A3 CANADIAN REGIONAL STUDIES
An interdisciplinary examination of specific regions and provinces in Canada. Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students with credit in Canadian Studies 3A3.

CDN ST I 2B3 CANADIAN SOCIAL AND CULTURAL STUDIES
An interdisciplinary examination of such subjects as cultural heritage and achievement, ethnic and cultural groups, religion and education.
Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students with credit in Canadian Studies 3B3.

CDN ST I 3E3 CANADIAN INDUSTRIAL AND URBAN STUDIES
An interdisciplinary examination of such subjects as industrialization, class structures and demographic changes, the ecology of post-industrial Canada and problems in urban geography and planning.
Seminar (2 hrs.); one term

CDN ST 3F3 STUDIES OF CANADIAN INSTITUTIONS AND POLICIES
An interdisciplinary examination of such subjects as government structures and systems, federal and provincial politics, the civil service, external affairs and economic problems and policy.
Seminar (2 hrs.), one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction.

CDN ST 4E6 INDEPENDENT RESEARCH
In regular consultation with a faculty member from the Committee of Instruction, students will prepare and defend a major research paper on an interdisciplinary subject. There will be a formal oral examination by three instructors from the Committee of Instruction with representation from both Faculties.
Prerequisite: Registration in Level IV of Honours Canadian Studies and another subject.

CANADIAN AREA COURSES

HUMANITIES
Art History 3B3 Canadian Art and Architecture
Dramatic Arts 3BB3 Contemporary Quebec Theatre
English 2C3 Contemporary Canadian Fiction
English 2G6 Canadian Literature
English 323 Contemporary Canadian Poetry
French 2F3 The Civilization of French Canada I
French 2FF3 The Civilization of French Canada II
French 3A3A The Modern French Canadian Novel
French 3BB3 Contemporary Quebec Theatre
French 4U3 Topics in French-Canadian Literature
History 2J6 The History of Canada
History 3C3 The Indian in Eastern Canada
History 3W3 The People of Ontario, 1790-1940: An Introduction to Regional Social History
History 4N6 Canadian Historiography
Music 3T3 Studies in Canadian Music

SOCIAL SCIENCES
Anthropology 3A3 Ethnology The Canadian North
Anthropology 3F3 Contemporary Northern Peoples
Economics 2K3 Economic History of Canada
Economics 3G6 Public Finance
Economics 3F3 Topics in Canadian Economic History
Geography 2E3 Canada
Geography 3D3 Historical Geography of Canada
Geography 4U3 Selected Problems in Urban Planning
Geography 4Z3 Advanced Cultural Geography
Political Science 2G6 Politics in Canada
Political Science 3DD6 Political Parties, Movements and Elites in Canada
Political Science 3GG3 Canadian Federalism
Political Science 316 Canadian Political Ideas
Political Science 4S6 Canadian Political Theory
Religious Studies 3B3 Native and Ethnic Religions in Canada
Religious Studies 3BB3 Major Denominations in Canada
Sociology 2H6 A Sociological Analysis of Canadian Society
Sociology 3BB3 Major Denominations in Canada (same as Religious Studies 3BB3)
Sociology 3Q3 Native and Ethnic Religions in Canada (same as Religious Studies 3B3)
Sociology 403 Regionalism and Regional Development in Canada
Other courses may qualify as Canadian Area courses. Students wishing to register in a course not on the list must consult the Committee of Instruction.
Of the total number of units taken in courses designated as Canadian Area courses, at least six must be taken outside and at least six must be from within the Faculty in which the student is registered.
The Canadian Area courses required for the Canadian Studies portion of a Combined programme must be exclusive of Canadian Area courses offered by the student's department (e.g., a student in Honours Canadian Studies and History may not use History courses to fulfill the Canadian Area component).

Ceramics

(See Materials Science and Engineering, Ceramics)
CHEMICAL ENGINEERING

Chemical Engineering

Faculty as of January 15, 1986

J. Vlachopoulos/Chairman

Professor Emeritus

Robert B. Anderson/A.B. (Augustana College), M.S., Ph.D. (Iowa), F.R.S.C., F.C.I.C.

Professors


John L. Brash/B.Sc., Ph.D. (Glasgow)


Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)


Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), P.Eng.

John F. MacGregor/B.Eng.

Cameron M. Crowe/B.Eng. (McGill), P.Eng.

Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)

Professor Emeritus

Robert B. Anderson/A.B. (Augustana College), M.S., Ph.D. (Iowa), F.R.S.C., F.C.I.C.

Professors


John L. Brash/B.Sc., Ph.D. (Glasgow)


Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)


Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), P.Eng.

Prerequisites:

CHEM ENG 2F4

3 lecturer., 1 tutorial (3); one term

Prerequisite: Chemical Engineering 2D4, or equivalent.

CHEM ENG 2G4 CHEMICAL ENGINEERING PRINCIPLES I

Steady-state mass balances in chemical processes and the first law of thermodynamics. The behaviour of gases and liquids, and their physical equilibria. Recycle in steady state operation.

3 lects., 1 tutorial (3); one term

Prerequisite: Registration in Level II Chemical Engineering, Chemical Engineering and Management or Applied Chemistry; or permission of the Department.

CHEM ENG 2F4 CHEMICAL ENGINEERING PRINCIPLES II

Combined mass and energy balances in the steady and unsteady state. The second law of thermodynamics and physical chemical equilibria.

3 lects., 1 tutorial (3); one term

Prerequisite: Chemical Engineering 2D4.

CHEM ENG 2G3 PROBLEM SOLVING AND COMPUTER SIMULATION

Developing awareness, strategies, creativity, analysis and interpersonal skills in the context of solving homework problems and projects. Steady state computer simulation, executive systems and their applications.

1 lecture, 2 tutorials (3); one term

Prerequisite: Engineering 2D3.

Corequisite: Chemical Engineering 2D4, or equivalent, and Chemical Engineering 2C2.

CHEM ENG 204 FLUID MECHANICS

The laws of statics and dynamics in both compressible and incompressible fluids. Equations of conservation and modern turbulence and boundary layer theory applied to submerged and conduit flow. Similitude, unsteady flow, measuring devices and fluid machinery.

3 lectures, 1 tutorial or lab (3); one term

Prerequisite: Mathematics 2M6, or 2P4 and 2Q4, which may be taken concurrently.

CHEM ENG 3A4 HEAT TRANSFER

Heat transfer in chemical engineering systems. Steady and unsteady state conduction, natural and forced convection, radiant heat transfer, condensation of vapour and boiling.

3 lectures, 1 tutorial; one term

Prerequisite: Chemical Engineering 2F4, 204.

CHEM ENG 3D3 CHEMICAL ENGINEERING THERMODYNAMICS

Review of the total energy balance and mechanical energy balance. Theoretical and practical cycles, including compression and refrigeration. Chemical reaction and phase equilibria of multicomponent systems, with emphasis on non-ideality. Thermodynamic analysis of processes.

2 lectures, 1 tutorial; one term

Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3E3 PROCESS MODEL FORMULATION AND SOLUTION

Formulation of models for various chemical processing units in the steady and unsteady states. Techniques for numerical solution of model equations, including algebraic and ordinary differential equations, both linear and non-linear.

3 lectures; one term

Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3G3 SIMULATION, MODELING AND PROBLEM SOLVING

Computer programming, executive programs modeling heat exchangers, separators and reactors. Creativity, analysis, heuristics and defining open-ended problems.

1 lecture, 2 tutorials (2); one term

Prerequisite: Chemical Engineering 2G3 or Commerce 3QB3, Chemical Engineering 3A4, 3E3.

Pre- or Co-requisite: Chemical Engineering 3K3, 3M4.

CHEM ENG 3K3 INTRODUCTION TO REACTOR DESIGN

Stochasticity of multiple reactions, kinetics of homogeneous reactions, interpretation of batch data, design of CSTR and plug flow idealized reactors.

3 lectures, one term

Prerequisite: Chemical Engineering 3D3, or registration in Level III or IV Honours Applied Chemistry.

CHEM ENG 3L2 INTERMEDIATE LABORATORY SKILLS

Experiments and projects in fluid mechanics, heat transfer, thermodynamics and mass transfer.

1 lecture, 1 lab (3); one term

Prerequisite: Chemical Engineering 204.

Pre- or Co-requisite: Chemical Engineering 3A4, 3D3, 3M4.

CHEM ENG 3M4 MASS TRANSFER AND STAGEWISE OPERATIONS

Stage operations, diffusion, mass transfer coefficients, distillation, differential contacting and absorption.

3 lectures, 1 tutorial (2); one term

Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3P3 PROCESS CONTROL


3 lectures; one term

Prerequisite: Mathematics 2M6, and Chemical Engineering 3E3, or registration in Level IV Ceramic Engineering, or permission of the Department. Not open to students with credit in Chemical Engineering 4P3.

CHEM ENG 4B3 POLYMER REACTION ENGINEERING


3 lectures, one term

Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management; or permission of the Department.

CHEM ENG 4C3 STATISTICS FOR ENGINEERS

Linear regression analysis in matrix form, non-linear regression, multi-response estimation, design of experiments including factorial and optimal designs. Special emphasis on methods appropriate to engineering problems.

3 lectures; one term

Prerequisite: Statistics 3M3 or equivalent and permission of the Department.
CHEM ENG 4D3 DISPERSED PHASE AND PARTICLE PROCESSING
Particle size characterization, filtration, fluidization, sedimentation, centrifugation and flotation.
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management

CHEM ENG 4K3 REACTOR DESIGN
Non ideal flow, mixing, catalytic kinetics, packed, fluidized bed reactors. Two phase reactors.
3 lects.; one term
Prerequisite: Chemical Engineering 3K3 or permission of the Department

CHEM ENG 4L2 ADVANCED LABORATORY SKILLS
Experiments and projects in transport phenomena, reaction kinetics and reactor design.
1 lab. (3), 1 lect.; one term
Prerequisite: Chemical Engineering 3L2 and registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4M3 SEPARATIONS
Distillation column design, transport phenomena, laminar and unsteady state mass transfer, analogies, adsorption, extraction, absorption, ion exchange, drying, humidification, crystallization.
3 lects.; one term
Prerequisite: Chemical Engineering 2O4, 3A4, 3M4.

CHEM ENG 4N4 COST ESTIMATION AND PROCESS DEVELOPMENT
Design and operation of chemical plants; creation and development of new processes using case studies. Ethics, decision-making, reliability, theory, project planning, cost estimation, time value of money, functional analysis and a survey of optimization techniques.
3 lects.; 1 tut. (2); one term
Prerequisite: Chemical Engineering 3A4, 3E3, 3G3, 3K3, 3M4; or registration in Level IV Ceramic Engineering.

CHEM ENG 4S3 HETEROGENEOUS CATALYSIS
Preparation and characterization of catalysts; physical adsorption and chemisorption; kinetics and mechanism of catalytic reactions and commercial processes.
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4T3 TRANSPORT PROCESSES IN BIOMEDICAL ENGINEERING
Analytical, experimental and design principles and chemical engineering skills for solving problems in biological flow systems, e.g. haemodynamics, extracorporeal oxygenator, artificial kidney and artery disease.
3 lects.; one term
Prerequisite: Chemical Engineering 2O4; or permission of the Department.

CHEM ENG 4W4 CHEMICAL PLANT DESIGN AND SIMULATION
Projects, often in cooperation with industry, usually involve steady-state computer simulation of an existing process or design of a new process. Plant equipment may be tested to develop simulation models.
2 project labs. (3); two terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4Y4 UNDERGRADUATE RESEARCH PROJECT
Research projects with students working on their own under the direction of a Faculty member.
2 labs. (3); two terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management; and first-class standing in the previous Winter Session; or permission of the Department.

CHEM ENG 4Z3 COLLOIDS, SURFACE PHENOMENA AND UNIT OPERATIONS
The properties of colloids and surfaces and their use in the design of reactors and separators. Includes stability of colloids, double layer phenomena, wetting, flocculation, coagulation, surface equations of change, particle size measurements.
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

ENGINEER 4U3 WATER AND WASTEWATER TREATMENT PROCESS DESIGN
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.

For Graduate courses, see the Calendar of the School of Graduate Studies.

CHEMICAL ENGINEERING

Chemistry

Faculty as of January 15, 1986

T. Birchall/Chairman

Professors Emeriti

Ronald P. Graham/M.A. (Queen's), A.M., Ph.D. (Columbia), F.C.I.C.
Henry G. Thode/C.C., M.B.E., B.Sc., LL.D. (Regina,Saskatchewan), Ph.D. (Chicago), D.Sc. (Toronto, British Columbia, Acadia, Laval, Royal Military College, McGill, Queen's, McMaster, York), F.R.S., F.R.C.S., F.C.I.C.

Professors

Russell A. Bell/M.Sc. (Wellington), M.S. (Wisconsin), Ph.D. (Stanford), F.C.I.C.
Ronald F. Childs/B.Sc. (Bath University of Technology), Ph.D., D.Sc. (Nottingham)
Alto Corsini/Ph.D. (McMaster), F.C.I.C.
Peter T. Dawson/B.Sc. (Birmingham), Ph.D. (Cambridge)
Donald R. Eaton/M.A., D.Phil. (Oxford)
John E. Greedan/B.A. (Bucknell), Ph.D. (Tulsa)
Ottelle E. Hileman, Jr./B.Sc.Ed. (Bowling Green State), Ph.D. (Case Institute of Technology), F.C.I.C.
Herbert L. Holland/M.Sc. (Warwick), Ph.D. (Queen's) part-time
Michael L. Klein/B.Sc., Ph.D. (Bristol) part-time
Joseph D. Laposa/B.Sc. (St. Louis), M.S. (Chicago), Ph.D. (Loyola)
David B. MacLean/B.Sc. (Acadia), Ph.D. (McGill), F.R.S.C., F.C.I.C.
Jack J. McCullough/B.Sc., Ph.D. (Queen's, Belfast)
Michael J. McGlinchey/B.Sc., Ph.D. (Manchester)
David P. Santry/B.Sc., Ph.D. (London)
Donald R. Smith/B.Sc. (McMaster), Ph.D. (Leeds) part-time
Richard H. Tomlinson/B.Sc. (Bishop's), Ph.D. (McGill), F.C.I.C.
John Warkentin/B.Sc., M.Sc. (Manitoba), Ph.D. (Iowa State), F.C.I.C.
Nick H. Westrik/B.Sc. (Alberta), M.A., Ph.D. (Johns Hopkins), F.C.I.C.

Associate Professors

Adam P. Hitchcock/B.Sc. (McMaster), Ph.D. (British Columbia)
David A. Humphreys/B.Sc., M.Sc. (London), Ph.D. (McMaster)
Bran E. McCurry/B.Sc. (British Columbia), Ph.D. (Stanford)
Gary J. Schrobilgen/B.Sc. (Dubuque, Iowa), M.Sc. (Brock), Ph.D. (McMaster)
A. John Yarwood/B.Sc., Ph.D. (Birmingham)

Assistant Professors

Michael A. Brook/B.Sc. (Toronto), Ph.D. (McGill)
Donald D. Burgess/B.Sc. (Waterloo), M.Sc., Ph.D. (McMaster)
William J. Leigh/B.Sc., M.Sc., Ph.D. (Western)
Michael A. Quilliam/B.Sc., Ph.D. (Manitoba)

Associate Members

I. David Brown (Physics) B.Sc., Ph.D. (London) F.C.I.C.
Alvin E. Hameleic/Chemical Engineering) B.A.Sc., M.A.Sc., Ph.D (Toronto), P.Eng.
Walter F. Kean (Medicine) M.B., Ch.B. (Glasgow) F.R.C.P.(C), F.A.C.P.
CHEMISTRY

CURRICULUM 1986-88

Department Notes:
1. * Course not necessarily offered every session.
2. Students not in a Science programme should note that Chemistry 1B6 or 1B7 serves as a prerequisite for Chemistry 2D3. Also, Chemistry 2D3 is a prerequisite for Biochemistry 2E3.

CHEM IA6 GENERAL CHEMISTRY
An introduction to chemistry. The laboratory is designed to illustrate the lecture material, and to co-ordinate with it.
3 lects., 1 tut., 1 lab.(3) every other week; two terms.
Prerequisite: Grade 13 Chemistry and registration in Natural Sciences I, or Engineering I, or the Arts and Science Programme. Students with Grade 12 Chemistry and an overall Grade 13 average of at least 85% who are registered in Natural Sciences I or Engineering I will also be considered by the Chairman of the Department.

CHEM IB6 GENERAL CHEMISTRY
An introduction to chemistry. A course designed for students who are registered in Faculties other than Science or Engineering.
3 lects., 1 lab.(3) every other week; two terms.
Prerequisite: Grade 13 Chemistry, or Grade 12 Chemistry with an overall Grade 13 average of at least 75% or permission of the instructor. Not open to students in Natural Sciences I or Engineering I.

CHEM 2A3 ANALYTICAL CHEMISTRY I
An introduction to the basic principles of analytical chemistry, with particular emphasis on solvent equilibria. Applications to classical methods of analysis.
2 lects., 2 labs.(3); one term.
Prerequisite: Chemistry 2T5 or 2T6, which may be taken concurrently, or registration in a programme in which Chemistry 2A3 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2A4, 2K3, 2M5, 2N3, 2N4, 2X1, 3K3, 3K6.

CHEM 2B6 ORGANIC CHEMISTRY
A systematic treatment of aliphatic and aromatic compounds and an introduction to spectroscopic techniques for structure determination.
2 lects., 1 lab.(3); two terms.
Prerequisite: Registration in a programme in which Chemistry 2B6 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2O6, 2O8, 2S8.

CHEM 2C3 STRUCTURE AND REACTIONS OF THE MAIN GROUP ELEMENTS
Structure and reactions of inorganic compounds; introduction to symmetry.
3 lects., 1 lab.(3); one term.
Prerequisite: Registration in a programme in which Chemistry 2C3 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2A3, 2A4, 2M5, 2N3, 2N4, 3K3, 3K6.

CHEM 2D3 ORGANIC CHEMISTRY
An introduction to the classical and modern analytical techniques with an emphasis on applications in Engineering.
1 lect., 2 labs.(3); one term.
Prerequisite: One of Chemistry 2P4, 2P6, 2Q5, 2Q6, 2T5, 2T6, any of which may be taken concurrently. Not open to students who are registered in, or who have credit in any of Chemistry 2A3, 2A4, 2K3, 2M5, 2N3, 2N4, 3K3, 3K6.

CHEM 2N6 ORGANIC CHEMISTRY
An introduction to classical and modern analytical techniques with emphasis on applications in Life Sciences.
1 lect., 1 lab.(3), and 1 lect. or lab.(3); one term.
Prerequisite: One of Chemistry 2P4, 2P6, 2Q5, 2Q6, 2T5 or 2T6, any of which may be taken concurrently. Not open to students who are registered in, or who have credit in any of Chemistry 2A3, 2A4, 2K3, 2M5, 2N4, 2X1, 3K3, 3K6.

CHEM 206 ORGANIC CHEMISTRY
An introduction to organic chemistry with emphasis on the reactions of functional groups.
3 lects., 1 lab.(3); two terms.
Prerequisite: One of Chemistry 1A6 or 1A7, with a grade of at least C--; or registration in a programme in which Chemistry 206 is required. Not open to students who are registered in, or who have credit in Chemistry 2B6, 2D3, 2D4, 2O8 or 2S8.

CHEM 2P6 PHYSICAL CHEMISTRY
The states of matter; elementary principles of thermodynamics; chemical and physical equilibria; electrochemistry; rates of chemical reactions.
2 lects., 1 lab.(3) every other week; two terms.
Prerequisite: Chemistry 1A6 or 1A7 and Mathematics 1A6. Not open to students who are registered in, or who have credit in any of Chemistry 2P4, 2Q5, 2Q6, 2R2, 2T5, 2T6, Physics 2H3.

CHEM 2Q6 PHYSICAL CHEMISTRY
Basis of physical phenomena related to biological systems, including equilibria, transport, and kinetics.
2 lects., 1 lab.(3) or problem session(3) every other week; two terms.
Prerequisite: Chemistry 1A6 or 1A7, and one of Mathematics 1A6, 1B3, 1G4, 1F6. Not open to students who are registered in, or who have credit in any of Chemistry 2P4, 2P6, 2Q5, 2R2, 2T5, 2T6, Physics 2H3.

CHEM 2T6 THERMODYNAMICS
An introduction to the basic principles of thermodynamics, with applications to physical and chemical equilibria, including electrochemistry.
2 lects., 1 lab.(3) every other week; two terms.
Prerequisite: Chemistry 1A6 or 1A7, and one of Mathematics 2G3 or 2N3, which may be taken concurrently. Open only to students registered in a programme in which Chemistry 2T6 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2P4, 2P6, 2Q5, 2R2, 2T5, 2T6, Physics 2H3.

CHEM 2W3 INORGANIC CHEMISTRY
Introductory inorganic chemistry of silicates, metals, their oxides and sulfides.
3 lects.; one term.
Prerequisite: Chemistry 1A6 or 1A7. Not open to students who are registered in, or who have credit in any of Chemistry 2W3, 2W4, 2W5, 2W6, 2W7, 2W8, 2W9.

CHEM 3A3 ANALYTICAL CHEMISTRY II
An introduction to modern instrumental methods of analysis.
3 lects., 1 lab.(3); one term.
Prerequisite: Chemistry 2A3 or 2A4.

CHEM 3B3 MODERN PHYSICAL CHEMISTRY
An introduction to quantum mechanics and spectroscopy.
2 lects., 1 tut.; one term.
Prerequisite: Chemistry 2P4 or 2P6; Mathematics 2G3 or 2N3. Not open to students who are registered in, or who have credit in any of Chemistry 2U3, 2B4, 3L3, 3S3.

CHEM 3D3 ORGANIC CHEMISTRY
A mechanistically-oriented discussion of mono- and polyfunctional organic compounds with emphasis on applications to synthesis.
3 lects., 1 lab.(3); one term.
Prerequisite: Chemistry 2B6 and registration in a programme in which Chemistry 3D3 is required. Not open to students who are registered in, or who have credit in Chemistry 3D6 or 3F3. First offered in 1987-88.

CHEM 3D6 ORGANIC CHEMISTRY
A mechanistically-oriented discussion of mono- and polyfunctional organic compounds with emphasis on applications to synthesis.
2 lects., 1 lab.(3); two terms.
Prerequisite: Chemistry 2P6 and registration in a programme in which Chemistry 3D6 is required. Last time offered in 1986-87.

CHEM 3E6 TRANSITION METAL INORGANIC CHEMISTRY
The properties, structures, and reactions of inorganic compounds, with emphasis on transition metal chemistry; introduction to organometallic chemistry.
2 lects., 1 lab.(3); two terms.
Prerequisite: Chemistry 2C3 or 2S8 and registration in a programme in which Chemistry 3E6 is required.

CHEM 3F3 ORGANIC CHEMISTRY
Special topics in Organic Chemistry; a sequel to Chemistry 206. The laboratory will emphasize synthesis and identification of organic compounds.
2 lects., 1 lab.(3); one term.
Prerequisite: Chemistry 206 or 208.

CHEM 3G3 MODERN PHYSICAL CHEMISTRY II
A continuation of Chemistry 3G3, with application to chemical problems.
2 lects., 1 tut.; one term.
Prerequisite: Chemistry 3B3. Not open to students who have credit in, or are registered in Chemistry 2U3, 2B4, 3L3 or 3U3.

CHEM 3I3 INDUSTRIAL CHEMISTRY
A survey of the chemical industry. Products obtained from petroleum, natural gas, and soda ash. Petrochemicals, synthetic and natural polymers.
3 lects.; one term.
Prerequisite: Level II courses in inorganic and organic chemistry, or Chemistry 258, or registration in Level IV of a Chemical Engineering programme.
CHEM 3K3 ANALYTICAL CHEMISTRY
An introduction to modern analytical techniques.
2 lec., 1 lab.(3); one term
Prerequisite: Chemistry 2K3. Not open to students who are registered in, or have credit in, any of Chemistry 2M5, 2N3, 2N4, 3A3, 3A4, 3K6.

CHEM 3L3 INTRODUCTION TO MOLECULAR SPECTROSCOPY
A course introducing group theory and aspects of molecular spectroscopy.
3 lec.; one term
Prerequisite: Chemistry 3L3. Not open to students who are registered in or have credit for Chemistry 3B3 or 3B4.

CHEM 3Q3 INORGANIC CHEMISTRY
Transition metal complexes, application of physical techniques to inorganic problems.
2 lec., 1 lab.(3); one term
Prerequisite: Chemistry 2Q3 or 2F4. Not open to students who are registered in, or have credit in, any of Chemistry 3Q4, 3E6, 3Q4.

CHEM 3U3 QUANTUM CHEMISTRY OF ATOMS AND MOLECULES
An introduction to the principles of quantum mechanics and their application to the electronic structure of atoms and molecules.
3 lec.; one term
Prerequisite: Chemistry 1A6 or 1A7 and Mathematics 2O3 or 2N3. Not open to students who are registered in or have credit for Chemistry 2U3, 3B3, 3B4, 3Q3.

CHEM 4A3* ADVANCED ORGANIC CHEMISTRY
A discussion of some modern advances in organic chemistry including such topics as aromaticity, molecular rearrangements, and organic photochemistry.
2 lec.; one term
Prerequisite: One of Chemistry 3D3, 3D6, 3F3.

CHEM 4B3* CHEMICAL APPLICATIONS OF SPECTROSCOPY
The applications of spectroscopy to the solution of chemical problems, quantum states and spectra; theory of microwave, infrared, Raman and electronic spectra; gas and tunable lasers.
2 lec.; one term
Prerequisite: One of Chemistry 3B4, 3G3, 3L3 and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4C3* SOLID STATE CHEMISTRY
Structure and properties of crystalline solids. Topics include crystal chemistry and crystal symmetry, introduction to space groups, defects in ionic crystals, nonstoichiometry, electronic structure and properties of semiconductors and metals.
2 lec.; one term
Prerequisite: One of Chemistry 3E6, 3Q3, 3Q4, and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4D3* THE CHEMISTRY OF NATURAL PRODUCTS
The structural elucidation and synthesis of selected naturally-occurring organic compounds.
2 lec.; one term
Prerequisite: One of Chemistry 3D3, 3D6 or 3F3.

CHEM 4G6 SENIOR THESIS
A thesis based on a project under the direction of a member of the Faculty. Prerequisite: Registration in Level IV of an Honours programme in Chemistry. Students registered in Level IV of the Chemistry Major programme, with a CAA of at least 8.5 will also be considered, if sufficient projects are available. Not open to students who are registered in, or have credit in Chemistry 4G6 or 4T6.

CHEM 4K6 CHEMICAL KINETICS
An introduction to statistical mechanics and the kinetic theory of gases. The rates of chemical reactions in gaseous, condensed and interfacial systems, and the molecular processes by which reactions occur.
2 lec., 1 lab.(3) every other week; two terms
Prerequisite: One of Chemistry 3B4, 3G3, 3U3, Physics 3M6, 3Q3 and registration in Level IV of an Honours or Major Programme in Chemistry. Not open to students with credit in Chemistry 3C4.

CHEM 4P3* ADVANCED ANALYTICAL CHEMISTRY
A course dealing with modern topics of analytical chemistry.
2 lec.; one term
Prerequisite: One of Chemistry 2M5, 2N3, 2N4, 3A3, 3A4, 3K3, 3K6.

CHEM 4Q3* ADVANCED QUANTUM MECHANICS
Further applications of quantum mechanics to problems of chemical interest.
2 lec.; one term
Prerequisite: One of Chemistry 3B4, 3Q3, 3U3, and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4R3* ADVANCED TRANSITION METAL CHEMISTRY
A selection from the following topics: mechanisms of reactions involving transition metal ions; homogeneous catalysis; applications of NMR and other physical methods; organometallic chemistry.
2 lec.; one term
Prerequisite: One of Chemistry 3E6, 3Q3, 3Q4 and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4S3* ADVANCED MAIN GROUP CHEMISTRY
A selection from the following topics: chemistry of selected main group elements, electron deficient compounds, Mössbauer spectroscopy, theory and application of nuclear and radiation chemistry.
2 lec.; one term
Prerequisite: One of Chemistry 3E6, 3Q3, 3Q4 and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4T6 INSTRUMENTAL ANALYSIS
Advanced instrumental methods of analysis, with emphasis on general principles, instrumentation, and applications of computers to chemical analysis.
1 lec., 1 lab.(4); two terms
Prerequisite: Registration in Level IV Honours Chemistry or Chemistry Major. Not open to students who are registered in, or have credit in Chemistry 4G6.

CHEM 4U6 ADVANCED EXPERIMENTATION
Fundamental experimental principles of biochemistry and chemistry including modern instrumental methods. Three units selected from Chemistry 4T6 plus Biochemistry 4P6.
2 labs.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L6, 4P3, Chemistry 4T4, 4T6.

CHEM 4V3* STATISTICAL THERMODYNAMICS
Principles of statistical thermodynamics and their applications in chemistry.
2 lec., one term
Prerequisite: Chemistry 4G6, which may be taken concurrently. Not open to students with credit in Chemistry 3V3.

For Graduate Courses see Calendar of School of Graduate Studies.

Civil Engineering and Engineering Mechanics

Faculty as of January 15, 1986

R.G. Drysdale/Chairman

Professors
Mark Donelan/B.Eng. (McGill), Ph.D. (British Columbia)/part-time
Robert G. Drysdale/B.Sc. (Manitoba), M.A.Sc., Ph.D. (Toronto), P.Eng.
Frederick L. Hall/A.B. (Amherst), M.S. (M.I.T.), Ph.D. (Chicago)
Paul F. Hamblin/B.A.Sc. (Toronto), M.Sc. (British Columbia), Ph.D. (Seattle), P.Eng./part-time
David C. Lam/B.Sc. (Hong Kong), M.Sc. (Waterloo), Ph.D. (Waterloo)/part-time
Keith L. Murphy/B.A.Sc. (Toronto), M.Sc., Ph.D. (Wisconsin), P.Eng./part-time
Hugh Robinson/B.Sc., Ph.D. (Durham), P.Eng.
Alan A. Smith/B.Sc. (Glasgow), Ph.D. (Strathclyde), P.Eng.

Associate Professors
Brian L. Allen/B.Sc. (Alberta), M.S., Ph.D. (Berkley, California), P.Eng.
Tarek S. Aziz/B.Sc. (Cairo), M.S. (Carleton), D.Sc. (M.I.T.), P.Eng./part-time
Ahmed Ghobanly/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Farouque A. Mirza/B.Sc. (Karachi), B.Eng. (McGill), M.Eng., Ph.D. (British Columbia)
Gilles G. Patry/M.A.Sc. (Ottawa), Ph.D. (California, Davis), P.Eng.
William J. Snodgrass/B.A.Sc. (Waterloo), M.S.E.E., Ph.D. (N. Carolina)/part-time

Assistant Professors
Patricia Ngan/B.A.Sc. (British Columbia), M.S. (Cal. Tech.), Ph.D. (British Columbia)
CIVIL ENGINEERING


Lecturer

James MacLeod/B.A.Sc. (Toronto)

Associate Members


CURRICULUM 1986-88

CIV ENG 2A2 SURVEYING AND MEASUREMENT
Introduction to measurement and computational techniques of surveying, the theory of measurement and errors, adjustment of observations.
1 lect., 1 lab. (5); one term
Prerequisite: Registration in a programme in Civil Engineering.

CIV ENG 2B2 COMMUNICATIONS AND CIVIL ENGINEERING
Oral and written communications, design of engineering studies. A professional liaison programme involving site visits. Concrete mix design and laboratory registration in a Civil Engineering programme.
1 lect., 1 lab or tut.; one term
Prerequisite: Physics 1D3, and registration in or completion of Engineering 2P4, and registration in a Civil Engineering programme.

CIV ENG 2C4 STRUCTURAL MECHANICS
Unsymmetrical bending, combined axial and flexural loading, shear stresses in thin-walled members, shear centre, plastic deformation, residual stress. Transformations of stress and strain; failure criteria; deflections of statically indeterminate beams; energy method; Castigliano's theorem, column stability; design for impact loading.
3 lects., 1 lab. (3); one term
Prerequisite: Engineering 2C4.

CIV ENG 2D3 GEOLOGY FOR ENGINEERS
Composition of the earth; geologic processes, minerals & rocks; classification systems; weathering, erosion, transportation and deposition; engineering properties of rock and soil; subsurface exploration and site investigation; geologic map usage.
2 lects., 1 lab. (3); one term
Prerequisite: Registration in a programme in Civil Engineering. Not open to students with credit in Geology 1A6 or 1B6.

CIV ENG 2E2 COMPUTER APPLICATIONS IN CIVIL ENGINEERING
1 lect., 1 lab. (3); one term
Prerequisite: Engineering ID3, Physics ID3, Engineering 2P4 and registration in a Civil Engineering programme.

CIV ENG 2F3 GEOTECHNICAL ENGINEERING I
Geotechnics; kinetics of fluids; continuity equations. Hydrodynamics; conservation of energy and momentum, Bernoulli equation; turbulence; pumps and turbines; streamlines and equipotentials.
2 lects., 1 tut.(1), 1 lab.(2), every other week; one term
Prerequisite: Registration in, or completion of, Engineering 2P4 and Mathematics 2M6.

CIV ENG 3A3 GEOTECHNICAL ENGINEERING II
Composition and characteristics of soils; seepage theory; effective stress; stresses and displacements from theory of elasticity; elastic solutions for problems in soil mechanics; consolidation theory; Terzaghi's theory; numerical solutions.
2 lects., 1 lab.(3) or 1 tut.(2), every other week; one term
Prerequisite: Civil Engineering 2D3, or Geology 1A3 and 1C3 or 1A6 or 1B6.

CIV ENG 3B3 GEOTECHNICAL ENGINEERING II
Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field tests; earth pressure theory; bearing capacity theory; slope stability, and embankment analysis.
2 lects., 1 lab.(3) or 1 tut.(2), every other week; one term
Prerequisite: Civil Engineering 3A3.

CIV ENG 3C4 ENGINEERING SYSTEMS
Mathematical models and systems; project comparison; optimization; linear, non-linear and dynamic programming; simulation and computer-aided design.
3 lects., 1 tut.(2) or lab.(3); one term
Prerequisite: Completion of, or registration in, Civil Engineering 3A3, 3B3, 3G4, 3J4, 3K3, 3M4, 3O4. Not open to students with credit in Civil Engineering 4B3.

CIV ENG 3D4 STRUCTURAL ANALYSIS
Deflection of structures by moment-area, conjugate beam and virtual work; analysis of indeterminate structures; approximate methods and influence lines.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 2C4.

CIV ENG 3J4 REINFORCED CONCRETE DESIGN
Introduction to concrete technology; design by working stress and by ultimate strength methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force, bond and anchorage; practical design requirements; interpretation of building code for behaviour of structures.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 3K3 INTRODUCTION TO TRANSPORTATION ENGINEERING
Traffic flow characteristics; capacity and control for interrupted and uninterrupted flow roadways; travel demand forecasting.
2 lects., 1 tut.(2); one term
Prerequisite: Engineering ID3 or equivalent.

CIV ENG 3M4 MUNICIPAL HYDRAULICS
Water quality; water requirements; population forecasting; water demand; water treatment; reservoirs; transport and distribution of water; wastewater collection, stormwater, pumping stations; wastewater treatment; water quality modelling in receiving water bodies.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 2O3 and Mathematics 2M6, and in registration in, or completion of, Civil Engineering 3O4 and Mathematics 3J4.

CIV ENG 3O4 CIVIL ENGINEERING HYDRAULICS
Flow resistance equations; open channel flow; gradually varied flow; pipes; water hammer; mass oscillations in conduits; river engineering.
3 lects., 1 lab.(1/3); one term
Prerequisite: Civil Engineering 2O3. Mathematics 2M6.

CIV ENG 4A4 ENGINEERING HYDROLOGY
Hydrologic cycle; climate; precipitation; hydrologic abstractions; streamflow analysis; unit hydrograph; frequency analysis; hydrologic routing; rainfall-runoff modelling; urban runoff models; design storms; snow and ice hydrology; water quality modelling.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3M4.

CIV ENG 4C3 ENVIRONMENTAL PROTECTION
2 lects., 1 tut.(2); one term
Prerequisite: Permission of the Department.

CIV ENG 4D4 GEOMETRIC HIGHWAY DESIGN
Design of various types and classes of streets and highways. Theory and practice in design of intersections, interchanges, arterial highways, and freeways, in urban and rural areas.
3 lects., 1 lab.(2); one term
Prerequisite: Civil Engineering 3K3.

CIV ENG 4F3 TRAFFIC ENGINEERING
Traffic studies, collection analysis and interpretation of data. Traffic control and management; capacity, isolated intersection, arterial and network signal timing; warrants and use of traffic control devices. Freeway traffic management; surveillance and control strategies/systems.
2 lects., 1 tut.(2); one term
Prerequisite: Civil Engineering 3K3.

CIV ENG 4G3 PAVEMENT MATERIALS DESIGN
Components of highway pavements: ground water and drainage for highway facilities; soil compaction and stabilization; culvert design; aggregates; bituminous and concrete materials, flexible pavement design; concrete pavement design.
2 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3A3 and 3B3.

CIV ENG 4H3 LAND USE AND TRANSPORTATION
Quantitative models to predict transportation flows and land use patterns in urban areas, including gravity-type models, the Lowry model and discrete choice models.
3 lects.; one term
Prerequisite: Civil Engineering 3K3. Same as Geography 4H3.

CIV ENG 4J3 ENGINEERING: ITS HISTORY, PHILOSOPHY AND INFLUENCE ON CIVILIZATION
2 lects., 1 tut.(2); one term
Prerequisite: Registration in an Engineering programme.

CIV ENG 4K3 MODERN METHODS OF STRUCTURAL ANALYSIS
2 lects., 1 tut.(2); one term
Prerequisite: Civil Engineering 3G4 and Mathematics 3J4.
CIV ENG 414 DESIGN OF STORMWATER SYSTEMS
Investigation, planning and design of elements in a hypothetical development of a real drainage system: flood control, drainage, recreation, municipal and biological aspects of watershed management. Role of conservation authorities and public bodies. Site visits and design sessions using computer programs.
2 lects., 1 lab; (3); one term
Prerequisite: Civil Engineering 3M4; or permission of the Department.

CIV ENG 4N4 DESIGN OF STEEL STRUCTURES
Elastic and plastic analysis and limit states design philosophy for steel members and structures; relationship of limit states design specifications to the basic behaviour of structures, design specifications.
3 lects., 1 tut; (2); one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 4P3 ADVANCED MECHANICS OF MATERIALS
Theory of elasticity; beam on elastic foundation; bending of curved beams; torsion of non-circular sections; analysis of thin-walled sections; cable structures; bending of thin plates; energy methods.
3 lects.; one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 4R4 STRUCTURAL SYNTHESIS
Structural design process, gravity and lateral loading requirements, structural performance criteria, choice of structural systems. Approximate analysis of different structural systems, such as frames and shear walls, suitable for preliminary design. Analysis of actual buildings. Use of package computer programme for alternate design comparison.
3 lects., 1 lab; (3); one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 4R4 ADVANCED REINFORCED AND PRESTRESSED CONCRETE DESIGN
3 lects., 1 lab and/or tut; (2); one term
Prerequisite: Civil Engineering 3G4 and 3J4.

ENGINEER 4U3 WATER AND WASTEWATER TREATMENT PROCESS DESIGN
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.
3 lects.; one term
Prerequisite: Civil Engineering 3B3.

Eng Imm 4Y4 ADVANCED MECHANICS OF MATERIALS
Geotechnical principles, theory of plasticity, strength of soils, concrete, steel, reinforcement.
CLASSICS

CLAS CIV 223 GREEK AND ROMAN RELIGION
A study of the role of religion in Greek and Roman public and private life.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Alternates with Classical Civilization 2X3.
Same as Religious Studies 223.

CLAS CIV 3C3 GREEK AND ROMAN EPIC
A survey of epic poetry, including the origins, Homer and Greek epic, Vergil and Roman epic.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.
Alternates with Classical Civilization 4A3.

CLAS CIV 3G3 LATE ANTIQUE AND EARLY CHRISTIAN ART
The art and architecture of the later Roman Empire, and the birth of Christian art
(A.D. 200-600).
3 lects.; one term
Prerequisite: Classical Civilization 2C3, or Art History 2C3, 2G3 or 2K3; or permission of the Department.
Alternates with Classical Civilization 4L3.
Same as Art History 3G3.

CLAS CIV 3J3 TOPICS IN THE COMPARATIVE STUDY OF GREEK AND ROMAN LITERATURE IN TRANSLATION
1986-87: Greek Historians and Their Theories of History
A study of the development of history-writing as a genre; readings in Herodotus, Thucydides, Xenophon and Josephus as representatives of stages in the Greek historiographical tradition; and the study of the criticisms made of previous and contemporary historians by Polybius and Lucian.

1987-88: The Trojan War in Classical Literature
A study of the episodes and uses of the Trojan War legend in Greek and Roman epic and tragedy; readings in Homer, Aeschylus, Sophocles, Euripides, Vergil and Seneca.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.
Same as Comparative Literature 3I3.

CLAS CIV 3L3 THE HELLENISTIC AGE
The successors of Alexander, the world of the monarchies and their absorption into the Roman Empire. Political, cultural and social achievements in the light of modern historical research will be emphasized.
3 hrs. lects. and discussion groups; one term
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department. Not available to students with credit in History 3L6.
Same as History 3L3.
Offered in alternate years.

CLAS CIV 3M3 THE ROMAN EMPIRE
Rome, Italy and the provinces from the creation of an autocracy by Augustus until the end of the 2nd century A.D.: developments in government, society, defence and economy; the Romanization of the provinces. Archaeological evidence and new approaches to problems will be considered.
3 hrs. lects. and discussion groups; one term
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department. Not available to students with credit in History 3D6.
Same as History 3M3.
Offered in alternate years.

CLAS CIV 3R3 THE GREEK CITY: AN ARCHAEOLOGICAL STUDY
A study of the physical growth and development of the cities which became the focal point of society and culture in the Greek world. The chief topics will be the rise and fall of the principal centres of Cretan and Mycenaean culture, the emergence of the mature Greek cities, culminating in Athens in the 5th century B.C., and subsequent urban development and city planning in the time of Alexander the Great and his successors.
3 lects.; one term
Prerequisite: One of Classical Civilization 2B3, 2F3, 2M3, 3S3; or permission of the Department. Not available to students receiving credit for Classical Civilization 2L3.
Alternates with Classical Civilization 3S3.

CLAS CIV 3S3 THE ROMAN CITY: AN ARCHAEOLOGICAL STUDY
A study of the transformation of the city of Rome from an obscure village to a vast metropolis, the nature of city planning and urban life, and the patterns of urban development in Rome and her Empire. The study is based upon the evidence of monuments and architectural remains in Rome, Pompeii and other surviving cities of the Empire in Europe, Africa and Asia.
3 lects.; one term
Prerequisite: One of Classical Civilization 2C3, 2F3, 2L3, 3R3; or permission of the Department. Not available to students receiving credit for Classical Civilization 2M3.
Alternates with Classical Civilization 3R3.

CLAS CIV 3U3 SOCIAL LIFE AND THOUGHT IN PERICLEAN ATHENS
A description and analysis of selected aspects of the social life of Athens in the second half of the 5th century B.C., based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2U3, as well as others peculiar to Periclean Athens: work and leisure, education, religion, marriage and family life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term
Prerequisite: Classical Civilization 2U3 and three additional units of Classical Civilization; or Classical Civilization 2G6; or History 1L6; or permission of the Department. Not available to students with credit in Classical Civilization 3M3.
Alternates with Classical Civilization 3V3.

CLAS CIV 3V3 SOCIAL LIFE AND THOUGHT IN AUGUSTAN ROME
A description and analysis of selected aspects of the social life of Rome at the end of the 1st century B.C. based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2V3, as well as others peculiar to Augustan Rome: work and leisure, education, religion, marriage and family life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term
Prerequisite: Classical Civilization 2V3 and three additional units of Classical Civilization; or Classical Civilization 2G6; or History 1L6; or permission of the Department.
Same as Classical Civilization 3U3.

CLAS CIV 4A3 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.
Seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department.
Same as Comparative Literature 4D3 and English 4A3.

CLAS CIV 4G6 SPECIAL TOPICS IN GREEK HISTORY
Investigations into Greek social history and its interpretation.
Seminar (2 hrs.); two terms
Prerequisite: Six units in Ancient Greek civilization, and registration in Level III or IV of any Honours programme in Classical Studies, Classics, Greek, or History; or permission of the Department of History.
Same as History 4D6.
Enrolment is limited.

CLAS CIV 4F3 SUPERVISED STUDY
Under the supervision of members of the Department of Classics, students will investigate in detail some area(s) of Classical Studies with a view to bringing together aspects of the work of previous levels.
Prerequisite: Registration in Level IV of Honours Classical Studies or Combined Honours in Classical Studies and another subject; or permission of the Department.

CLAS CIV 4F6 SPECIAL TOPICS IN ROMAN HISTORY
The central theme will be development and change throughout the Roman Empire in the 3rd and 4th Centuries A.D.
Seminar (2 hrs.); two terms
Prerequisite: Six units of Roman civilization, and registration in Level III or IV of any Honours programme in Classical Studies, Classics, Latin, or History; or permission of the History Department.
Same as History 4F6.
Enrolment is limited.

CLAS CIV 4L3 TOPICS IN ANCIENT ART AND ARCHAEOLOGY
1987-88: Greek Painting
A study of the development of ancient Greek painting from the royal and religious themes of Minoan palatial fresco (c.1600 B.C.) through Classical and Hellenistic experiments (e.g. 100 B.C.) with perspective, chiaroscuro, and trompe-l'oeil. Evidence will be drawn from Aegean and Greek wall-painting, vase painting, mosaics, and Roman copies of Greek masterpieces.
Seminar (3 hrs.); one term
Prerequisite: Classical Civilization 2B3, and registration in Level III or IV of a programme in Classical Studies or Art History, and permission of the instructor. Enrolment is limited.
Alternates with Classical Civilization 3G3.

CLAS CIV 4L4 SOCIAL LIFE AND THOUGHT IN PERICLEAN ATHENS
A description and analysis of selected aspects of the social life of Athens in the second half of the 5th century B.C., based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2U3, as well as others peculiar to Periclean Athens: work and leisure, education, religion, marriage and family life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term
Prerequisite: Classical Civilization 2U3 and three additional units of Classical Civilization; or Classical Civilization 2G6; or History 1L6; or permission of the Department. Not available to students with credit in Classical Civilization 3M3.
Alternates with Classical Civilization 3V3.

CLAS CIV 4L5 THEMES IN ANCIENT HISTORY
An examination of at least two selected themes in Ancient History, particularly the history of the Greco-Roman world, with emphasis on the use of source materials, primary and secondary, literary and non-literary.
Seminar (2 hrs.); two terms
Prerequisite: Six units of Classical civilization or Ancient History, and registration in Level IV of any honours programme in Classical Studies, Classics, Greek, Latin or History with a Cumulative Area Average of at least 9.0.

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GREEK 1Z6 BEGINNERS’ INTENSIVE GREEK
A rapid introduction to the grammar of Ancient Greek. Passages of simple Greek are read in the second term.
5 hrs. (lects. and tuts.); two terms
Prerequisite: Open.
This course, with a grade of at least B, is accepted as a prerequisite for admission to Honours Classics or Combined Honours in Greek and another subject.

Intermediate and Advanced Language and Literature Courses

GREEK 2C3 XENOPHON
Selected readings from the Anabasis, Cyropaedia and Memorabilia.
3 lects.; one term
Prerequisite: Greek 2Q3, or permission of the Department.
Alternates with Greek 2E3.

GREEK 2E3 HERODOTUS
Selected readings from the Histories.
3 lects.; one term
Prerequisite: Greek 2Q3 or permission of the Department.
Alternates with Greek 2C3.

GREEK 2F3 EURIPIDES
Selected readings from the tragedies.
3 lects.; one term
Prerequisite: Greek 2Q3, or permission of the Department.

GREEK 2Q3 GREEK READING PRACTICE
A study of selected passages from Greek authors designed to develop a student's proficiency in reading Greek.
3 lects.; one term
Prerequisite: Grade 13 Greek or Greek 1Z6; or permission of the Department.

GREEK 2R3 GREEK LANGUAGE
A study of Greek grammar and style based chiefly upon reading selected passages and translation from English to Greek.
2 lects.; two terms
Prerequisite: Greek 126 with a grade of at least B or Greek 2Q3; or permission of the Department.

GREEK 3M3 GREEK COMEDY
Selected readings from the comedies of Aristophanes and Menander.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4M3.

GREEK 3N3 GREEK PHILOSOPHERS WRITERS
Selected readings from the Presocratics, Plato, Aristotle and Epicurus.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4L3.

GREEK 3Q3 GREEK ORATORS
Selected readings from speeches.
3 lects.; two terms
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4Q3.

GREEK 3R2 ADVANCED GREEK LANGUAGE STUDY I
A study of Greek grammar and style, and practice in Greek composition.
1 lect.; two terms
Prerequisite: Nine units of Level II Greek including Greek 2R3 or 2R4; or permission of the Department.
Alternates with Greek 4R2.
CLASSICS

LATIN 2R3 LATIN LANGUAGE
A study of Latin grammar and style based chiefly upon reading selected passages and translation from English to Latin.
2 lects.; two terms
Prerequisite: Latin 1Z6 with a grade of at least B, or Latin 2Q3; or permission of the Department.

LATIN 3D3 ROMAN SATIRE
Selected readings from the satires of Horace and Juvenal.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 4A3.

LATIN 3L3 ROMAN PHILOSOPHICAL WRITERS
Selected readings from the philosophical writings of Cicero and Seneca.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.

LATIN 3Q3 CICERO
Selected readings from the speeches.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 4Q3.

LATIN 3R2 ADVANCED LATIN LANGUAGE STUDY I
A study of Latin grammar and style, and practice in Latin composition.
1 lect.; two terms
Prerequisite: Nine units of Level II Latin including Latin 2R3 or 2R4; or permission of the Department.
Alternates with Latin 4R2.

LATIN 4A3 ROMAN DRAMA
Selected readings from the comedies of Plautus and Terence and the tragedies of Seneca.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 3D3.

LATIN 4Q3 GUIDED READING
Intensive reading of selections from Roman authors under the supervision of members of the Department of Classics.
Tues.; one term
Prerequisite: Registration in Level III or IV of Honours Classics or Combined Honours in Latin and another subject, and permission of the Department. Latin 4Q3 may be repeated, if on a different author, to a total of six units.

LATIN 4R3 ROMAN ELEGiac POETRY
Selected readings from the elegies of Propertius, Tibullus, and Ovid.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 3L3.

LATIN 4Q3 TACITUS
Selected reading from the Annales.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 3Q3.

LATIN 4R2 ADVANCED LATIN LANGUAGE STUDY II
A study of Latin grammar and style, and practice in Latin composition.
1 lect.; two terms
Prerequisite: Nine units of Level II Latin including Latin 2R3 or 2R4; or permission of the Department.
Alternates with Latin 3R2.

For Graduate Courses see Calendar of School of Graduate Studies.

Professors Emeriti
William J. Schlatter/A.B., A.M., Ph.D. (Illinois), C.P.A./Accounting
Andrew Z. Szendrovis / M.A., Ph.D. (Kolossey)/Production and Management Science/Professor (Half-time) of Production and Management Science.

Professors
Roy J. Adams/B.A. (Pennsylvania State), M.A., Ph.D. (Wisconsin)/Industrial Relations
Naresh C. Agarwal/B.A., M.A. (Delhi), Ph.D. (Minnesota)/Organizational Behaviour/Behavioural and Industrial Relations Area
Peter M. Banting/B.A., M.B.A. (McMaster), Ph.D. (Michigan State)/Marketing
Robert G. Cooper/B.Eng., M.Eng. (McGill), M.B.A., Ph.D. (Western Ontario)/Marketing
Harish C. Jain/B.Com. (Delhi), M.B.A. (Indiana), Ph.D. (Wisconsin)/Organizational Behaviour
Robert C. Joyner/B.A., M.A., Ph.D. (Toronto)/Organizational Behaviour
Robert F. Love/B.Sc. (Toronto), M.B.A. (Western Ontario), Ph.D. (Stanford), P.Eng./Management Science
Winston H. Mahatoo/B.A. (London), B.Sc., M.Sc. (McGill), Ph.D. (Montreal)/Marketing
Joseph B. Rose/B.B.A. (Adelphi), M.B.A. (California), Ph.D. (State University of New York at Buffalo)/Industrial Relations
Randolph E. Ross/B.A. (Waterloo Lutheran), M.B.A. (Michigan State), D.B.A. (Indiana)/Marketing/Associate Dean (External Relations)
George W. Torrance/B.A.Sc., M.B.A. (Toronto), Ph.D. (State University of New York at Buffalo), P.Eng./Management Science/Dean of the Faculty
William G. Truscott/B.S. (Princeton), M.B.A. (McMaster), D.B.A. (Indiana), P.Eng./Production and Management Science/Director of the Ph.D. Programme
George O. Wesolowsky/B.Sc. (Toronto), M.B.A. (Western Ontario), Ph.D. (Wisconsin)/Management Science/Chairman of the Management Science and Information Systems Area

Associate Professors
Prakash L. Abad/B.Tech. (Indiana Institute of Technology), M.S., M.B.A., Ph.D. (Cincinnati)/Management Science
Norman P. Archer/B.Sc. (Alberta), Ph.D. (McMaster), M.S. (New York)/Management Science/Acting Director, IPACS
Kenneth R. Deal/B.Sc., M.B.A., Ph.D. (State University of New York at Buffalo)/Marketing and Management Science/Chairman of the Marketing Area/Acting Chairman of the Business Environment and Policy Area
Kelly F. Gheyar/B.Com. (Bouygues), Ph.D. (Oklahoma State), C.P.A./Accounting
Clarence C.Y. Kwan/Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto), P.Eng./Finance
A. William Richardson/B.Sc., Ph.D., M.B.A. (McMaster), C.M.A./Accounting/Associate Dean (Academic Programmes)
Anne G. Samdal/B.Sc. (Auburn), Ph.D. (North Carolina)/Business Economics
George Steiner/M.Sc. (Budapest), Ph.D. (Waterloo)/Production and Management Science
Eva C. Tihany/Ph.D. (Kolozsvár), M.B.A. (North Carolina)/Accounting/Chairman of the Accounting Area

Assistant Professors
Christopher K. Bart/B.A., M.B.A. (York), Ph.D. (Western Ontario), C.A./Business Policy
Min S. Basadur/B.Sc. (Toronto), M.B.A. (Xavier), Ph.D. (Cincinnati), P.Eng./Organizational Behaviour
Trevor W. Chamberlain/B.Sc. (California, Berkeley), M.B.A. (McGill)/Finance
Y.C. Lillian Chan/B.B.A. (Chinese University of Hong Kong), Ph.D. (Virginia Polytechnic Institute and State University)/Accounting
C.S. Sherman Cheung/B.S. (Louisiana State), M.S., Ph.D. (Illinois)/Finance and Business Economics
James C. Gaa/B.A. (Michigan State), A.M., Ph.D. (Washington, St. Louis), Ph.D. (Illinois)/Accounting/Chairman of the Accounting Area

For Graduate Courses see Calendar of School of Graduate Studies.

Commerce

Faculty as of January 15, 1986
Naresh C. Agarwal/Chairman, Personnel and Industrial Relations Area
Kenneth R. Deal/Chairman, Marketing Area/Acting Chairman, Business Environment and Policy Area
James C. Gaa/Chairman, Accounting Area
George O. Wesolowsky/Chairman, Management Science and Information Systems Area

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Andrew Z. Szendrovis / M.A., Ph.D. (Kolossey)/Production and Management Science/Professor (Half-time) of Production and Management Science.

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Associate Professors
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Kenneth R. Deal/B.Sc., M.B.A., Ph.D. (State University of New York at Buffalo)/Marketing and Management Science/Chairman of the Marketing Area/Acting Chairman of the Business Environment and Policy Area
Kelly F. Gheyar/B.Com. (Bouygues), Ph.D. (Oklahoma State), C.P.A./Accounting
Clarence C.Y. Kwan/Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto), P.Eng./Finance
A. William Richardson/B.Sc., Ph.D., M.B.A. (McMaster), C.M.A./Accounting/Associate Dean (Academic Programmes)
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George Steiner/M.Sc. (Budapest), Ph.D. (Waterloo)/Production and Management Science
Eva C. Tihany/Ph.D. (Kolozsvár), M.B.A. (North Carolina)/Accounting/Chairman of the Accounting Area

Assistant Professors
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Min S. Basadur/B.Sc. (Toronto), M.B.A. (Xavier), Ph.D. (Cincinnati), P.Eng./Organizational Behaviour
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Y.C. Lillian Chan/B.B.A. (Chinese University of Hong Kong), Ph.D. (Virginia Polytechnic Institute and State University)/Accounting
C.S. Sherman Cheung/B.S. (Louisiana State), M.S., Ph.D. (Illinois)/Finance and Business Economics
James C. Gaa/B.A. (Michigan State), A.M., Ph.D. (Washington, St. Louis), Ph.D. (Illinois)/Accounting/Chairman of the Accounting Area
An introduction to both micro and macro aspects of Finance. At the micro level, various financial instruments and functions of financial institutions in Canada will be described. Prerequisite: Economics 1A6 and Commerce 2A03.

**COMMERCE 2A03 INTRODUCTION TO MARKETING**
An introduction to marketing as a field of study, market structure, marketing institutions, marketing concepts and strategies. Stress is placed upon the analytical, managerial, and conceptual aspects of the subject. Prerequisite: Economics 1A6.

**COMMERCE 2Q03 COMPUTER-AUGMENTED STATISTICAL ANALYSIS**
An introduction to the application of statistical analysis in managerial decision-making. The concepts of statistical analysis are applied to a variety of topics, including decision-making, estimation by sampling, hypothesis testing, analysis of variance, simple linear and multiple regression and forecasting. Prerequisite: Business 1 Mathematics and Computer Science 1A3, or equivalent courses.

**COMMERCE 3A03 COST AND MANAGERIAL ACCOUNTING I**
An introduction to concepts underlying the use of cost accounting information for managerial planning and control, and for inventory valuation. The nature and analysis of costs, and the usefulness and limitations of accounting data for decision-making will be discussed. Prerequisite: Commerce 2A03.

**COMMERCE 3A03 FINANCIAL ACCOUNTING II**
A first course in intermediate financial accounting dealing with the theory and practice of financial statement preparation and reporting. The emphasis will be on asset valuation and the related impact on income measurement. Prerequisite: Commerce 2A03.

**COMMERCE 3B03 INDUSTRIAL RELATIONS**
An introduction to the structure and process whereby labour, management and the public interact to produce terms and conditions of employment. Topics include the development, structure and objectives of organized labour, management philosophy and policy in industrial relations and governmental policy. Prerequisite: Commerce 2A03.

**COMMERCE 3B03 PERSONNEL**
An introduction to the administrative and research aspects of the selection, placement, remuneration, training, and promotion of people in organizations. Prerequisite: Commerce 2A03.

**COMMERCE 3F03 SECURITIES ANALYSIS**
The emphasis is on the analysis of marketable securities, especially equities. Topics include the analysis of marketable securities, investment strategies to improve rates of return, and the techniques of securities analysis and valuation. In addition, the course introduces portfolio considerations and the efficient markets' literature. Prerequisite: Commerce 2F03.

**COMMERCE 3M03 INTRODUCTION TO MARKETING RESEARCH**
An introduction to the role and methods of marketing research. Among topics considered are measurement, sample selection, questionnaire development, data collection, and analysis and interpretation of data. Prerequisite: Commerce 2M03, and 2Q03 or Statistics 3Y2.

**COMMERCE 3M03 CONSUMER MOTIVATION**
An analysis of the motivations underlying consumer choice behaviour such as store patronage, brand loyalty, and new-product adoption. Specifically, the course will trace the role of perception, learning, attitudes, personality, reference groups, social class and culture in the consumer decision process. Prerequisite: Commerce 2M03.

**COMMERCE 3Q03 DECISION SCIENCE FOR MANAGERS**
This course is a study of analytical approaches that assist managerial decision-making; it provides coverage of decision theory and an introduction to optimization methods, computer simulation and the general approach of management science. Prerequisite: Commerce 2Q03.

**COMMERCE 3Q03 BUSINESS DATA PROCESSING**
An introduction to commercial data processing technology: I/O devices; storage; processors; software; its deployment in transaction/line processing and reporting systems; and the analysis and design of such systems. Prerequisite: Computer Science 1A3, or equivalent course(s).

**LEVEL IV COMMERCE COURSES**
In most Level IV Commerce courses, section size will be restricted to a maximum of 30 students; students will be admitted on a first-come basis.

**COMMERCE 4A03 COST AND MANAGERIAL ACCOUNTING II**
A consideration of more complex topics in management planning and control, and for inventory valuation. The nature and analysis of costs, and the usefulness and limitations of accounting data for decision-making will be discussed. Prerequisite: Commerce 3A03.
COMMERCE 4A3 FINANCIAL ACCOUNTING III
This course completes the coverage of intermediate financial accounting. It deals with problems related to the measurement of liabilities, accounting for income taxes and corporate equities.
Prerequisite: Commerce 3A3.

COMMERCE 4AC3 FINANCIAL ACCOUNTING IV
An advanced accounting course considering specific problems of accounting for the corporate entity, such as, business combinations, intercorporate investments, consolidated financial statements, accounting for foreign operations and foreign currency transactions, segment reporting.
Prerequisite: Commerce 3A3.

COMMERCE 4AD3 AUDITING
An examination of the attest function in accounting including ethical, legal, and statutory influences in the development of auditing standards. The nature of control structures and of audit evidence is examined. The nature, scope, and application of auditing procedures are examined through a selection analysis of asset, liability, revenue, and expense items.
Prerequisite: Commerce 3A3.

COMMERCE 4AE3 ACCOUNTING INFORMATION SYSTEMS
Consideration of the principles underlying the role of accounting as an information system for planning and controlling business operations. The emphasis is on internal control in both manual and automated systems. Topics include controls over the system development process, the auditor's use and analysis of internal control, and the use of the information system in auditing the accounting information system.
Prerequisite: Commerce 3A3A, 3B3 and 3Q3B.

COMMERCE 4AF3 SEMINAR IN ACCOUNTING THEORY
A review of accounting theory as a background for applying underlying concepts to current accounting problems. Emphasis is on current literature, with a major term paper required.
Prerequisite: Completion of, or concurrent registration in, Commerce 4A3.

COMMERCE 4BA3 BEHAVIOURAL ISSUES IN MANAGEMENT
Detailed analysis of employee motivation and reward systems; organizational structure, leadership and decision making; group processes; and management of conflict and change.
Prerequisite: Commerce 3B3.

COMMERCE 4BC3 COLLECTIVE BARGAINING
This course considers the strategies and problems in personnel decisions in the context of the Canadian environment. Topics include job analysis and manpower planning, methods of personnel recruitment and selection, human rights legislation in Canada and the U.S., the practice of recruitment and selection in Canada, decision making strategies in personnel recruitment and selection, and assessment centres.
Prerequisite: Commerce 3BA3 or Labour Studies 2A3.

COMMERCE 4BD3 SETTLEMENT OF INDUSTRIAL DISPUTES
The nature and the role of industrial conflict as well as the techniques which have been developed to control the incidence of conflict in union-management situations.
Prerequisite: Commerce 3BA3 or Labour Studies 2A3.

COMMERCE 4BE3 COMPENSATION THEORY AND ADMINISTRATION
The course is designed to provide an understanding of the process, issues, and techniques involved in developing effective compensation systems in organizations. The course draws heavily on economic and behavioural theories and their application to the area of compensation.
Prerequisite: Commerce 3B3.

COMMERCE 4BF3 MANAGERIAL FINANCE
A managerial point of view is established by the application of basic financial theory and analysis to actual case situations. Lectures are used to complement case discussions. The course is useful for students interested in general management, as well as for those wishing to attain a degree of specialization in Finance.
Prerequisite: Commerce 3FA3.

COMMERCE 4BG3 FINANCIAL THEORY
This course explores the theoretical and conceptual foundations of Finance. Topics include: utility maximization and choices involving risk, the quantification of risk and return, concepts of value; the investment, financing and dividend decisions of firms, asset pricing in perfect and imperfect markets.
Prerequisite: Commerce 3FA3.

COMMERCE 4FC3 PORTFOLIO THEORY AND MANAGEMENT
The selection and management of investment portfolios is analyzed with mathematical models. The course covers recent developments in portfolio theory, with a view to applications by individual and institutional investors.
Prerequisite: Commerce 4FB3.

COMMERCE 4MB3 INTERNATIONAL BUSINESS
A survey of theories, concepts, and corporate strategies relevant to the actual conditions and problems of international investment, trade, finance, and other related areas. Topics include balance of payments, foreign exchange, political risk, joint venture, global strategy, international personnel, and international development.

COMMERCE 4MC3 PRODUCT MARKETING
This course covers concepts, methods and strategies for both new and existing products. Topics include: the new product process; launch strategies; product policy; portfolio analysis and product positioning.
Prerequisite: Commerce 3MA3.

COMMERCE 4MD3 INDUSTRIAL MARKETING
To give the student an overall view of the marketing of industrial goods and services, this course utilizes techniques and concepts from introductory marketing courses and applies them to the special problems encountered in the industrial market.
Prerequisite: Commerce 3MA3.

COMMERCE 4PA3 BUSINESS POLICY
This course builds upon, and integrates, the student's knowledge of the functional areas of business. Various management practices in specific corporate situations are compared, and several theories of management strategy formulation at different stages of corporate development are examined.

COMMERCE 4PB3 TAXATION
The principles of Canadian federal income taxation are examined in considerable detail through a reading of both the statute law and the common law. Emphasis is placed on the application of the law to the situations of individuals and businesses. Topics include: administration, liability for income tax, computation of income, computation of taxable income and computation of tax.
Prerequisite: Commerce 3AB3 and 3FA3.

COMMERCE 4PC3 ADVANCED CANADIAN INCOME TAXATION
This course continues the study of Canadian federal income taxation with an in-depth coverage of selected provisions of the Income Tax Act pertaining to business activities, particularly the activities of corporations.
Prerequisite: Commerce 4PB3.

COMMERCE 4PD3 COMMERCIAL LAW
This course emphasizes those areas of law which are most relevant to business activity. Particular attention is given to the law relating to contracts and business organizations. Other areas of study include sources of law, the judicial process, real and personal property, torts, agency, credit, and negotiable instruments.

COMMERCE 4QA3 PRODUCTION/OPERATIONS
An introduction to the production/operations function with emphasis on the use of quantitative analysis to assist decision-making. Topics include: layout of facilities; aggregate planning; scheduling, inventory control, and quality control.
Prerequisite: Commerce 3Q3A or registration in the Engineering and Management programme.

COMMERCE 4QB3 ANALYSIS OF PRODUCTION/OPERATIONS PROBLEMS
An examination of analytical approaches to problems in the field of production/operations. The course will provide in-depth coverage of a limited number of topics. These topics may be selected from among: layout and location of facilities; scheduling, inventory control and materials handling.
Prerequisite: Commerce 4QA3 or Mechanical Engineering 4C3.

COMMERCE 4QC3 QUANTITATIVE ANALYSIS FOR BUSINESS
An examination of the techniques of management science and their application to business problems. Topics include: linear programming, integer programming, and optimization problems on networks.
Prerequisite: Commerce 3Q3A or registration in the Engineering and Management programme.

Comparative Literature
L.A. Hutcheon (English)/Co-ordinator

Department Notes:
1. Comparative Literature is the study of literature from the point of view of more than one national literature and/or in conjunction with any other intellectual discipline. It is designed to meet the needs of those students who wish to study literary texts as an intercultural and often interdisciplinary phenomenon.

2. Courses are organized to cover six basic areas of comparative literary study:
   - General Cultural Background
   - Literary and Cultural History
   - Literary Forms
   - Literary Periods
   - General

   Comparative Literature 1A6, 3A6
   Comparative Literature 2D3, 2G3, 4D3
   Comparative Literature 2CC3, 2C6
   Comparative Literature 2B3, 3E3
   Comparative Literature 3B6, 3J3, 3I3
   Comparative Literature 3Q3, 3Q3Q, 4A3, 4B3
   Comparative Literature 3F3
3. Students enrolled in the Humanities Interdisciplinary B.A. programme may elect Comparative Literature as a theme of study. (See Faculty of Humanities section of the Calendar, for details of the programme.)

4. Other students, especially those in Combined Honours programmes, may find these courses to be useful.

CURRICULUM 1986-88

COMP LIT 1A6 INTRODUCTION TO THE WESTERN LITERARY TRADITION

An introduction to the origins and continuity of the Western literary tradition from the Bible and classical antiquity through to the modern period, by means of the detailed study of both its human values and its formal patterns, as seen in representative texts from major literatures and languages (in translation). In this course much attention is given to the development of critical skills in reading and writing.

2 lects.; 1 tut.; one term.
Prerequisite: Grade 13 English; or the permission of the co-ordinator.

COMP LIT 2B3 GREEK AND ROMAN DRAMA

Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama.

3 lects.; one term.
Prerequisite: Open to students in Level II and above. Same as Classical Civilization 2E3 and Dramatic Arts 2E3.

COMP LIT 2C6 TOPICS IN THE STUDY OF LONGER LITERARY FORMS

1987-88: The European Novel in Translation

An introductory study of some of the major works of Russian, French, Italian, Spanish and German fiction, primarily of the nineteenth and twentieth centuries.

3 lects.; two terms.
Prerequisite: Registration in Level II or above. Not available to students with credit in Comparative Literature 3C6. Alternates with Comparative Literature 2CC3.

Comparative Literature 2C6 may be repeated, if on a different topic, to a total of 12 units.

COMP LIT 2CC3 TOPICS IN THE STUDY OF SHORTER LITERARY FORMS

1986-87: Shorter Forms of Fiction

Concentrating on the nineteenth and twentieth centuries, this course will provide an introduction to representative novellas and short stories by major English, German, French, and American authors (in translation where necessary).

3 lects.; one term.
Prerequisite: Registration in Level II or above. Not available to students with credit in Comparative Literature 3CC3. Alternates with Comparative Literature 2C6.

Comparative Literature 2CC3 may be repeated, if on a different topic, to a total of 6 units.

COMP LIT 2D3 BIBLICAL TRADITIONS IN LITERATURE

A study of the influence of the Bible on Western literatures, especially English. Approaches may include the examination of symbolism, imagery, typology, doctrinal themes and narrative structures.

3 lects.; one term.
Prerequisite: Open to students in Level II and above, except to students receiving credit for English 2P3. Same as English 2D3.

COMP LIT 2G3 BIBLICAL LITERATURE

A survey introduction to biblical literature (Old Testament, New Testament and selected Apocrypha and Pseudepigrapha) and the history of biblical interpretation to meet the particular needs of students of Western literature.

2 lects., 1 tut.; one term.
Prerequisite: Open to students in Level II and above. Same as Religious Studies 2V3.

COMP LIT 3A6 LITERATURE

Literary works drawn from a variety of genres and periods will be examined. The course will focus on the ways in which great writers have treated enduring human ethical concerns. It will attempt to show how literary creativity involves the matching of formal and stylistic mastery, on the one hand, with ethical awareness on the other. The course will require frequent brief written assignments.

3 lects.; two terms.
Prerequisite: Registration in the Arts and Science programme; or Comparative Literature 1A6 with a grade of at least B and permission of the instructor. Same as Arts and Science 3A6.

COMP LIT 3B6 FROM ROMANTICISM TO MODERNISM

An introduction to the major intellectual and aesthetic currents in Europe from the beginning of the nineteenth century to approximately 1920.

3 lects.; two terms.
Prerequisite: Registration in Level III or IV of any programme in the Faculty of Humanities. Same as Humanities 3B6.
COMPARATIVE LITERATURE

COMP LIT 4D3 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.
1 lect., 1 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature, or permission of the Department of English.
Offered in 1987-88, and in alternate years.
Same as Classical Civilization 4A3 and English 4A3.

OTHER COURSES RELEVANT TO COMPARATIVE LITERATURE
An History 2Q3 Biblical Traditions in the Visual Arts
Classical Civilization 2D3 Greek and Roman Mythology
Classical Civilization 2X3 Greek and Roman Background to Early Christianity
Classical Civilization 223 Greek and Roman Religion
Classical Civilization 3C3 Greek and Roman Epic
Dramatic Arts 1A6 Introduction to Drama
Dramatic Arts 2X6 The Art of the Film
Dramatic Arts 3R3 American Cinema I
Dramatic Arts 3R3 American Cinema II
Dramatic Arts 3Y3 The French Cinema
English 2C3 Contemporary Canadian Fiction
English 2G6 Canadian Literature
English 3B3 Psychoanalytic Approaches to Literary Texts
English 3JJ3 Topics in Fiction II
English 3K3 Topics in Critical Approaches
English 3K3 Topics in 20th-Century Literature II
English 3Z3 Contemporary Canadian Poetry
English 4D3 Topics in Medieval and Renaissance Literature
French 3Z3 African and Caribbean French Literature
French 4L3 Topics in French African and Caribbean Literature
French 4X3 Linguistics and Modern French Literary Criticism (from Structuralism to Semiotics)
German 2H3 German Prose in Translation
German 2J3 German Drama in Translation
German 2M3 Introduction to Literary Criticism
Humanities 2B6 Themes in Western Civilization
Phiilosophy 2H3 Aesthetics
Religious Studies 2D03 The Five Books of Moses
Religious Studies 2EE6 Introduction to the Study of the New Testament
Religious Studies 2EE3 The Prophets
Religious Studies 2LI3 Christianity in the Patristic Period, 100-800
Religious Studies 2JJ3 Christianity in the Middle Ages, 800-1500
Religious Studies 2K33 Christianity in the 16th Century
Religious Studies 2LI3 Christianity after 1600
Religious Studies 203 The Qur'an
Religious Studies 2TT6 Introduction to Islam
Religious Studies 3M3 Israeli Poetry and Wisdom
Russian 2A6 19th-Century Russian Literature in Translation
Russian 3D3 Russian Drama since 1800
Russian 3E3 Studies in the Russian Novel Dostoevsky
Russian 3K6 20th-Century Russian Literature in Translation
Russian 3T3 Studies in the Russian Novel Tolstoy

W.F. Skipper Poehiman/B.S. (Niagara), B.Sc. (Brock), M.Sc., Ph.D. (McMaster)
Lecturer
A. Hurst/ B.L.A. (Guelph)
Associate Members
Norman P. Archer/S.C. (Alberta), M.S. (New York), Ph.D. (McMaster)
Evelyn M. Nelson/B.Sc., M.Sc., Ph.D. (McMaster)
Peter G. Sutherland/B.Sc. (McGill), M.S., Ph.D. (Illinois)

CURRICULUM 1986-88

Department Notes:
1. Because of resource limitations, enrolment in Computer Science and all joint programmes involving Computer Science may be limited. Students intending to enter any Computer Science programme should consult the Department of Computer Science and Systems.
2. The following are suggested Computer Science options available to students not in Computer Science Programmes:
   - For Science-oriented students: Computer Science 1B3, 1C3, and either 2F3, 3D3, 3P3, 3T3, 4W3 or 2H3.
   - For Business-oriented students: Computer Science 1A3, 2A3, 2P3, 313, 413.
3. *Course is not necessarily offered every session; consult the Chairman of the Department of Computer Science and Systems, or an Associate Dean of Science (Studies).

COMP SCI 1A3 INTRODUCTION TO COMPUTING FOR BUSINESS
Organization and characteristics of stored-program computers; programming in BASIC: data representation; program testing; descriptive statistics; algorithms; sequential data files; computer solution of problems.
3 lects.; one term
Prerequisite: Grade 13 or Mathematics 1K3 or 1L3, and registration in the Faculty of Business. Not open to students who are registered in, or have received credit in, one of Computer Science 1A3, 1B3, 1H3, 1K3, 2H3, Engineering 1D3.

COMP SCI 1B3 INTRODUCTION TO COMPUTING FOR SCIENCE
Overview and characteristics of stored program computers; programming in FORTRAN; data representation; program testing; algorithms; application of computers in various scientific disciplines.
3 lects.; one term
Prerequisite: Grade 13 Calculus or Mathematics 1K3 and another Grade 13 Mathematics course or, Mathematics 1L3 or 1M3. Not open to students who are registered in, or have received credit for any of Computer Science 1A3, 1H3, 1K3, 2H3, Engineering 1D3.

COMP SCI 1C3 INTRODUCTION TO COMPUTER ARCHITECTURE
An introduction to the structure of computer systems; the organization of the central processing unit, the memory subsystem, and input/output devices; an introduction to machine-language and assembler programming.
3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, 1K3, Engineering 1D3. Not open to students who are registered in, or have received credit for, Electrical Engineering 213.

COMP SCI 1H3 INTRODUCTION TO COMPUTING FOR HUMANITIES AND SOCIAL SCIENCE
Organization and characteristics of stored-program computers; programming in FORTRAN; data representation; program testing; algorithms; computer solution of problems.
3 lects.; one term
Prerequisite: One Grade 13 Mathematics, or Mathematics 1K3 or 1L3. Not open to students who are registered in, or have received credit for, any of Computer Science 1A3, 1B3, 1K3, 2H3, Engineering 1D3.

COMP SCI 2A3 INTRODUCTION TO COBOL PROGRAMMING
Data representation: COBOL; structured programming application to report generation; date editing; and file maintenance with sequential files; sorting and merging techniques; case studies.
3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, 1K3, 2H3, Commerce 313.

COMP SCI 2B3 INTRODUCTION TO COMPUTER SCIENCE
Program testing, programming style, recursion, analysis of algorithms, computational complexity, sorting and searching methods. The programming language Pascal is introduced.
3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 and, concurrent registration in Computer Science 2L3.

Computer Science and Systems

Faculty as of January 15, 1986

Peter E Lauer/Chairman

Professors
Gerald L. Keach/ B.A.Sc. (Toronto), M.Sc., Ph.D. (McMaster)/Director
IPACS
Peter E. Lauer/B.A. (Alabama), M.A. (Emory), Ph.D. (Queen's, Belfast)
Patrick J. Ryan/ B.Sc. (Toronto), Ph.D. (Brown)

Associate Professors
William H. Fleming/B.Sc., M.Sc., Ph.D. (McMaster)
Derek J. Kenworthy/B.A., M.A., D.Phil. (Oxford)
Kenneth A. Redish/B.Sc. (London), F.B.C.S.
William F. Smithy/B.A. (Toronto), M.Sc. (Ottawa)
Nicholas Sontself/B.Sc., Ph.D. (Sydney)

Assistant Professors
Ivan Bruba/Ing. (CVUT, Prague), RNDR (Charles, Prague), C.Sc (CVUT, Prague)
Stanislav Jarzebek/M.Sc., Ph.D. (Warsaw)
COMP SCI 2L3 INTRODUCTION TO ALGORITHMS AND PROGRAMMING
A second course for students specializing in computing. Skills in problem solving are developed by studying a set of examples suitable for a digital computer, for many of which formal or mathematical models are not immediately obvious.
3 lects.; one term
Prerequisite: Computer Science 2B3 and registration in a Computer Science, Computer Engineering or Computer Engineering and Management programme. Enrolment is limited.

COMP SCI 2N3 ADVANCED FORTRAN
A second course for students who do not intend to specialize in computing. Topics include: structured programming, programming and algorithmic techniques, graphical output, debugging, queues, lists, and trees, utility programmes.
3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, and one of Mathematics 1A6, 1M3, 1B4, 1F6, 1G6 or, Engineering 1D3 and Mathematics 1N6. Not open to students in any Honours, Major or B.Sc. programme in Computer Science. Not open to students who have completed or are registered in Computer Science 2P3.
Computer Science 2L3, 2N3, and 2P3 are mutually exclusive. Students who have completed or are registered in one may not receive credit in either of the other two, with the following exception: students who have completed Computer Science 2N3 prior to 1983, and who wish to upgrade to Computer Science 2P3 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P3.

COMP SCI 2P3 PASCAL AND PROBLEM SOLVING
Simple and intermediate Pascal programming, data types, control statements, recursion, structural programming, problem solving techniques applied to problems which are amenable to computer solution. Program style. Debugging principles.
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, and one of Mathematics 1A6, 1M3, 1B4, 1F6, 1G6; or, Engineering 1D3 and Mathematics 1N6. Not open to students who have completed or are registered in Computer Science 2L3.
Computer Science 2L3, 2N3, and 2P3 are mutually exclusive. Students who have completed or are registered in one may not receive credit in either of the other two, with the following exception: students who have completed Computer Science 2N3 prior to 1983, and who wish to upgrade to Computer Science 2P3 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P3.

COMP SCI 3A3 DATA STRUCTURES
Indices, arrays, queues, stacks, lists, graphs, trees, and search trees. Applications to memory management, pattern matching, indexed sequential files, etc.
3 lects.; one term
Prerequisite: Computer Science 2L3 and registration in a Computer Science or Computer Engineering degree programme.

COMP SCI 3B3 ORGANIZATION OF PROGRAMMING LANGUAGES
An applied course in programming-language concepts emphasizing the run-time behaviour of programs. It includes a comparative study of several major programming languages and an introduction to some formal aspects of language definition and analysis.
3 lects.; one term
Prerequisite: Computer Science 2A3 or 3A3, or Computer Science 3D3 and registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management and, permission of the instructor.

COMP SCI 3D3 COMPUTER SYSTEMS ARCHITECTURE
Study of a computer system involving hardware and software components; control, storage, and input/output systems; assemblers, loaders, compilers; operating systems and virtual memory techniques.
3 lects.; one term
Prerequisite: Computer Science 1C3 and one of Computer Science 2L3, 2P3, or registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management.

COMP SCI 3E3 INTRODUCTION TO SOFTWARE ENGINEERING
Problem specification, program design, implementation, and testing to produce a reliable and maintainable software system using state-of-the-art programming methodology. Application of these techniques through a term project for medium-sized teams.
2 lects., 1 lab (2); one term
Prerequisite: Computer Science 2L3 and registration in a Computer Science or Computer Engineering degree programme.

COMP SCI 3I3 BUSINESS SYSTEMS ANALYSIS AND DATA ORGANIZATION
Common algorithms used in business data processing; information organization and storage; concepts of systems analysis; case studies drawn from word processing, office automation, decision support systems management information systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L3, 2P3 and completion of, or registration in, 2A3.

COMP SCI 3P3 SCIENTIFIC DATA PROCESSING
Basic techniques of constructing large scientific data processing systems, file organisation, and data base techniques for managing large volumes of data. Computer graphics, data representation and systems design will be discussed.
Prerequisite: Computer Science 2L3, or 2P3.

COMP SCI 3R3 PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Computer Science 2L3 and registration in Level III of the B.Sc. programme in Computer Science.

COMP SCI 3T3 COMPUTER ORGANIZATION AND ASSEMBLER PROGRAMMING
A second course in computer organization with particular emphasis on assembler-language programming.
2 lects.; 1 lab (2); one term
Prerequisite: Computer Science 3D3.

COMP SCI 4E3 COMPILERS
An introduction to formal description of programming languages and the construction of compilers and interpreters for the translation of programs into executable form.
3 lects.; one term
Prerequisite: Completion of Level III of a Computer Science or Computer Engineering programme.

COMP SCI 4F3 SOFTWARE ENGINEERING PROJECT
Students work in large teams on a large-scale project to produce high-quality production software.
3 hrs.; one term
Prerequisite: At least three Level III or IV Computer Science courses, including credit in, or registration in, Computer Science 3E3; and registration in a Computer Engineering or Computer Engineering and Management degree programme.

COMP SCI 4G6 PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Registration in Level IV of a programme in which Computer Science 4G6 is specified and completion of one of Computer Science 3A3, 3I3. Not open to students who are registered in or have completed Computer Science 3R6.

COMP SCI 4I3 MANAGEMENT INFORMATION SYSTEMS
The use of modern computer technology in the information processing and planning processes of small and large organizations. Emphasis will be placed on data design and office automation.
3 lects.; one term
Prerequisite: Computer Science 3I3.

COMP SCI 4J3 INTRODUCTION TO FORMAL LANGUAGE THEORY
The mathematical properties of context-free grammars and languages will be studied.
3 lects.; one term
Prerequisite: Computer Science 3A3, and one of Mathematics 2F4, 2J6. Offered in 1986/87, alternating with Computer Science 4X3.

COMP SCI 4L3 DATABASE MANAGEMENT SYSTEM DESIGN
A first course on database management systems which emphasizes the concepts and structures necessary for their design and implementation. Topics include: data models, data normalization, data description languages, query facilities, file organization, file security, data integrity and reliability, and concurrency.
3 lects.; one term
Prerequisite: Computer Science 2A3 and 3A3 or, registration in Computer Engineering or Computer Engineering and Management.

COMP SCI 4W3 COMPUTER SIMULATION LANGUAGES AND THE SIMULATION OF COMPUTERS
Three languages for the simulation of discrete stochastic systems will be compared: GPSS, Simscript or Simula, and GASP II; simulation of various operations in computer systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L3, 2N3, 2P3.

COMP SCI 4X3 THE MATHEMATICAL ANALYSIS OF ALGORITHMS
An introduction to the analysis of algorithms dealing with the relative speed of alternate algorithms and related matters.
3 lects.; one term
Dramatic Arts

Courses and programmes in Dramatic Arts and Film at McMaster University are supervised and co-ordinated by an interdisciplinary Committee on Dramatic Arts. Students who plan to register in a programme in Dramatic Arts must consult the Chairman of the Committee before selecting courses.

Committee of Instruction
D. Duncan (English) (Acting) Chairman
L. Braswell (English)
A. Brennan (English)
J. Coldwell (English)
F. Crisp (Dance)
A. Hamond (English)
T. Hoey (Classics)
E. Inman (Acting)
F. Minelli (Spanish)
E. Nardocchio (French)
G. Pettie (Film)
B. Pocknell (French)
C. Rouben (French)
R. Van Dusen (German)
V. Vince (English)
D. Wilson (Dance)

CURIUM 1986-88

DRAM ART 1A6 INTRODUCTION TO DRAMA
An exploration of the theatrical medium through the study of plays from major periods of Western drama, including plays featured in the year's Dramatic Arts productions. 2 lects., 1 tut.; two terms
Prerequisite: Open.

DRAM ART 2A6 AN INTRODUCTION TO THE ACTOR'S CRAFT
Contemporary methods of acting. Basic skills of voice, speech and movement. Study and presentation of scenes from modern drama. Participation in campus drama by arrangement with the instructor. 2 studio practices (2 1/2 hrs.); two terms
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the instructor after audition.

DRAM ART 2B6 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the medieval period to the close of the 18th century (excluding Shakespeare). 3 lects.; two terms
Prerequisite: Registration in a programme in Dramatic Arts or English; or permission of the English Department. Same as English 2B6.

DRAM ART 2C3 PERFORMANCE AND THE IDEA OF THEATRE 900-1700
A survey of staging and performance practice, popular, courtly and religious; theory and practice of stage design and theatre architecture. 3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 2E3 GREEK AND ROMAN DRAMA
Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama. 3 lects.; one term
Prerequisite: Open to students in Level II and above. Same as Classical Civilization 2E3 and Comparative Literature 2B3.

DRAM ART 2F3 OPERA
An analysis of selected operatic works in their historical context, with a view to exploring the nature of opera as a theatrical and musical form. 3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts or Music; or permission of the instructor. Alternates with Dramatic Arts 2FF3.

DRAM ART 2FF3 STUDIES IN OPERA
1986-87: Opera on Record
An examination of the dramatic, historical, and musical importance of the legacy of operatic recordings from 1900 to the present. 3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts or Music; or permission of the instructor. Alternates with Dramatic Arts 2F3.

Dramatic Arts 2FF3 may be repeated if on a different topic, to a total of six units.

DRAM ART 2J3 GERMAN DRAMA IN TRANSLATION
A study of selected plays from the early nineteenth century to the early 1970's (Buchner to Handke). 3 lects.; one term
Prerequisite: Open. Available, with permission of the Department, as an elective to students registered in a programme in German. Same as German 2J3.

DRAM ART 2X6 THE ART OF THE FILM
An introduction to film style and technique through a detailed critical analysis of major works from the silent period to the present day. 2 lects. plus one weekly film screening; two terms
Prerequisite: 6 units of Humanities, preferably Dramatic Arts 1A6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Enrolment is limited.

DRAM ART 3A6 STYLES OF ACTING
Study and practice of styles associated with different periods of theatre. Improvement of basic skills through scene presentations. Participation in campus drama by arrangement with the instructor. Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 2A6; or permission of the instructor.

DRAM ART 3BB3 CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dubé and Michel Tremblay. 3 lects.; one term
Prerequisite: French 2F3 or 2FF3; or permission of the Department of Romance Languages. Note that texts and instruction are in French. Students taking this course as Dramatic Arts 3BB3 must be registered in a programme in Dramatic Arts, and may offer written work in English. Same as French 3BB3.

DRAM ART 3C3 MODERN EUROPEAN DRAMA IN ENGLISH
Translation
A study of representative plays by modern European dramatists from Ibsen to the present. 1 seminar (2 hrs.), plus playreadings; one term
Prerequisite: Dramatic Arts 1A6; or permission of the instructor. Same as Comparative Literature 3E3.

DRAM ART 3D3 TECHNICAL ASPECTS OF THE THEATRE
A survey of the theory and practice of all the technical skills involved in a theatrical production: set design, set construction, lighting, sound, carpentry, properties, costumes. Technical assistance with Dramatic Arts productions. 2 hrs. first term; 1 hr. (workshop) second term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 3D3 RUSSIAN DRAMA SINCE 1800
An introduction in translation to the major works of Russian Theatre. 2 lects., 1 tut.; one term
Prerequisite: Open (students in Level II and above). Offered in alternate years. Same as Russian 3D3.

DRAM ART 3K6 SHAKESPEARE
An extensive critical reading and discussion of selected plays. 3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in Dramatic Arts or English; or permission of the English Department. Same as English 3K6.

DRAM ART 3P3 MODERN DRAMA IN ENGLISH
A representative selection of plays by modern British, Irish, and North American dramatists will be examined in order to study the relationship between drama and society in our age, as well as conventions and experiments in the contemporary theatre. 3 lects.; one term
Prerequisite: Dramatic Arts 1A6, or English 1A6, 1B6 or 1C6. Same as English 3P3.

DRAM ART 3Q3 SEVENTEENTH-CENTURY FRENCH DRAMA
A study of selected plays of Corneille, Molière and Racine. 3 lects.; one term
Prerequisite: Dramatic Arts 1A6 and French 1A6 or 1B6; or permission of the Department of Romance Languages. Note that texts and instruction are in French. Students taking this course must be registered in a programme in Dramatic Arts and may offer written work in English. Same as French 3Q3.
DRAM ART 3R3 THE AMERICAN CINEMA I
A survey of some of the predominant features of the American Cinema from its beginning to 1940. Emphasis will be placed on both the artistic value of the films and on their social significance and impact.
2 lecs.; plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Not available to students with credit in Dramatic Arts 3R6.

DRAM ART 3RR3 THE AMERICAN CINEMA II
A survey of some of the predominant features of the American Cinema from 1940 to the present day. Emphasis will be placed on both the artistic value of the films and on their social significance and impact.
2 lecs.; plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Not available to students with credit in Dramatic Arts 3R6.

DRAM ART 3XX3 TOPICS IN 20TH-CENTURY DRAMA
1987-88: Modern Canadian Drama
A selection of representative plays from various Canadian regions will be studied with attention to their dramatic form and their treatment of regional as well as general social, historical and political themes.

1987-88: British Drama - 1950 to the Present
The emergence of an important group of playwrights in post-war British theatre will be traced through the reading of representative works.
3 lecs.; one term.
Prerequisite: Dramatic Arts 1A6, or English 1A6, 1B6 or 1C6. Dramatic Arts 3XX3 may be repeated if on a different topic, to a total of 6 units. Same as English 3XX3.

DRAM ART 3Y3 FRENCH CINEMA
A survey of French Cinema from its beginnings to the present, through detailed analysis of major works.
2 lecs.; plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X6, or French 1A6 or 1B6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Same as French 3Y3.

DRAM ART 4A6 PRINCIPLES OF STAGE DIRECTING
Play analysis, schedule planning, rehearsal techniques, technical stagecraft required to bring a play to performance. Direction of a play for performance under the supervision of the instructor. Class meets twice a week, total 5 hrs.; two terms.
Prerequisite: Dramatic Arts 3A6 and registration in an Honours programme in Dramatic Arts; or permission of the instructor.

DRAM ART 4B5 TOPICS IN THEATRE HISTORY: INDEPENDENT STUDY I
Students who wish to undertake independent study in one of the following areas must consult the Chairman of the Committee on Dramatic Arts prior to registration: Medieval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design; Modern European Theatre.
One term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 4B83 TOPICS IN THEATRE HISTORY: INDEPENDENT STUDY II
Students who wish to undertake independent study in one of the following areas, which must be different from that selected for 4B83, must consult the Chairman of the Committee on Dramatic Arts prior to registration: Medieval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design; Modern European Theatre.
One term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ARTS 4D3 SPECIAL STUDIES IN DRAMATIC ARTS I
1987-88: The Medieval Theatre of England and France
A study of representative plays together with a consideration of medieval techniques of staging.
1 lec., 1 tut. (2 hrs.); one term.
Same as English 4D3.

DRAM ART 4D3 SPECIAL STUDIES IN DRAMATIC ARTS II
1986-87: Spanish Theatre of the Golden Age
A study of plays by the major Spanish playwrights of the period 1550-1680, including works by Cervantes, Lope, Tirso and Calderón, in English translation.
3 lecs.; one term.
Prerequisite: Open to students in Level II and above.
Same as Spanish 4G3.

DRAM ART 4E3 THEORY OF DRAMA AND THEATRE
A study of selected theoretical documents, principally from the 20th century; introduction to semantics of the theatre; fundamentals of performance theory.
3 lecs.; one term.
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 4F3 THEATRE HISTORIOGRAPHY
Introduction to the theatre historian's sources and methods; selected topics for research, analysis and discussion.
3 lecs.; one term.
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts. Not available to students with credit in Dramatic Arts 3G6.

DRAM ART 4G3 PERSPECTIVES IN DANCE: A CULTURAL SURVEY
A survey of dance in selected cultures, studying its role in ritual, in art and in theatre.
3 hrs.(lect., seminars); one term.
Prerequisite: Permission of the instructor. Alternates with Dramatic Arts 4J3.

Same as Physical Education 4G3.

DRAM ART 4H3 LITERATURE AND FILM
An examination of the particular characteristics of both literature and film and the inter-relationships between them through a detailed study of selected novels, short stories and plays and the films that have been based on them.
2 lecs.; plus one weekly film screening; one term.
Prerequisite: Registration in Level III or IV of a programme in Dramatic Arts or Literature; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. It is recommended that students should already have taken Dramatic Arts 2X6.
Same as English 4H3.

DRAM ART 4J3 PERSPECTIVES IN DANCE: DANCE IN CONTEMPORARY SOCIETY
A study of dance forms in the 20th century. Students will view films, dance performances and participate in dance workshops.
3 hrs.(lect., seminars); one term.
Prerequisite: Permission of the instructor. Alternates with Dramatic Arts 4G3.
Same as Physical Education 4J3.

DRAM ART 4K3 FILM COMEDY
A study of the tradition of film comedy within a framework of comic theory in general and especially in its application to drama.
2 lecs.; plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Not available to students with credit for this topic taken under Dramatic Arts 4D3.

Economics
Faculty of Arts
S. Ahmad/Chairman
Stuart Mestelman/Associate Chairman

Professors Emeriti
R. Craig McIvor/B.A. (Western), M.A., Ph.D. (Chicago), F.R.S.C.
Robert W. Thompson/B.A. (Toronto), M.A. (Queen's), Ph.D. (London)

Professors
Syed Ahmad/M.A., LL.B. (Aligarh), M.Sc. (Econ.), D.Sc. (Econ.) (London)
John B. Burbridge/B.A., Ph.D. (McGill)
Frank T. Denton/M.A. (Toronto), F.R.S.C.
Peter J. George/B.A., M.A., Ph.D. (Toronto)
James A. Johnson/M.A., Ph.D. (Minnesota)
Atif A. Kuburs/B.A., (American University, Beirut), M.A, Ph.D. (Purdue)
Ernest H. Oksanen/A.M. (Michigan), B.A., Ph.D. (Queen's)
William M. Scammell/B.Comm. Sc. (Queen's, Belfast), Ph.D. (Wales)
William M. Scarr/B.A. (Queen's), M.A. (Essex), Ph.D. (Toronto)
Byron G. Spencer/B.A. (Queen's), Ph.D. (Rice)
James R. Williams/ M.A., Ph.D. (Minnesota)

Associate Professors
Martin J. Browning/B.Sc., M.Sc. (London)
David W. Butterfield/B.S., M.S. Eng. (Calif. Inst. of Tech.), A.B., M.A., Ph.D. (Berkeley)
Kenneth S. Chan/B.Sc., M.A., Ph.D. (Brown)
Donald A. Dawson/A.M. (Chicago), Ph.D. (Western), N.D.C.
Martin D. Dooley/B.A. (Indiana), M.S., Ph.D. (Wiscosis-Madison)
ECONOMICS

David H. Feeny/BA (Northern Illinois), M.A., Ph.D. (Wisconsin-Madison)
Alan J. Harrison/BA, M.A., Ph.D. (Essex)
Melvin L. Kliman/BA (Manitoba), M.A. (Queen’s), Ph.D. (Minnesota)
Stuart Mestelman/BA (Pittsburgh), M.S., Ph.D. (Purdue)
R. Andrew Muller/BA, McGill, M.A., Ph.D. (Toronto)
Martin J. Osborne/BA (Cambridge), Ph.D. (Stanford)
A. Leslie Robb/ M.A. (British Columbia), Ph.D. (Essex)
Jon D. Welland/BA (McMaster), M.A., Ph.D. (Minnesota)

Assistant Professors
John E. Leach/BA (Alberta), M.A., Ph.D. (Queen’s)
Wayne Lewchuk/ M.A. (Toronto), Ph.D. (Cambridge)
Donnie J. Magee/B.Math, Waterloo, M.A., Ph.D. (Western)
Peter J. McCabe/A.B. (Boston College) Ph.D. (Northwestern)

Associate Members
Jeff L. Callen/ (Business) B.A. (York), M.B.A., Ph.D. (Toronto)
M. Luke Chan/ Business B.Sc. (University of Prince Edward Island), M.A., Ph.D. (McMaster)
I. Kirskey/(Business) B.A., M.A. (Tel-Aviv), Ph.D. (McMaster)
George J. Papageorgiou/(Geography) Dip. in Architecture (National Technical, Athens), M.C.P., Ph.D. (Ohio State)
Gregory L. Stoddart/Epidemiology and Biostatistics B.A. (Western), Ph.D. (British Columbia)

CURRICULUM 1986-88

Department Notes:
1. Students are advised to consult the Department for more detailed information on current offerings.
2. Students with strong academic records, particularly those from other departments, may be permitted to enrol in courses for which they have not completed all prerequisites. Such students must have the permission of the instructor.
3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar in the section Sessional Dates.

ECON 1A6 INTRODUCTORY ECONOMICS
An introduction to the method and theory of economics, and their application to the analysis of contemporary economic problems.
3 hrs.; two terms
Prerequisite: Open.

ECON 2B3 ANALYSIS OF ECONOMIC DATA I
Application of statistical concepts to the analysis of economic data, with attention to Canadian sources. Regression analysis is emphasized. Topics may also include index numbers.
3 hrs.; one term
Prerequisite: Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C– in Economics 1A6. Not open to students with credit or concurrent registration in Economics 306 or other statistics courses (except Statistics 2D3) without permission of the Department. Not open to students who have credit in, or are required to take, Commerce 2QA3.

ECON 2G3 INTERMEDIATE PRICE THEORY
Elements of consumer behaviour; production and cost, price and output determination under various market structures; employment of inputs.
3 hrs.; one term
Prerequisite: Registration in an Economics or Commerce programme, or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C– in Economics 1A6. Not open to students with credit or concurrent registration in Economics 2L6.

ECON 2H3 INTERMEDIATE INCOME AND EMPLOYMENT THEORY
Elements of national accounting, basic models of income determination, inflation and unemployment in the Canadian context.
3 hrs.; one term
Prerequisite: Registration in an Economics or Commerce programme, or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C– in Economics 1A6. Not open to students with credit or concurrent registration in Economics 2M6.

ECON 2K3 ECONOMIC HISTORY OF CANADA
A survey of the changing structure of the Canadian economy from the colonial period to the present; early significance of primary production for export markets; emerging domestic markets and industrialization; government’s role in promoting the development of the national economy.
3 hrs.; one term
Prerequisite: At least C– in Economics 1A6. Not open to students with credit for Economics 2K6.

ECON 2L6 INTERMEDIATE MICROECONOMICS
Consumer behaviour; production and cost; price and output determination under various market structures; factor pricing and distribution of factor payments; general equilibrium; welfare economics.
3 hrs.; two terms
Prerequisite: Registration in Economics or Commerce; or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C– in Economics 1A6.
A student receiving credit for Economics 2G3 may receive only 3 additional units of credit for Economics 2L6.

ECON 2M6 INTERMEDIATE MACROECONOMICS
National income accounting and related topics; models of output and price determination; theories of monetary and fiscal policy applied to the Canadian economy.
3 hrs.; two terms
Prerequisite: Registration in Economics or Commerce; or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C– in Economics 1A6.
A student receiving credit for Economics 2H3 may receive only 3 additional units of credit for Economics 2M6.

ECON 3A3 ADVANCED ECONOMIC THEORY I
Mathematically oriented approaches to the analysis of the behavior of individual consumers, workers and firms.
3 hrs.; one term
Prerequisite: Mathematics 1N3 or equivalent and an average of at least 7.0 in Economics 2L6 and 2M6. Mathematics 2L3 or equivalent is recommended.

ECON 3AA3 ADVANCED ECONOMIC THEORY II
Comparative static and dynamic analysis of macroeconomic models.
3 hrs.; one term
Prerequisite: At least C– in Economics 3A3.

ECON 3B3 PUBLIC FINANCE
Public sector economics. Topics are selected from: public good provision; market failure; public choice; wealth, expenditure and income taxation; intergovernmental fiscal relations; government budgeting.
3 lects.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3C6.

ECON 3CC6 PUBLIC FINANCE
Public finance and practice of public finance with special reference to Canada. Topics include government expenditure criteria, fiscal policy; taxation of income, wealth and expenditure; intergovernmental fiscal relations.
3 hrs.; two terms
Prerequisite: Economics 2G3 or 2L6.
A student who has credit for Economics 3B3 may receive only 3 additional units of credit for Economics 3C6.

ECON 3DD LABOUR ECONOMICS
Introduction to the economics of the labour market; demand for labour by the firm and industry; supply of labour by the individual; investment in human capital.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3E3 TOPICS IN LABOUR ECONOMICS
Topics will vary from year to year. The following are given as examples: economic goals and effects of unions; labour mobility; labour force participation; wage differentials; discrimination; unemployment.
3 hrs.; one term
Prerequisite: Economics 3D3 and Economics 2B3 or 3C6.

ECON 3H3 INTERNATIONAL MONETARY ECONOMICS
Balance of payments and economic problems of an open economy with special reference to Canada; the international financial system and proposals for its reform.
3 hrs. (lects. and seminars); one term
Prerequisite: Economics 2H3 or 2M6. Not open to students receiving credit for Economics 4B6.

ECON 3HH3 INTERNATIONAL TRADE
Real theory of international trade; interregional and international specialization; effect of commercial and industrial policies.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 4B6.

ECON 3I3 ECONOMIC HISTORY OF THE UNITED STATES
Economic analysis of the development of the U.S. economy. Topics include the colonial economy, slavery, transportation, income distribution, foreign trade, technical and institutional change and the Great Depression.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6; or permission of the instructor. Economics 2H3 or 2M6 is recommended.
ECON 316 ECONOMIC DEVELOPMENT
Analysis of economies of less developed countries. Topics include structural change, dual economies, agriculture, population, savings, financial development, income distribution, trade, and policy.
3 hrs.; two terms
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

ECON 3K6 MONETARY ECONOMICS AND FINANCIAL ORGANIZATION: THEORY AND POLICY
Objectives, organization and operation of the financial sector; financial intermediaries in the capital market; mechanism of international payments; monetary theory and policy concerning Canadian allocative and stability objectives.
3 hrs.; two terms
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

A student with credit for Commerce 2FA3 may receive only 3 additional units of credit for Economics 3K6.

ECON 3L3 MARXIAN ECONOMICS
An examination of the foundations of Marxian economic thought; Marxism as a theory of the capitalist system; the place of Marxian doctrine in contemporary economic analysis.
3 lects.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3L3 HISTORY OF ECONOMIC THEORY
Economic thought from earliest times, with emphasis on the major schools from Adam Smith to Alfred Marshall, selected modern trends and controversies.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6; Economics 2H3 or 2M6. Not open to students with credit in Economics 4C6.

ECON 3M3 ECONOMIC HISTORY OF BRITAIN FROM 1750
The development of the British economy; the Industrial Revolution; population; trade unions; business organization; transportation finance; trade; migration; capital movements; the role of government.
3 hrs. (lects. and seminars); one term
Prerequisite: At least C— in Economics 1A6. Not open to students with credit in Economics 3M6.

ECON 3N6 INDUSTRIAL ORGANIZATION AND PUBLIC POLICY
The structure, conduct and performance of industrial markets, with emphasis upon the problems and methods of maintaining effective competition.
3 hrs.; two terms
Prerequisite: Economics 2G3 or 2L6.

A student who has credit for Economics 3S3 may receive only 3 additional units of credit for Economics 3N6.

ECON 306 ECONOMIC STATISTICS
Statistical analysis as a basic research technique in economics, emphasizing estimation and statistical inferences, including linear regression models. Applications are drawn from micro and macroeconomics.
3 lects.; two terms
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6. Not open to students with credit or concurrent registration in Statistics 3D6.

Students with credit in Economics 2B3 or in other statistics courses (except Statistics 2D3) may receive only 3 additional units for Economics 306.

ECON 3R3 THE INTERNATIONAL ECONOMY SINCE 1945
International finance, commercial policy, changing national and industrial structures and relations between development and the developing countries.
3 hrs.; one term
Prerequisite: At least C— in Economics 1A6.

ECON 3S3 INDUSTRIAL ORGANIZATION
A study of the structure conduct and performance of industrial markets.
3 lects.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3N6.

ECON 3T3 TRANSPORT ECONOMICS
Economic theory applied to such questions as the demand for transport, cost analysis, pricing, and government regulation; Canadian transport problems.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3U3 ANALYSIS OF ECONOMIC DATA II
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6, and Economics 2S3, or an equivalent course in statistics with permission of the instructor. Not open to students with credit or concurrent registration in Economics 4G3.

ECON 3V3 PUBLIC CHOICE AND BENEFIT-COST ANALYSIS
The economics of social decision-making; the logic of group decision and the political process; welfare economics, theory and application of benefit-cost analysis.
3 hrs. (lects. and seminars); one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3W3 NATURAL RESOURCES
Competitive and socially optimal exhaustion of nonrenewable resources; market failure as illustrated by mineral cartels, fisheries and forestry; Canadian energy policy.
3 hrs. (lects. and seminars); one term
Prerequisite: Economics 2G3 or 2L6, and Mathematics 1M3; or permission of the instructor.

ECON 3X3 SELECTED TOPICS I
Topics will vary from year to year depending on student interests and faculty availability. Students should consult the Department on topics to be offered.
3 hrs.; one term
Prerequisite: Permission of the Department.

ECON 3Y3 SELECTED TOPICS II
As for Economics 3X3.
3 hrs.; one term
Prerequisite: Permission of the Department.

ECON 3Z3 HEALTH ECONOMICS
Analysis of allocation of resources in health care. Topics include markets for health care, insurance, biomedical research, technology assessment, organization, and public policy.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6. Economics 2B3 or another course in statistics is recommended.

ECON 4E3 TOPICS IN MICROECONOMICS
Applications of advanced microeconomic theory.
3 hrs.; one term
Prerequisite: At least C— in Economics 3A3.

ECON 4F3 TOPICS IN MACROECONOMICS
Applications of advanced macroeconomic theory.
3 hrs.; one term
Prerequisite: At least C— in Economics 3AA3.

ECON 4G3 ECONOMETRICS I
Development of regression models appropriate to economics. Illustrations from applied micro- and macroeconomics.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6, and at least C— in Economics 3O6 or Statistics 3D6; or permission of the instructor.

ECON 4GG3 ECONOMETRICS II
Special topics in econometrics, including identification in simultaneous equations models in micro- and macroeconomics and topics in the analysis of time series.
3 hrs.; one term
Prerequisite: Economics 4G3.

ECON 4H3 LINEAR ECONOMIC MODELS
Application and interpretation in economics of linear programming, game theory, and inter-industry analysis.
3 lects.; one term
Prerequisite: At least C— in each of Mathematics 1L3, 1M3 (or equivalent Mathematics), Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

ECON 4M6** DIRECTED RESEARCH I
A reading and/or research programme supervised by a Department member. A major paper is required. Students should consult the Department concerning admission.
Prerequisite: Permission of the Department.

ECON 4N3** DIRECTED RESEARCH II
As for Economics 4M6.
Prerequisite: Permission of the Department.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Eighteenth-Century Studies

There is no B.A. programme in Eighteenth-Century Studies, but students wishing to make a special study of the field may group electives from the following list of relevant courses offered by various departments. For a full description and requirements see the appropriate departmental listings. For information on year offered see the timetable.
Electrical and Computer Engineering

Faculty as of January 15, 1986

N.K. Sinha/Chairman

Professors Emeriti
Arthur S. Gladwin/D.Sc. (Glasgow), Ph.D. (London)

Professors
Rudi deBuda/Dipl.Eng., Ph.D. (Vienna)/part-time
Raymond D. Findlay/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Reuven Kital/M.Sc., D.Sc. (Witwatersrand), F.I.E.E.E.
John Litt/lva/B.Sc. (British Columbia), M.Sc., Ph.D. (Western Ontario)
Barna Szabados/Dipl.Eng. (Grenoble), M.Eng., Ph.D. (McMaster)
Desmond P. Taylor/B.Sc., M.Sc. (Queen’s), Ph.D. (McMaster), F.E.I.C., P.Eng.

Associate Professors
Charles R. Carter/B.A.Sc., M.A.Sc. (British Columbia), Ph.D. (McMaster), P.Eng.
Stephen H. Chisholm/B.A.Sc. (Toronto), Ph.D. (London)
Mohamed A. El-Kady/M.Sc. (Eng.) (Cairo), Ph.D. (McMaster), P.Eng./part-time
Chandra M. Kudsia/B.Sc. (Delhi), B.E. (Bangalore), M.Eng. (McMaster), Ph.D. (Concordia), P.Eng./part-time

Assistant Professors
Ewa Tarasiewicz/B.Sc., M.Sc., Ph.D. (Poland)
Terence D. Todd/B.Sc., M.Sc., Ph.D. (Waterloo)
Carl F. Weaver/B.A.Sc. (Waterloo), M.Eng., Ph.D. (McMaster)

Associate Members
A.A. Berezn/M.Sc., Ph.D. (Leningrad)
R.F. Bloch/M.Sc., Ph.D. (Zurich), MD (McMaster), F.R.C.P.(C)
Hugh deBruin/M.Eng., Ph.D. (McMaster), P.Eng.
T.J. Kenna/B.Sc. (Jamaica), M.Sc., Ph.D. (McMaster)
P.E. Lauer/B.A. (Alabama), M.A. (Atlanta), Ph.D. (Belfast)

L.D. Pengelly/B.A.Sc. (Toronto), M.Sc., Ph.D. (McGill), M.I.E.E.
W.F. Skip Poelhman/B.S. (Niagara, New York), B.Sc. (Brock), M.Sc., Ph.D. (McMaster)
D.A. Thompson/B.Sc., Ph.D. (Reading)
P. Yip/B.Sc. (Memorial), Ph.D. (McMaster)

CURRICULUM 1986-88

Department Notes:
Enrolment in an Electrical Engineering course may be limited to those students for whom the course is a required course.

ELEC ENG 2B4 ELECTRICAL SCIENCE
Electrostatics and electromagnetic fields; electric and magnetic circuits; lumped parameter models; loop and nodal methods; circuit theorems; RLC circuits; transformers; conducting, insulating and magnetic materials.
3 lects., 1 lab. or tut.; one term
Prerequisite: Mathematics 1H5 Physics 1E4, and registration in a programme in Computer or Electrical Engineering.

ELEC ENG 2F3 ELECTRONICS I
Semiconductor physics; device physical electronics, models and characteristics; diode circuits; bipolar and unipolar transistors; simple amplifier circuits; analog switches.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B4 and Mathematics 2P4.

ELEC ENG 2H3 DIGITAL SYSTEMS I
Number systems, Boolean algebra, switches and logic gates, simplification of Boolean functions, combinatorial logic, flip-flops, analysis and design of clocked sequential circuits.
2 lects., 1 lab. or tut.; one term
Prerequisite: Registration in a programme in Computer or Electrical Engineering.

ELEC ENG 2K3 COMPUTATIONAL METHODS IN ELECTRICAL ENGINEERING
Introduction to the formulation and solution of problems in fields, circuits and systems. Numerical methods for simulation of electrical models and designs.
2 lects., 1 tut.; one term
Prerequisite: Electrical Engineering 2B4 and Mathematics 2P4.

ELEC ENG 3B4 CIRCUITS AND SYSTEMS II
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3 and 2K3.

ELEC ENG 3C4 ELECTROMAGNETIC FIELDS AND WAVES
Scalar and vector potential fields; Maxwell’s equations, boundary conditions, electromagnetic energy and Poynting’s theorem, transmission lines; waves; field plotting.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3 and 2K3.

ELEC ENG 3H3 DIGITAL SYSTEMS II
Memory, programmable logic arrays, small computer system organization, register transfer logic, hard ware and software. Operation, organization and control of central processor unit.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2H3, or Engineering 3N3.

ELEC ENG 3K4 SIMULATION AND OPTIMIZATION I
Simulation of circuits and systems. Sparse matrix applications; optimization techniques; adjoint systems and sensitivity, tolerance assignment; design centering; yield analysis. Microcomputer CAD systems.
2 lects., 1 lab., 3, 1 tut.;(1); one term
Prerequisite: Electrical Engineering 2K3 and concurrent registration in Electrical Engineering 3B4, 3C4, Mathematics 3K3.

ELEC ENG 3N4 ENERGY CONVERSION I
Fundamentals of electromechanical energy conversion; dc motors and generators; transformers; polyphase circuits and devices, synchronous and induction machines; computer models.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B4, 2K3, 3C4, and Mathematics 2Q4.

ELEC ENG 3S3 ENERGY CONVERSION II
Analysis and design of energy conversion systems. Electric power generation, rotary industrial drives, linear electric machines; symmetrical components, single phase machines; introduction to electronic power control.
2 lects., 1 lab. or tut.; second term
Prerequisite: Electrical Engineering 3N4, or Engineering 3M3 with permission of the Department.

ELEC ENG 3T4 ELECTRONICS II
Advanced treatment of semiconductor device physical electronics, circuit models and characteristics. Transistor amplifiers, frequency response; feedback, operational amplifier design. Compensation.
3 lects., 1 lab or tut.; one term
Prerequisite: Electrical Engineering 2D3, 2F3.

ELEC ENG 3U4 ELECTRONICS III
Linear and nonlinear operational amplifier circuits; signal generators; active filters; power amplifiers; regulators; digital electronics; A/D and D/A converters, multiplexers, sample and hold; noise.
3 lects., 1 lab or tut.; one term
Prerequisite: Electrical Engineering 3T4.

ELEC ENG 3V3 SOFTWARE ENGINEERING DESIGN
Students work in teams on large-scale projects involving the design of software for specific problems. Emphasis is placed on software reliability and maintainability.
1 lect., 1 lab (2); one term
Prerequisite: Computer Science 2L3, and registration in a programme in Computer Engineering.

ELEC ENG 4A4 COMMUNICATIONS SYSTEMS
Representation of signals and systems, random signals and noise, amplitude modulation, angle modulation, noise in cw modulation systems, pulse modulation, optimum receivers.
2 lects., 1 lab or tut.; one term
Prerequisite: Electrical Engineering 3B4, Statistics 3X3.

ELEC ENG 4B4 TRANSMITTING AND RADIATING SYSTEMS
Principles of transmission lines, waveguides and antennas, matching, Smith-chart applications, dipole and Yagi antennas, ground wave and sky wave propagation.
3 lects., 1 lab or tut.(3); one term
Prerequisite: Electrical Engineering 3C4.

ELEC ENG 4C4 CONTROL SYSTEMS
Models for typical components, characteristics of feedback systems, performance and stability analysis, design and compensation, digital control systems, design with state-variable feedback, discrete time systems, nonlinear systems.
3 lects., 1 lab or tut.; one term
Prerequisite: Electrical Engineering 3B4, Mathematics 3K3.

ELEC ENG 4D4 COMPUTER COMMUNICATION NETWORKS
An introduction to modern data communication networks; switching techniques; architecture and protocols; design of communication subnetworks; local area networks; interconnections; data communication services; electronic messaging; Teletex.
3 lects., 1 tut.; one term
Prerequisite: Electrical Engineering 3B4, 3H13.

ELEC ENG 4E4 DIGITAL SYSTEMS IV
Typical computer systems; memory and CPU organization, throughput, priority techniques, buses, networking. Operating systems and their components.
2 lects., 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 4H4. Not open to students with credit in Electrical Engineering 4T4.

ELEC ENG 4F4 POWER ELECTRONICS
Characteristics of power semiconductor devices: rectifier transistor, SCR, GTO-SCR, TRIAC. Heat flow calculations, circuits with power switches; ac voltage controllers, controlled rectifiers, converters and inverters.
2 lects., 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 3G4 or 3U4.

ELEC ENG 4G4 DIGITAL COMMUNICATIONS
2 lects., 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 4A4, and Mathematics 3K5 or 3K3.

ELEC ENG 4H4 DIGITAL SYSTEMS III
2 lects., 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 3H3. Not open to students with credit in Electrical Engineering 4G4.

ELEC ENG 4J4 THESIS PROJECT
An experimental investigation or design project to be carried out by the student, to test initiative, grasp of the subject, and capacity for independent work.
2 labs.(3); two terms
Prerequisite: Registration in the graduating session of a programme in Computer or Electrical Engineering.

ELEC ENG 4K4 SIMULATION AND OPTIMIZATION II
Analogue IC and system simulation; advanced optimization techniques; yield optimization; postproduction tuning; network diagnosis; advanced modelling of active and passive devices. Design and use of CAD systems.
2 lects., 1 lab (3), 1 tut (1); one term
Prerequisite: Electrical Engineering 3K4.

ELEC ENG 4L4 FILTER THEORY AND DESIGN
2 lects., 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 3B4.

ELEC ENG 4N4 POWER SYSTEMS
Transmission systems; load flow; voltage control; economics; balanced and unbalanced fault analysis and stability assessment; simulations. Field trips included.
2 lects., 1 lab, 1 proj. lab.; one term
Prerequisite: Electrical Engineering 3B4, and 3N3 or 3N4.

ELEC ENG 4R4 ELECTRONICS IV
Selected advanced topics in physical electronics of semiconductor devices; integrated circuit fabrication technology; integrated circuit component design; analog integrated circuits.
2 lects. 2 labs or tuts.; one term
Prerequisite: Electrical Engineering 3G4 or 3U4.

ELEC ENG 4S4 ANTENNA THEORY AND DESIGN
Small antennas; radiation efficiency, transmission line loading; arrays, wire antennas, travelling wave, half wave, folded dipole and Yagi antennas; aperture antennas; receiving antennas, noise power, measurements.
2 lects., 1 lab or tut.; one term
Prerequisite: Electrical Engineering 3C4.

ELEC ENG 4T4 MICROCOMPUTER INTERFACING
Microcomputer architectures; timing; program controlled I/O; memory mapping, handshaking, polling; interrupt controlled I/O; DMA; serial communication; peripheral interfaces.
2 lects., 1 lab (3), 2 tuts (1); one term
Prerequisite: Electrical Engineering 3H3 and registration in a Computer Engineering programme. Not open to students with credit in Electrical Engineering 4H4.

ELEC ENG 4U4 BIOMEDICAL ELECTRONIC INSTRUMENTATION
Generation and nature of bio-electric potentials; bio-electrodes impedances and transducers, signal, ultrasonics, lasers, telemetry, electrical safety, electronic pacemakers, cardiovascular, pulmonary, gastrointestinal and neuromuscular instrumentation.
3 lects., 1 lab., alternate weeks; one term
Prerequisite: Electrical Engineering 3G4 or 3U4 or Engineering 3N3 or equivalent.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Engineering (General)

CURRICULUM 1986-88

Department Notes:
Enrolment in these courses by students in programmes other than Engineering or Engineering and Management may be limited.

ENGINEER 1C4 ENGINEERING DESIGN
Graphical communication and problem solving techniques. Introduction to engineering design. Projects on conceptual design in the different engineering disciplines.
1 lect., 1 lab (4); first term
1 lect., 1 lab (2); second term
Prerequisite: Registration in Engineering I.

ENGINEER 1D3 ENGINEERING COMPUTATION
A first course in programming for engineers, using BASIC and FORTRAN to solve problems in analysis, design and elementary optimization.
3 lects.; one term
Prerequisite: Registration in Engineering I.

ENGINEER 2C3 ELECTRICAL CIRCUITS AND MEASUREMENTS
Electrical quantities and circuit elements, Kirchoff's laws and network theory, transient response of circuits, simple measurement devices and transducers, characteristics of motors.
2 lects., 1 lab or tut.; one term
Prerequisite: Physics 1E4, and registration in Mathematics 2M6, or 2P4 and 2Q4.
An introduction to electricity and magnetism covering electrostatics, electric currents, magnetism and electromagnetism, with applications in circuits and elementary devices.

3 lects., 1 lab. or tut.; one term
Prerequisite: Physics 1E4, and registration in Mathematics 2M6, or 2P4 and 2Q4.

ENGINEER 203 STRUCTURE AND PROPERTIES OF ENGINEERING MATERIALS

The relationships between the structure of solids and their properties are developed by study of specific mechanical, electrical, magnetic and chemical properties, along with the various levels of structural complexity exhibited by solid materials. Student independent study is aided by audio-visual materials and regular tutorial assistance.

Self-paced study; one term
Prerequisite: Completion of at least 12 units of Level I Chemistry, Mathematics or Physics. Not open to students who are registered in, or have completed, Materials 1A6, or 1A3 and 1B3.

ENGINEER 2P4 ENGINEERING MECHANICS 'A'

Principles of statics as applied to deformable solids. Stress and strain, elastic and inelastic behaviour of simple members under axial force, bending and torsion. Deflection of beams; statical indeterminacy.

3 lects., plus one unit comprising tutorials or lectures devoted to applications, at the discretion of the instructor; one term
Prerequisite: Mathematics 1H5 and Physics 1D3.

ENGINEER 2Q4 ENGINEERING MECHANICS 'B'

Kinetostatics and dynamics of particles and rigid bodies. Motion with respect to a rotating frame of reference. Work, energy and momentum principles. Free, damped and forced vibrations of single degree of freedom systems.

3 lects., plus one unit comprising tutorials or lectures devoted to applications, at the discretion of the instructor; one term
Prerequisite: Engineering 2P4.

ENGINEER 2R4 BASIC ENGINEERING MECHANICS

Statics: equivalent force systems, equilibrium of particles and rigid bodies. Deformable body mechanics: stress, strain, deformation of members. Dynamics: work, energy and momentum; dynamics of particles and planar motion of rigid bodies.

2 lects.; two terms
Prerequisite: Mathematics 1H5 and Physics 1D3.

ENGINEER 2S3 MECHANICS FOR ELECTRICAL AND COMPUTER ENGINEERING


3 lects.; one term
Prerequisite: Mathematics 1H5 and Physics 1D3 and registration in Computer or Electrical Engineering.

ENGINEER 2W4 ENGINEERING THERMODYNAMICS

An introduction to the principles of thermodynamics and their application to engineering.

3 lects., 1 tut.; one term
Prerequisite: Chemistry 1A7 and Mathematics 2M6, or 2P4 and 2Q4, which may be taken concurrently.

ENGINEER 2M3 ELECTRICAL CIRCUITS AND POWER

Fundamentals of electromechanical energy conversion. Motors and generators, transformers, single and polyphase power circuits, synchronous and induction machines, power systems, etc.

2 lects. and 1 lab. or tut.; one term
Prerequisite: Engineering 2M4.

ENGINEER 2N3 ELECTRONICS AND INSTRUMENTATION


2 lects., 1 tut.(2) or 1 lab.(3); one term
Prerequisite: Engineering 2M4.

ENGINEER 2P3 MECHANICAL BEHAVIOUR OF MATERIALS

Phenomenological treatment of elastic and plastic deformation, creep, fatigue and fracture; mechanics of engineering materials. Physical processes in metals, ceramics, polymers, concrete, wood and composite materials. Application to mechanical design of structures, welded components and materials selection decisions. Test methods, including non-destructive inspection.

3 lects.; one term
Prerequisite: Mathematics 2M6 or equivalent, and Engineering 2P4 or 2R4, or Physics 2C5 or 2G3.

ENGINEER 2Q3 ELECTRONIC PROPERTIES OF SOLIDS

A conceptual and quantitative study of how electronic properties of solids are based upon microscopic theory. Basic quantum mechanics used as a tool to explain electronic, magnetic and dielectric behaviour of metals, insulators and semiconductors.

3 lects.; one term
Prerequisite: Engineering Physics 2A3, or Engineering 2M4, or equivalent.

ENGINEER 3R3 PROPERTIES AND SELECTION OF ENGINEERING MATERIALS

Properties of engineering materials are related to production and fabrication methods and resultant microstructures. Materials processing, fabrication and selection in engineering design.

3 lects.; one term
Prerequisite: Engineering 203. Not open to students registered in a programme administered by the Department of Materials Science and Engineering.

Offered in alternate years.

ENGINEER 4A1 ENGINEERING AND MANAGEMENT REPORT

Report on a topic related to career development required of each student in Level IV of an Engineering and Management programme; guidelines and evaluation procedures provided by Programme Director.

Prerequisite: Registration in Level IV of an Engineering and Management programme.

ENGINEER 4B3 ENGINEERING ECONOMICS


2 lects., 1 tut.; one term
Prerequisite: Registration in Level IV of an Engineering programme. Not open to students registered in, or having credit for, Chemical Engineering 4N4. Not open to students registered in Engineering and Management programmes.

ENGINEER 4C3 REAL-TIME COMPUTER INTERFACING

Organization of real-time computers; instrumentation and interfacing for data acquisition and control; computer communication and local area networks; diagnostics for real-time operations.

2 lects., 1 lab.(3); one term
Prerequisite: Registration in the graduation session of a programme for which this is a required course. Not open to students with credit in Electrical Engineering 3H3 or Physics 4D6.

ENGINEER 4D3 METAL FORMING

Offered jointly by the Departments of Mechanical Engineering and Materials Science and Engineering. Engineering plasticity applied to rolling, forging, deep drawing, extrusion, wire drawing. The effect of solidification and mechanical working on the structure and properties of engineering alloys is exemplified by reviews of foundry practice, powder metallurgy, thermomechanical processing and non-destructive testing.

3 lects.; one term
Prerequisite: Engineering 203, and Mechanical Engineering 3A3 or Engineering 3F3.

ENGINEER 4U3 WATER AND WASTEWATER TREATMENT PROCESS DESIGN

Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. The process capabilities, hardware and design equations, of the physical, chemical and biological processes used to improve water. Emphasis on processes such as biochemical oxidation, clarification, coagulation, sludge dewatering and disinfection. The design by the class of a complete water quality control plant.

2 lects., 1 tut.(2); one term
Prerequisite: Chemical Engineering 204, or Civil Engineering 304, or Mechanical Engineering 304, and registration in Level IV of a B.Eng. programme or Level V of a B.Eng.Mgt. programme.

ENGINEER 4X3 CONCEPTS IN BIOMEDICAL ENGINEERING

Engineering and physical science approach to human physiological systems; cardiovascular system, with specific organ circulations, respiratory systems, overall integration and control.

3 lects.; one term
Prerequisite: Completion of at least 30 units beyond Level I of an Honours or Major programme in Science or Engineering.

ENGINEER 5A1 ENGINEERING AND MANAGEMENT REPORT

Report on a topic related to career development required of each student in the Engineering and Management programme; guidelines and evaluation procedures provided by Programme Director.

Prerequisite: Registration in Level V of an Engineering and Management Programme; or permission of the Programme Director.

Engineering Physics

Faculty of January 15, 1986

D.A. Thompson/Chairman

Professors

Alfred J. Alcock/B.A.Sc. (Toronto), Ph.D. (Oxford)/part-time
Edward A. Ballik/B.Sc. (Queen's), D.Phil. (Oxford), P.Eng.
H. Douglas Barber/B.Sc., M.Sc. (Saskatchewan), Ph.D. (London), P.Eng/part-time
George T. Bereznai/B.Eng. (Adelaide), M.Eng., Ph.D. (McMaster)/part-time
John A. Davies/B.A., M.A., Ph.D. (Toronto)/part-time
Brian K. Garside/B.A., M.A., Ph.D. (Oxford), P.Eng./part-time
David P. Jackson/B.Sc., M.A., M.Sc., Ph.D. (McMaster)
John S. Kirkaldy/B.Sc., M.Sc., Ph.D. (McGill)
John P. Martin/B.Sc. (Budapest), Ph.D. (Western), P.Eng./part-time
David A. Thompson/B.Sc., Ph.D. (Reading)
Oleh A. Trojan/B.Sc., M.A., Ph.D. (Toronto), P.Eng./part-time

Associate Professors
Alexander A. Bereznai/B.Sc., M.Sc., Ph.D. (Leningrad State)
Jen-Shih Chang/B.Eng., B.Eng., M.Eng. (Musashi Int. of Tech.), Ph.D. (York)
John Reid/B.A. (Oxford), M.Sc., Ph.D. (McMaster)

Assistant Professors
E. Jessop/B.Sc. (Waterloo), M.A., Ph.D. (Harvard)
Adrian Kilai/B.Eng. (McMaster), Ph.D. (Cornell)

CURRICULUM 1986-88

ENG PHYS 2A3 ELECTRICAL SCIENCE I
An introduction to electricity and magnetism for Engineering Physics students.
2 lects., 1 lab or tut (3); one term
Prerequisite: Physics 1E4 and registration in Mathematics 2P4.

ENG PHYS 2E4 SCIENTIFIC ELECTRICAL SCIENCE II
Analysis of ac circuits and ac power. Maxwell's equations and electromagnetic theory. Introductory modern physics.
3 lects., 1 lab or tut (3); one term
Prerequisite: Engineering Physics 2A3.

ENG PHYS 3F3 FUNDAMENTALS OF SOLID STATE ELECTRONICS
Electrons in solids, with emphasis on semiconductors, carrier drift and diffusion; doped semiconductors; non-equilibrium carrier effects; optical properties of semiconductors.
2 lects., 1 lab or tut (3); one term
Prerequisite: Engineering Physics 2A3 and 2E4, or equivalent.

ENG PHYS 3X3 ENGINEERING APPLICATIONS IN MEDICINE AND SURGERY
Engineering science principles for: analysis of physiological phenomena and the plasma state; reaction analysis; lasers and electro-optics; solid state electronics; nuclear engineering; biology; biomedical engineering.
3 lects.; one term
Prerequisite: Completion of a minimum of 30 units beyond Level I in any Engineering or Science programme.

ENG PHYS 4A4 THESIS OR DESIGN PROJECT
Thesis or design projects offered by any department in the Faculty of Engineering will be considered.
2 labs (3); two terms
Prerequisite: Permission of the Department.

ENG PHYS 4C2 SPECIAL TOPICS IN ENGINEERING PHYSICS
Selected topics in engineering physics. Oral and written presentations by students on current topics in engineering.
1 lect.; two terms
Prerequisite: Completion of 60 units beyond Level I in any Engineering programme.

ENG PHYS 4D3 NUCLEAR REACTOR ANALYSIS
Release and utilization of energy from nuclear procce; steady state and dynamic systems of chain reactions; neutron distributions and nuclear fuel cycle analysis; systems analysis of various nuclear energy concepts.
3 lects. (including field trip); one term
Prerequisite: Engineering Physics 3D3.

ENG PHYS 4E3 SOLID STATE DEVICES I
Electronic properties of semiconductors, contact phenomena; p-n junctions; Schottky diodes, photodiodes, bipolar transistors, field effect transistors.
2 lects. 1 tut.; one term
Prerequisite: Engineering Physics 3F3 or Engineering 3Q3.

ENG PHYS 4F3 SOLID STATE DEVICES II
Physical principles underlying operation of selected devices, and their characteristics; optical devices, avalanche devices, Gunn Effect devices, Read diodes, charge coupled devices, integrated circuits, Josephson junctions.
2 lects., 1 tut.; one term
Prerequisite: Engineering Physics 4E3

ENG PHYS 4G3 OPTICAL INSTRUMENTATION
Design of optical equipment (including reflective and refractive optical systems, interferometers and spectrometers). Optical sources and power measurements. Detectors (photographic, photoelectric, etc.), including use in the infrared and ultraviolet, and at low intensity levels.
2 lects., 1 tut.; first term
Prerequisite: Physics 3N3, or Engineering Physics 3E3.

ENG PHYS 4H6 SPECIAL STUDIES IN ENGINEERING PHYSICS
A special programme of studies to be arranged by mutual consent of the professor, departmental chairman, and the student. A student elects to work with a professor carrying out literature surveys, experiments, theoretical investigations, etc. A written report is required.
2 tuts., 1 lab (3); two terms
Prerequisite: Permission of the Department.

ENG PHYS 4K3 OPTICAL COMMUNICATIONS SYSTEMS
2 lects., 1 tut.; second term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Engineering or Physics programme.

ENG PHYS 4L3 NUCLEAR REACTOR THERMALHYDRAULICS I
Introduction to two phase flow and nuclear reactor thermohydraulics systems. Condensation and boiling phenomena and heat transfer mechanisms. Two phase flow apparatus and diagnostics techniques. Modelling of two phase flow by homogeneous and separated flow models.
2 lects., 1 lab.; one term
Prerequisite: Chemical Engineering 204, or Mechanical Engineering 3O4.

ENG PHYS 4N3 PRINCIPLES OF FUSION ENERGY
Fusion phenomena and the plasma state; reaction analysis; Coulomb scattering; field effect trajectories; magnetic field configurations; particle transport, energy viability; burn cycles; inertial confinement; muon catalyzed fusion.
3 lects.; one term
Prerequisite: Engineering Physics 3D3.

ENG PHYS 4P4 LASERS AND ELECTRO-OPTICS
2 lects.; two terms
Prerequisite: Physics 3N3, or Engineering Physics 3E3.

ENG PHYS 4U4 MODERN AND APPLIED PHYSICS LABORATORY
Selected advanced experiments in two areas of applied physics, chosen from among: lasers and electro-optics; solid state electronics; nuclear engineering; biomedical engineering.
2 labs (3); two terms
Prerequisite: Registration in Level IV Engineering Physics or Engineering Physics and Management.

ENG PHYS 4W3 ACQUISITION AND ANALYSIS OF EXPERIMENTAL INFORMATION
A system approach to experimental measurement, in which topics such as simulation, modelling, estimation, signal-processing and enhancement, data reduction techniques, and modern sensing methods are examined.
1 lect., 1 tut.; two terms
Prerequisite: Mathematics 3C6, or 3C3 and 3O3; or permission of the Department.

ENG PHYS 4Y3 ENGINEERING PHYSIOLOGY
Quantitative physiology, involving bioengineering analysis of macrosystems. Examination of cardiovascular, respiratory, neurological and digestive systems.
3 lects.; one term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Science or Engineering programme.

PHYSICS 3B6 ELECTRONICS
Network theory and filters, semiconductor devices, amplifier circuits, D.C. power supplies, integrated circuits, operational amplifiers and digital circuits.
2 lects.; both terms. 1 lab (2); two terms
Prerequisite: Engineering Physics 2A3 and 2E4, or Physics 2B6.
ENGLISH

Physics 46e: Digital Logic and Computer Systems
The design and use of digital logic systems. The applications of digital systems to data acquisition and control techniques. A project-oriented laboratory will involve both hardware and software.
2 lec., 1 lab.; two terms
Prerequisite: Engineering Physics 2A3 and 2E4, or Physics 2B6.

For Graduate courses, see also the Calendar of the School of Graduate Studies.

English

Faculty as of January 15, 1986
L.A. Braswell/Chairman

Professors Emeriti
George C. Haddow/M.A. (Toronto and Oxford)
Barnes A.W. Jackson/B.A. (McMaster), D.Phil. (Oxford)
Dorothy S. Murphy/B.A., M.A. (Toronto and Oxford)
Warwick J.B. Owen/M.A. (New Zealand and Oxford), Ph.D. (Wales), F.R.S.C.

Professors
Maqbool Aitz/B.A., M.A. (Punjab), D.Phil. (Oxford)
Aliyin Berland/M.A. (Chicago), M.Litt. (Cantab.)
David Blewett/B.A., M.A. (Manitoba), Ph.D. (Toronto)
Laurel A. Braswell/B.A., M.A. (Arkansas), M.A., Ph.D. (Toronto)
Andrew W. Brink/B.A., M.A. (Toronto), Ph.D. (London)
Thomas H. Cain/B.A., M.A. (Toronto), Ph.D. (Wisconsin)
Douglas J.M. Duncan/B.A. (Oxford), Ph.D. (Aberdeen)
H. John Ferns/B.A., M.A. (Oxford), Ph.D. (Western)
Maureen P. Halsall/B.A. (McMaster), M.A., Ph.D. (Harvard)
Antony D. Hammond/B.A. (New Zealand), M.A., Ph.D. (Auckland)
Linda A.M. Hutcheon/B.A. (Toronto), M.A. (Cornell), Ph.D. (Toronto)
Brian John/M.A., Dipl.Ed., Ph.D. (University College of North Wales)
James King/B.A. (Toronto), M.A., Ph.D. (Princeton)
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto)
Richard E. Morton/B.A. (Wales), B.Litt. (Oxford)
Graham Petrie/M.A. (St. Andrews), B.Litt. (Oxford)
W. Graham Roebuck/B.A. (Durham), M.A. (McMaster), Ph.D. (London)
F. Norman Shrive/C.D., B.A. (McMaster), M.A. (Toronto), Ph.D. (Queen's)
Chauncey D. Wood/B.A. (Union College), M.A., Ph.D. (Princeton)

Associate Professors
Carl P.A. Ballstad/B.A., M.A. (Western), Ph.D. (London)
James D. Brasch/B.S. (State University of New York), M.A. (Colgate), Ph.D. (Wisconsin)
Anthony S. Brennan/B.A. (Oxford), M.A., Ph.D. (McMaster)
James Dale/B.A., M.A., Ph.D. (Cambridge)
Norman Rosenblund/B.A. (Western), M.A. (McMaster), Ph.D. (Pittsburgh)
Joseph T. Sigan/B.A. (King's College, Wilkes-Barre), M.A., Ph.D. (Pennsylvania)
Ronald W. Vince/B.A. (McMaster), M.A. (Rice), Ph.D. (Northwestern)

Assistant Professors
Donal D. Goldschmidt/B.A. (Queen's), M.A., Ph.D. (McMaster)
Roger L. Hyman/B.A. (York), M.A., Ph.D. (Toronto)
George E. Purnell/B.A. (Sir George Williams), M.A. (Alberta)

Curriculum 1986-1988

Department Notes:
1. Students who do not meet the prerequisites for courses should consult the Department, since in some cases exceptions may be made.
2. Level III and IV courses, unless specifically restricted, are open as electives to Level II students with the stated prerequisites.

3. Courses open as electives to qualified students registered in any University programme.

English 2C3 Contemporary Canadian Fiction

English 2D3 Biblical Traditions in Literature

English 2F3 Studies in American Literature

English 2M3 Practical Criticism

English 2R3 Topics in Restoration and 18th-Century Literature

English 3A3 Techniques of Expository Writing

English 3B3 Psychoanalytic Approaches to Literary Texts

English 3E3 Shakespeare: Selected Plays

English 3F3 Techniques of Creative Writing

English 3GG Topics in 19th-Century Literature

English 3H3 Topics in Poetry

English 3I3 Topics in Fiction I

English 3JJ3 Topics in Fiction II

English 3K3 Topics in Critical Approaches

English 3P3 Modern Drama in English

English 3PP3 Topics in World Literature in English

English 3X3 Topics in 20th-Century Literature

English 3XX3 Topics in 20th-Century Literature II

English 3Z3 Contemporary Canadian Poetry

English 4A3 The Classics and English Literature

English 4D3 Topics in Medieval and Renaissance Literature

English 1AB6 Literature in English: Major Authors
A chronological study of English literature from medieval to modern times. In this course much attention is given to the development of critical skills in reading and writing.
2 lec., 1 tut.; two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 1B6 or 1C6.

English 1B6 Literature in English: Major Forms
A study of literature according to genre (such as novel, tragedy, lyric) using predominantly modern examples. In this course much attention is given to the development of critical skills in reading and writing.
2 lec., 1 tut.; two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 1A6 or 1C6.

English 2D2 English Drama
English drama from the medieval period to the close of the 18th century (excluding Shakespeare).
3 lec.; two terms
Prerequisite: Registration in a programme in English or Dramatic Arts; or permission of the English Department.
Same as Dramatic Arts 2B6.

English 2C3 Contemporary Canadian Fiction
A study of the themes and structure of the contemporary Canadian novel, usually with emphasis upon the relationship of Canada's cultural patterns and its literature.
3 lec.; one term
Prerequisite: One of English 1A6, 1B6 or 1C6; or permission of the Department.

English 2D3 Biblical Traditions in Literature
A study of the influence of the Bible on Western literature, especially English. Approaches may include the examination of symbolism, imagery, typology; doctrinal themes and narrative structures.
3 lec.; one term
Prerequisite: Open to students in Level I and above, except to students with credit for English 2F3.
Same as Comparative Literature 2D3.

English 2E6 English Literature
A study of major works with enduring value and significance in the tradition of literature in English. In this course, much attention is given to the development of critical skills in reading and writing.
3 lec.; two terms
Prerequisite: Open to students in Level II and above. Not available to students registered in the Faculty of Humanities or to students with credit in or registered in English 1A6, 1B6 or 1C6.

English 2F3 Studies in American Literature
A study of some of the most important writers who developed American literature as a distinctive mode of writing in English.
3 lec.; one term
Prerequisite: One of English 1A6, 1B6 or 1C6; or permission of the Department.
ENGLISH 4X3 INDEPENDENT STUDY
In consultation with members of the English Department, students will prepare an essay on an approved topic designed to bring together aspects of their work over the previous years.
Prerequisite: Registration in Level IV of an Honours programme in English.
For Graduate Courses see Calendar of School of Graduate Studies.

Film
(See Dramatic Arts 2X6, 3R6, 3Y3.) Film courses are not accepted for R-group credit for students in Honours or B.A. programmes in English.

French
(See Romance Languages, French)

Geography
Faculty as of January 15, 1986
S.B. McCann/Chairman
S.M. Taylor/Associate Chairman
Professor Emeritus
Lloyd G. Reeds/M.A., Ph.D (Toronto)

Professors
Brian T. Bunting/M.A. (Sheffield), Ph.D. (London)
Andrew F. Burghardt/A.B. (Harvard), M.A., Ph.D. (Wisconsin)
John A. Davies/B.A. (Bristol), M.Sc. (McGill), Ph.D. (London)
M.J. Dean/B.A. (Birmingham), M.Phil. (London), M.A., Ph.D., (Pennsylvania)
Derek C. Ford/M.A., D.Phil. (Oxford)
R. Louis Gentilcore/B.A. (Toronto), Ph.D. (Maryland)
F.L. Hall/A.B. (Amherst), M.Sc. (M.I.T.), Ph.D. (Chicago)/Associate Professor of Civil Engineering and Engineering Mechanics
Leslie J. King/M.A. (New Zealand), Ph.D. (Iowa)
S. Brian McCann/B.Sc. (Wales) Ph.D. (Cambridge)
Yorgos Y. Papageorgiou/Dipl. Arch. Eng. (National Technical, Athens), M.C.P., Ph.D. (Ohio State)
Wayne R. Rouse/B.Sc. (McMaster), M.Sc., Ph.D. (McGill)
S. Martin Taylor/B.A. (Bristol), M.A., Ph.D. (British Columbia)
Ming-ko Woo/M.A. (Hong Kong), Ph.D. (British Columbia)

Associate Professors
John J. Drake/M.A. (Oxford), M.Sc., Ph.D. (McMaster)
Ko-Lee Liew/B.S. (National Taiwan), M.A. (Kansas State), Ph.D. (Clark)

Assistant Professors
William P. Anderson/M.A., Ph.D. (Boston)
G.M. MacDonald/B.A. (Berkeley), M.Sc. (Calgary), Ph.D. (Toronto)

Lecturer
Vera Chouinard/B.A. (Western), M.A. (Toronto)

Associate Member
Norman F. White/M.D.C.M. (McGill), D.Psych. (McGill), F.R.C.P.(C) (Royal College)

Instructional Assistants
Walter Peace/M.A. (McMaster)
Michael Robinson/M.A. (Brock)

CURRICULUM 1986-88
Department Notes:
1. * Indicates a Science course.

2. Students are advised that not all courses will be offered in every year and should consult the Handbook for Undergraduate Geographers.

GEOG 1A6 PHYSICAL PROCESSES OF LANDFORMS AND ATMOSPHERES
The physical bases of geomorphology and climatology emphasizing processes on Earth.
2 lects., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open.

GEOG 1B6 LOCATION, LAND USE AND CONFLICT
Urban development, land use and location theory: application to contemporary North American and Third World cities.
2 lects., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open.

GEOG 2A3 LOCATION THEORY
Theories of location of economic activities, including agriculture, industry and settlement.
3 lects.; one term
Prerequisite: Geography 1A6 or 1B6, or permission of the instructor.

GEOG 2B3 URBAN GEOGRAPHY
Concepts and methods of economic geographical analysis applied to problems at the inter- and intra-urban levels. Topics include urbanization, city systems and structure and such issues as pollution, congestion and prejudice.
3 lects.; one term
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 2D3 THE GEOGRAPHY OF SETTLEMENT
An examination of the geographical development of settlement, with particular reference to Old World origins and the beginnings of European settlement in North America.
2 lects., 1 lab.(2); one term
Prerequisite: Open.

GEOG 2E3 CANADA
The physical and economic geography of Canada, emphasizing problems of regional development.
3 lects.; one term
Prerequisite: Open. Not available to students who have received credit for Geography 2H3.

GEOG 2F3* BOUNDARY LAYER CLIMATE
The energy and water balance at the earth's boundary layer as it applies to natural and man-modified landscapes.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6, or permission of the instructor.

GEOG 2K3* THE GEOGRAPHY OF THE SOLAR SYSTEM
The physical bases of geomorphology and climatology emphasizing processes on Earth.
2 lects., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Geography 1A6, or permission of the instructor.

GEOG 2L3* GEOGRAPHIC INFORMATION PROCESSING
An introduction to the use of the microcomputer to acquire, manipulate, analyse, illustrate and report geographical data.
Prerequisite: Registration in a Geography programme with at least a C- in Geography 1A6 or 1B6 and C- in six other units.

GEOG 2L6* STATISTICAL ANALYSIS IN GEOGRAPHY
The use of geographical data in hypothesis testing and parameter estimation. Probability, distributions, significance tests, simple linear regression and error analysis.
Prerequisite: Geography 2L3 and registration in a Geography programme, or permission of the Department. Not available to students with credit in Geography 2L6.

GEOG 2P3 THE UNITED STATES OF AMERICA
The physical and economic geography of the United States.
3 lects.; one term
Prerequisite: Open.

GEOG 2R3 BEHAVIOURAL GEOGRAPHY
An application of theories of individual choice and behaviour to problems of urban geography.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 2T3* FLUVIAL GEOMORPHOLOGY
Analysis of sediment transport by moving water and of the resulting erosional and depositional features.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6, or one of Geography 1A3, 1C3 or 1A6, or permission of the instructor.

GEOG 2W3* HYDROLOGY IN CANADA
A discussion of fresh water resources, including both surface and groundwater.
3 lects.; one term
Prerequisite: Geography 1A6, or one of Geography 1A3, 1C3 or 1A6.
GEOGRAPHY

GEOG 3Y3 URBAN AND REGIONAL DEVELOPMENT
Recent trends in urban and regional development, emphasizing issues of change in the spatial structure of central cities, suburbs and regions.
2 lects.; 1 tut.(1); one term.
Prerequisite: Geography 1B6, or permission of instructor.

GEOG 3B3 EUROPE
The physical, economic, social, and political geography of Europe, past and present.
3 lects.; one term.
Prerequisite: Open.

GEOG 3D3 HISTORICAL GEOGRAPHY OF CANADA
Major themes in the historical geography of Canada, with particular reference to settlement changes in the 19th century.
3 lects.; one term.
Prerequisite: One of Geography 2D3, 2E3, 2H3, or permission of the instructor.

GEOG 3E3 FIELD STUDY IN PHYSICAL GEOGRAPHY
Field study design, data collection methods and data processing. Offered in the summer following Level II. Details are announced in January.
Prerequisite: Geography 2L13 or 2L6, and permission of the Department.

GEOG 3E5 FIELD STUDY IN HUMAN GEOGRAPHY
Introduction to field study design, data collection methods and data processing. Offered in summer, following Level II. Details announced in January.
Prerequisite: Geography 2L3 or 2L6, and permission of the Department.

GEOG 3F3 RADIATION CLIMATOLOGY
The physical basis of large scale climate and mechanisms of climatic change.
2 lects., 1 lab.(2); one term.
Prerequisite: Geography 2F3, or registration in a programme in the Faculty of Science.

GEOG 3G3 POPULATION GROWTH AND DISTRIBUTION
Facts, theories, and major issues about the growth and distribution of human population.
3 lects.; one term.
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 3I3 PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY
The geology and surface morphology of planets and moons of the Solar System, with particular reference to the rocky bodies. Comparative studies are emphasized.
3 lects.; one term.
Prerequisite: Geography 1A6, or one of Geography 1A3, 1C3, or 1A6, and completion of at least 12 units of Level II (or higher) Science courses; or permission of the instructor.

GEOG 3J3 SOILS AND RURAL LAND USE IN CANADA
The development of the major soil forms in Canada, their classification, capability and conservation. The application of soils studies to land use planning.
2 lects.; 1 lab.(2); one term.
Prerequisite: Open.

GEOG 3L3 MULTIVARIATE ANALYSIS IN GEOGRAPHY
Analysis of the variance of geographical data into those parts contributed by various factors and error components. Emphasis is on the integration of substantive, mathematical and statistical knowledge.
4 hrs. (lects. and lab.); one term.
Prerequisite: Geography 2L3 or 2L6, and Mathematics 1A6 or 1M3, or permission of the instructor.

GEOG 3M3 GLACIAL AND PERIGLACIAL GEOMORPHOLOGY
The nature and development of glacial and periglacial landforms.
2 lects., 1 lab.(2); one term.
Prerequisite: Geography 2T3, or permission of the instructor.

GEOG 30S EXPLANATION IN GEOGRAPHY
The application of the scientific model of explanation in geographic research with emphasis on the principles of research design.
2 lects., 1 sem.(2); one term.
Prerequisite: Geography 2L3 or 2L6.

GEOG 3P3 BIOGEOGRAPHY: DISTRIBUTION OF PLANTS AND ANIMALS
An introduction to the concepts of biogeography. Emphasis is placed on the physical, biological and historical factors which control the spatial and temporal distribution of plants and animals.
3 lects.; one term.
Prerequisite: Geography 1A6, or Biology 1A6, or permission of the instructor.

GEOG 3Q3 INDUSTRIAL GEOGRAPHY
Principles underlying the locational decisions of manufacturing firms and the growth and decline of industrial regions with examples from the Hamilton area.
2 lects., 1 lab.; one term.
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 3R3 GEOGRAPHY OF A SELECTED WORLD REGION
The study of an area outside North America and Europe which will include topics in physical and human geography.
3 lects.; one term.
Prerequisite: Open.

Geography 3R3 may be repeated, if on a different topic, with permission of the Department.

GEOG 3T3 GEOGRAPHY OF PLANNING
A systematic approach to the study of the planning process, with emphasis on analysis of the social, economic, and political bases of planning.
2 lects., 1 lab.(2); one term.
Prerequisite: One of Geography 2A3, 2B3, 2H3 or 2Y3, or permission of the instructor.

GEOG 3V3 REMOTE SENSING
The physical principles of remote sensing, with emphasis on photographic systems. Visual interpretation procedures and their application in geographical studies.
2 lects., 1 lab.(2); one term.
Prerequisite: Level I Geography or one of Geography 1A3, 1C3, 1A6; or permission of the instructor.

GEOG 3W3 HYDROLOGY
Principles of hydrology and their applications in physical geography.
2 lects., 1 lab.(2); one term.
Prerequisite: Geography 1A6, or permission of the instructor.

GEOG 3X3 URBAN MODELS AND POLICY ANALYSIS I
A survey of modern literature on urban spatial structure. Topics include morphology, adjustments to change, and such phenomena as sudden urban growth and the decline of central cities.
3 lects.; one term.
Prerequisite: Geography 2B3, 2L3 or 2L6, or permission of the instructor.

GEOG 3Z3 POLITICAL GEOGRAPHY
An introduction to the concepts and methods of political geography, with particular emphasis on the state and its administrative subdivisions.
3 lects.; one term.
Prerequisite: Registration in a Level III or IV programme, or permission of the instructor.

GEOG 4A3 KARST GEOMORPHOLOGY AND HYDROGEOLOGY
Kart rocks, equilibrium and kinetics of their aqueous dissolution; cavern genesis and porosity in aquifers; speleothem chronology; features of surface landforms; practical applications.
3 lects.; one term.
Prerequisite: Geography 2T3, or permission of the instructor.

GEOG 4C6 RESEARCH PAPER
The student will select a study in geography and have it approved by a Faculty Supervisor, normally prior to May 1. The final report of the project is due by April 1 of the following year.
1 seminar(2) alternate weeks; two terms.
Prerequisite: Geography 3O3, and registration in Level IV of an Honours programme in Geography.

GEOG 4D3 COASTAL GEOMORPHOLOGY
The dynamics and morphologies of the shore zone.
2 lects.; 1 lab.; one term.
Prerequisite: Geography 3M3, or permission of the instructor.

GEOG 4E3 FIELD COURSE
Detailed study of a particular aspect of physical geography in the field. Held in the two weeks prior to fall registration; report to be submitted before the end of first term. Various topics and locations: details announced in March.
Prerequisite: Permission of the instructor, which is given only if the appropriate Level II and Level III courses have been passed.

GEOG 4F3 THEORIES OF URBAN AND REGIONAL DEVELOPMENT
Theoretical perspectives on the processes underlying urban and regional development.
3 lects.; one term.
Prerequisite: Registration in a Level IV Geography programme, or permission of the instructor.

GEOG 4G3 CONTEMPORARY PROBLEMS IN PHYSICAL GEOGRAPHY
Investigation of current research problems in physical geography, emphasizing the integration of the subfields of the discipline.
2 seminars(2); one term.
Prerequisite: Any three of Geography 3F3, 3K3, 3M3, 3P3, 3V3, 3W3.

GEOG 4H3 LAND USE AND TRANSPORTATION
A review of quantitative models used to predict transportation flows and land use patterns in urban areas; including gravity type models, the Lowry model and discrete choice models.
3 lects.; one term.
Prerequisite: One of Geography 3N3, 2L3 or 2L6, or permission of the instructor.

GEOG 4I3 URBAN BEHAVIOURAL GEOGRAPHY
Theoretical and empirical approaches to urban cognition and urban spatial behaviour.
2 lects.; 1 lab.(2); one term.
Prerequisite: Geography 2R3 and 3O3, or permission of the instructor.

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GEOG 4K3+ PEDOLOGY AND SOIL MICROMORPHOLOGY
Studies of soil genesis and soil micromorphology, to include field survey and sampling procedures, and the study of soils in thin section. 
3 lects.; one term
Prerequisite: Geography 2K2 or 3K3, or permission of the instructor.

GEOG 4N3+ PRINCIPLES OF GEOGRAPHICAL INFORMATION SYSTEMS
Methods of acquiring, relating, managing and displaying large geographical data bases. Computer cartography.
2 lects.; 1 lab(2); one term
Prerequisite: 2L3, and registration in a Geography Honours programme.

GEOG 4P3+ ADVANCED BIOGEOGRAPHY
Selected topics and methods in biogeographical research. Emphasis is placed on the collection and quantitative analysis of modern and fossil phytogeographical data.
2 lects., 1 lab(2); one term
Prerequisite: Geography 3P3, or Biology 2F3, or permission of the instructor.
Offered 1986/87 and in alternate years.

GEOG 4Q3+ CLIMATES IN HIGH LATITUDES
Aspects of the heat and water balance climateology of terrestrial ecosystems in northern areas, with emphasis on the Canadian sub-arctic and tundra.
3 lects.; one term
Prerequisite: Geography 3F3, or permission of the instructor.

GEOG 4S3 SELECTED PROBLEMS IN URBAN PLANNING
An examination of planning as a public decision process, with emphasis on land use conflicts and their resolution in the Hamilton region.
2 seminars(2); one term
Prerequisite: Geography 3T3.

GEOG 4W3+ HYDROLOGIC MODELLING
Analyses and extension of hydrologic data, with a survey of deterministic and stochastic models in hydrology.
2 lects., 1 lab(2); one term
Prerequisite: Geography 3W3, or permission of the instructor.

GEOG 4X3 URBAN MODELS AND POLICY ANALYSIS II
A survey of modern literature on urban issues. Topics include welfare criteria, externalities, public goods, fiscal policies.
3 lects.; one term
Prerequisite: Geography 3X3, or permission of the instructor.

GEOG 4Z3 THE URBAN LANDSCAPE
The role of culture in the Canadian urban community viewed through the study of the built environment in the Hamilton area.
2 seminars (2); one term
Prerequisite: Registration in any Level IV Honours programme, or permission of the instructor.

For Graduate Courses see Calendar of School of Graduate Studies.

Geology
Faculty as of January 15, 1986
R.H. McNutt/Chairman

Professors
Brian J. Burley/Sc. (London), M.Sc. (British Columbia), Ph.D. (McGill)
Paul M. Clifford/Sc. (Southampton), Ph.D. (London)
James H. Crocket/Sc. (New Brunswick, Oxford), Ph.D. (M.I.T.)
H. Douglas Grundy/Sc., Ph.D. (Manchester)

Robert H. McNutt/B.Sc. (New Brunswick), Ph.D. (M.I.T.)
Michael J. Risk/B.Sc. (Toronto), M.Sc. (Western), Ph.D. (Southern California, L.A.)
Henry P. Schwarz/B.A. (Chicago), M.S., Ph.D. (California Institute of Technology), F.R.S.C.
Denis M. Shaw/M.A. (Cambridge), Ph.D. (Chicago), F.R.S.C.
Gerd E. Westermann/B.Sc. (Braunschweig), Dipl. Geol. (Tubingen)

Assistant Professors
Alan P. Dickin/M.A. (Cambridge), D. Phil. (Oxford)
Christopher J. Hale/B.Sc. (Toronto), M.A. (California, S.B.), Ph.D. (Toronto)

CURRICULUM 1986-88
Department Notes:
Enrolment is limited in all Geology courses at Level II and above.

GEOLOGY 1A3 SURVEY OF GEOLOGICAL SCIENCES
An introduction to the physical and chemical processes which are operative within, and upon the earth. Laboratory work includes the study of minerals, rocks, fossils and geological maps.
2 lects., 1 lab(3); one term
Prerequisite: Open

GEOLOGY 1C3 EARTH PROCESSES
An introduction to geology through study of dynamic geological processes, particularly global plate tectonics.
2 lects., 1 lab(3); one term
Prerequisite: Open

GEOLOGY 2B4 OPTICAL CRYSTALLOGRAPHY AND MINERALOGY
Elementary optical theory with applications to, and descriptive study of, the common rock-forming minerals. The latter part of Geology 2B6.
2 lects., 1 lab(2); one term
Prerequisite: Open

GEOLOGY 2B6 OPTICAL CRYSTALLOGRAPHY AND MINERALOGY
Elementary crystallography prerequisite to optical crystallography. Elementary optical theory with applications to, and descriptive study of, the common rock-forming minerals.
2 lects., 1 lab(2); two terms
Prerequisite: Registration in a Geology programme, or permission of the Department.

GEOLOGY 2D6 EARTH HISTORY
The principles of continental evolution, as illustrated by North America and the classical geological areas. Field and laboratory demonstrations in earth history and geological maps.
2 lects., 1 lab(3); two terms
Prerequisite: One of Geology 1A3, 1C3, 1A6; or permission of the instructor.

GEOLOGY 2D6 STRUCTURAL GEOLOGY
A study of inherent and imposed structures in rocks, their inter-relationships, and their modes and environments of formation.
2 lects., 1 lab(3); two terms
Prerequisite: One of Geology 1A3, 1C3 or 1A6

GEOLOGY 2I3 INTRODUCTION TO GEOPHYSICS
Introduction to the quantitative study of the earth. Origin of the earth, solar system, gravitation, geomagnetic field, terrestrial heat flow and elements of seismology.
3 lects.; one term
Prerequisite: One of Physics 1A6, 1A7, 1B6, 1B7, 1C6 or 1C7, and registration in a Geology programme; or permission of the instructor.

GEOLOGY 2L3 APPLIED GEOPHYSICS A
Principles and uses of electrical, magnetic, electromagnetic and radioactivity-based techniques in exploration geophysics; borehole logging methods.
2 lects., 1 lab(2); one term
Prerequisite: Geology 2I3; or permission of the instructor.

GEOLOGY 3C5 PETROGRAPHY
A sequel to Geology 2B6. An introductory course in the petrology of igneous, sedimentary, and metamorphic rocks. Laboratory studies on rock suites.
2 lects., 1 lab(2); two terms
Prerequisite: Geology 2B6.
GEOLOGY

GEOLOGY 3D6 INTRODUCTORY PALAEOONTOLOGY
Principles of palaeontology; the organization and evolution of life in the past, with emphasis on invertebrate fossils.
2 lects., 1 lab (3); two terms
Prerequisite: One of Geology 1A3, 1C3 or 1A6, and one of Biology 2E3 or 1A6, or permission of the instructor.

GEOLOGY 3E2 FIELD CAMP
A field camp of about two weeks duration held immediately after the April-May Examinations. Normally taken immediately following Level II by students in all Geology and combined programmes, with the exception of Honours Biology and Geology.
Prerequisite: Permission of the Department.

GEOLOGY 3G4 CRYSTALLOGRAPHY AND MINERALOGY
Topics in X-ray crystallography; an introduction to crystal chemistry and mineralogy; laboratory studies in the physical and chemical properties of minerals.
3 lects., 1 lab (3); one term
Prerequisite: Geology 2B6

GEOLOGY 3H3 GEOLOGICAL DATA PROCESSING
Nature of geological data; techniques of graphical presentation and data analysis, including use of microcomputers.
3 lects.; one term
Prerequisite: Computer Science 1B3, which may be taken concurrently, and registration in a Geology programme; or permission of the instructor. Not open to students with credit in Geology 2H3.

GEOLOGY 3I3 PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY
The geology and surface morphology of planets and moons of the Solar System with particular reference to the rocky bodies. Comparative studies are emphasized.
3 lects.; one term
Prerequisite: Geography 1A6, or one of Geology 1A3, 1C3 or 1A6, and completion of at least 12 units of Level II (or higher) Science courses.
Same as Geography 3I3.

GEOLOGY 3J3 PHYSICAL PROCESSES IN GEOLGY
An elementary treatment of physics of continuous media. Stress and strain analysis, sedimentary, tectonic, glacial, marine, weathering, and possible applications to geologic problems.
3 lects.; one term
Prerequisite: Geology 2I3; or permission of the instructor.

GEOLOGY 4B3 IGNEOUS PETROLOGY
Advanced theory of igneous rocks.
3 lects.; one term
Prerequisite: Geology 3C6. Materials 3D3; or permission of the instructor.

GEOLOGY 4BB3 METAMORPHIC PETROLOGY
Advanced theory and practice on metamorphic rocks.
2 lects., one lab (3); one term
Prerequisite: Geology 3C6, Chemistry 2P4 or 2P6; or permission of the instructor.

GEOLOGY 4D3 ADVANCED PALAEOONTOLOGY I
Surveys of selected living and fossil marine communities; marine habitats.
2 lects., 1 seminar; one term
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

GEOLOGY 4E6 METALLIC MINERAL DEPOSITS
Geology, isotopic geochemistry, and mineralogy of ore deposits; ore genesis. Two laboratories.
2 lects., 1 lab (3); two terms
Prerequisite: Registration in Level IV of a Geology programme; or permission of the instructor.

GEOLOGY 4F3 ADVANCED PALAEOONTOLOGY II
Functional morphology (autecology) of selected fossil invertebrates. Lectures and seminars; one term.
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

GEOLOGY 4G6 GEOLOGY THESSIS
Prerequisite: Open to students in Level IV of a Geology programme subject to the approval of the Chairman of the Department.

GEOLOGY 4M3 SEDIMENTOLOGY: PHYSICAL PROCESSES
A first course in the principles of physical sedimentology.
3 lects.; one term
Prerequisite: Geology 2C6; or permission of the instructor.

GEOLOGY 4MM3 SEDIMENTOLOGY: CHEMICAL PROCESSES
A review of equilibrium models and surface reactions. Topics covered are weathering, carbonate systems, evaporites, clays, iron minerals, phosphates, and diagenesis.
3 lects.; one term
Prerequisite: One of Chemistry 2P4, 2P6, 2T3, 2T5, or 2T6 and Geology 2C6; or permission of the instructor.

GEOLOGY 4N3 STRUCTURAL GEOLOGY II
Principles of rock deformation as inferred from theory and experiment. These principles are applied to the study of actual geological structures on all scales.
3 lects.; one term
Prerequisite: Geology 2D5 or 2D6 and completion of, or registration in Geology 3C6.

Offered in 1986-87, and in alternate years.
Alternates with Geology 4V3.

GEOLOGY 4Q6 GECHEMISTRY
Review of thermodynamics and crystal chemistry; consideration of sedimentary, igneous, metamorphic, and economic geochemical cycles; special topics including origin of crust, oceans, and chemical oceanography.
3 lects., two terms
Prerequisite: Chemistry 2P6 or 2P4, and completion of, or registration in Geology 3C6.

GEOLOGY 4S3 PHYSICAL OCEANOGRAPHY
Energy budget of the ocean; optical oceanography, ocean dynamics. Examples for the Great Lakes.
3 lects.; one term
Prerequisite: Geology 2C6; or permission of the instructor.

GEOLOGY 4T3 PLATE TECTONICS
Principles of plate tectonics, with application to regional and historical geology.
3 lects.; one term
Prerequisite: Geology 2C6

GEOLOGY 4U3 GEOLOGY OF FOSSIL FuELS
Organic matter in sediments and how it is converted into accumulations of coal or petroleum. Exploration and production techniques. Canadian case histories.
3 lects.; one term
Prerequisite: Geology 2C6

GEOLOGY 4V3 PHYSICAL VOLCANOLOGY
Physical modes of eruption of volcanoes and the products of such eruptions. Interpretation of ancient rocks in the light of modern volcanic rocks.
2 lects.; one term
Prerequisite: Completion of, or registration in Geology 3C6.
Offered in 1987-88.
Alternates with Geology 4N3.

For Graduate Courses see Calendar of School of Graduate Studies.

German

Faculty as of January 15, 1986

G. Teuscher/Chairman

Professors
Karl Denner/M.A. (Kentucky), Ph.D. (Johns Hopkins)
Gerhart Teuscher/Dipl.-Ubersetzer (Mainz-Germersheim), M.A. (Toronto), Ph.D. (State University of New York, Buffalo)

Associate Professors
James B. Lawson/B.A. (New York State College for Teachers, Albany), M.A. (Johns Hopkins)
Hans H. Schulte/Statesexamen: Stud;-Ref; Stud:-, Dr.phil. (Munich)
Robert L. Van Dusen/B.A. (Harvard), M.A., Ph.D. (Texas)
Fritz T. Widmaier/B.A. (Waterloo), A.M., Ph.D. (Southern California)

CURRICULUM 1986-88

Department Notes:
1. Students interested in German and Austrian History are advised to take History 3J6.

Beginners' Language Course

GERMAN 1Z6 BEGINNERS' INTENSIVE GERMAN
This course is designed to give students the ability to express themselves reasonably well in German. In addition, they will acquire the basics of German grammar and considerable reading skill. Small tutorial groups will ensure maximum participation by each student. Laborarory practice is an integral part of the course. 4 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 12 or Grade 13 German. Students with prior knowledge of the language as determined by an interview may be required to take German 2Z6.

This course is the first in a series of intensive language courses. German 1Z6, 2Z6, 3Z2, 3Z3. 3223. The completion of German 3Z2 with a grade of at least A results in a transcript notation indicating that the student has completed a series of intensive German language courses and has acquired a good working knowledge of spoken and written German.
Intermediate and Advanced Language and Literature Courses

**GERMAN 1A6 INTRODUCTION TO GERMAN STUDIES**
Lectures outline the development of German literature against its cultural background. Tutorials involve grammar, lab practice and class reading of literary texts. Lectures and tutorials in German; written reports in German and English. 5 hrs.; 2 lectures, 2 tutorials, lab. practice; two terms
Requisite: Grade 12 (with a grade of at least 80%) or Grade 13 German, or German 1Z6 (with a grade of at least A); or permission of the Department. Not available to students with credit in or registered in German 2Y6. A required course for those intending to enter Alternative A programmes in German.

**GERMAN 2A3 MODERN GERMAN PROSE AND POETRY**
German prose from Naturalismus to the 1960's (Hauptman to Böll) will be emphasized. Following a short introduction to the mechanics and interpretation of lyric poetry, selected poems by major authors from Neo-Romanticism to post-Expressionism will be read.
3 lectures; one term
Requisite: German 1A6 or 2Y6; or permission of the Department.

**GERMAN 2E3 GERMAN GRAMMAR**
A systematic review, including translation and oral practice.
3 hrs. (including lab. practice); one term
Requisite: German 1A6 or 2Y6; or permission of the Department.

**GERMAN 2F3 MODERN GERMAN DRAMA FROM NATURALISM TO EXPRESSIONISM**
The plays will be studied both as individual works and in the context of their historical and intellectual background.
3 lectures; one term
Requisite: German 1A6 or 2Y6; or permission of the Department.

**GERMAN 2G3 GERMAN LANGUAGE PRACTICE**
A course designed for non-native speakers with emphasis on vocabulary building.
3 hrs. (including lab. practice); one term
Requisite: German 1A6 or 2Y6, and permission of the Department.

**GERMAN 2H3 GERMAN PROSE IN TRANSLATION**
Eight representative pieces of 20th-century writing from the period framed by the two World Wars will be read and discussed within the context of German letters and culture. Particular attention will be given to two Nobel Prize winners: Mann and Böll.
3 lectures; one term
Requisite: Open to students in Level II and above. Available, with permission of the Department, as an elective to students registered in a programme in German.

**GERMAN 2J3 GERMAN DRAMA IN TRANSLATION**
A study of selected plays from the early nineteenth century to the early 1970's (Büchner to Handke).
3 lectures; one term
Requisite: Open to students in Level II and above. Available, with permission of the Department, as an elective to students registered in a programme in German. Same as Dramatic Arts 2J3.

**GERMAN 2K3 INTRODUCTORY GRAMMAR FOR READING GERMAN**
An introductory course designed to give a working knowledge of German grammar for translating German into English. It will deal only with the written language. (Those interested in the spoken language should register for German 2Z3. The sequel to German 2K3 is German 2L3.)
3 lectures; one term
Requisite: Open, except to native speakers or students with Grade 13 German or German 1Z6.

**GERMAN 2L3 GERMAN FOR ARTS AND SCIENCE STUDENTS**
A reading course for students in Humanities, Social and Natural Sciences and Engineering. Reading and translation of scholarly and scientific prose, selected as far as possible in correlation with the student's field of study. It is strongly recommended that the student first complete German 2G3.
3 lectures; one term
Requisite: Grade 13 German, German 1Z6 or 2K3; or permission of the Department.

**GERMAN 2M3 INTRODUCTION TO LITERARY CRITICISM**
This course familiarizes the student with the nature, function and materials of literary criticism and interpretation. After the main library resources are identified and examined, examples of the major schools of German literary criticism are analyzed to aid the student in developing a critical method.
2 lectures, first term; 1 lecture second term
Requisite: German 1A6 or 2Y6 and permission of the Department. Not available to students with credit in German 3E4.

**GERMAN 2Y6 THE GERMAN LITERARY TRADITION**
Study and interpretation of texts from all periods of German literature. Papers in German and speech laboratory will allow further pursuit of grammatical and oral skills.
5 hrs. (2 lectures, 3 tutorials); two terms
Requisite: German 1Z6 with a grade of at least A — Not available to students with credit in or registered in German 1A6. A required course for those intending to enter Alternative B programmes in German.

**GERMAN 2Z6 INTERMEDIATE INTENSIVE GERMAN**
Conversation practice and writing assignments. Review of grammatical structures, expansion of vocabulary, and extensive reading of original German texts. Laboratory practice is an integral part of the course. Small tutorial groups ensure maximum participation by each student.
4 hrs.; two terms
Requisite: Grade 12 German (with a grade less than 80%) or German 1Z6 (with a grade of at least B — ); or permission of the Department.

**GERMAN 3A3 BAROQUE AND ENLIGHTENMENT LITERATURE**
Discussion of selected works within their historical and intellectual contexts.
3 lectures; one term
Requisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3A4.

**GERMAN 3B3 'STURM UND DRANG' AND CLASSICISM**
The rise of German literature up through Classicism in the major works of Schiller and Goethe.
3 lectures; one term
Requisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3B4.

**GERMAN 3D3 THE GERMAN NOVELLA**
Analysis and discussion of the genre, based on representative works from major 19th-century literary movements.
3 lectures; one term
Requisite: 9 units of German; or permission of the Department. Not available to students with credit in German 2D3.

**GERMAN 3H3 HISTORY OF THE GERMAN LANGUAGE: INTRODUCTION TO MIDDLE HIGH GERMAN**
All who have studied German to the 19th-century literary movements.
3 lectures; one term
Requisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3H4.

**GERMAN 3M3 ADVANCED ORAL AND WRITTEN LANGUAGE PRACTICE I**
A practically-oriented course designed to increase the student's facility in using German as a means of oral and written communication. Students will be required to express their views on a variety of topics in written assignments and subsequent class discussions. Extensive reading will expand the students' vocabulary and improve general language ability.
3 lectures; one term
Requisite: German 2Z6, with a grade of at least A — , or 2E3 or permission of the Department. Not available to students with credit in German 3C4.

**GERMAN 3Z3Z ADVANCED ORAL AND WRITTEN LANGUAGE PRACTICE II**
A continuation of the approach used in German 3Z3.
3 lectures; one term
Requisite: German 3Z3 (with a grade of at least B). Completion of German 2Z3 with a grade of at least A — results in a transcript notation indicating that the student has completed a series of intensive German language courses and has acquired good working knowledge of spoken and written German.

**GERMAN 4A3 GERMAN LYRIC POETRY**
An examination of German lyric poetry as it reflects the changing styles and the main trends of literary expression in Germany from the 17th to the 20th century.
3 lectures; one term
Requisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4A4.

**GERMAN 4C3 ADVANCED LANGUAGE PRACTICE**
Emphasis on composition and oral expression.
3 hours; one term
Requisite: German 3Z3 or 3Z3Z; or permission of the Department. Not available to students with credit in German 4C4.

**GERMAN 4C3Z TRANSLATION: TECHNIQUES AND PRACTICE**
Practice in the translation of texts of literary and non-literary nature. (English to German and German to English).
3 hours; one term
Requisite: German 3Z3; or permission of the Department.

**GERMAN 4F3 TWENTIETH-CENTURY GERMAN LITERATURE**
A critical reading of representative texts showing the development of shorter fiction and poetry from the turn of the century to the present. Where appropriate, the relationship of literature to painting, opera and film will be examined.
3 lectures; one term

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GERONTOLOGY

Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4F4.

GERMAN 4G3 THE ROMANTIC MOVEMENT
The Blaue Blume of the earlier part of the 19th century (Novalis to Heine) and the transition to the Modern Age (Büchner to Fontane).
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4G4.

GERMAN 4H3 MEDIEVAL GERMAN LITERATURE
Selected texts from the major writers of the Middle and Old High German Periods.
3 lects.; one term
Prerequisite: German 3H3 or 3H4. Not available to students with credit in German 4H4.

GERMAN 4J3 THE MODERN GERMAN NOVEL
Reading and discussion of three major novelists and selected works: Fontane, Mann, Kafka.
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4J4.

GERMAN 4M3 GOThic
An introduction to the Gothic language through close reading of selected texts.
3 lects.; one term
Prerequisite: German 3H3 or 3H4. Not available to students with credit in German 4M4.

GERMAN 4X3 SPECIAL TOPICS IN GERMAN LITERATURE
1987-88: German Literature in Exile (1933-45)
Discussion of major authors of the period and the emigre experience in West and East.
3 lects.; one term
Prerequisite: Permission of the Department.
German 4X3 may be repeated, if on a different topic, to a total of 6 units.

GERMAN 4Z6 SPECIAL TOPICS IN APPLIED LINGUISTICS
A comparative analysis of the most important grammatical structures of English and German forms the background for discussions of methods and techniques of teaching German to speakers of English. The theoretical part of the course is combined with practical application in simulated teaching situations.
Seminar (2 hrs.); two terms
Prerequisite: Registration in Level IV of any Honours programme in German and permission of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.

Gerontology

Gerontology Programmes at McMaster University are administered by the Faculty of Social Sciences through the Office of Gerontological Studies, and are co-ordinated and supervised by an interdisciplinarian Committee of Instruction.

Students wishing to register in a Gerontology Programme must obtain written approval of the Chairman of the Committee of Instruction of Gerontology Programmes.

Committee of Instruction:
K. Kihnen (Social Work)/Chairman
D. Counts (Anthropology)
P. George (Dean) Ex-officio
O. Polido (Neurosciences)
O. Roman (Nursing)
C. Roland (Family Medicine)
E. Ryan (Psychiatry)
J. Synge (Sociology)
J. Thomas (Philosophy)
I. Turpie (Medicine)
V. Walters (Sociology)

CURRICULUM 1986-88

GERONTOL 1A6 INTRODUCTION TO GERONTOLOGY
An introduction to gerontology as a multidisciplinary study of aging, focusing on the philosophical, historical, biological, physiological, psychological, economic, social and health care aspects, as well as social policies in respect to an aging population.
3 hrs.(lects. and discussions); two terms
Prerequisite: Open.
Same as Social Science 2G6.

GERONTOL 2A3 MULTIDISCIPLINARY ISSUES IN GERONTOLOGY
The course focuses on issues and problems arising from the multidisciplinary nature of gerontological research and education. Special attention will be given to the contributions of the cognate disciplines and the integration of gerontological knowledge.
3 hrs.(lects. and discussions); one term
Prerequisite: Gerontology 1A6 or Social Science 2G6, and registration in a Gerontology programme.

GERONTOL 2B3 BIOLOGICAL DIMENSIONS OF HUMAN AGING
An examination of age-related changes in human biological and physiological functioning. Attention will be given to prevention of deterioration of functioning, and the maintenance of optimal functioning.
3 hrs.(lects.); one term
Prerequisite: Gerontology 1A6 or Social Science 2G6, and enrolment in a Gerontology programme; or permission of the instructor.

GERONTOL 3A3 INTERNATIONAL ASPECTS OF GERONTOLOGY
Issues in gerontology in selected developed and developing countries. The course focuses on demographic changes, social, political and economic implications of population change, attitudes toward the aged, health care and social policies.
3 hrs.(lects and discussions); one term
Prerequisite: Gerontology 1A6 or Social Science 2G6; or permission of the instructor.
Not offered in 1986-87.

GERONTOL 3B3 GERONTOLOGY FIELD EXPERIENCE
Directed practicum of 36 hours in an approved gerontology field experience and a bi-weekly seminar focusing on integration of theoretical knowledge and practicum experience.
3 hrs. field experience per week, and 1 hr. bi-weekly seminar; one term
Prerequisite: Registration in Level III of a Gerontology programme.
Not offered in 1986-87.

GERONTOL 3C3 RESEARCH METHODS IN SOCIAL GERONTOLOGY
An overview of various approaches to the study of social issues relevant to aging, including questionnaire studies, laboratory experiments, and secondary analysis of archival data.
3 hrs.(lects. and discussion); one term
Prerequisite: Enrollment in a Gerontology programme, and completion of Gerontology 2A3, and 6 units of Gerontology Area courses.
Not offered in 1986-87.

GERONTOL 3D3 PSYCHOLOGICAL ASPECTS OF AGING
An examination of the cognitive and social-psychological aspects of aging: sensation, perception, attention, memory, intelligence, communication, personality, attitudes and mental health.
3 hrs.(lects. and discussion); one term
Prerequisite: Open to students in Level III or IV of a Gerontology programme who have completed Gerontology 1A6 and Psychology 1A6; or permission of the instructor.
Same as Psychology 3DD3.

Students in a Psychology Programme (except those in Gerontology & Psychology) must register for this course as Psychology 3DD3.

GERONTOL 3E3 INDEPENDENT STUDY IN GERONTOLOGY
The student will select a topic in gerontology for an in depth investigation under the supervision of a faculty member and write a paper on findings.
Prerequisite: Registration in Level III or IV of a Gerontology programme.
The study will normally extend over two terms.

GERONTOL 4A6 GERONTOLOGY THESIS
Students conduct research projects with individual faculty members. Students who write a thesis in the other subject of their combined programme, must arrange for six additional units of Gerontology or Gerontology Area course work.
Prerequisite: Registration in Level IV of a Honours Gerontology programme, and permission of course co-ordinator.

OTHER DESIGNATED GERONTOLOGY AREA COURSES
Students should check the prerequisites for these courses in the Course Listings by Department section of the Calendar.

Religious Studies 2A6 Death and Dying in Human Experience
Anthropology 3Q3 Anthropological Approaches to the Study of Aging
History 3EE3 History of Medicine in Canada
Philosophy 3C3 Advanced Bioethics
Social Work 3C3 Social Aspects of Health and Disease
Sociology 3G3 Sociology of Health Care
Sociology 3K3 Sociology of Aging
Health Sciences 3B4 Science, Health and Society
Health Sciences 4C3 Advanced Clinical Study I
Health Sciences 4D3 Advanced Clinical Study II

Other courses may qualify as Gerontology Area course. Students wishing to register in a course not on the list must consult the Chairman of the Committee of Instruction.

Greek

(See Classics, Greek)
Health Sciences

CURRICULUM 1986-88:

Faculty Note:
The courses offered as Health Sciences cover three areas of study as follows:
† denotes Nursing (A and B Stream) courses.
‡ denotes B.H.Sc. Pre-Programme Phase courses.

HTH SCI 1A6: HUMAN BIOCHEMISTRY
The biochemistry and nutrition of the human body in health and disease.
Term I’s major topic is production of energy from glucose and fat. Obesity, diabetes, heart disease, running and nutrition are used as examples to illustrate the metabolism of energy production. Vitamins and minerals related to glucose and fat metabolism are also discussed.
Term II covers electrolyte balance, body pH, proteins, enzymes, protein malnutrition and nucleic acids. The metabolic processes are discussed against a backdrop of metabolic illness, drug metabolism and cancer. A final section deals with nutritional patterns for each stage of life, male and female.
3 hrs.; 3 lects.; 1 tut.; two terms
Prerequisite: Admission to the Nursing Programme; or permission of the instructor.

HTH SCI 1B7: HUMAN BIOLOGICAL SCIENCE I
Term I is an overview of human structure and function, including the metabolic and synthetic processes of cells and the role of chemical mediators on cell function; basic tissues and their developmental origins; the organization of the body; and the structure and function of the musculo-skeletal system.
Term II examines homeostasis. Structual and functional aspects of the cardiovascular, respiratory, renal and digestive systems are integrated around the major themes of haemodynamics, fluid compartments, metabolism and nutrition.
2 hrs.; 1 lab.; two terms

HTH SCI 2B8: HUMAN BIOLOGICAL SCIENCE II
The term begins with a study of reproductive anatomy and physiology, with particular emphasis on intrinsic control mechanisms and extrinsic methods of regulation of reproduction. Selected aspects of human growth and aging are presented through the remainder of the course in a tutorial setting. Medical microbiology and principles of pathology are considered in the latter half of the term, including structure and function of infectious agents, control measures and host defenses.
Term II begins with a study of the central and peripheral nervous system, including the special senses and neuroendocrine relationships. Introductory skills in neurological assessment and drug actions on the nervous system are also considered.
The latter part of Term II is devoted to a study of the principal diseases of the organ systems.
3 hrs.; 2 tuts. alternating with 2 lects.; 1 lab.; 2 tuts.; two terms
Prerequisite: Normally Health Sciences 1A6 and 1B7, or equivalent.

HTH SCI 2C4† HUMAN ANATOMY: PHYSIOLOGY I
An overview of the structure and function of the musculoskeletal system with emphasis on application of knowledge to clinical problems relevant to occupational therapy and physiotherapy. This course is a companion to Health Sciences 2D4.
6 hrs.; 2 lects.; 2 lab.; 2 tuts.; one term
Prerequisite: Registration in the B.H.Sc. Pre-programme Phase.

HTH SCI 2D4† HUMAN ANATOMY: PHYSIOLOGY II
The structure and function of the nervous system is reviewed with specific application to clinical problems of relevance to occupational therapists and physiotherapists. This course is a companion to Health Sciences 2C4.
6 hrs.; 2 lects.; 2 lab.; 2 tuts.; one term
Prerequisite: Registration in the B.H.Sc. Pre-programme Phase.

HTH SCI 3A4† and † CRITICAL APPRAISAL OF RESEARCH LITERATURE
Introduction to the principles of clinical research and statistical inference with particular emphasis on critical assessment of evidence as presented in the health sciences literature related to the care of patients. A problem based approach will be taken.
3 hrs.(lects./problem-based tut.) and 2 hrs.(guided self-study); one term
Prerequisite: Registration in Level III Nursing; or registration in the B.H.Sc. Pre-programme Phase; or permission of instructor.

HTH SCI 3B4† SCIENCE, HEALTH AND SOCIETY
This course is the same as Health Sciences 4B4.
Prerequisite: Registration in Level III Nursing; or permission of instructor.

HTH SCI 3C3† SELECTED TOPICS IN HEALTH PROFESSIONAL EDUCATION
This course will introduce the student to principles of adult learning utilized in health sciences with a focus on their application to adult education. Specific concepts include problem-based education, clinical problem-solving, self-directed learning, and small-group process.
2 hr. tut.; 4 hrs. self-study biweekly; one term
Prerequisite: Registration in the B.H.Sc. Pre-programme Phase; or permission of the instructor.

HTH SCI 4A3† THEORETICAL BASIS OF PRACTICE OCCUPATIONAL THERAPY/PHYSIOTHERAPY
This course examines where the professions of occupational therapy and physiotherapy stand in their past, present and future development, and evaluation of theoretical bases and clinical models. Using a multidisciplinary approach, emphasis is placed on the ability to analyze and formulate models that clarify the roles and functions of both professions.
3 hrs.(lects., tuts.); one term
Prerequisite: Registration in the B.H.Sc. programme; or permission of the instructor.

HTH SCI 4B4† HEALTH, SCIENCE AND SOCIETY
This course is concerned with the biological, environmental, behavioural, social, and economic factors that determine the health of a given population and the role of health care services in meeting the health needs of the population. There are three major components to the course: measuring health status, the determinants of health, and the provision of health care services.
2 hrs.(lects./problem-based tut.); one term
Prerequisite: Registration in the B.H.Sc. Programme; or permission of the instructor.

HTH SCI 4C3† ADVANCED CLINICAL STUDY I
This course is intended to give the student an opportunity to study in greater depth the chosen area of study of Health Sciences 4C3, in consultation with a faculty member. This study may take the form of a paper, presentation or project. The independent study is based on a negotiated learning contract with the instructor.
6 hrs.(independent study); one term
Prerequisite: Registration, or credit, in Health Sciences 4C3.

HTH SCI 4L4: PRINCIPLES AND METHODS OF RESEARCH
Advanced critical analysis of nursing and related literature. Principles of research methodology and statistics are used to examine systematically the literature in relation to selected topics. Students participate in an ongoing research study.
2 hrs.(lects./problem-based tut.) one term, and 4 hrs. (guided self-study) second term; two terms
Prerequisite: Health Sciences 3A4 or equivalent.

AREAS OF CLINICAL STUDY FOR HTH SCI 4C3
Health Care and the Elderly: This course is designed to study the biological, psychological and sociological aspects of aging. It will include study of the aging process, the epidemiology of aging and of the disease processes particularly prevalent in elderly persons, especially those affecting ability to live independently. Study of therapeutic measures used in their treatment will also be undertaken. Community resources available to facilitate independence, and those available in institutions will also be studied which aim to improve function and quality of life.

Neurosciences: This course focuses on selected therapeutic approaches commonly used by occupational and physical therapy in the treatment of patients with neurological disorders. Neurodevelopmental therapy, sensory integration, behavioural medicine, motor skill acquisition and cognitive restructuring are studied from the context of their scientific basis, as well as their principles and techniques of practice.

Occupational Health: The course will be based on the role of the occupational physiotherapist in occupational health. It will specifically look at:
a. prevention of illness/accident
b. management of illness/accident
c. return to work following illness/accident

Psychosocial Rehabilitation: This course provides the student with a framework of observation/assessment of psychosocial issues in health care. Theoretical concepts from the clinical behavioural sciences' study areas of individual, group, family, community, and the organization are presented and discussed by expert tutors. Psychosocial issues in clinical practice with physical and psychiatric health care problems are integrated, using an individual case study from the student's area of practice/interest.

Rehabilitation: The purpose of this course is to critically explore selected factors that influence the rehabilitation of a disabled individual. Through investigation of the literature, and the use of identified resource personnel, students consider the biological, behavioural, social, environmental, and economic factors that interact in the rehabilitation process. A problem based learning format allows the student to analyze the impact of these elements on the provision of rehabilitation services. Small group discussions allow students to examine their attitudes about disability, and explore mental barriers to the integration of disabled persons into Canadian
society. Small mixed-disciplinary group discussions are also used to promote the
student's skills in facilitating group function with a view to applying these
principles to investigation community resources and evaluate their ability to meet
the needs of disabled individuals.
*Not all clinical study areas may be available each year. For further information
contact the Programme Office.*

**Hebrew**
(See Religious Studies, Hebrew)

**History**

**Faculty as of January 15, 1986**

C.J. Jago/Chairman

Professor Emeritus
(Acadia, Wilfrid Laurier, McMaster, Sydney), L.I.D. (Windsor,
Alberta), F.B.A., F.R.S.C., F.R.H.S.

Professors
A. Richard Allen/B.A. (Toronto), M.A. (Saskatchewan), Ph.D. (Duke)
Ezio Cappadocia/B.A., M.A. (Toronto), Ph.D. (Chicago)
Alan Cassels/M.A. (Oxford), Ph.D. (Michigan), F.R.H.S.
Paul S. Fritz/B.A. (Queen's), M.A. (Wisconsin), Ph.D. (Cambridge),
F.R.H.S.

David P. Gagan/B.A., M.A. (Western), Ph.D. (Duke)
Daniel J. Geagan/B.A. (Boston), Ph.D. (Johns Hopkins)
Charles M. Johnston/B.A. (McMaster), M.A., Ph.D. (Pennsylvania)
Harvey A. Levenstein/B.A. (Toronto), M.S., Ph.D. (Wisconsin)
David J. Russo/B.A. (Massachusetts), M.A. Ph.D. (Yale)
Richard J.A. Talbert/B.A., M.A., Ph.D. (Cambridge)
John H. Trueman/B.A., M.A. (Toronto), Ph.D. (Cornell)
John C. Weaver/B.A. (Queen's), M.A., D. Phil. (Duke)

Associate Professors
David P. Barrett/B.A., M.A., M.Phil. (Toronto), Ph.D. (London)
Edmond M. Beame/B.A. (Cornell), Ph.D. (Illinois)
John P. Campbell/I.M. (Glasgow), A.M., Ph.D. (Yale)
George J. Grinnell/B.S. (Columbia), M.A., Ph.D. (California)
Charles J. Jago/B.A. (Western), Ph.D. (Cambridge)
Robert H. Johnston/B.A. (Toronto), M.A., Ph.D. (Yale)
Bernice M. Kaczynski/B.A. (Pittsburgh), M.Phil., Ph.D. (Yale)
Harry E. Turner/B.A. (McMaster), M.A. (Toronto)
Thomas E. Willey/B.A. (Butler), M.A., Ph.D. (Yale)

Assistant Professors
James D. Alsop/B.A. (Winnipeg), M.A. (Western), Ph.D. (Cambridge)
W. Thomas Matthews/B.A. (Western), M.A., Ph.D. (McMaster)

Associate Members
Peter J. George/Economics)/M.A., Ph.D. (Toronto)
George Paul/classics/B.A. (McMaster), Ph.D. (London)
Charles G. Roland/Family Medicine/B.Sc. (Med.), M.D. (Manitoba)

**CURRICULUM 1986-88**

**Department Notes:**

1. The Department of History offers three Level I courses, each of which
is designed to introduce the student to the study of History at the
university level through the examination of an important aspect of
the development of western civilizations. Students will be admitted to
B.A. or Honours programmes in History from any one of the three
courses. Students may take only one of these courses.

2. Students in B.A. History may take a maximum of 12 units in any one
field of Ancient, Asian, Canadian, British, and the Americas (exclud­
ing Canada), and 18 units of European History, including Level I, but
exclusive of electives. Students in any Honours programme in His­
tory may take a maximum of 24 units in any one field of Ancient,
Asian, Canadian, British, and the Americas (excluding Canada), and
30 units of European History, including Level I, but exclusive of electives.

3. In selecting courses students in B.A. and Honours History and in a
Combined Honours programme including History must ensure that
they take at least six units in each of three fields of History. For this
purpose the Department has established the following six
fields: European, Ancient, Asian, Canadian, British, and the Amer­
icas (excluding Canada).

4. Enrolment in any Level IV History course will be limited to twelve
students. Preference will be given in order to students in the following
categories: Level IV Honours History; Level IV Combined Honours in
History and another subject; Continuing students taking a full
course load; Level III Honours History; Level III Combined Honours in
History and another subject; Level III B.A. in History, others.

5. Students interested in Ancient History are advised to examine the
courses in Classical Civilization offered by the Department of
Classics.

**LEVEL I COURSES**

**HISTORY 1C6 THE MODERN WORLD: THE ERA OF EUROPEAN
PRIMACY**

A study of the background and development, from the French Revolutionary Era
to the present, of the principal political, intellectual, and economic factors that have
shaped the 20th-century world.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open. Students may take only one Level I History course.

**HISTORY 1D6 THE CIVILIZATION OF THE WEST**

A study of the principal themes and issues in European history from the Fall of
the Roman Empire to the twentieth century.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open, except to students with credit in History 1A6 or 1B6. History
1D6 is recommended for those students who anticipate entering a programme in
History. Students may take only one Level I History course.

**HISTORY 1L6 ANCIENT STATES AND EMPIRES**

Comparative analysis of the earliest states and empires of Western Asia and the
Mediterranean with references to other ancient empires. Focus on the impulse to
towards the development and on the societies, structures and ideologies which legitimised and
stabilised the empires.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open. Students may take only one Level I History course.

**LEVEL II COURSES**

**HISTORY 2A6 EARLY MODERN EUROPE 1400-1715**

A study of the transition from late medieval to early modern civilization, with
emphasis upon the breakup of feudal society and the consequent changes in the
character of Europe.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

**HISTORY 2B6 CHINA: FROM THE OPium WAR TO THE PRESENT**

The history of China in the 19th and 20th centuries. The emphasis will be on
internal developments, from the disintegration of the imperial system through the
rise of the Communist Party to the building of the People's Republic of today.

3 lects.; two terms
Prerequisite: Open to students in Level II and above, except to students with credit in
History 3Q6.

**HISTORY 2C6 UNITED STATES HISTORY**

The history of the United States from the Colonial Era to the Second World War.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

**HISTORY 2D6 EUROPE IN THE MIDDLE AGES**

A survey of European History from A.D. 400-1400. Particular attention will be
given to the attempts at political and social organization which led to the 'birth of
Europe'.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 1A6.

**HISTORY 2E6 THE HISTORY OF CANADA**

A study of the major social and political forces that have contributed to the
development of modern Canada.

3 lects.; two terms
Prerequisite: Open to students in Level II and above.
HISTORY 2K6: THE HISTORY OF SCIENCE
Historical explorations into such issues as ecology vs. industrial progress, nuclear energy, genetic engineering and sociobiology, the creation/evolutionist debate, Galileo and the Church, Renaissance art and science, and the origins of Western science.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2L6: GREECE AND ROME
Greece from the rise of the city-states to Alexander; Rome from the Middle Republic through the early Empire. Attention will be given to the political, military, and social developments in the light of both literary and archaeological evidence. (No Greek or Latin required.)
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2M6: EUROPEAN SOCIETY FROM ABSolutISM TO DEMOCRACY
An analysis of the main political, social, and cultural forces shaping European Society from 1740 to 1918. The course will focus on the formation of modern political institutions, social classes and ideologies.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2N6: BRITISH HISTORY 1500 TO THE PRESENT
Emphasis will be placed on the main political, religious, economic and social developments.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above. Not available to students receiving credit for History 1N6.

LEVEL III COURSES

HISTORY 3A3: TOPICS IN MODERN ITALIAN HISTORY. 1815 TO THE PRESENT
The Risorgimento, the Roman question, Fascism and contemporary issues of Catholicism and Communism.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3A3A: THE RISE AND FALL OF IMPERIAL SPAIN
An examination of the culture, society and politics of Spain from the 15th to the 18th century with particular emphasis on the spread of the Spanish hegemony over Western Europe and the development of Spanish colonies in the New World.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3B3: MODERN JAPAN
A survey of nineteenth and twentieth century Japan, with emphasis on political developments, social change, and Japan's relations with East Asia.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3B3A: THE TOWN IN UNITED STATES HISTORY
A study of the political, economic, social, cultural and intellectual aspects of town life, as well as an examination of the relationship of the town to American society as a whole.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3C3: THE INDIAN IN EASTERN CANADA
A history of the Indian in Ontario, Quebec, and the Maritimes, from the earliest days of Indian-white contact to the 20th century.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above. Offered in alternate years.

HISTORY 3C3A: ANCIENT CHINA: SELECTED TOPICS IN THE HISTORY OF CHINA PRIOR TO 221 B.C.
The political institutions, political philosophy, art and archaeology of the formative period of China's culture.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Except to students with credit in History 206. Offered in alternate years.

HISTORY 3D3A: IMPERIAL CHINA: SELECTED TOPICS IN THE HISTORY OF CHINA FROM 221 B.C. TO THE 18TH CENTURY
Government, social structure, internal politics and China's relations with the outside world during the imperial age.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Except to students with credit in History 206. Offered in alternate years.

HISTORY 3E6: SELECTED TOPICS IN THE RECENT HISTORY OF THE UNITED STATES
American society, politics, and foreign relations from World War I to the present, with considerable emphasis on social history (including the history of women, minorities, labour, and radicalism), as well as the United States' relations with the Communist and Third Worlds.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 2H6, or permission of the Department.

HISTORY 3EE3: HISTORY OF MEDICINE IN CANADA
An examination of the development of medical and health services in Canadian history. Emphasis will be on the interaction between society and medicine, rather than the technical aspects of medicine.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3F3: MEDIEVAL SOCIETY
An examination of rural, aristocratic, urban and monastic communities of the Middle Ages. Attention will be given to patterns of social organization as well as to such particular themes as marriage, family and death.
3 hrs. (lects. and discussion group); one term
Prerequisite: One of History 1A6, 1D6, 216; or permission of the Department.

HISTORY 3F3A: MODERN POLAND 1863-1970
An examination of the development of Poland since the failure of the crucial rebellion of 1863-4. Emphasis will be on the struggle for national independence and on social and industrial modernization.
3 hrs. (lects. and discussion); one term
Prerequisite: Any 6-unit course in modern European history; or permission of the instructor.
Offered in alternate years. Same as Political Science 373.

HISTORY 3G6: THE HISTORY OF THE INDIAN SUBCONTINENT
A survey of the history of India with major emphasis on the 19th and 20th centuries.
3 lects.; two terms
Prerequisite: Registration in any programme in History; or permission of the Department.

HISTORY 3I6: THE HISTORY OF MODERN RUSSIA
A survey of the history of Russia with major emphasis on the 19th and 20th centuries.
3 lects.; two terms
Prerequisite: Registration in any programme in History; or permission of the Department.

HISTORY 3J3: CRIME, CRIMINAL JUSTICE AND PUNISHMENT IN MODERN HISTORY
An analysis of major political, social, and cultural developments in the German states and Austria from the Reformations to 1955.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3J3A: THE LIBERAL TRADITION IN THE 19TH CENTURY
The utilitarian and the natural right schools of liberalism, classical liberalism and nationalism, the traditionalist and Marxist critiques, the Catholic Church and liberalism.
3 lects.; one term
Prerequisite: Any 6-unit course in modern European history, or registration in any programme in Political Science; or permission of the Department.

HISTORY 3K6: CANADA IN THE TWENTIETH CENTURY
A survey of the major events and themes in Canadian political and social history from the start of the Laurier government to the present.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3L3: THE HELLENISTIC AGE
The successors of Alexander, the world of the monarchies and the absorption into the Roman Empire. Political, cultural, and social achievements in the light of modern historical research will be emphasized.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department. Not available to students with credit in History 3L6. Offered in alternate years. Same as Classical Civilization 3L3.

HISTORY 3M6: REVOLUTION AND REACTION IN EUROPE, 1763-1848
A study of the Enlightenment, the French Revolution and the Bonapartist tradition: the relationship between liberalism and nationalism.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.
HISTORY 3NM3 THE ROMAN EMPIRE
Rome, Italy, and the provinces from the creation of an autocracy by Augustus until the end of the 2nd century A.D.: developments in government, society, defense and economy; the Romanization of the provinces. Archaeological evidence and new approaches to problems will be considered.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department. Not available to students with credit in History 3D6.
Offered in alternate years.
Same as Classical Civilization 3NM3.

HISTORY 3NN3 THE NEWTONIAN REVOLUTION
A study of the relationship between science and liberalism since the time of Newton.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above.

Alternates with History 3QQ3.

HISTORY 303 THE CITY IN NORTH ATLANTIC DEVELOPMENT
This course examines the material culture of the North American city, including town planning, housing, commercial and industrial architecture and transportation with select comparison made between the European and North American city.
3 lects.; one term.
Prerequisite: History 2J6 or 2K6; or permission of the Department. Not available to students with credit in History 3O6.
Offered in alternate years.

HISTORY 3P3 RELIGION AND SOCIETY IN CANADA
This course will trace the origin, nature and development of the major Canadian religious denominations from the 17th to the mid-20th Century.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above.

Offered in alternate years.

HISTORY 3PP3 CHANGE AND CONTINUITY: THEMES IN VICTORIAN BRITAIN
An examination of the main political, social and cultural developments with particular reference to the Liberal and Radical movements and the persistence of aristocratic power.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 3Y6.

Alternates with History 3NN3.

HISTORY 3QQ3 WAR AND SOCIETY IN EARLY MODERN ENGLAND, 1485-1713
A thematic study of the nature of English warfare and its relationship to society during the period in which England developed as a major military and naval power.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above.

HISTORY 3RR3 RELIGION AND POLITICS IN THE AGE OF THE REFORMATION
An examination of both the Protestant and Catholic movements of the 16th century with particular attention to their political and social implications.
3 lects.; one term.
Prerequisite: Open to students in Level II and above.

HISTORY 3SS3 ASPECTS OF THE CULTURAL HISTORY OF ENGLAND, 1500-1668
An introduction to courtly, urban, and rural culture from pre-Reformation humanism through to the Restoration era, with emphasis upon social, political and religious influences.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above.

HISTORY 3TT3 MATERIAL LIFE AND MATERIAL CULTURE IN ENGLAND, 1500-1800
Among topics covered will be: food and drink, clothing, costume and fashion, lodging, health and medicine, architecture of towns and cities, technology, capitalism and the emergence of a consumer society.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: Open to students in Level II and above.

HISTORY 3US3 ASPECTS OF FRENCH CANADIAN HISTORY
Emphasis will be placed on Quebec from the 18th to mid-20th Century.
3 hrs. (lects. and discussion groups); one term.
Prerequisite: History 2J6; or permission of the Department. Not available to students with credit in History 3Z6.
Offered in alternate years.

HISTORY 3UU3 SOCIAL LIFE AND THOUGHT IN PERICLEAN ATHENS
A description and analysis of selected aspects of the social life of Athens in the second half of the 5th century B.C., based upon contemporary literature, documents and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2U3, as well as others peculiar to Periclean Athens: work and leisure, education, religion, marriage and family life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term.
Prerequisite: History 1L6 or 2L6, or Classical Civilization 2V3 and 3 additional units of Classical Civilization; or Classical Civilization 2G6; or permission of the Department. Not available to students with credit in Classical Civilization 3M3.

Alternates with History 3WV3.

Same as Classical Civilization 3UU3.

HISTORY 3Y6 THE PEOPLE OF ONTARIO, 1790-1940: AN INTRODUCTION TO REGIONAL SOCIAL HISTORY
A survey of the development of society in Ontario stressing the interplay of social, economic and demographic factors in the transition from an agrarian to an urban industrial society.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Level II and above.

HISTORY 3YV3 SOCIAL LIFE AND THOUGHT IN AUGUSTAN ROME
A description and analysis of selected aspects of social life of Rome at the end of the 1st century B.C. based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2V3, as well as others peculiar to Augustan Rome: work and leisure, education, religion, marriage and family life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term.
Prerequisite: History 1L6 or 2L6, or Classical Civilization 2V3 and 3 additional units of Classical Civilization; or Classical Civilization 2G6; or permission of the Department. Not available to students with credit in Classical Civilization 4N3.

Alternates with History 3UU3.

Same as Classical Civilization 3YV3.

HISTORY 3ZZ3 EARLY LATIN AMERICA
From the Amerindian cultures to 1823. The course will deal with the pre-Columbian civilizations, the Spanish conquest and its consequences until the wars for independence from Spain.
3 lects.; one term.
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 2C6.

HISTORY 3YY3 MODERN LATIN AMERICA SINCE 1820
Liberalism, nationalism, militarism and the various revolutions will be covered as well as the U.S. role in Latin America and the Caribbean.
3 lects.; one term.
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 2C6.

LEVEL IV COURSES

HISTORY 4A6 SPECIAL TOPICS IN BRITISH HISTORY (1688-1830)
Seminar (2 hrs.); two terms.
Prerequisite: History 2N6 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4AA6 SPECIAL STUDIES IN THE HISTORY OF TUDOR AND STUART ENGLAND
Studies in the political, religious, intellectual and social life of Tudor and Stuart England.
Seminar (2 hrs.); two terms.
Prerequisite: History 2N6 and registration in Level IV of any Honours programme in History with a History Cumulative Area Average of at least 9.0; or permission of the Department.
Enrolment is limited.

HISTORY 4BC6 SPECIAL TOPICS IN BRITISH IMPERIAL HISTORY
The major emphasis of this course will be on the Victorian Empire.
Seminar (2 hrs.); two terms.
Prerequisite: Registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4CD6 SPECIAL TOPICS IN GREEK HISTORY
Investigations into Greek social history and its interpretation.
Seminar (2 hrs.); two terms.
Prerequisite: Six units in Ancient Greek civilization, and registration in Level III or IV of any Honours programme in History, Classics, Classical Studies or Greek; or permission of the Department.

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HISTORY 46 SPECIAL TOPICS IN THE HISTORY OF VICTORIAN BRITAIN
An examination of such themes as the two-party system, the Irish question, working-class life, religious and literary movements, evolving industrialism, imperialism and social reform.
Seminar (2 hrs.); two terms
Prerequisite: History 2N6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 46 THE REVOLUTIONARY MOVEMENT IN MODERN CHINA
A history of 20th-century China with the focus on the political movements that have been the agents of change.
Seminar (2 hrs.); two terms
Prerequisite: History 2B6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 46 SPECIAL TOPICS IN ROMAN HISTORY
The central theme will be development and change throughout the Roman Empire in the 3rd and 4th centuries A.D.
Seminar (2 hrs.); two terms
Prerequisite: Six units in Roman civilization, and registration in Level III or IV of any Honours programme in History, Classics, Classical Studies or Latin; or permission of the Department.
Same as Classical Civilization 416. Enrolment is limited.

HISTORY 46 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES IN THE 20TH CENTURY
Seminar (2 hrs.); two terms
Prerequisite: One of History 1K6, 2H6 or 3E6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 46 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES BEFORE 1865
Seminar (2 hrs.); two terms
Prerequisite: History 1K6 or 2H6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4L6 THEMES IN ANCIENT HISTORY
An examination of at least two selected themes in Ancient History, particularly the history of the Greek-Roman world, with emphasis on the use of source materials, primary and secondary, literary and non-literary.
Seminar (2 hrs.); two terms
Prerequisite: Six units in Ancient History or Classical Civilization, and registration in Level IV of any Honours programme in History, Classics, Classical Studies, Greek or Latin with a Cumulative Area Average of at least 9.0.
Same as Classical Civilization 4L6. Enrolment is limited.

HISTORY 4M6 SPECIAL TOPICS IN THE HISTORY OF THE RENAISSANCE AND THE REFORMATION
Seminar (2 hrs.); two terms
Prerequisite: One of History 1A6, 1B6, 1D6, 2A6, 3B6, and registration in Level IV of any Honours programme in History with a History average of at least 9.0; or permission of the Department. Enrolment is limited.

HISTORY 4N6 CANADIAN HISTORIOGRAPHY
A study of the ideas of the major historians of Canada.
Seminar (2 hrs.); two terms
Prerequisite: History 2J6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Students may take only two of History 4N6, 4V6, 4W6, and 426. Enrolment is limited.

HISTORY 4P6 RUSSIA AND REVOLUTION
The impact of modernization upon the Soviet state and society.
Seminar (2 hrs.); two terms
Prerequisite: History 3H6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4Q6 CONTEMPORARY EUROPE
Topics in the history of Europe during the 20th century.
Seminar (2 hrs.); two terms
Prerequisite: A course in 19th or 20th century European History, registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4R6 SPECIAL TOPICS IN THE HISTORY OF MEDIEVAL EUROPE AND BYZANTIN
Topics will include the consequences of the Barbarian invasions, diplomatic communications between West and East, relations between the Roman and Orthodox Churches, the impact of the Crusades, and the significance of the fall of Constantinople.
Seminar (2 hrs.); two terms
Prerequisite: One of History 1A6, 1D6, 2J6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4S6 CANADIAN LABOUR AND THE LEFT
The contribution of working people to the nation, the development of the Canadian labour movement, labour as a political force, the evolution of legislation regarding the work place and industrial conflict.
Seminar (2 hrs.); two terms
Prerequisite: History 2J6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Provision will be made for eligible students in the Labour Studies programme. Enrolment is limited.

HISTORY 4T6 INDEPENDENT RESEARCH
A reading and/or research programme under the supervision of at least two members of the Department. A major paper is required, as well as a formal oral examination.
Prerequisite: Open to students in Level IV of any Honours programme in History with a History Average of at least 10.0 and permission of the Department. Enrolment is limited.

HISTORY 4U6 THE CANADIAN CITY
An examination of the Canadian city, including the study of traditional local histories, as well as urban social history. The course will examine change in urban society, questions of health, housing, economic activity, planning, and politics.
Seminar (2 hrs.); two terms
Prerequisite: History 2J6 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Students may take only two of History 4N6, 4V6, 4W6, and 426. Enrolment is limited.

HISTORY 4V6 SPECIAL TOPICS IN THE HISTORY OF MODERN SCIENCE
A study of the scientific revolution and its impact on western culture in the 19th and 20th centuries.
Seminar (2 hrs.); two terms
Prerequisite: Registration in Level III or IV of any Honours Programme; or permission of the Department. Enrolment is limited.

HISTORY 4W6 SOCIETY AND CULTURE IN 17TH-CENTURY EUROPE
A study of the social and economic structure of Europe, 1600-1715, and of the cultural changes associated with this period.
Seminar (2 hrs.); two terms
Prerequisite: Six units of European History and registration in any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4X6 INTRODUCTION TO SOCIAL HISTORY
An introduction to theories of societal analysis and the historiography of the new social history with specific reference to their application to Canadian social history.
Seminar (2 hrs.); two terms
Prerequisite: Registration in Level III or IV of any Honours Programme; or permission of the Department. Students may take only two of History 4N6, 4V6, 4W6 and 426. Enrolment is limited.

The following courses in the field of History are offered by the Department of Classics:
Classical Civilization 2U3 Social Life and Thought of the Greeks
Classical Civilization 2V3 Social Life and Thought of the Romans

For Graduate Courses see Calendar of School of Graduate Studies.
**LABOUR STUDIES**

**Humanities (General)**

**CURRICULUM 1986-88**

**HUMANITIES 1C3 CRITICAL THINKING**

This course aims to improve skills in analyzing and evaluating arguments and presentations found in everyday life and academic contexts, and to improve critical judgement.

- 2 lecs., 1 tut., 1 term
- Prerequisite: Open. Not available to students with credit in or registered in Humanities 1A6, Humanities 2A6, Arts and Science 1B6, Philosophy 2J3 or Philosophy 2R3. Not to be used by Humanities 1 students as an R-group course. Enrolment is limited.

**HUMAN 2B6 THE THEMES OF WESTERN CIVILIZATION**

A study of the ideas and issues that define the Western cultural tradition. The course views the concerns of modern artists and thinkers as a response to the two ancient sources of Western civilization, the Greek and the Biblical. It concentrates on four figures in four crucial periods: Socrates in the context of Greek philosophy and drama; St. Paul and the Judaic-Christian tradition; Shakespeare and the birth of a secular age; Wagner and Romantic decadence.

- 2 lecs., 1 tut., 2 terms
- Prerequisite: Open. Not available to students with credit in Humanities 1B6. Further information regarding this course may be obtained from Dr. G. Roebuck (English) and Prof. S. Azenstat (Philosophy).

**HUMANITIES 3B6 FROM ROMANTICISM TO MODERNISM**

An introduction to the major intellectual and aesthetic currents in Europe from the beginning of the nineteenth century to approximately 1920.

- 3 lecs., 2 terms
- Prerequisite: Registration in Level III or IV of any programme in the Faculty of Humanities. Same as Comparative Literature 3B6.

**Italian**

(See Romance Languages, Italian)

**Labour Studies**

The Honours B.A. Programme and the B.A. Programme in Labour Studies are supervised and co-ordinated by an interdisciplinary Committee of Instruction consisting of:

- F. Jones (Labour Studies)/Chairman
- N. Agarwal (Business)
- M. Basadur (Business)
- M. Browning (Economics)
- H. Jain (Business)
- P. George (ex officio)
- J. Jones (Social Work)
- W. Lewchuk (Labour Studies/Economics)
- R. Storey (Labour Studies/Sociology)

**CURRICULUM 1986-88**

**LABR ST 1A3 AN INTRODUCTION TO LABOUR STUDIES**

An introduction to the basic subject area on issues associated with Labour Studies. Topics include the nature of work, the evolution of labour-management relations and the role of government.

- Lectures and discussion; one term
- Prerequisite: Open.

**LABR ST 1A3 THE CANADIAN LABOUR MOVEMENT**

An examination of the impact of economic, social, cultural and political factors on the historical evolution, structure and actions of the Canadian working class and labour movement.

- Lectures and discussions; one term
- Prerequisite: Open.

**LABR ST 1B3 THE THEORETICAL FOUNDATIONS OF THE LABOUR MOVEMENT**

An examination of political, sociological and economic explanations of labour behaviour in industrial society. The focus will be on attempts to explain why labour has tended to organize as well as the different strategies which labour has pursued to achieve its goals.

- Lectures and discussions; one term
- Prerequisite: Open.

**LABR ST 2A3 TRADE UNIONISM: ORGANIZATION, PROCEDURES AND PRACTICES**

An overview of the functioning of contemporary unions within Canada. Areas studied will include: labour legislation; union administration, union policy, and the impact of unions on working conditions and on Canadian society.

- Lectures and discussions; one term
- Prerequisite: Registration in the B.A. programme in Labour Studies; or permission of the instructor.

**LABR ST 2A6 TRADE UNIONS**

An overview of the functioning of contemporary unions in Canada. Areas studied will include: union administration, union policy and the impact of unions on working conditions and on Canadian society.

- Lectures and discussions; two terms
- Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 2A3.

**LABR ST 2B3 SOCIAL WELFARE**

An analysis of social welfare policy and the income security system in Canada in historical perspective.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme.

Same as Term I of Social Work 2B6. (Students not in a Social Work programme must register for this course as Labour Studies.)

**LABR ST 2C3 THEORETICAL FOUNDATIONS OF THE LABOUR MOVEMENT**

An examination of political, sociological and economic explanations of labour behaviour in industrial society. The focus will be on attempts to explain why labour has tended to organize as well as the different strategies which labour has pursued to achieve its goals.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme.

**LABR ST 3A6 CURRENT LABOUR ISSUES**

An analysis of contemporary issues such as technology, occupational health and safety, women, income policies and industrial democracy. Each will be discussed with respect to current and proposed public policies.

- Lectures and discussions; one term
- Prerequisite: Registration in the B.A. Programme in Labour Studies; or permission of the instructor.

**LABR ST 3A6 CURRENT LABOUR ISSUES**

An analysis of contemporary issues such as technology, industrial democracy, work-sharing and part-time work. Topics will be discussed in relation to current and proposed public policies.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 1B3.

**LABR ST 3A3 CURRENT LABOUR ISSUES**

An analysis of contemporary issues such as technology, occupational health and safety, women, income policies and industrial democracy. Each will be discussed with respect to current and proposed public policies.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 3A3.

**LABR ST 3B3 ECONOMICS OF TRADE UNIONISM AND LABOUR**

Topics will include the economics of the labour market, trade unionism, work, the impact of trade unions on the labour market, economic theories of strikes and trade unions and the state.

- Lectures and discussion; one term
- Prerequisite: Economics 1A6.

**LABR ST 3C3 LABOUR LAW AND POLICY**

An analysis of the concepts and fundamentals of Canadian labour law and an analysis of Canadian labour policy.

- Lectures; one term
- Prerequisite: Registration in a Labour Studies programme.

**LABR ST 3D3 OCCUPATIONAL HEALTH AND SAFETY**

An analysis of issues and problems associated with occupational health and safety in Canada and other industrialized countries. Topics will be examined from social, political, economic, legal and medical perspectives.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme.

Offered in alternate years.

**LABR ST 3E3 WOMEN, WORK AND TRADE UNIONISM**

An examination of the historical and contemporary relations between women and work and women and trade unionism. Topics will include the evolution and structure of the gender division of labour, women and the labour market, and the relationship of women to the labour movement.

- Lectures and discussion; one term
- Prerequisite: Registration in a Labour Studies programme.

Offered in alternate years.

**LABR ST 3I3 THE SOCIOLOGY OF ORGANIZATIONS**

A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.

- Lectures and discussion; one term
- Prerequisite: Sociology 1A6, or permission of the instructor. Not open to those students with credit in Sociology 3P3 prior to 1973-74.

Same as Sociology 213.
LABR ST 446 FIELD EXPERIENCE
Combined field experience and seminars to develop practice and research skills relating to labour issues. Students spend a minimum of the equivalent of one day per week in a labour union, government agency or other appropriate organization. Seminar; two terms
Prerequisite: Registration in Level IV Honours B.A. in Labour Studies.

LABR ST 483 HONOURS SEMINAR
The seminar will provide an opportunity for in-depth study of selected topics relating to labour issues. Seminar; one term

LABR ST 4C3 PUBLIC SECTOR COLLECTIVE BARGAINING
This course examines unionization and collective bargaining for employees in the public, and para-public sectors. The theories covered include the origin and growth of public sector unions, models of public sector bargaining, legal aspects of bargaining rights and impasse resolution, bargaining issues and bargaining outcomes, and empirical studies of the effectiveness of dispute resolution procedures. Lectures and discussion; one term
Prerequisite: Commerce 4BC3, and registration in a Labour Studies programme. Open, as an elective, to Level IV Commerce students with the permission of the instructor, and the Chairman of the Labour Studies Committee of Instruction.

LABR ST 4D3 COMPARATIVE INDUSTRIAL RELATIONS
A discussion of industrial relations, policies and practices in several selected countries. Topics will include the development, structure, objectives and strategies of labour and management organizations. Lectures and discussion; one term
Prerequisite: Completion of the Level II required courses in a Labour Studies programme. Open, as an elective, to Level IV Commerce students with the permission of the instructor, and the Chairman of the Committee of Instruction.

Latin
(See Classics, Latin)

LINGUISTICS
Linguistics is the study of language as a system of human communication. As a discipline it combines the methods of traditional scholarship and philosophy with those of observational and experimental science in order to investigate the nature, structure and development of languages everywhere in the world and of language as a uniquely human faculty.

There is no B.A. Programme in Linguistics, but students may enrol in courses with linguistic content offered by the various departments. Advice on the selection of courses in Linguistics may be obtained from the Office of the Associate Dean (Studies), Faculty of Social Sciences.

A thematic study of Linguistics is available through the Humanities Interdisciplinary B.A. Programme. Further information about this programme may be obtained from the Office of the Associate Dean (Studies), Faculty of Humanities or by referring to the Faculty of Humanities section of this Calendar.

CURRICULUM 1986-88

LINGUIST 1A6 THE STUDY OF LANGUAGE
A far-reaching survey intended to acquaint the student with the numerous disciplines that deal with language and many of the crucial concepts and techniques developed within them. The course will enable the student to pursue higher studies in either linguistics or other language-related disciplines.
2 hrs., 1 tut., two terms
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
Same as Anthropology 1B6.

LINGUIST 2L3 PHONETICS
A study of the sounds of language and the articulatory capabilities of man.
3 hrs. (lects.); one term
Prerequisite: Open.
Same as Anthropology 2L3.

LINGUIST 2M3 PHONOLOGY
A study of the patterns of distinctive sounds in the world’s languages.
3 hrs. (lects.); one term
Prerequisite: Anthropology or Linguistics 2L3; or permission of the instructor.
Same as Anthropology 2M3.

LINGUIST 313 SYNTAX
A study of the capacity of man to form words into sentences. The emphasis will be upon generative transformational grammar.
3 hrs. (lects.); one term
Prerequisite: Open.
Same as Anthropology 313.

LINGUIST 3M3 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 hrs. (lects.); one term
Prerequisite: Anthropology or Linguistics 313; or permission of the instructor.

LINGUIST 3Y3 HISTORICAL LINGUISTICS
An advanced course covering the techniques for reconstructing ancestral languages. Language families, cognate sets, sound laws, internal and comparative reconstruction, and mechanisms of change will be treated.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2M5, or 2L3 and 2M3; or permission of the instructor.
Same as Anthropology 3Y3.

LINGUIST 4K3 ADVANCED TOPICS IN LINGUISTICS
An advanced course covering select topics in linguistic theory with particular emphasis upon their application to a language or set of languages.
3 hrs. (lects.); one term
Prerequisite: 12 units of Linguistics above Level I; or permission of the instructor.
Same as Anthropology 4K3.

OTHER RELATED COURSES
The following courses are related to the study of Linguistics, as well as courses in the history of specific languages.
For course descriptions and prerequisites, see the listings under each department.

Anthropology 2Q3 Linguistics and the Study of Culture
Anthropology 2T3 Selected Topics in Anthropological Linguistics
English 253 English as Communication
English 2T3 Development of English
English 2V6/2Vv6 The English Language
French 2H3 Introduction to French Linguistics
French 3B3 Semantics
French 3E3 Applied Linguistics and Second-Language Learning
French 3Q3 General and Comparative Phonetics
French 3U3 Sociolinguistics
French 4C3 French Morphology and Syntax
French 4E3 History of the French Language After 1600
French 4K3 Linguistics and Modern French Literary Criticism (From Structuralism to Semiotics)
French 423/Italian 423/Spanish 423 Development of the Romance Languages
Italian 4L4 Introduction to Italian Linguistics
Philosophy 2B3 Introductory Logic
Philosophy 2M3 Scientific Method
Psychology 3G3 Development During Infancy
Psychology 3H3 Intellectual Development After Infancy
Russian 4J3 Topics in Russian Language I
Russian 4K3 Topics in Russian Language II
Students planning graduate study in linguistics are well advised to study a classical Indo-European language. The following courses are available:
Greek 126 Beginners’ Intensive Greek
Latin 126 Beginners’ Intensive Latin
Sanskrit 3A6 Introduction to Sanskrit Grammar
Religious Studies 718 Readings in Sanskrit Texts (permission needed)

Manufacturing Engineering
(See Mechanical Engineering, Manufacturing Engineering)

Materials Science and Engineering
Faculty as of January 15, 1986
G.R. Purdy/Chairman

Professors
Dante Cosma/B.Eng., Ph.D. (Bucharest)/part-time
J. David Embury/B.Sc. (Manchester), Ph.D. (Cambridge), P.Eng.
Gyan G. Johari/B.Sc., M.Sc., Ph.D. (Gorakhpur)/Chair of Glass Science and Technology
D. Alan Kay/B.Sc., Ph.D. (Glasgow)
MATERIALS SCIENCE AND ENGINEERING

Wei-Kao Lu/B.S. (Chen-Kung), Ph.D. (Minnesota)/The Stelco Chair in Metallurgy
G. Robert Piercy/M.A.Sc. (British Columbia), Ph.D. (Birmingham), P.Eng.
Assoc. Chair
Adrian Kitai/B.Sc. (McMaster), P.Eng. (Cornell)

CURRICULUM 1986-88

CERAMICS 3A4 CERAMIC AND GLASS TECHNOLOGY
Ceramics: powder synthesis and characterization; surface electrochemistry; shaping and sintering. Glasses: melting, forming and quality control; annealing and tempering; ceramic and metallic glazes.
2 lects.; two terms
Prerequisite: Chemistry 2T5 or 2T6; Materials 2C4 or Metallurgy 2C3.

CERAMICS 4L4 GENERAL CERAMIC LABORATORY
A series of laboratories relevant to glass and ceramics technology. Industrial seminars and design problems in the second term.
2 labs.; two terms
Prerequisite: Completion of either Ceramics 404 or 4P4, and Materials 3B4, 3D6, and one of Ceramics 3A4, 404, 4P4.

CERAMICS 4P4 GLASSES AND REFRactories
Structure and physical properties of glasses. Raw materials used in glass and ceramic production, phase diagrams in glass-forming systems, production and heat treatment. The structure, properties and uses of refractories.
2 lects.; two terms
Prerequisite: Chemistry 2F3 or 258; or permission of the Department.
Offered for the last time in 1986-87.

CERAMICS 4R3 CERAMIC SCIENCE
Microstructural development and properties of traditional ceramics. Acidic, basic, neutral and non-oxidizing refractories; ferro-electric piezoelectric and ferromagnetic ceramics; super-ionic and structural ceramics.
3 lects., one term.
Prerequisite: Materials 3B6, 3E6.
Offered commencing in 1987-88.

CERAMICS 4S3 GLASS SCIENCE
Theoretical and experimental aspects of silicates, polymers, metallic glasses and glass-ceramics. Modern concepts and application of non-crystalline solids.
3 lects., one term.
Prerequisite: Materials 3B6, 3E6.
Offered commencing in 1987-88.

MATERIALS

MATLS I A3 INTRODUCTION TO MATERIALS
Introduction to fundamental concepts of bonding and atomic structure of condensed materials, with applications to silicate minerals, glasses, polymeric materials, and elementary metals and alloys.
2 lects., 1 tut.; one term
Prerequisite: Registration in or completion of Natural Sciences 1. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 203.

MATLS I B3 INTRODUCTION TO PROPERTIES OF MATERIALS
The structure of materials, its control and effect on properties; crystallography, stiffness and strength, plastic flow and fracture.
2 lects., 1 tut.; one term
Prerequisite: Materials I A3. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 203.

MATLS II C4 INTRODUCTION TO MATERIALS PROCESSING
The application of chemical principles to materials processing, including metals, ceramics, plastics and electronic materials. Thermochemistry of oxides, sulphides and halides; electrometry; kinetics of heterogeneous reactions; interfacial phenomena.
3 lects., 1 tut. or lect.; one term
Prerequisite: Chemistry 2T5 or 2T6, which may be taken concurrently. Not open to students who have completed Metallurgy 2C3.

MATLS 2F3 EXPERIMENTAL METHODS AND COMPUTATION
The basic experimental methods of acquiring, analyzing and presenting data are applied to experiments which demonstrate the properties exhibited by solid materials. Computer methods in the acquisition and processing of experimental data.
1 lab.(3), first term; 2 labs.(3); second term
Prerequisite: Computer Science 1H3 or Engineering 1D3, and Chemistry 1A7, and registration in a programme administered by the Department of Materials Science and Engineering.

MATLS 3B4 CRYSTALLOGRAPHY AND MICROSTRUCTURE
A laboratory course, complemented by lectures. Crystal structure and its determination by X-ray diffraction, microstructures of metals, alloys and ceramics and their correlation with phase equilibria.
1 lect., 1 lab.(3); one term
Prerequisite: Materials 2F3.

MATLS 3D6 THERMODYNAMICS OF MATERIALS
Foundations of thermodynamics from classical, statistical, quantum mechanical and quasicrystalline points of view.
3 lects.; two terms
Prerequisite: One of Chemistry 2P4, 2P6, 2T5, 2T6, Engineering 2W4, Physics 2H3, or Chemical Engineering 2D4 and 2F4.

MATLS 3E6 TRANSPORT PROCESSES
Diffusion mechanisms in solids and their application to phase transformations.
Heat transfer by conduction, convection and radiation, with applications to metallurgical and ceramic processing. Emphasis on the setting up of kinetic relationships using conceptual models.
3 lects.; two terms
Prerequisite: Mathematics 2M6, or Mathematics 2P4, 2P6, 2P8.

MATLS 3H3 THERMODYNAMICS OF MATERIALS II
The second half of Materials 3D6, with emphasis on "atomistic" topics such as statistical mechanics, ordering, interfaces and defects.
3 lects.; one term
Prerequisite: One of Chemistry 2P4, 2P6, 2T5, 2T6, Engineering 2W4, Physics 2H3, or Chemical Engineering 2D4 and 2F4.

MATLS 3P3 MECHANICAL BEHAVIOUR OF MATERIALS
Offered partly in common with Engineering 3P3.
3 lects.; one term
Prerequisite: Engineering 203, and 2P4 or 2R4.

MATLS 4A1 WORK REPORT
A report based on summer work experience appropriate to each student’s programme. The report will be defended orally. The Chairman should be consulted for detailed requirements, in the Spring of Level II.
3 lects.; one term
Prerequisite: One of Chemistry 2P4, 2P6, 2T5, 2T6, Chemical Engineering 2F4.

MATLS 4E3 PHASE TRANSFORMATIONS
The thermodynamics, kinetic and crystallographic aspects of phase transformations, with applications to the preparation and processing of materials. Solidification, recrystallization and heat treatment of steels, aluminum alloys and non-metallic materials.
3 lects.; one term
Prerequisite: Materials 3B3 or 3E6.

MATLS 4K4 SENIOR THESIS
Each student will have an individual experimental problem. A preliminary report is required at the end of the first term. The thesis is defended orally. A minimum of six scheduled hours each week, two terms.
Prerequisite: Registration in Level IV Ceramics, Materials or Metallurgical Engineering, Honours Materials Science or Materials Science Major.

MATLS 4M3 DISLOCATION THEORY
The behaviour of dislocations in solids. Crystallographic and plastic properties of dislocations, quantitative treatments of the yield stress, work hardening rate and strengthening mechanisms in metallic and non-metallic materials.
3 lects.; one term
Prerequisite: Engineering 2P4 and Materials 3B4.

MATLS 4Q3 CASE STUDIES
Analysis of current industrial problems, involving background science, cost analysis and process design.
2 lects., 1 tut.; one term
Prerequisite: Materials 3B4, 3D6, 3E6.
METALLURGY

METALL 3C3 CHEMICAL METALLURGY I
The application of chemical principles to extractive metallurgy. Mineral processing, hydrometallurgy, electrochemistry, reduction of iron ore, roasting and smelting of sulphide ores, electrowinning of aluminum and magnesium, halide metallurgy. Heat and mass balance calculations.
2 lects., 1 lab.(3); one term
Prerequisite: One of Chemistry 2P4, 2P6, 2T5, 2T6, Engineering 2W4.

METALL 4C4 CHEMICAL METALLURGY II
A sequel to Metallurgy 3C3. Physical chemistry of ironmaking and steelmaking processes; modern analytical techniques; refractories and their application.
2 lects.; two terms
Prerequisite: Metallurgy 3C3, or completion of at least 60 units of the Ceramic Engineering programme beyond Level I.

METALL 4L4 GENERAL LABORATORY AND SEMINAR
Major laboratory exercises drawing upon a broad spectrum of material covered in other metallurgical courses; student seminars in the second term.
2 labs.(3); two terms
Prerequisite: Materials 3B4 and 3D6.

METALL 4N3 KINETICS AND REACTOR ANALYSIS IN METALLURGICAL SYSTEMS
3 lects.; one term
Prerequisite: Materials 3E6, which may be taken concurrently with the permission of the instructor.

RELEVANT ENGINEERING COURSES
See Engineering (General) for course descriptions.
Engineer 203 Structure and Properties of Engineering Materials
Engineer 393 Mechanical Behaviour of Materials
Engineer 3Q3 Electronic Properties of Solids
Engineer 3R3 Properties and Selection of Engineering Materials
Engineer 4J3 Metal Forming

For Graduate courses, see the Calendar of the School of Graduate Studies.

Mathematics and Statistics

Faculty as of January 15, 1986

B. Banaschewski/Chairman
I.Z. Chorneyko/Associate Chairman

Professors Emeriti
Ernest A. Behrens/D.Phil.nat (Hamburg)
William J. McCaIIon/B.A., M.A. (McMaster)

Professors
Bernhard Banaschewski/Dipl. Math., Dr. rer. nat. (Hamburg), F.R.S.C.,
McKay Professor of Mathematics
Minakata Behara/B.Sc., M.Sc. (Utkal), Dr. rer. oec. (Saarland)
Claude E. Billigheimer/B.A., B.Sc., M.A. (Melbourne), Ph.D. (Toronto)
Gunter W.A. Bruns/Dr. rer. nat. (Berlin)
John M. Chadam/B.A. (Toronto), S.M., Ph.D (MIT)
Tae Ho Choe/B.S., B.S.C., M.A., (Kyeonggook), Ph.D. (Florida)
Joseph Csima/Dipl. Math. (Eotvos, Budapest), Ph.D. (Toronto)
Thomas M.K. Davison/B.Sc. (Sir George Williams), M.A., Ph.D. (Toronto)
Charles W. Dunnett/M.B.E., B.A. (McMaster), M.A. (Toronto), D.Sc. (Aberdeen), Professor of Clinical Epidemiology and Biostatistics
Gerard Field/B.Sc., Ph.D. (London), Professor of Applied Mathematics
Hans P. Heting/B.Sc. (McMaster), M.A. (Western), Ph.D. (Toronto)
Taqdir Hussain/B.A., M.A. (Allahab), Ph.D. (Syracuse)
Gerald L. Kreeb/B.Sc.(Toronto), M.Sc., Ph.D. (McMaster)/Director, IPACS
Norman D. Lane/B.A. (Queen’s), M.A., Ph.D. (Toronto)/Graduate Advisor
Rubens G. Lintz/B.A., Ph.D. (Sao Paulo)
Peter D.M. Macdonald/B.Sc., M.Sc. (Toronto), D.Phil. (Oxford)
S. Gopal Mohanty/B.Sc. (Utkal), M.A. (Punjab), Ph.D. (Albion)
Bruno J.W. Mueller/B.Sc. (Göttingen), M.S., Ph.D. (Main)
Evelyn M. Nelson/B.Sc., M.Sc., Ph.D. (McMaster)
Carl R. Riehm/B.A. (Toronto), Ph.D. (Princeton)
Alexander Rosa/M.S. (Kiev State), Ph.D. (Slovak Acad. Sciences)

Donald W.L. Sprung/B.A. (Toronto), Ph.D., D.Sc. (Birmingham),
Professor of Physics
Anatole B. Volkov/B.Sc. (North Carolina), M.S., Ph.D. (Wisconsin),
Professor of Physics

Associate Professors
Pulak C. Chakravarti/B.Sc. (Calcutta), M.Sc., Ph.D. (London)
Ihor Z. Chorneyko/B.A., M.A. (Saskatchewan), Ph.D. (Alberta)
Ernst O. Gadamer/Diplom Physiker (Frankfurt), M.A., Ph.D. (Toronto)
Ian Hambleton/B.Sc., M.Sc., Ph.D. (Toronto), Ph.D. (Yale)
Zdislav V. Kovarik/B.Sc. (Charles, Prague), Ph.D. (Toronto)
Ernest R. Moed/B.A., M.A., Ph.D. (Western)
Eric T. Sawyer/B.Sc., Ph.D. (McGill)
James D. Stewart/B.Sc. (Toronto), M.S. (Stanford), Ph.D. (Toronto)
Patrick C. Yip/B.Sc. (Memorial), Ph.D. (McMaster)

Assistant Professors
McKenzie Y.-K. Wang/A.B. (Princeton), Ph.D. (Stanford)

CURRICULUM 1986-88

Department Notes:
1. * Course is not necessarily offered every session; consult the Chairman of the Department or an Associate Dean of Science (Studies).
2. Students registered in an Arts and Science Programmes should note that Arts and Science 1D6 Calculus serves as an equivalent prerequisite for all upper level Mathematics courses, in which Mathematics 1A6 is a prerequisite.

MATH 1A6 CALCULUS I
This is a course in differential and integral calculus with emphasis on the fundamental processes and applications.
3 lects., 1 tut.; two terms
Prerequisite: Grade 13 Calculus.

MATH 1B3 LINEAR ALGEBRA I
Vectors, matrices, determinants, vector spaces, complex numbers.
3 lects., 1 tut.; one term
Prerequisite: Grade 13 Calculus. Not open to students who have credit in Mathematics 1G4.

MATH 1H5 ENGINEERING MATHEMATICS I
Mathematics used in engineering with emphasis on the solution of problems. Topics include application of the calculus and introductions to algebra, vectors and numerical methods.
3 lects.; first term; 2 lects.; second term
Prerequisite: Registration in Engineering I.

MATH 1J3 INTRODUCTORY CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to differential and integral calculus.
3 lects., 1 tut.; one term
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have credit in, any of Mathematics 1A6, 1F6, 1M3, 1N6. Normally not open to students who have completed Grade 13 Calculus.

MATH 1L3 LINEAR ALGEBRA AND PROBABILITY FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to vectors, matrices, determinants, probability theory.
3 lects., 1 tut.; one term
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have credit in, any of Mathematics 1B3, 1B4, 1F6, 1G4.

MATH 1M3 CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
Differential and integral calculus.
3 lects., 1 tut.; one term
Prerequisite: Mathematics 1K3, or Grade 13 Calculus. Not open to students who are registered in, or have credit in, any of Mathematics 1A6, 1F6, 1M3, 1N6.

MATH 1N6 CALCULUS FOR ENGINEERS
Differential and integral calculus with emphasis on fundamental processes and applications. Introduction to multivariate calculus.
3 lects., 1 tut.; two terms
Prerequisite: Grade 13 Mathematics; three credits including Mathematics 1A6.

MATH 2A6 CALCULUS II
Partial differentiation and differentiability of functions of several variables, extremal problems with constraints, implicit function theorem, multiple integrals, line and surface integrals, Green’s, Gauss’, Stokes’ Theorems and Systems of Differential Equations.
3 lects.; two terms
MATH 2B6 LINEAR ALGEBRA II
Vector spaces, linear transformations, polynomials, determinants, canonical forms, Jordan forms, inner product spaces, bilinear forms, introduction to groups of linear transformations.
3 lects.; two terms
Prerequisite: Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4. Not open to students who are registered in, or have credit in, Mathematics 2G3.

MATH 2C3 DIFFERENTIAL EQUATIONS
3 lects.; one term
Prerequisite: Mathematics 1A6 or 1N6, and one of Mathematics 1B3, 1B4, 1G4, 1H5. Not open to students who are registered in, or have credit in, Mathematics 203.

MATH 2F3 SETS AND NUMBERS
Elementary operations on sets, relations, functions, equivalence relations and partitions, partially ordered sets, equivalence of sets and its basic properties, the real number system.
3 lects.; one term
Prerequisite: Registration in an Honours programme in Mathematics, or permission of the instructor. Not open to students who are registered in, or have credit in, Mathematics 2B6.

MATH 2G3 INTERMEDIATE CALCULUS
Differential calculus of several variables, multiple integrals, line and surface integrals.
3 lects.; one term
Prerequisite: Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4. Not open to students who are registered in, or have credit in, Mathematics 2A5 or 2A6.

MATH 2H3 IDEAS IN MATHEMATICS
Selected topics from: set theory, non-Euclidean and projective geometries, number theory, probability and statistics, algebraic systems. No specific background in mathematics is assumed.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV of a non-Science programme.

MATH 2J6 LINEAR ALGEBRA AND SET THEORY
Sets, relations, and functions; the Axiom of Choice; the real number system; vector spaces, transformations, matrices and linear equations; eigenvalues and diagonalization of matrices; inner products.
3 lects.; two terms
Prerequisite: Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4. Not open to students who are registered in, or have credit in, Mathematics 2B4, 2B6, 2F3, 2F4.

MATH 2K3 FINANCIAL MATHEMATICS
Nominal and effective rates of interest and discount, forces of interest and discount, compound interest, annuities certain, amortization, sinking funds, bonds, security evaluation, determination of yields.
3 lects.; one term
Prerequisite: One of Mathematics 1A6, 1F6, 1M3, or permission of the instructor.

MATH 2L3 INTERMEDIATE CALCULUS AND DIFFERENTIAL EQUATIONS FOR BUSINESS AND THE SOCIAL SCIENCES
Functions of several variables, partial differentiation, chain rule, and extremal problems. First and second order differential equations, difference equations.
3 lects.; one term
Prerequisite: One of Mathematics 1A6 or 1M3, and one of Mathematics 1J3, 1B3, 1B4, 1G4. Not open to students who are registered in, or have credit in, Mathematics 2A5 or 2G3.

MATH 2M6 ENGINEERING MATHEMATICS II
Vector functions and operators, orthogonal curvilinear coordinates, applications of partial derivatives, multiple integrals, line and surface integrals, integral theorems, ordinary differential equations, Laplace transforms.
3 lects.; two terms
Prerequisite: Mathematics 1N6 and 1H5.

MATH 2N3 INTERMEDIATE MATHEMATICS FOR CHEMISTRY
Three dimensional analytic geometry and vectors, partial derivatives, multiple integrals, first order differential equations, linear differential equations.
3 lects.; one term
Prerequisite: Mathematics 1A6, and one of 1B3, 1B4 or 1G4.

MATH 2O3 DIFFERENTIAL EQUATIONS
Ordinary differential equations with constant co-efficients, series solutions, special methods; Laplace transforms, Fourier series, introduction to partial differential equations.
3 lects.; one term
Prerequisite: Mathematics 1A6 or 1N6, and one of Mathematics 1B3, 1B4, 1G4, 1H5. Not open to students who are registered in, or have credit in, Mathematics 2C3 or 2C4.

MATH 2P4 DIFFERENTIAL EQUATIONS FOR ENGINEERS
Complex numbers, linear differential equations, Fourier series, Fourier and Laplace transforms, partial differential equations.
4 lects.; or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N6 and 1H5.

MATH 2Q4 ADVANCED CALCULUS FOR ENGINEERS
Vector algebra, curves, partial differentiation, multiple integrals, Green’s Theorem, line and surface integrals, integral theorems, scalar and vector potentials, numerical solutions of linear systems.
4 lects.; or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N6 and 1H5.

MATH 2A6 REAL ANALYSIS
Development of the real number system, infinite series, differentiable functions of several variables. Study of integral, uniform convergence, improper integrals and their applications.
3 lects.; two terms
Prerequisite: Mathematics 2A5 or 2A6, and 2B4 or 2B6.

MATH 2B3 FOUNDATIONS OF GEOMETRY
Topics chosen from affine, projective, spherical or hyperbolic geometry, curves and surfaces in 3-space.
3 lects.; one term
Prerequisite: Mathematics 2B4 or 2B6, and 2F3 or 2F4, or a grade of at least C in Mathematics 2J6.

MATH 2C3 MATHEMATICAL PHYSICS I
Linear algebra and Eigenvalue problems; partial differential equations, orthogonal functions, Fourier series, Legendre functions, spherical harmonics.
3 lects.; one term
Prerequisite: Mathematics 2A5 or 2A6, and 2C3 or 2C4, or 2G3 and 203, or 2P4 and 2Q4, and Physics 2C5 or 2G3. Not open to students who are registered in, or have credit in, Mathematics 3A4, 3K3, 3V6.

MATH 2D3 MATHEMATICAL PHYSICS II
Functions of a complex variable, probability and statistics, boundary value problems, Bessel functions.
3 lects.; one term
Prerequisite: Mathematics 2C3. Not open to students who have credit in or are registered in Mathematics 3A4, 3K3, 3V6.

MATH 2E6 ALGEBRA I
Selected topics from: monoids, quotient monoids, groups, rings, including Sylow theorems, the fundamental theorem of finitely generated Abelian groups, Wedderburn Theorems.
3 lects.; two terms
Prerequisite: Mathematics 2F3 or 2F4, or at least a grade of C in Mathematics 2J6.

MATH 2F6 ADVANCED DIFFERENTIAL EQUATIONS
3 lects.; two terms
Prerequisite: Mathematics 2A5 or 2A6, and 2C3 or 2C4.

MATH 2G6 PROBLEM SOLVING
Principles of problem solving and application to solutions of mathematical problems. Practice in developing problem-solving skills on problems from various areas of mathematics.
3 lects.; one term
Prerequisite: Completion of at least 12 units of Level II Mathematics or Statistics, and the permission of the instructor.
Enrollment is limited.

MATH 3H6 NUMBER THEORY
Topics chosen from: congruences and residues, continued fractions, approximation of irrationals, arithmetic in selected quadratic number fields, Diophantine equations, partitions, geometry of numbers, quadratic reciprocity.
3 lects.; one term
Prerequisite: Permission of the instructor.

MATH 3I4 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for civil engineering, including probability and statistics, partial differential equations, numerical analysis, and matrix algebra.
4 hrs.; one term
Prerequisite: Mathematics 2M6.

MATH 3K3 ENGINEERING MATHEMATICS III
Complex variable theory with applications to electrical and computing engineering.
3 lects.; one term
Prerequisite: Mathematics 2F4 and 2Q4. Not open to students who have credit in Mathematics 3K5.

MATH 3L6 MATHEMATICAL LOGIC AND BOOLEAN ALGEBRA
The Axiom of Choice and its equivalents, ordinal numbers, cardinal numbers and the basics of transfinite arithmetic. Boolean algebras, Heyting algebras and possibly other algebras relevant for logic, classical and nonclassical propositional logics with emphasis on completeness, compactness and decidability.
3 lects.; two terms
Prerequisite: Mathematics 2F3 or 2F4, or at least a grade of B in Mathematics 2J6, or permission of the instructor.
MATH 306 REAL ANALYSIS
Development of real numbers. Riemann-Stieltjes integration; Gauss' and Stokes' Theorems; Jacobians, implicit function theorems. Taylor's expansions, pointwise, uniform, mean convergence; orthogonal functions, Fourier series.
3 lects.; two terms
Prerequisite: One of Mathematics 2A5, 2A6, 2G3.

MATH 3P3 GENERAL TOPOLOGY
Introduction to basic notions of general topology, various modes of defining topological spaces, continuity, convergence, separation axioms, compactness, connectedness.
3 lects.; one term
Prerequisite: Mathematics 2F3 or 2F4, or at least a grade of C in Mathematics 2I6.

MATH 3Q3 NUMERICAL ANALYSIS I
An introduction to the methods of numerical analysis, including methods for interpolation, numerical differentiation and integration, and the solution of transcendental, differential and matrix equation.
3 lects.; one term
Prerequisite: Mathematics 2A5 or 2A6, and 2C3 or 2C4, or 2G3 and 2O3, or 2P4, 2Q4, and one of Computer Science 1B3, 1H3, 2H3.

MATH 3R3 LINEAR PROGRAMMING
The general linear programming problem, simplex procedures, dual problems, degeneracy procedures, parametric linear programming, additional procedures and applications.
3 lects.; one term
Prerequisite: Mathematics 1A6, and one of Mathematics 1B3, 1B4, 1G4.

MATH 3S3 OPTIMIZATION
Non-linear programming methods, integer programming, quadratic programming, stochastic programming, and dynamic programming.
3 lects.; one term
Prerequisite: One of Mathematics 2A5, 2A6, 2G3, and Mathematics 3R3.

MATH 3T3 COMPLEX ANALYSIS I
Analytic functions, power series, elementary conformal mappings, Cauchy's Theorem, residue calculus.
3 lects.; one term
Prerequisite: One of Mathematics 2A5, 2A6, 2G3.

MATH 3V6 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for mechanical, metallurgical and ceramic engineering, including probability and statistics, partial differential equations, numerical analysis.
2 hrs., first term; 4 hrs., second term
Prerequisite: Mathematics 2M6 or equivalent.

MATH 3W3* DIRECTED READING
Directed reading in areas of mathematics of interest to the student and instructor.
Prerequisite: Permission of the Chairman of the Department.

MATH 3X3* LIFE CONTINGENCIES I
Single life functions and probabilities, forces of mortality, commutation functions, life annuities, insurance benefits, premium reserves.
3 lects.; one term
Prerequisite: Statistics 2D3 or 2D4, and Mathematics 2K3; or permission of the instructor.

MATH 3Y3* LIFE CONTINGENCIES II
Joint life and last survivor functions and probabilities, contingent functions, stationary population theory, multiple decrement theory.
3 lects.; one term
Prerequisite: Mathematics 3X3.

MATH 3Z3 HISTORY OF MATHEMATICS
An introduction to the history of mathematics, including interaction with other phases of culture, with special emphasis on the past three centuries.
3 lects.; one term
Prerequisite: At least two Level II Mathematics or Statistics courses other than Mathematics 2G3, 2H3, 2H6, 2K3, 2L3.

MATH 4A6 FUNCTIONS OF A COMPLEX VARIABLE
Study of analytic functions, their various representations, and their properties.
3 lects.; two terms
Prerequisite: Mathematics 3A6. Not open to students who are registered or have credit in, Mathematics 4O3.

MATH 4B6* DIFFERENTIABLE MANIFOLDS
Introduction to differentiable manifolds, differentiable forms, integration on manifolds, topics in differential geometry.
3 lects.; two terms
Prerequisite: Mathematics 3P3 or 3P4; or permission of the instructor.

MATH 4C3* COMBINATORICS
Inversion formulae, systems of distinct representatives, block designs and other configurations; and other topics.
3 lects.; one term
Prerequisite: One of Mathematics 2A5, 2A6, 2G3, and one of Mathematics 2B4, 2B6, 2I6; or permission of the instructor.

MATH 4D3 MATHEMATICAL PHYSICS III
Some mathematical techniques and their applications to physics and engineering. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations, hydrodynamics, elasticity, general relativity, field theory.
3 lects.; one term
Prerequisite: Mathematics 3O3 or 3C6, and registration in an Honours or Engineering program.

MATH 4E3 ALGEBRA II
Group theory, polynomial and group rings, ideal theory, Galois Theory.
3 lects.; one term
Prerequisite: Mathematics 3E4 or 3E6.

MATH 4F3 THEORY OF GAMES
Two person zero sum and non-zero sum games, n-person games; other topics.
3 lects.; one term
Prerequisite: Mathematics 3A6 or 3O6.

MATH 4I3* BANACH AND HILBERT SPACES
An introduction to l∞, Banach and Hilbert spaces, bounded linear operators, functionals, open mapping and closed graph theorems, duality, Riesz representation theorems; and other topics.
3 lects.; one term
Prerequisite: Mathematics 4K3 or 4K4; or permission of the instructor.

MATH 4J3 GRAPH THEORY
Graphs, trees, bipartite graphs, connectivity, graph colouring, matrix representations, applications.
3 lects.; one term
Prerequisite: One of Mathematics 2A5, 2A6, 2G3; and one of Mathematics 2B4, 2B6, 2J6.

MATH 4K3 MEASURE THEORY AND PROBABILITY
Introduction to the theory of measure and integration with applications to probability theory.
3 lects.; one term
Prerequisite: Mathematics 3T3. Not open to students who are registered or have credit in, Mathematics 4A6.

MATH 4L6 NUMERICAL ANALYSIS II
A detailed study including underlying hypotheses, convergence and stability methods available for the solution of ordinary and quasilinear partial differential equations.
2 lects., 1 lab.(3) every other week; two terms
Prerequisite: Mathematics 3Q3 or 3Q4.

MATH 4M3* FINITE AUTOMATA AND COMPUTABILITY
Finite automata, deterministic automata, regular languages, Turing machines, recursive functions, primitive recursive functions, decidability and undecidability with applications to formal language theory.
3 lects.; one term
Prerequisite: One of Mathematics 2F3, 2F4, 2J6.

MATH 4N6 APPLIED MATHEMATICAL ANALYSIS
Lebesque integration, distribution theory, Fourier Analysis, partial differential equations, integral equations, calculus of variations; additional topics.
3 lects.; two terms
Prerequisite: Mathematics 3D3 or 3F6; or permission of the instructor.

MATH 4W3 DIRECTED READING
Directed reading in areas of mathematics of interest to the student and the instructor.
Prerequisite: Registration in Level IV of an Honours Mathematical Sciences Program and permission of the Chairman of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.

STATISTICS

STATS 2D3 PROBABILITY THEORY I
Elementary theory of probability; random variables; discrete and continuous distributions including binomial, Poisson, hypergeometric, uniform, normal, \( X^2 \); moment-generating functions, limiting distributions, central limit theorems; applications.
3 lects.; one term
Prerequisite: One of Mathematics 1A6, 1M3, and one of Mathematics 1B3, 1B4, 1G4, 1L3.

STATS 2M3 STATISTICAL METHODS
Introduction to statistical methods and applications.
3 lects.; one term
Prerequisite: Mathematics 1A6 or 1F6, or a grade of at least B in Mathematics 1K3 and 1L3. Not open to students who have completed Economics 2B3, or Psychology 2R6, or Statistics 2R6.

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MATHEMATICS AND STATISTICS

STATS 2R6 INTRODUCTORY STATISTICS WITH APPLICATIONS
Descriptive statistics, plotting data, computation of measures for data, probability, random variables, hypothesis testing, parameter estimation, analysis of variance, chi-square tests, distribution-free tests.
3 lects.; two terms
Prerequisite: Grade 13 Calculus or Mathematics 1K3. Not open to students who have completed any of Statistics 2D3, 2D4, 2M3, 3M3, Psychology 2R6, Economics 2B3.

STATS 3D6 MATHEMATICAL STATISTICS I
The multivariate normal distribution, point and interval estimation, sampling distributions, tests of hypotheses, elementary linear regression, and other topics.
3 lects., 1 lab (1); two terms
Prerequisite: Statistics 2D3 or 2D4, and one of Mathematics 2A5, 2A6, 2G3, 2L3.

STATS 3N3 STATISTICAL METHODS FOR ENGINEERS
Introduction to statistical methods and applications: data analysis and statistical methods.
3 lects.; one term
Prerequisite: Registration in, or completion of, Levels III, IV or V Engineering.

STATS 3S3 SURVEY SAMPLING
Survey design; simple random sampling; stratified sampling; proportional allocation; ratio estimation; cluster sampling; systematic sampling and sample size determination. A project associated with current research is required.
3 lects.; one term
Prerequisite: Statistics 2D3 or 2D4, and Statistics 2M3 or 3M3; or permission of the instructor.

STATS 3US STOCHASTIC PROCESSES I
Random walk, Markov chains, discrete and continuous parameter Markov processes, branching processes, birth and death processes, queuing processes.
3 lects.; one term
Prerequisite: Statistics 2D3 or 2D4, and Statistics 2M3 or 3M3; or permission of the instructor.

STATS 3X3 ENGINEERING MATHEMATICS IV
Further topics of interest for electrical engineering, emphasizing probability theory.
3 lects.; one term
Prerequisite: Mathematics 2P4 and 2Q4.

STATS 3Y3 MULTIPLE REGRESSION AND NON-PARAMETRIC METHODS
Multiple linear regression model, tests on coefficients, interpretation and applications; autoregression models and time series; nonparametric tests such as goodness-of-fit, Wilcoxon tests and others.
3 lects.; one term
Prerequisite: One of Statistics 3M3, 3N3, 3X3, Mathematics 3J4, 3V6, and registration in an Engineering and Management programme; or permission of the instructor.

STATS 4H3 OPERATIONS RESEARCH
Network models and algorithms, dynamic models, queueing models and other topics.
3 lects.; one term
Prerequisite: Mathematics 3R3, and Statistics 2D3 or 2D4.

STATS 4K3 STATISTICAL DECISION THEORY
Decision theory and applications; Bayes, admissible and minimax rules; multiple decision problems.
3 lects.; one term
Prerequisite: Statistics 3D6.

STATS 4M3 MULTIVARIATE ANALYSIS
Multivariate distributions: Normal, Wishart, T² and others; regression, correlation, factor analysis, general linear hypothesis.
3 lects.; one term
Prerequisite: Statistics 3D6, and one of Mathematics 2B4, 2B6, 2J6.

STATS 4R3 REGRESSION ANALYSIS
Linear and non-linear models; least squares theory; analysis of residuals; stepwise regression; weighted least squares; prediction and calibration; selected topics in regression.
3 lects.; one term
Prerequisite: Statistics 3D6.

STATS 4T3 DESIGN OF EXPERIMENTS
Analysis of variance and covariance; linear models; randomised block designs; Latin squares; factorial experiments. Emphasis on applications.
3 lects.; one term
Prerequisite: Statistics 3D6; or permission of the instructor.

STATS 4U3 NONPARAMETRIC METHODS IN STATISTICS
Rank tests and non-parametric methods; rank correlation; comparisons with parametric methods.
3 lects.; one term
Prerequisite: Statistics 3D6; or permission of the instructor.

For Graduate Courses see Calendar of School of Graduate Studies.

Mechanical Engineering

Faculty as of January 15, 1986

D.S. Weaver/Chairman

Professor Emeritus

Professors
Mohammed A. Dokainish/B.Sc. (Cairo), M.A.Sc., Ph.D. (Toronto), P.Eng.
Ross L. Judd/B.E.Sc. (Western), M.Eng. (McMaster), Ph.D. (Michigan), P.Eng.
Brian Latto/B.Sc. (London), Ph.D. (Glasgow), P.Eng., C.Eng.
David S. Weaver/M.A.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.

Associate Professors
Mohammed ElBestawi/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Hoda A. ElMaraghy/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Mohamed Shoukry/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Ian Yellowley/B.Sc. (Nottingham), M.Sc., Ph.D. (Manchester), P.Eng.

Assistant Professor
Vincent M. Sowa/B.Sc. (Illinois), M.A. (Purdue), Ph.D. (Waterloo)/Part-time

Lecturers
Richard A. Hudspith/B.Eng. (McMaster), P.Eng./part-time
Robert C. Hudspith/B.Eng., M.Eng. (McMaster)/part-time

Associate Members
Dhanjoo N. Ghista/Ph.D. (Stanford)

CURRICULUM 1986-88

Department Notes:
Enrolment in Mechanical Engineering courses by students in programmes other than those administered by the Department may be limited.

MANUFACTURING ENGINEERING

MANUFACT 2C3 ENGINEERING DESIGN I
One or two projects in small teams involving modelling, analysis, synthesis and computing, with emphasis on analysis. Individual reports are required with complete assembly and detail drawings.
2 lects., 1 lab (3) alternating weeks and 1 lab (3) every week; one term
Prerequisite: Engineering IC4, 1D3 and 2P4.

MANUFACT 3M3 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, measurements and solid mechanics.
2 labs. (4.5); two terms
Prerequisite: Registration in Manufacturing Engineering.

MANUFACT 4A3 COMPUTER AIDED MANUFACTURING
3 lects.; one term
Prerequisite: Mechanical Engineering 3C3, and registration in Manufacturing Engineering, or permission of the Department.

MANUFACT 4M4 PROJECT
A major project in the area of manufacturing engineering. It may be of a design or experimental nature.
1 lab (3); first term, 3 labs (3); second term
Prerequisite: Completion of a minimum of 62 units of Manufacturing Engineering beyond Level 3.

MANUFACT 4P2 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, solid mechanics and controls.
1 lab (3); two terms
Prerequisite: Manufacturing Engineering 3M3.
MECHANICAL ENGINEERING

MECH ENG 2A3 KINEMATICS OF MECHANISMS
Computations and projects in mechanical engineering. Introduction to the design of mechanisms. Analysis and synthesis of cams, gears and planar mechanisms. Force analysis of machine members.
2 lects., 1 lab.(3); first term, 1 lab.(3); second term
Prerequisite: Mathematics 1H5, 1N6, Physics 1D3.

MECH ENG 2B3 MECHANICAL ENGINEERING MEASUREMENTS
Introduction to the theory and practice of measuring techniques. Theory of measurements, precision shop measurements and optical tools; measurements of pressure, flow, temperature and power; combustion analysis and gas analysis, measurement of strain and force; elementary statistical analysis.
1 lect., 1 lab.(3), first term, 1 lab.(3); second term
Prerequisite: Mathematics 1H5, Physics 1D3.

MECH ENG 2C3 ENGINEERING DESIGN II
One or two projects in small teams involving modeling, analysis, synthesis and computing, with emphasis on analysis. Individual reports are required with complete assembly and detail drawings.
2 lects., 1 lab.(3) alternating weeks and 1 lab.(3) every week; one term
Prerequisite: Engineering 1C4, 1D3 and 2P4.

MECH ENG 3A3 ENGINEERING MECHANICS
Singularity functions, generalized Hooke’s law; shear stress, shear flow in beams; shear center. Biaxial and unsymmetrical bending analysis of indeterminate beams and frames using energy methods; impact loads. Buckling of compression members.
3 lects.; one term
Prerequisite: Engineering 2P4.

MECH ENG 3C3 MANUFACTURING ENGINEERING
A general introduction, encompassing the wide field of activities from iron and steel making through casting, rolling, forging, to cold forming, metal cutting, welding, bonding, electrical machining, surface treatment, mechanical handling, assembly, cleaning, packaging.
2 lects., 1 lab.(3); one term
Prerequisite: Registration in a programme in Manufacturing Engineering or Mechanical Engineering.

MECH ENG 3D3 MECHANICAL ENGINEERING THERMODYNAMICS
The thermodynamic laws, as developed in Engineering 2W4, are re-examined. Advanced engineering thermodynamic processes, psychometry, introduction to direct energy conversion and chemical equilibrium, with emphasis on combustion.
3 lects.; one term
Prerequisite: Engineering 2W4.

MECH ENG 3E4 ENGINEERING DESIGN III
Introduction to elements of mechanical analysis. Static and dynamic analysis of machine elements, members and mechanical systems. The laboratory consists of problems and case studies.
3 lects., 1 lab.(3); one term
Prerequisite: Engineering 2P4, 2Q4, and Mechanical Engineering 3A3.

MECH ENG 3M2 COMPOSITE LABORATORY
Laboratory exercises in fluid mechanics, thermodynamics and solid mechanics.
1 lab.(3); two terms
Prerequisite: Registration in Mechanical Engineering or Mechanical Engineering and Management.

MECH ENG 3Q4 FLUID MECHANICS
Fluid properties and statics are introduced. Basic equations of continuity, energy and momentum for internal and external flows are discussed. Similarity, dimensional analysis and compressible and incompressible flows.
3 lects., 2 tuts.; one term
Prerequisite: Mathematics 2M6 or 2P4, 2Q4, and Engineering 2W4.

MECH ENG 3R3 HEAT TRANSFER
3 lects.; one term
Prerequisite: Mathematics 2M6, Engineering 2W4, Mechanical Engineering 3Q4.

MECH ENG 4A3 ADVANCED STRENGTH OF MATERIALS
The application of strength of materials to practical engineering calculations in design and in the working of metals. Plastic deformation and creep. Elastic behaviour and rapid, approximate methods are emphasized more than detailed techniques of numerical analysis.
2 lects., 1 lab.; one term
Prerequisite: Mechanical Engineering 3A3 or equivalent.

MECH ENG 4C3 INDUSTRIAL ENGINEERING
3 lects.; one term
Prerequisite: Mathematics 3V6.
MECHANICAL ENGINEERING

MECH ENG 4W3 AEROTHERMODYNAMICS
Aerodynamics and thermodynamics of compressible flow including wave propagation, shock formation and the effect of friction and heat transfer in internal flow. Real gas flow including the flow in nozzles, diffusers, ejectors and curved passages. Two-phase compressible flow effects.
3 lects.; one term
Prerequisite: Engineering 2W4 and Mechanical Engineering 3O4.

MECH ENG 4X3 MATERIAL PROPERTIES IN DESIGN
Selection of materials. Canadian standards for structural steel design and internationally accepted material designations; the effects of heat treatment, surface treatment, welding, etc., designing against various modes of failure, including fatigue, stress corrosion cracking, embrittlement and wear.
3 lects.; one term
Prerequisite: Engineering 2O3 and Mechanical Engineering 3A3 or equivalent.

MECH ENG 4Y3 ADVANCED KINEMATICS OF MACHINES
Additional topics on the analysis of mechanisms. Major emphasis on the design and methods of synthesis of mechanism to perform specific motion tasks.
3 lects.; one term
Prerequisite: Engineering 2Q4 and Mechanical Engineering 2A3.

MECH ENG 4Z3 COMPUTER AIDED DESIGN
Use of computer library subroutines, computer graphics in design, advanced programming methods for computer-aided design, interactive programming, design of computer-aided design packages, some numerical methods particularly relevant to computer-aided design, computer control of machines.
2 lects., 1 lab.(3); one term
Prerequisite: Mechanical Engineering 3E4 and Mechanical Engineering 2C3 or Manufacturing Engineering 2C3.

ENGINEER 4J3 METAL FORMING
Offered jointly by the Departments of Mechanical Engineering and Materials Science and Engineering. See Engineering (General) for course description.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Metallurgy
(See Materials Science and Engineering, Metallurgy)

Molecular Biology
These courses are administered, within the Faculty of Science, jointly by the Departments of Biochemistry, Biology and Pathology, through a Committee of Instruction, and also draw on the new McMaster Institute for Molecular Biology and Biotechnology, to be established July 1, 1986, as a teaching resource. Information and counselling may be obtained from the Programme Co-ordinator of the Molecular Biology and Biotechnology programme.

MOL BIO 3A6 LABORATORY IN MOLECULAR BIOLOGY
Part of this course is common with Biochemistry 3L6. The remainder consists of basic experiments in molecular biology and microbial genetics.
2 labs.; two terms
Prerequisite: Credit or registration in Biochemistry 3B3 or 3G6, and registration in Honours Molecular Biology and Biotechnology; or permission of the instructor.
Offered in 1987-88.

MOL BIO 4A3 LABORATORY IN MOLECULAR BIOLOGY AND BIOTECHNOLOGY
Cloning, engineered mutagenesis, DNA sequencing, characterization and expression of genes and fermentation.
3 labs.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6. Open to students in Honours Molecular Biology and Biotechnology. For students in Honours Biochemistry and Honours Biology, a C.A.A. of at least 8.0 and permission of the programme co-ordinator is required.
Enrolment is limited
Offered in 1988-89.

MOL BIO 4B3 BIOTECHNOLOGY AND GENETIC ENGINEERING
Theory, methods and applications in genetic engineering and biotechnology with emphasis on recombinant DNA, hybridomas, engineered organisms and fermentation processes.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6.
Offered in 1988-89.

MOL BIO 4C3 GENE EXPRESSION
An advanced course covering molecular aspects of gene expression in prokaryotes and eukaryotes: control of transcription, RNA processing and transport, translation, protein processing and targeting.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6.
Offered in 1988-89.

MOL BIO 4D3 MOLECULAR ASPECTS OF EUKARYOTIC CHROMOSOMES
Chromatin structure, repeated DNA sequences, concerted evolution of gene families, telomeres, centromeres, gene transfer, oncoviruses, transposable elements.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6, Biology 303.
Offered in 1988-89.

MOL BIO 4E3 REPLICATION AND RECOMBINATION
Replication, recombination, repair and mutagenesis of DNA.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6, Biology 303.
Offered in 1988-89.

MOL BIO 4F3 MOLECULAR ASPECTS OF DEVELOPMENT
Topics include genetic and non-genetic determinants of early embryonic development, cell determination, and differentiation.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6, Biology 3N6.
Offered in 1988-89.

MOL BIO 4G3 PLANT MOLECULAR BIOLOGY
Molecular aspects of special features of plant cells and their organelles, cell growth, regeneration and development, protoplast fusion, plant viruses and host-vector systems.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C3 or 3G6, Biology 2D3 and registration in or completion of Biology 4B3 or 4H3.
Offered in 1988-89.

Music
Faculty as of January 15, 1986

F.A. Hall/Chairman

Professor
Marta Hidy/Dipl. Perf. (Budapest), F.R.H.C.M. (Hon.)
Alan Walker/B.Mus., D.Mus. (Durham), A.R.C.M., L.G.S.M., F.G.S.M. (Hon.)
William Wallace/B.Mus., Ph.D. (Utah)

Associate Professor
Frederick Hall/ Assoc. Dipl., B.Mus. (McGill), M.A., Ph.D. (Toronto)
Hugh Hartwell/Assoc. Dipl., B.Mus. (McGill), A.M., Ph.D. (Pennsylvania)
Zdenek Konicek/Dipl., M.A. (Prague) (part-time)
Paul Rapoport/A.B. (Michigan), M.Mus., Ph.D. (Illinois)

Assistant Professor
Matthew Airthart/B.A. (Whitman), M.M. (Northwestern)
Shany Shaltz/A.Mus., B.A., M.A., Ph.D. (Toronto) (part-time)

Lecturer (part-time)
Roger Flock
Kenneth Gee/A.R.C.T., B.Mus. (McMaster)

Instructor (part-time)
Richard Birney-Smith/harpischord
Renée Bouthot/Dipl. Perf., M.M. (Toronto)/voice
Alla Brat/piano
Mark Childs/Dipl. (Curtis)/viola
Dennis Driscoll/A.R.C.C.O. Dipl./organ
Cecile Bérard-Dunn/B.Mus. (College Marie de l'Incarnation), M.M. (Montreal)/piano
Paula Elliott/B.Mus., M.M./flute
Roger Flock/percussion
Lynne Gangbar/classical guitar
Robert Grim/Mus.Bac., M.A./trumpet
Jean Norman Iadeluca/percussion
Gregory B. IrvinlMus.Bac./tuba
Gary Kidd/Mus.Bac./clarinet
Peter Lutek/bassoon
Mark McCarron/jazz guitar
Jon Peterson/Dipl. (Curtis)/oboe
MUSIC

MUSIC 1A6 INTRODUCTION TO MUSIC
An historical survey of music from ca. 500 to the present. The development of styles and genres within the major musical periods. Elementary theory.
3 lects.; two terms
Prerequisite: Open. No previous musical knowledge required. Not available to students registered in Honours Music.

MUSIC 1B6 HISTORY OF MUSIC (CA. 500-1750)
A survey of medieval, renaissance, and baroque music. Includes consideration of performance practices, and influences of the other arts and of socio-political developments.
3 lects.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1C2 COUNTERPOINT
The analysis and writing of modal counterpoint in the style of the late renaissance.
1 lect.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1CC2 HARMONY
The analysis and writing of functional harmony. Includes study of music by J.S. Bach and others.
1 lect.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1D2 AURAL TRAINING AND GENERAL MUSICIANSHIP
1 lect.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1DD2 KEYBOARD SKILLS
18th-century harmony applied to the keyboard. (Students with a deficiency in keyboard skills will enrol in a special section.)
1 lect.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1E4 PRACTICAL STUDY
The technique and repertoire of any orchestral instrument, the piano, organ, harpsichord, voice, recorder, saxophone, or guitar.
1 half-hour lesson weekly; two terms
Prerequisite: Registration in a Music programme.

MUSIC 1E6 PRACTICAL STUDY
The technique and repertoire of the student's major instrument (piano or standard orchestral woodwind, brass, or string instrument).
1 hour lesson weekly; two terms
Prerequisite: Registration in Music 1 (Performance). Not available to students with credit in Music 1E4.

MUSIC 1F3 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital.
1 hour; two terms
Prerequisite: Registration in Music 1 (Performance).

MUSIC 1G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 2A6 HISTORY OF MUSIC
A detailed study of music from ca. 1700 to the present.
3 lects.; two terms
Prerequisite: Music 1A6; or permission of the Department. Not available to students registered in Honours Music.

MUSIC 2B3 HISTORY OF MUSIC (CA. 1750-1880)
A survey of classical and romantic music.
3 lects.; one term
Prerequisite: Music 1B6, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2B3 HISTORY OF MUSIC (CA. 1880 TO THE PRESENT)
A survey of post-romantic and 20th-century music.
3 lects.; one term
Prerequisite: Music 1B6, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2C2 COUNTERPOINT
A continuation of Music 1C2. Imitative counterpoint in the style of the late renaissance. Includes study of music by composers such as Palestrina and Lassus.
2 lects.; one term
Prerequisite: Music 1C2, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2CC2 HARMONY
A continuation of Music 1CC2. Chromatic harmony and the completed minor-major system.
1 lect., term one; 2 lects., term two
Prerequisite: Music 1CC2, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2DD2 KEYBOARD SKILLS
A continuation of Music 1DD2. Includes transposing at sight and score reading.
1 lect.; two terms
Prerequisite: Music 1DD2, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2E4 PRACTICAL STUDY
A continuation of Music 1E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 1E4, and in a Music programme.

MUSIC 2E6 PRACTICAL STUDY
A continuation of Music 1E6.
1 hour lesson weekly; two terms
Prerequisite: Music 1E6, and in Honours Music (Performance). Not available to students with credit in Music 2E4.

MUSIC 2F3 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital.
1 hr.; two terms
Prerequisite: Registration in Honours Music (Performance).

MUSIC 2G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 2H4 ANALYSIS
The traditional forms of music as found in works by composers such as Bach, Mozart, Beethoven, and Brahms.
2 lects.; two terms
Prerequisite: Music 1CC2, and in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 3A3 MUSIC EDUCATION I
A survey of choral techniques and music appreciation, and of the rudiments of music for classroom use.
3 lects.; one term
Prerequisite: Music 1A6 or 2A6; or permission of the Department. Not available to students registered in Honours Music.
MUSIC A survey of the
MUSIC Alternates
3 lects.; one term
Prerequisite: Music 3A3, or registration in a Music programme; or permission of
the Department.
MUSIC 3B3 TOPICS IN MUSIC HISTORY: EARLY MUSIC
(MEDIEVAL TO BAROQUE) 1986-87: The Renaissance Madrigal Seminar (2 hrs.); one term
Prerequisite: Music 2B3, and registration in a Music programme.
Alternates with Music 3B3. Music 3B3 may be repeated, if on a different topic, to a total of 6 units.
MUSIC 3BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE
ROMANTIC ERA 1987-88: 19th-Century Piano Music Seminar(2 hrs.); one term
Prerequisite: Music 2B3, and registration in a Music programme.
Alternates with Music 3B3. Music 3BB3 may be repeated, if on a different topic, to a total of 6 units.
MUSIC 3C4 HARMONY AND COUNTERPOINT Advanced studies in baroque music. Invention and fugue.
2 lects.; two terms
Prerequisite: Music 2C2, and either 2CC2 or 2CC3, and registration in a Music programme.
MUSIC 3E4 PRACTICAL STUDY A continuation of Music 2E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 2E4, and registration in a Music programme.
MUSIC 3E6 PRACTICAL STUDY A continuation of Music 2E6.
1 hour lesson weekly; two terms
Prerequisite: Music 2E6, and registration in Honours Music (Performance). Not
available to students with credit in Music 3E4.
MUSIC 3E63 MASTER CLASS/RECITAL Seminar in the study and performance of selected solo works for the student's
major instrument, culminating in a solo recital of approximately 45 minutes. Repertoire
differ from that chosen in Music 3E6 and 4E6.
Seminar (1 hr.); two terms
Prerequisite: Music 2E6, registration in Honours Music (Performance), and per-
mission of the Department.
MUSIC 3F3 CHAMBER ENSEMBLE Study and performance of selected chamber music, culminating in a recital.
1 hour; two terms
Prerequisite: Music 2F3, and registration in Honours Music (Performance).
MUSIC 3G2 ENSEMBLE Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by
the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students regis-
tered in a Music programme.
MUSIC 3H4 ANALYSIS Techniques of analysis applied to selected works of the 20th century.
2 lects.; two terms
Prerequisite: Music 2B3, 2H4, and either 2CC2 or 2CC3, and registration in a Music programme.
MUSIC 3J4 ORCHESTRATION A study of the instruments of the orchestra. The scoring of music for symphony
orchestra and for concert band.
2 lects.; two terms
Prerequisite: Music 2D2D, and either 2CC2 or 2CC3, and registration in a Music *
programme.
MUSIC 3K3 BRASS METHODS A study of the basic techniques of playing brass instruments. Brass literature for
various educational levels. No previous study of brass required.
1 lect., 1 lab.; two terms
Prerequisite: Registration in a Music programme.
MUSIC 3L3 WOODWIND METHODS A study of the basic techniques of playing woodwind instruments. Woodwind lit-
erature for various educational levels. No previous study of woodwinds required.
1 lect., 1 lab.; two terms
Prerequisite: Registration in a Music programme.
MUSIC 3M4 STRING METHODS A study of the basic techniques of playing string instruments. String literature for
various educational levels. No previous study of strings required. Each student will
concentrate on one instrument and gain a working knowledge of the others.
2 lects.; two terms
Prerequisite: Registration in a Music programme.
MUSIC 3N3 VOCAL METHODS A study of the basic techniques of singing. The organization, conducting, and
rehearsing of a choir. Choral literature for various educational levels. No previous study of voice required.
1 lect.; two terms
Prerequisite: Registration in a Music programme.
MUSIC 303 CONDUCTING Fundamental conducting techniques applied to works selected from the standard
repertoire.
2 lects., term one; 1 lect., term two
Prerequisite: Music 1CC2, and registration in a Music programme.
MUSIC 3Q3 LITERATURE AND PEDAGOGY Survey and application of teaching methods for the repertoire of the student's
major instrument.
Seminar (2 hrs.); one term
Prerequisite: Music 2E6, and registration in Honours Music (Performance).
MUSIC 3R3 RESEARCH METHODS AND BIBLIOGRAPHY An examination of the major reference and bibliographic sources. Historical, ana-
lytical, and critical methods of research.
2 lects.; one term
Prerequisite: Music 1A6 or completion of 18 units of Music including Music 1B6;
or permission of the Department. Offered in alternate years.
MUSIC 3U3 JAZZ An historical survey of jazz, focusing on selected performers and arrangers.
2 lects.; one term
Prerequisite: Music 1A6 or completion of 18 units of Music including Music 1CC2, or permission of the Department.
Offered in alternate years.
MUSIC 4B3 TOPICS IN MUSIC HISTORY: MUSIC OF THE
CLASSICAL ERA 1986-87: Opera Seminar (2 hrs.); one term
Prerequisite: Music 2B3, and registration in a Music programme.
Alternates with Music 4BB3. Music 4B3 may be repeated, if on a different topic, to a total of 6 units.
MUSIC 4BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE 20TH
CENTURY 1987-88: The Evolution of the Avant-Garde Seminar (2 hrs.); one term
Prerequisite: Music 2B3, and registration in a Music programme.
Alternates with Music 4B3. Music 4BB3 may be repeated, if on a different topic, to a total of 6 units.
MUSIC 4C4 HARMONY AND COUNTERPOINT Advanced studies in classical and romantic music. Variations, sonata, and char-
acter pieces.
2 lects.; two terms
Prerequisite: Music 3C4, and registration in a Music programme.
MUSIC 4E4 PRACTICAL STUDY A continuation of Music 3E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 3E4, and registration in a Music programme.
MUSIC 4E6 PRACTICAL STUDY A continuation of Music 3E6.
1 hour lesson weekly; two terms
Prerequisite: Music 3E6, and registration in Honours Music (Performance). Not
available to students with credit in Music 3E4.
MUSIC 4EE4 MASTER CLASS/RECITAL Seminar in the study and performance of selected solo works for the student's
major instrument, culminating in a solo recital of approximately 1 hour. Repertoire
will differ from that chosen in Music 3E6 and 4E6.
Seminar (1 hr.); two terms
Prerequisite: Music 3E6 and 3EE3, registration in Honours Music (Performance),
and permission of the Department.
MUSIC 4F3 CHAMBER ENSEMBLE Study and performance of selected chamber music, culminating in a recital.
1 hr.; two terms
Prerequisite: Music 3F3, and registration in Honours Music (Performance).
MUSIC 4G2 ENSEMBLE Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by
the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students regis-
tered in a Music programme.
MUSIC 4H3 ANALYSIS Advanced studies in analysis. Seminar (2 hrs.); one term
Prerequisite: Music 2B3, 2H4, and either 2CC2 or 2CC3, and registration in a Music programme.
Offered in alternate years.
NURSING

NURSING 2L6 GUIDED NURSING PRACTICE I
Growth and development of the individual are studied within the context of the family and the community. Concepts basic to nursing are examined as they relate to maturational and situational stress. By using a variety of clinical and laboratory settings, experiences are provided with children of several age groups, young adults in the childbearing phase of family development and adults of all ages, some of whom have been hospitalized for surgery. Each student works in hospital, community and home settings each term.
9 hrs. (clin. lab.); two terms
Prerequisite: Nursing 1F7, or equivalent.

NURSING 2H4 GUIDED NURSING PRACTICE II
Students utilize knowledge and skills studied in Levels I and II by assessing, planning, implementing, and evaluating the nursing care of patients in one of a variety of clinical settings.
24 hrs. (clin. lab., including tut.) per week for 4 wks.; third term
Prerequisite: Nursing 2L6, 2M5, or equivalent.

NURSING 358 NURSING CONCEPTS IN HEALTH AND ILLNESS II
Models of nursing intervention using a variety of theoretical bases are applied to health care situations through problem-based learning. Recurring themes such as crisis, loss, anxiety, identity, immobility, and pain are studied in a framework related to the promotion of health, prevention of illness, early diagnosis and treatment, rehabilitation, and maintenance.
4 hrs. (lect./problem-based tut.); two terms

NURSING 3X7 GUIDED NURSING PRACTICE III
Planned and guided practice experiences are provided in a variety of settings (e.g., psychosocial, pediatric and medical-surgical units, physicians offices and community health agencies). Major emphasis is given to the assessment, problem-solving, inter-personal, technical and teaching skills necessary to implement and evaluate nursing care in institutional and ambulatory community settings. Nursing of individuals and families throughout the life-cycle and along the health-illness continuum is stressed.
21 hrs. (clin. lab. including tut.); 13 weeks
Prerequisite: Normally taken concurrently with Nursing 358.

NURSING 3Y7 GUIDED NURSING PRACTICE IV
A continuation of Nursing 3X7.
21 hrs. (clin. lab. including tut.); 13 weeks
Prerequisite: Normally taken concurrently with Nursing 358.

NURSING 4A2 CURRENT TRENDS AND ISSUES IN NURSING
Issues facing the profession, and the implications of current changes in the health field for future nursing practice.
2 hrs. every other week; two terms

NURSING 4E6 CONCEPTS IN HEALTH AND ILLNESS III
A problem based tutorial course in which students integrate theories and concepts related to patient care and leadership with their clinical experience. Student participation includes selecting appropriate clinical situations for study and leading the group problem solving.
3 hrs. (lect./problem-based tut.) per week; two terms

NURSING 4J7 GUIDED NURSING PRACTICE V
This course focuses on the application of theory and concepts to clinical practice, including the introduction to the leader/manager role in patient care. Students are individually placed in a variety of health care settings.
24 hrs. (clin. lab. including tut.); 12 weeks
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 4K7 GUIDED NURSING PRACTICE VI
A continuation of Nursing 4J7.
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

CURRICULUM 1986-88: Diploma Registered Nursing (B) Stream
In addition to Nursing 358, 4A2, 4E6, the following courses are required:

NURSING 3L5 GUIDED NURSING PRACTICE I
Planned and guided practice experiences in primary health care settings. Major emphasis is given to the assessment, problem-solving, interpersonal, ministering and teaching behaviour necessary to implement and evaluate nursing care in ambulatory community settings. Nursing of individuals and families throughout the life cycle and along the health-illness continuum is stressed.
15 hrs. (clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 358.

NURSING 3M5 GUIDED NURSING PRACTICE II
A continuation of Nursing 3L5.
15 hrs. (clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 358.

NURSING 3N8 GUIDED NURSING PRACTICE III
Concentrated planned experience in one setting with a major emphasis on the development of expanded role skills in a reality situation which allows for the development and demonstration of independent decision-making.
40 hrs. (clin. lab., including tut.); 6 to 8 weeks (normally offered in May - June.)
PHILOSOPHY

NURSING 4S5 GUIDED NURSING PRACTICE IV
An applied nursing practice course in which the focus is on the integration of theory and concepts in a variety of interdependent health care settings.
15 hrs. (clin. lab., including tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 4T5 GUIDED NURSING PRACTICE V
A continuation of Nursing 4S5.
15 hrs. (clin. lab., including tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 428 GUIDED NURSING PRACTICE VI
A concentrated planned experience in a clinical area of the student's building on the knowledge, skills and attitudes previously developed in order to allow the development of independent decision-making capacity in an area of special interest.
40 hrs. (clin. lab., including tut.); 6 to 8 weeks (normally offered in May - June.)

Peace Studies
While there is no B.A. programme in Peace Studies, students wishing to concentrate in this area should be aware of the following courses offered by various departments. The Faculty of Social Sciences offers an introductory course, Social Sciences 2B6. Those desiring further information on specific courses should consult the departmental listings in the Calendar. Note should be taken of the fact that some of those courses have prerequisites.

Students wishing to pursue Peace Studies may obtain further information from Dr. F. Dekar (Divinity College), Dr. Graeme MacQueen (Religious Studies), or Dr. R. Rempel (History).

CURRICULUM 1986-88
Social Science 2B6 Introduction to the Study of Peace
Anthropology 2X3 Warfare and Aggression
Anthropology 3T3 Competition and Conflict
Biology 3Q3 Radiobacteriology
History 3IF6 The History of Warfare 1865-1945
History 3QQ3 War and Society in Early Modern England, 1485-1713
History 3RR3 War and Society in Twentieth Century Britain
Philosophy 1B6 Philosophy in Society
Philosophy 2G3 Social and Political Issues
Political Science 25T International Politics
Political Science 3AA6 International Politics in the Post War Period
Political Science 3CC3 International Organizations
Religious Studies 1F6 War and the Problem of Meaning
Religious Studies 2H3 Issues in War and Peace
Sociology 3F6 Political Sociology

Philosophy
Faculty as of January 15, 1986
Evan Simpson/Chairman

Professors Emeriti
Horace A. Dulmage/B.A., B.D. (McMaster), Ph.D. (Chicago)
James H. Noxon/B.A., M.A. (Queen's), Ph.D. (Edinburgh)
Frederick W. Waters/B.A., B.D. (McMaster), Ph.D. (Yale)

Professors
G. Brent Madison/B.A. (Rensselaer), M.A. (Marquette), Ph.D. (Paris)
John E. Thomas/B.A., B.D. (McMaster), Ph.D. (Duke)

Associate Professors
Samuel Azjenstat/B.A., M.A. (Toronto)
Catherine Beattie/B.A. (McMaster), M.A. (Guelph), Ph.D. (London)
Constantine Georgiadis/M.A. (Warrawi), Ph.D. (London)
Nicholas J. Griffis/B.A. (Leicester), Ph.D. (Australian National)
David L. Hitchcock/B.A. (McMaster), Ph.D. (Claremont)
Sami M. Najm/A.A. (Beirut), B.A. (Wesleyan), M.A., Ph.D. (Yale)
Spriro Panagiotou/B.Sc., M.A. (Guelph), Ph.D. (St. Andrews)
Michael Radner/B.A. (Carleton College, Minn.), M.A., Ph.D. (Minnesota)

Assistant Professors
John R.M. Bristol/B.A., M.A., Ph.D. (Toronto)/part-time
Mark Vorobej/B.A. (Carleton), M.A., Ph.D. (Toronto)
Wilfrid Waluchow/B.A., M.A. (Western), D.Phil. (Oxford)

PHILOSOPHY

CURRICULUM 1986-88
Department Notes:
1. The Department of Philosophy offers two Level I courses, Philosophy 1B6 and Philosophy 1D6, which are designed to introduce the student to the study of the subject. No student may take more than one of these courses.
2. The Department of Philosophy offers courses in five major areas of Philosophy, namely History of Philosophy, Logic, Theory of Knowledge, Ethics and Theory of Value, and Metaphysics. Students are advised to include courses from each of these areas in their programmes.

PHILOSOPHY 1B6 PHILOSOPHY AND SOCIETY
An introduction to philosophy, through the social-political thought of two or more of Plato, Hobbes, Mill and Marx, focusing on rival views of human nature and the state, social conflict, inequality and justice.
2 lec., 1 tut.; two terms
Prerequisite: Open, except to students who have credit in, or are registered in, Philosophy 1D6.

PHILOSOPHY 1D6 PROBLEMS IN PHILOSOPHY
A critical investigation of man's understanding of God, himself, political society, morality, art, and nature.
2 lec., 1 tut.; two terms
Prerequisite: Open, except to students who have credit in, or are registered in, Philosophy 1B6.

PHILOSOPHY 2A6 ANCIENT GREEK PHILOSOPHY
A study of Western philosophical thought from its earliest beginnings to the triumph of Christianity in the Roman Empire, with emphasis on Plato and Aristotle.
2 lec., two terms
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2B3 INTRODUCTORY LOGIC
Sentential and quantification logics are introduced and applied to arguments in English. 3 lec.; one term
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2C6 PHILOSOPHY DURING THE SCIENTIFIC REVOLUTION
A study of 17th- and 18th-Century European and British philosophy, dealing with the major philosophical issues raised by the 17th-Century scientific revolution.
3 lec.; two terms
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2D3 MORAL ISSUES
An introduction to moral psychology, offering a biographical ethics. Issues such as abortion, human experimentation, euthanasia, and genetic screening will be investigated in cooperation with members from the Faculty of Health Sciences.
2 lec.; 1 tut.; one term
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2F3 PHILOSOPHICAL PSYCHOLOGY
A study of some theories of human nature, traditional and contemporary, with particular reference to the various sciences and disciplines upon which philosophers have modeled their investigations of human psychology.
3 lec.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Philosophy 2F6.

PHILOSOPHY 2G3 SOCIAL AND POLITICAL ISSUES
A philosophical examination of some contemporary issues in public policy, such as environmental problems, the question of a just distribution of society's goods and services, and problems of peace and security in a nuclear age.
2 lec.; 1 tut.; one term
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2H3 AESTHETICS
An introduction to some main theories of the nature of art, criticism, and the place of art in life and society.
3 lec.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOSOPHY 2I3 SCIENTIFIC METHOD
3 lec.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Philosophy 2I3.

Assistant Professors
John R.M. Bristol/B.A., M.A., Ph.D. (Toronto)/part-time
Mark Vorobej/B.A. (Carleton), M.A., Ph.D. (Toronto)
Wilfrid Waluchow/B.A., M.A. (Western), D.Phil. (Oxford)
PHILOS 2N3 BUSINESS ETHICS
An analysis of ethical issues arising in contemporary business life. Sample topics include: fair and unfair competition; responsibilities towards employees, society and the environment; honesty and integrity in business; the moral status of corporations.
2 lects., one tut.; one term
Prerequisite: Open to students in Level II and above.

PHILOS 2R3 REASONING
An introduction to important types of reasoning, with emphasis on concepts rather than techniques. Possible topics: arguments, deductive validity, the logical structure of sentences, testing hypotheses, making decisions, reasoning about value questions.
2 lects., 1 tut.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Philosophy 2J3.

PHILOS 3A6 FROM KANT TO HEGEL
The philosophies of Kant and Hegel viewed in relation to each other and to other philosophies of the period, such as those of Rousseau or Schelling.
1 lect.(2 1/2 hrs.); two terms
Prerequisite: Philosophy 2C6 and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 3B3 PHILOSOPHIES OF EXISTENCE
An examination of the 19th-century forerunners of contemporary existential philosophy, concentrating principally on the thought of Kierkegaard and Nietzsche.
1 lect.(2 1/2 hrs.); one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 3C3 ADVANCED BIOETHICS
An advanced study of the application of ethical theory to selected problems in health care relating to the problem of the sanctity versus the quality of life.
3 lects.; one term
Prerequisite: A grade of at least B in Philosophy 2D3.

PHILOS 3E3 PLATO
A critical examination of Plato's writings, with reference to selected central philosophical issues.
1 lect., 1 seminar (2 hrs.); one term
Prerequisite: Philosophy 2A6 and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 3G3 ETHICS
An introduction to the major types of ethical theory and the problem of their justification.
3 lects.; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 3H3 PHILOSOPHY OF RELIGION
A discussion of the nature of religious belief and of some arguments for and against the existence of God.
3 lects.; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 3J3 ARISTOTLE
A systematic study of Aristotle's major doctrines.
1 seminar(2 1/2 hrs.); one term
Prerequisite: Philosophy 2A6 and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 3K3 PHILOSOPHY OF EDUCATION
An introduction to the philosophy of education and its role in dealing with contemporary educational issues, such as equality of educational opportunity and students' rights.
2 lects., 1 tut.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3M3 PHILOSOPHY OF BIOLOGY
Introduction to philosophical problems arising from Biology: the nature of biological laws and explanations, the presuppositions of taxonomy, the status of sociobiology and evolutionary theory.
2 lects., 1 tut.; one term
Prerequisite: One course in Biology or Philosophy 2M3; or permission of the instructor. Not available to students with credit in Philosophy 2L3.

PHILOS 3N6 POLITICAL PHILOSOPHY
A study of the main political perspectives -- conservatism, liberalism, and radicalism -- and their ideas of liberty, equality, justice, and revolution.
3 lects.; two terms
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 3Q3 PHILOSOPHY OF LAW
An investigation of the nature of law and of issues arising within legal systems. These issues include legal reasoning, equality, legal insanity, punishment, and the Charter of Rights and Freedoms.
3 lects.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3R3 BERTRAND RUSSELL
Introduction to various aspects of Russell's philosophical thought. Each year two or three topics in his theory of knowledge, metaphysics, philosophy of language and social philosophy will be selected for special attention.
1 lect.(2 hrs.), 1 seminar; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 3W3 READING COURSE
Topics to be arranged between individual students and instructors.
Prerequisite: Open to students in Level III or IV of a programme in Philosophy, subject to permission of the Department. A written proposal must be submitted to the Department prior to the term in which the course is to be taken. (This requirement does not apply to students in a programme combining Philosophy and Biology.)

PHILOS 4A3 CARTESIANISM
A study of Cartesianism (including the views of Leibniz) as a response to 16th-Century mechanism.
1 seminar(2 hrs.); one term
Prerequisite: Philosophy 2C6 or 2F3 and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 4B3 THEORY OF VALUE
A study of human practices of evaluation in morality, politics, art, religion, and economics.
1 lect., 1 seminar (1 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department. Offered in alternate years.

PHILOS 4D3 PHILOSOPHY: PRO AND CON
A study of some main currents of 20th-century philosophy, including the attack on mind and metaphysics by analytic philosophy.
1 lect., 1 seminar (1 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department. Offered in alternate years.

PHILOS 4E3 EXISTENTIALISM AND PHENOMENOLOGY
A study of selected texts of major existential and phenomenological philosophers in the 20th-century, such as Camus, Heidegger, Jaspers, Marcel.
Seminar (2 1/2 hrs.); one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 4H3 METAPHYSICS
An investigation of metaphysical concepts, such as substance, individuality, identity, essence, quality, process, mind, time and causality. Some contemporary criticisms of metaphysics will be discussed.
Seminar (2 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department. Offered in alternate years.

PHILOS 4I3 MEDIEVAL PHILOSOPHY
A discussion of the philosophical doctrines of Augustine, Thomas Aquinas, and William of Occam.
Seminar (2 1/2 hrs.); one term
Prerequisite: Philosophy 2A6 or 3E3 or 3J3 and registration in Level III or IV of any programme; or permission of the Department. Offered in alternate years.

PHILOS 4L3 LOGICAL THEORY
The course deals with applications of logic within philosophy and philosophical issues within logic. Topics which may be included are modal logics, deontic logics, formal semantics, free logics, many-valued logics, and such concepts as truth, reference, logical form, and bivalence.
3 lects.; one term
Prerequisite: Philosophy 2B3; or permission of the Department. Offered in alternate years.
PHILOS 4W3 READING COURSE
Topics and times to be arranged between individual students and instructors.
Prerequisite: Registration in Level IV of an Honours programme in Philosophy, subject to permission of the Department. A written proposal must be submitted to the Department prior to the term in which the course is to be taken. (This requirement does not apply to students in a programme combining Philosophy and Biology.) Not available to students in Philosophy 4W3.

PHILOS 4Z6 THESIS
Reading and research under the supervision of at least two members of the Department. A major paper is required as well as a formal oral examination.
Prerequisite: Registration in Level IV of any Honours programme in Philosophy, with a weighted average of at least 6.5 or equivalent in Level III and IV Philosophy courses previously taken, and permission of the Chairman of the Department. Not available to students receiving credit for Philosophy 4W3.

Physical Education
Faculty as of January 15, 1986

W.H. Fowler/Chairman
Professor Emeritus
Allan J. Smith/B.S.A., M.Ed. (Toronto), D.Ed. (SUNY, Buffalo)

Professors
Frank J. Hayden/B.A. (Western), M.A., Ph.D. (Illinois)
J. Duncan MacDougall/B.A., B.P.H.E. (Queen's), M.S. (Oregon), Ph.D. (Wisconsin)

Associate Professors
William H. Fowler/B.A. (Western), M.P.E. (Springfield)
Barbara A. Gowitzke/B.S. (Boston), M.Ed. (North Carolina), Ph.D. (Wisconsin)
Raymond B. Johnson/B.A. (Western), M.Ed. (SUNY, Buffalo), Ph.D. (Temple)
John R. Kennedy/B.A., B.P.H.E. (Toronto), M.A. (SUNY, Buffalo), Ph.D. (Ohio State)
Mary E. Keys/B.A., M.A. (Western), Ph.D. (Ohio State), Director, School of Physical Education and Athletics
Fredrick A. Moyes/Dip. P.E. (Jordanhill), M.Ed. (Leicester)
Digby G. Sale/B.P.H.E. (Toronto), M.A. (Western), Ph.D. (McMaster)

Assistant Professors
Cameron J. Blimkie/B.A., B.P.H.E. (McMaster), M.A., Ph.D. (Western)
Nicholas Ciptarian/B.P.H.E., M.Sc. (Lakehead)
Peter Donnelly/Dip.Ed. (City of Birmingham College), B.A. (Hunter College, N.Y.), M.S., Ph.D. (Massachusetts)
J. Digby Elliott/B.Sc., M.Sc., Ph.D. (Waterloo)
Susan E. Inglis/B.P.E., M.A. (Alberta)
Timothy D. Lee/B.H.K., M.A. (Windsor), Ph.D. (Louisiana State)
Neil McCartney/B.Ed. (St. Luke's College), Ph.D. (McMaster)
Cindy Riech/B.A., B.P.H.E., B.Ed., M.A. (Queen's)
Janet L. Starker/B.A. (Western), M.Sc., Ph.D. (Waterloo)

Lecturers
Michael Cain/B.A. (York)
John C. Edwards/B.P.E. (McMaster), M.A. (Western)
Robert J. Henderson/B.P.E. (McMaster), M.A. (Alberta)
Joanne M. Kennedy/B.A., M.A. (Western)
Susan J. Lindley/B.Sc. (Guelph)
Andrea M. Mann/B.A., B.P.E. (McMaster), M.Sc. (Dalhousie)
Brian K.V. Marar/B.P.E. (McMaster), M.A. (Western)
Thérèse A. Quigley/B.A. (Western), B.Ed. (Western), M.A. (Alberta)
David C. Wilson/B.Ed. (St. Paul's Cheltenham)

Instructors
Barry M. Phillips/B.Sc., B.Ed. (Acadia)
Gaye Stratton/B.P.H.E. (Toronto)

Associate Member
Oded Bar-Or/Pediatrics/M.D. (Hebrew Un., Jerusalem)

PHILOSOPHY

PHILOSOPHY 1A6 HUMAN ANATOMY
Macroscopic and microscopic anatomy, with particular reference to the locomotor, nervous, cardiovascular, respiratory, digestive, endocrine, and urogenital systems.
3 hrs. (lects., labs.); two terms

PHILOSOPHY 1B3 SOCIOLOGY OF SPORT
Critical examination of contemporary issues and problems of sport in Canadian society.
3 hrs. (lects. and discussion); one term

PHILOSOPHY 1E3 MOTOR DEVELOPMENT
Physical growth patterns and the development of perceptual-motor abilities. Age-appropriate motor behaviour, from infancy to old age, is investigated.
3 hrs. (lects., labs.); one term

PHILOSOPHY 1F3 KINESIOLOGY I
An introduction to basic mechanical principles and concepts as applied to physical activity.
3 hrs. (lects., labs.); one term

PHILOSOPHY 2A3 KINESIOLOGY II
Motor skills analyzed in terms of elementary mechanical principles.
1 lect., 2 labs.; one term

PHILOSOPHY 2B3 PSYCHO-MOTOR ASPECTS OF PHYSICAL ACTIVITY
Motor learning principles and performance determinants are investigated, together with other relevant psychological determinants of gross motor behaviour.
2 lects., 1 lab.; one term

PHILOSOPHY 2C6 PHYSIOLOGY OF EXERCISE
The effects of exercise on the physiological systems, and the application of physiological principles to human exercise performance.
2 lects., 1 lab.; two terms

PHILOSOPHY 2D3 PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT
Critical examination of the concepts, slogans, and assumptions, associated with physical education and sport, and a delineation of one's personal philosophy.
3 hrs. (lects. and discussion); one term

PHILOSOPHY 2F3 HISTORY OF PHYSICAL EDUCATION AND SPORT IN CANADA
The origins and development of modern physical education and sport in Canada, including individual leaders and contributing cultural factors.
3 hrs. (lects. and seminars); one term

PHILOSOPHY 3B3 ADAPTED PHYSICAL ACTIVITY AND MOVEMENT
Physical activity and movement designed to meet the needs, interests, and abilities of individuals referable to special physical activity programmes.
3 lects.; one term

PHILOSOPHY 3C3 MEASUREMENT AND EVALUATION I
Introduction to research design and scientific method; elementary statistics.
3 hrs. (lects., lab.); one term

PHILOSOPHY 3D3 MEASUREMENT AND EVALUATION II
Measurement and research methods; statistics.
3 hrs. (lects., lab.); one term
Prerequisite: Physical Education 3C3

PHILOSOPHY 3F3 SPORT AND PHYSICAL EDUCATION ADMINISTRATION I
The structure and function of various sport organizations. Units include: planning, budgeting, facilities, event coordination and other selected topics.
Lects., seminars; one term

CURRICULUM 1986-88

School Notes:
1. The following courses may be taken as electives for B.A. credit by undergraduates not in Physical Education 3J3, 3P3, 3Q3, 4E3, 4G3, 4J3, 4L3, 4M3, 4Q3.
   All other Physical Education courses are open only to students registered in the Bachelor of Physical Education programme.
2. Required Area theory courses are: Physical Education 1A6, 1B3, 1E3, 1F3, 2A3, 2B3, 2C6, 2D3, 2F3, and Biology 1J3.
   Required Area practicum courses are: PRO1 (Aquatics), PRO2 (Gymnastics), PRO3 (Track), PRO4 (Games), PRO5 (Dance), PRO6 (Fitness).
   Area Electives: All other Physical Education courses listed or offered.

3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

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PHYS ED 3G3 BEHAVIOURAL ASPECTS OF PLAY AND GAME INVOLVEMENT
Behavorial and developmental patterns of play from infancy through adulthood are examined in light of selected theories and contemporary practices in physical education and recreation.
3 hrs. (lects.); one term

PHYS ED 3H3 HISTORICAL INTERPRETATIONS OF PHYSICAL ACTIVITY
A survey of physical education and sport, beginning with ancient Greece, and with special emphasis on recent developments in Europe and North America.
2 lects., 1 seminar; one term

PHYS ED 3J3 AESTHETICS OF SPORT AND DANCE
An inquiry into involvement in sport and dance and the search for meaning and reality in these non-verbal forms of expression and communication.
3 hrs. (lects., seminars); one term
With permission of the instructor this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Not offered on a regular basis.

PHYS ED 3K3 SPORTS INJURIES
Methods of dealing with injuries under following headings: prevention; preliminary assessment and response; first aid; basic CPR; and post-medical care.
1 lect., 1 tut., 1 lab.; one term
Prerequisite: Permission of instructor.

PHYS ED 3L3 SPORT AND PHYSICAL EDUCATION ADMINISTRATION II (BEHAVIOURAL CONCEPTS)
Principles and concepts that attempt to interpret the performance of individuals and groups in organizations. Using the case study method, these are related directly to the field of physical education and sport.
3 hrs. (lects., seminars); one term
Physical Education 3F3 is not a prerequisite.

PHYS ED 3M6 THEORY AND PRACTICE OF COACHING
Practical application of physical education theory to coaching. Feedback on field experience will be the central focus.
3 hrs.; two terms
Prerequisite: Permission of the instructor.
Enrolment is limited.

PHYS ED 3P3 SPORT AND SOCIAL PROCESSES
Macro-analysis of sport in society; investigation of the relationship between sport and other social institutions.
3 hrs. (lects. and discussion); one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Same as Sociology 3D03.

PHYS ED 3Q3 SPORT AND SMALL GROUP DYNAMICS
Micro-analysis of sport in small social systems, investigation of the dynamics of involvement in sport encounters, the team as a small group, and sport subcultures.
3 hrs. (lects. and discussion); one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Same as Sociology 3E23.

PHYS ED 4A6 BIOMECHANICS OF HUMAN MOVEMENT
In-depth study of the mechanics of human movement with application to specific position and movement problems; relationship of the mechanics to selected neurophysiological mechanisms.
3 hrs. (lects., labs.); two terms
Prerequisite: Physics 2M3, and permission of instructor.

PHYS ED 4B3 PHYSICAL ACTIVITY AND CORONARY HEART DISEASE
An examination of the role of physical activity in the prevention and rehabilitation of coronary heart disease.
3 Lects.; one term
Prerequisite: Physical Education 3B3

PHYS ED 4C6 HUMAN PERFORMANCE PHYSIOLOGY
Factors affecting human physical performance, with emphasis upon procedures for maximizing sport performance.
2 lects., 1 lab.; two terms
Prerequisite: Permission of instructor; open to Level IV B.P.E. students.

PHYS ED 4D3 FOUNDATIONS IN OUTDOOR EDUCATION
An examination of Outdoor Education programmes and their historical, philosophical and sociological foundations.
3 hrs. (lects., seminars); one term
Enrolment is limited and reserved primarily for Level IV students (Level III students, by permission of the instructor only).

PHYS ED 4E3 MOTOR CONTROL
Neuromuscular control mechanisms underlying motor skill performance. Topics include basic neuroanatomy, mechanisms of sensation and regulation of voluntary movement.
2 lects., 1 lab.; one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED 4F3 SELECTED TOPICS IN PHYSICAL EDUCATION
From time to time a current issue or topic of sufficient breadth and interest may be included for study.
3 hrs. (lects., seminars); one term
Not offered on a regular basis.

PHYS ED 4G3 PERSPECTIVES IN DANCE: A CULTURAL SURVEY
Dance in selected cultures, its role in ritual, in art and in theatre.
3 hrs. (lects., seminar's); one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Same as Dramatic Arts 4G3.
Alternates with Physical Education 4J3.

PHYS ED 4H3 EMPLOYEE FITNESS
Various fitness prescriptions and programmes in the workplace will be examined and evaluated through both study and applied learning experiences.
3 hrs. (lects., presentations); one term
Enrolment is limited and reserved primarily for Level IV Physical Education students (Level III Physical Education students, by permission of instructor, only).

PHYS ED 4J3 PERSPECTIVES IN DANCE: DANCE IN CONTEMPORARY SOCIETY
Dance forms in the 20th century. Student view films, dance performances and participate in dance workshops.
3 hrs. (lects., seminars); one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED 4M3 PSYCHO-SOCIAL ASPECTS OF SKILL
Perceptual and social-psychological principles applied to specific problems in skill development. Research on motivation, arousal perception, personality and competition is discussed.
2 lects., 1 lab.; one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED 4Q3 HEALTH SCIENCE: PHYSICAL AND ENVIRONMENTAL
Selected transactions between the individual, the environs and disease agents, are explored as these transactions influence human diseases.
3 hrs. (lects., seminars); one term

PHYS ED 4Q5 HEALTH SCIENCE: BEHAVIOURAL
Development of an understanding of those health topics based primarily on the behavioural sciences. Specifially included are mental health, psychoactive drugs, and human sexuality.
3 hrs. (lects., seminars); one term

PHYS ED 4Q7 PEDIATRIC EXERCISE PHYSIOLOGY
Physiologic aspects of physical activity in children and adolescents in health and disease.
2 lects., 1 lab.; one term
With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED 4R3++ INDIVIDUAL STUDY PROJECT
Investigation of a selected theoretical or applied problem mutually acceptable to instructor and student.
Prerequisite: Permission of the Chairman and supervising instructor. Open to Level IV B.P.E. students.

PHYS ED 4S3 ADAPTED PHYSICAL ACTIVITY
To equip students to design and conduct activity programmes. Focus on mental retardation but also application of principles to a variety of populations.
Lects., seminars, labs., fieldwork; one term
Prerequisite: Physical Education 3B3.

PRACTICUM COURSES
In the four levels of the B.P.E. programme, each student must complete a minimum of 14 units of practicum.

One unit of practicum will normally comprise 24 hours; these hours may be compressed into one week (Camp or Orientation Week), spread over a term (Field Work Placement) or, more usually, extend over a 6 week period of 4 hours per week.

In Levels III and IV a variety of Basic and Advanced practicum courses are offered. At least one selection in Levels III and IV must be an Advanced practicum course.
PHYSICAL EDUCATION

Selection and Required Achievement in Practicum Classes
All practicum courses, in all Levels, must be completed with a minimum grade of D – in each practicum course.

Level I: 2 units
Level I students normally take PR01 Basic Aquatics and PR02 Basic Gymnastics.

Level II: 4 units
Level II students normally take PR03 Track and Field, PR04 Games, PR05 Dance, and PR06 Fitness.

Levels III and IV: 8 units
Level III and IV students normally take four (4) units per Level.

See the Practicum Calendar (available directly from the School of Physical Education) for specific course offerings.

General Regulations
1. In order for a student to attend an Advanced course, e.g., Advanced Hockey, the permission of the appropriate instructor must be obtained.
2. Students requiring direct entry into an Advanced course without meeting the requirements of the appropriate preceding basic course(s), must satisfy the instructor, both practically and theoretically. The prerequisite standard for Advanced level courses does not give credit for, nor does it count as, one of the 14 units required by the Department.
3. Any students wishing to take more than 2 units of Field Work practicum may do so in addition to the minimum of 14 units.
4. A student wishing to take more than four courses per Level, or more than one course per session, must obtain permission from the Chairman of the Department.

Outdoor Activity Courses
Courses in outdoor activities, e.g., canoe trippeing, skiing, rock climbing, etc. may be offered outside the regular time-tabled programme and in off-campus settings. It is not compulsory to take a course from the outdoor activity area, but interested students will receive comparable recognition for satisfactory completion of such courses, with one unit credit for each 24-hour course completed with at least a D – grade. A course fee is normally required in these offerings.

Field Work Practicum
Practicums may also be offered in the form of field work or leadership experiences, e.g., Cardiac Rehabilitation, Outdoor Education, Recreation/Athletic Administration. The Field Work practicum occurs outside the normal time-tabled schedule, and requires permission from the supervising instructor.

Physics

Faculty as of January 15, 1986
C.V. Stager/Chairman
P.G. Sutherland/Associate Chairman

Professors Emeriti
Bertram N. Brockhouse/B.A. (British Columbia), M.A., Ph.D. (Toronto), D.Sc. (Waterloo), F.R.S.C., F.R.S.
Martin W. Johns/M.A. (McMaster), Ph.D. (Toronto), D.Sc. (Brandon), F.R.S.C.

Professors
Edward A. Ballik/B.Sc. (Queen’s), D.Phil. (Oxford)
Rajat K. Bhaduri/M.Sc. (Calcutta), Ph.D. (McMaster)
David Brown B.Sc., Ph.D. (London)
Dennis G. Burke/B.E., M.Sc. (Saskatchewan), Ph.D. (McMaster)
John A. Cameron/B.A., Ph.D. (Montana), Ph.D. (McMaster)
Jules F. Carbotte/B.Sc. (Manitoba), M.Sc., Ph.D. (McGill), F.R.C.S.
W. Brian Clarke/B.A. (Dublin), Ph.D. (McMaster)
Malcolm F. Collins/M.A., Ph.D. (Cambridge
W. Ross Daters/M.Sc. (McMaster), Ph.D. (Wisconsin), F.R.S.C.
John A. Davies/M.A., Ph.D. (Toronto)/part-time
Brian K. Ganisde/B.A., D.Phil. (Oxford)
David A. Goodings/B.A. (Toronto), Ph.D. (Cambridge)
William E. Harris/B.Sc. (Alberta), M.Sc., Ph.D. (Toronto)
Terence J. Kennett/M.Sc., Ph.D. (McMaster)
John A. Kuehner/B.Sc. (Bishop’s), M.A. (Queen’s), Ph.D. (Liverpool), F.R.S.C.
Carman C. McMullen/M.Sc., Ph.D. (McMaster)
Yukihisa Nogami/B.Sc., D.Sc. (Kyoto)
William V. Prestwich/B.Sc., Ph.D. (McMaster)
Donald W. Sprung/B.A. (Toronto), Ph.D., D.Sc. (Birmingham), F.R.S.C.

Carl V. Stager/B.Sc. (McMaster), Ph.D. (M.I.T.)
Robert G. Summers-Gill/M.A. (Saskatchewan), Ph.D. (California)
Peter G. Sutherland/B.Sc. (McGill), M.S., Ph.D. (Illinois)
David W. Taylor/B.A., D.Phil. (Oxford)
Thomas Timusk/B.A. (Toronto), Ph.D. (Cornell)
Anatole B. Volkov/B.S. (North Carolina), M.S., Ph.D. (Wisconsin)
James C. Waddington/B.Sc. (Queen’s), Ph.D. (McMaster)
Derek Walton/B.Sc. (Toronto), Ph.D. (Harvard)

Assistant Professor
Anton M. Jopko/M.Sc., Ph.D. (McMaster)/part-time

Associate Members
C. Ross Hering/B.Sc. (Calgary), Ph.D. (McMaster)/part-time
Michael S. Patterson (Radiology), B.Sc. (Queen’s), M.Sc. (McMaster), Ph.D. (Toronto)
David A. Thompson (Engineering Physics), B.Sc., Ph.D. (Reading)
Brian C. Wilson (Radiology), B.Sc., Ph.D. (Glasgow)

Senior Demonstrator
J. Everett Carney/B.Eng., M.Sc. (McMaster)

CURRICULUM 1986-88

Department Notes:
1. The Department reserves the right to withdraw a Level III or IV course which is not specifically required in a programme if the registration falls below four.
2. Students in Level III or IV of Physics programmes will find a number of relevant electives among offerings of the Department of Biology and the Department of Engineering Physics.

PHYSICS 1A6. MECHANICS, WAVE MOTION, OPTICS, AND ELECTRICITY
A course, organized in sections of approximately 100 students, consisting of lectures, demonstrations, and laboratory work in general physics with stress on mechanics, wave motion, optics, electricity. Primarily intended for students proceeding in the physical sciences.

3 lects., 1 lab.(3) every other week; two terms
Prerequisite: At least 60% in Grade 13 Physics, and registration in Mathematics 1A6 and 1B3.

PHYSICS 1B6 GENERAL PHYSICS I
Lectures, demonstrations, and laboratory work in general physics. This course places less stress on the use of mathematics, and covers a wider range of topics, than Physics 1A6. Intended primarily for students proceeding in the life sciences.

3 lects., 1 lab.(3) every other week; two terms
Prerequisite: At least 60% in Grade 13 Physics, and registration in Mathematics 1A6.

PHYSICS 1C6 INTRODUCTORY PHYSICS
Lectures and demonstrations in physics, with particular stress on topics in mechanics, wave motion, optics and electricity, for students without Grade 13 Physics.

3 lects., 1 tut., 1 lab.(3) every other week; two terms
Prerequisite: Registration in Mathematics 1A6.

PHYSICS 1D3 MECHANICS
A course for Engineering students. Topics will include statics, kinematics, Newtonian dynamics, energy and momentum.

3 lects.; one term
Prerequisite: Registration in Level I Engineering.

PHYSICS 1E4 WAVE MOTION AND ELECTRICITY
A course for Engineering students. Topics include: oscillations and waves; interference and diffraction; charges; electric fields, potential; capacitance, current and circuits.

3 lects., one term; 1 lab.(3) every other week; two terms
Prerequisite: Registration in Level I Engineering.

PHYSICS 2A3 GENERAL PHYSICS II
A sequel to Physics 1B6 or 1B7. Electricity and magnetism. Intended primarily for students proceeding in the life sciences.

3 lects.; one term
Prerequisite: One of Physics 1A6, 1A7, 1B6, 1B7, 1C6, 1C7 and Mathematics 1A6 or 1B6. Not open to students in Honours Chemistry and Physics, Honours Physics, Honours Applied Physics, Physics Major, or B.Sc. in Physics.

PHYSICS 2B6 ELECTRICITY AND MAGNETISM
Electrostatics, D.C. and A.C. circuits, the magnetic field; Faraday’s law of induction; Maxwell’s equations.

3 lects., first term; 2 lects., second term; 1 lab.(3) every other week; two terms
Prerequisite: One of Physics 1A6, 1A7, 1B6, 1B7, 1C5, 1C7, and concurrent registration in Mathematics 2G3 and 2O3, or 2A6 and 2C3.
PHYSICS
A survey of general astronomy, including the solar system, stars and galaxies. Modern astrophysics, including radio and X-ray astronomy, pulsars and quasars.

PHYSICS 2E6 INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS
A survey of general astronomy, including the solar system, stars and galaxies. Modern astrophysics, including radio and X-ray astronomy, pulsars and quasars.

PHYSICS 2G3 MECHANICS OF A PARTICLE
Vectorial treatment of the mechanics of a particle in three dimensions.

PHYSICS 303 MODERN PHYSICS
Special relativity. Selected topics in photon physics, atomic physics, and quantum mechanics.

PHYSICS 304 INTRODUCTION TO QUANTUM MECHANICS
Operator algebra. The Schrödinger equation. The square well, harmonic oscillator, barrier, perturbations, transition matrix elements, and selected three-dimensional problems.

PHYSICS 312 INTERACTION OF RADIATION WITH MATTER
The interactions of nuclear radiations with matter: detectors, dosimetry, tracer methods, the production and use of X-rays.

PHYSICS 313 STARS AND STELLAR SYSTEMS
Observational properties of stars. Distance measurement in space. Galactic structure; properties of Galaxies, and cosmology.

PHYSICS 314 INTERMEDIATE LABORATORY
Experiments in atomic and nuclear physics, optics and spectroscopy, mechanics.

PHYSICS 315 QUANTUM MECHANICS AND ITS APPLICATIONS
An introductory course in quantum mechanics with applications to natural phenomena.

PHYSICS 316 THERMAL PHYSICS
Introduction to heat and the kinetic theory of gases.

PHYSICS 317 ELECTRONICS
Network theory and filters, semiconductor devices, amplifier circuits, D.C. power supplies, integrated circuits, operational amplifiers, and digital circuits.

PHYSICS 318 SEISMOLOGY
Methods of seismic exploration; earthquakes; studies of the earth's interior.
PHYSICS 4F3 QUANTUM MECHANICS
A sequel to Physics 3M6, including general structure of quantum mechanics, matrix mechanics, perturbation theory, and the variational method.
3 lects.; one term
Prerequisite: Physics 3M6, and Mathematics 3C6 or 3D3.

PHYSICS 4J4 ADVANCED LABORATORY
Projects in atomic, nuclear and solid state physics. Three or four projects are required, one of which may be associated with a faculty research programme.
1 lab (3); two terms
Prerequisite: Registration in a programme in which Physics 4J4 is required or is a specified option; or permission of Chairman of Department.

PHYSICS 4K3 SOLID STATE PHYSICS
Crystal structure and binding; lattice vibrations; electron energy bands; metals and semiconductors; magnetism.
3 lects.; one term
Prerequisite: Physics 3M6, or a grade of at least B− in 3O3 or 3P3, and 3Q3, and registration in Honours Physics or Physics Major.

PHYSICS 4Q4 RESEARCH PROJECT
An experimental or theoretical project to be carried out under the supervision of a professor. A report will be required.
Lab (6); two terms
Prerequisite: Registration in Level IV of a Physics programme, and permission of the Chairman of the Department. Normally limited to students with a C.A.A. of at least 10.0, or those enrolled in a Health and Radiation Physics Programme.

PHYSICS 4R3 RADIATION AND RADIOISOTOPE METHODOLOGY
Lectures and laboratory work in the techniques and theory of the measurement of radiation. Topics include radioactivity and radioactive decay, solid state dosimetry, principles of radioactive detectors, counting statistics and data reduction, advanced multidetector systems.
1 lect., 1 lab (3) every other week; two terms
Prerequisite: Physics 2B6, or Engineering Physics 2A3 and 2E4, and permission of the instructor.

PHYSICS 453 PHYSICS OF THE EARTH
Special topics in physics applied to earth sciences. Structure of the earth’s interior, geomagnetism, global tectonics, nuclear techniques in geophysics.
3 lects.; one term
Prerequisite: Physics 2B6, or Engineering Physics 2A3 and 2E4, and Mathematics 2G3 and 2O3, or 2A5 and 2C4, or 2A6 and 2C3; or permission of the instructor.
Offered in 1987-88 and alternate years.

PHYSICS 4T3 TOPICS IN RADIATION PHYSICS
Analysis of current techniques in radiation protection, medical imaging and therapy.
3 lects.; one term
Prerequisite: Physics 3T3, or Engineering Physics 3D3, and Mathematics 2G3 and 2O3, or 2A5 and 2C4, or 2A6 and 2C3.

PHYSICS 4U3 PARTICLE PHYSICS
Mesons and baryons; the quark model; local gauge invariance; symmetries; the electromagnetic, weak and strong interactions.
3 lects.; one term
Prerequisite: Physics 4F3, or permission of the instructor.

MATH 4D3 MATHEMATICAL PHYSICS III
Some mathematical techniques and their applications to physics and engineering. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations; hydrodynamics, elasticity, general relativity, field theory.
3 lects.; one term
Prerequisite: Mathematics 3C6 or 3D3, and registration in an Honours or Engineering programme.

For Graduate Courses see Calendar of School of Graduate Studies.

Polish
(See Slavic Studies, Polish)

Political Science

Faculty as of January 15, 1986
Michael J. Atkinson/Chairman

Professors Emeriti
Derry Novak/B.A. (Toronto)
Thomas C. Truman/B.A. (Melbourne), M.A. (Queensland)

Professors
Adam Bromke/M.A. (St. Andrews), Ph.D. (Montreal and McGill)

Marshall N. Goldstein/B.A. (Florida), Ph.D. (North Carolina)
Gordon P. Means/B.A. (Reed College), M.A., Ph.D. (Washington)
Peter J. Poitou/B.A. (Temple), M.A., Ph.D. (Columbia)
Klaus H. Pringsheim/B.A. (California, Los Angeles), M.A. (Columbia)
Mark Sprotle-Jones/B.Sc. (London), M.A., Ph.D., (Indiana/V.K.
Copos Chair in Urban Studies
Michael B. Stein/B.A. (McGill), M.A., Ph.D. (Prcincton)

Associate Professors
Howard Aster/B.A. (McGill) M.A. (Yale), Ph.D. (London)
Michael M. Atkinson/B.A. (Alberta), M.A., Ph.D. (Carleton)
George B. Breckenridge/M.A. (Glasgow and Duke), Ph.D. (Duke)
William M. Chandler/B.A. (Cornell), Ph.D. (North Carolina)
William D. Coleman/B.A. (Carleton), A.M., Ph.D. (Chicago)
Henry J. Jacke/B.S.S. (Fairfield), M.A., Ph.D. (Genevaienon)
Thomas J. Lewis/B.A. (Carleton), M.A., Ph.D. (SUNY, Buffalo)
Roman R. March/B.A. (Manitoba), M.A. (Carleton), Ph.D. (Indiana)
Kim Richard Nossai/B.A., M.A., Ph.D. (Toronto)

Assistant Professors
Barbara A. Carroll/B.A. (Manitoba), M.A. (Carleton), Ph.D. (American)
Stefania S. Miller/M.A. (McMaster), Ph.D. (Toronto)
John W. Seaman/B.A. (Mount Allison), M.A. (Dalhouse), Ph.D. (Toronto)

Associate Members
H.M. Brotz/Sociology), B.A., M.A. (Chicago), Ph.D. (London)
Rhoda E. Howard/B.A., M.A., Ph.D. (McGill)

CURRICULUM 1986-88

Department Notes:
1. The Department of Political Science offers courses in four main areas: Canadian Politics, Comparative Politics, International Politics and Political Theory. For a list of instructors and the courses falling in each area, students should consult the Department’s Handbook for Undergraduates, 1986-87 and 1987-88. This Handbook will be available for undergraduates on or before April 1 of each academic year. Students should also consult the Handbook in order to determine which courses are offered in a given year.

All students are encouraged to seek advice from members of the Department in developing a programme of study. All Honours students are required to discuss their programme with the Honours Advisor and to have it checked to ensure that it meets with Departmental requirements.

2. All students should be alerted to those Level II Political Science courses that are required in order to qualify for a number of Level III and IV courses. Recommended Courses: Political Science 2F6 and 2O6 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis. Students wishing to enter courses without the necessary prerequisites must receive written permission from the instructor.

3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

POL SCI 1A6 AN INTRODUCTION TO THE STUDY OF POLITICS
An introduction to various aspects of political science which will students encounter in subsequent years in the Department. The course is taught in a number of sections; each section is directed by one or two members of the Department.
3 hrs (lects. and tuts.); two terms
Prerequisite: Open.

POL SCI 2B6 POLITICS IN THE U.S.A.
A study of the development, nature, and functioning of the political system of the U.S.A.
3 hrs (lects.); two terms
Prerequisite: Open.

POL SCI 2C6 CULTURE AND POLITICS OF SOUTHERN ASIA AND NORTH AFRICA
An introduction to the civilizations of Islam and Hinduism and a survey of social movements and contemporary political trends across North Africa and Southern Asia.
POL SCI 2E6 INTERNATIONAL POLITICS
A study of the institutions and processes of the international political system.
3 hrs. (lects. and tuts.); two terms
Prerequisite: Political Science 1A6.

POL SCI 2F6 SYSTEMATIC STUDY OF POLITICS
An introduction to the study of concepts and theory formation, and an overview of
the scope, research methods, and statistical techniques of political science.
3 hrs. (lects. and tuts.); two terms
Prerequisite: Open.

POL SCI 2G6 POLITICS IN CANADA
A study of the development, nature and functioning of the political system of Canada.
3 hrs. (lects. and tuts.); two terms
Prerequisite: Open.

POL SCI 2K6 POLITICS IN THE U.S.S.R.
An analysis of the political ideology, institutions, and practices of the U.S.S.R.
3 lects.; two terms
Prerequisite: Open.

POL SCI 2M6 INTRODUCTION TO FAR EASTERN POLITICAL TRADITIONS
A general introduction to the traditional political ideas and institutions of China
and several other countries in Northeast Asia.
3 hrs. (lects.); two terms
Prerequisite: Open.

POL SCI 2P6 POLITICS IN WESTERN EUROPE
An introduction to comparative political analysis with an emphasis on the politics
of France, West Germany, Italy, and Great Britain.
3 hrs. (lects.); two terms
Prerequisite: Open, except to students registered in Political Science 3PP3,
3QQ3, or 3RR3.

POL SCI 3A6 HISTORY OF POLITICAL IDEAS
A study of the political ideas of some eminent thinkers from classical times to the
19th century.
3 lects.; two terms
Prerequisite: A previous course in Social Science or Philosophy.

POL SCI 3AA6 INTERNATIONAL POLITICS IN THE POST WAR PERIOD
A survey of international relations since the end of the Second World War, focussing
on the Cold War, and its impact on the international system.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2E6.

POL SCI 3B6 SOCIOECONOMIC DEVELOPMENT IN AFRICA
Selected topics in politics and social structure in sub-Saharan Africa.
3 hrs. (lects., and seminars); two terms
Prerequisite: A Level II course in Political Science. Same as Sociology 3C6 in 1986-88.

POL SCI 3BB3 APPROACHES TO THE STUDY OF INTERNATIONAL POLITICS
An examination of the theoretical approaches to the study of international relations.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E6.

POL SCI 3CC3 INTERNATIONAL ORGANIZATIONS
An analysis of the origins and development of the United Nations and selected
regional organizations.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E6.

POL SCI 3D3 COMPARATIVE POLITICS: SOUTHEAST ASIAN SYSTEMS
A comparative analysis of political processes in Southeast Asian states in the post-colonial era.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science or Asian Studies.

POL SCI 3DD6 POLITICAL PARTICIPATION AND ELITIST POLITICS IN CANADA
An analysis of the impact of social structure, ideology, and political culture on
structures of political participation and elitist politics in Canada.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6.

POL SCI 3EE3 THE FOREIGN POLICY PROCESS IN CANADA
An examination of the influences on foreign policy decision-making in Canada
and the elements of Canadian foreign policy.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E6 or 2G6.

POL SCI 3FF3 ISSUES IN CANADIAN FOREIGN POLICY
An analysis of recent issues in Canada's external relations designed to indicate
themes, problems and constraints in the making and execution of foreign policy
in Canada.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E6 or 2G6.

POL SCI 3G3 INTRODUCTION TO INDUCTIVE STATISTICS
An outline of levels of measurement and descriptive statistics, and a study of the
logic of statistical inference and its applications.
3 hrs. (lects. and labs.); one term
Prerequisite: Political Science 2F6; or permission of the instructor.

POL SCI 3GG3 CANADIAN FEDERALISM
An analysis of the constitutional framework, historical background and evolution
of federalism in Canada, emphasizing post-World War II issues.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SCI 3H3 STATISTICAL APPLICATIONS
This course builds upon the concepts taught in Political Science 3G3, and examines
how statistical techniques can be used to analyze political problems.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2F6; or permission of the instructor.

POL SCI 3J3 INTRODUCTION TO INTERGOVERNMENTAL RELATIONS IN CANADA
An analysis of selected policy areas focussing on governmental resources,
strategies, tactics and the outcomes of bargaining between governments in Canada.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SCI 3N3 CANADIAN POLITICAL IDEAS
The purpose of this course is to discover, understand, and analyze the major ide­
o logical trends in Canadian society.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6.

POL SCI 3NI3 ELECTIONS AND ELECTORAL BEHAVIOUR IN CANADA
A study of the development, nature and functioning of the electoral process in
Canada and the basis of voters' decisions.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SCI 3P6 FOREIGN POLICY ANDIRATHJ'S THOUGHTS
A study of Marx through a reading of his works from various stages in his
development.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2K6 or a course in Political Theory or Philosophy.

POL SCI 3R6 THEORIES OF MASS SOCIETY
A careful study of a few books by writers who have looked at the possible tension
between equality and liberty in the modern world and at the problem posed for
constitutional democracy by 'mass' cultural and political phenomena.
3 hrs. (lects. and seminars); two terms
Prerequisite: One course in Political or Social Theory, and permission of the
instructor.

POL SCI 3T6 COMPARATIVE POLITICS: EASTERN EUROPEAN SYSTEMS
An analysis of the political ideologies, institutions, and practices of selected states
of Eastern Europe (excluding the U.S.S.R.).
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SCI 3U6 THE POLITICS OF MODERN AND CONTEMPORARY CHINA
An introduction to the political ideas, institutions and practices of mainland China
and Taiwan in the period from 1911 to the present.
3 lects.; two terms
Prerequisite: Permission of the instructor.

POL SCI 3NN6 PUBLIC LAW
A study of the nature and function of public law, with special reference to consti­
tutional law and judicial behaviour.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6.
POL SCI 306 MODERN POLITICAL THOUGHT
A critical analysis of modern political ideas, from the early nineteenth century to the present time, with special emphasis on the theories of modern conservatism, liberalism, socialism, fascism, and democracy.
3 hrs.; two terms
Prerequisite: A previous course in Social Science or Philosophy.

POL SCI 3P3 POLITICAL SCIENCE IN GERMANY
A study of the development of the German political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs.(lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students concurrently enrolled in Political Science 2P6.

POL SCI 3Q6 POLITICAL SCIENCE IN JAPAN
An introductory survey of Japanese political institutions, ideas, and practices, from ancient to modern times.
3 hrs.; two terms
Prerequisite: Permission of the instructor. Not open to students receiving credit for Political Science 2N6. Offered in alternate years.

POL SCI 3QQ3 POLITICAL SCIENCE IN FRANCE
A study of the development and functioning of the French political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs.(lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students enrolled concurrently in Political Science 2P6.

POL SCI 3R6 DEMOCRACY AND POLITICAL CHANGE
An examination of the logical and historical connections between the idea of equality and both liberal and non-liberal forms of democracy.
2 lects.; two terms
Prerequisite: A previous course in Political Theory.

POL SCI 3RR3 POLITICS IN ITALY
A study of the development and functioning of the Italian political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs.(lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students enrolled concurrently in Political Science 2P6.

POL SCI 3S3 LOCAL GOVERNMENT AND POLITICS IN CANADA
A description of the laws and institutions of local government; examination of relationships with citizens and other levels of government; the dynamics of local politics.
3 hrs.(lects. and discussion); one term
Prerequisite: Open.

POL SCI 3S53 URBAN SERVICE DELIVERY
An examination of the formation, decision making and delivery of public policies to urban areas. Some public policies will be studied at length, along with aspects of others.
3 hrs.(lects. and discussion); one term
Prerequisite: Political Science 3S3.

POL SCI 3T3 MODERN POLAND 1863-1970
An examination of the development of Poland since the failure of the crucial rebellion of 1863-4. Emphasis will be on the struggle for national independence and on social and industrial modernization.
3 hrs.(lects. and discussion); one term
Prerequisite: Any 6 unit course in modern European History; or permission of the instructor. Offered in alternate years. Same as History 3FF3.

POL SCI 3U3 RESEARCH TECHNIQUES
A practical examination of topics in research design including questionnaire construction and interviewing procedures.
3 hrs.(lects.); one term
Prerequisite: Political Science 2F6. Not open to students who have taken Political Science 3U6.

POL SCI 3W6 POLITICAL SCIENCE IN BRITAIN
A study of the development and functioning of the British political system, including political culture, political parties and parliamentary institutions.
3 hrs.(lects. and seminars); two terms
Prerequisite: Permission of the instructor. Offered in alternate years.

POL SCI 3Y6 COMPARATIVE LEGISLATURES
An institutional and behavioural analysis of legislative bodies and executive-legislative relations in Canada, the United Kingdom, France, West Germany and the United States.
3 hrs.(lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SCI 3Z6 PUBLIC ADMINISTRATION
An examination of the role of public administration in seeking collective solutions to common problems at all levels of government in Canada.
3 hrs.(lects. and seminars); two terms
Prerequisite: Political Science 2G6, and one other Political Science course.
Prerequisite: Political Science 4A6 PRESSURE GROUP POLITICS
An analysis of research designed to explain the origins and nature of group influence upon the political process.
Original research projects.
3 hrs.(seminars); two terms
Prerequisite: A previous course in Political Science. Political Science 2F6, 2G6, 2P6, 3X6, and 3Z6 are recommended.

POL SCI 4A6 PROBLEMS IN AMERICAN POLITICS
An examination in depth of one of the important dimensions of the American political system.
3 hrs.(seminars); two terms
Prerequisite: Political Science 2B6, or permission of the instructor. Offered in alternate years.

POL SCI 4BB6 THE TRIAL OF SOCRATES
Plato’s understanding of the status of philosophy with respect to politics and rhetoric on the basis of the dialogues thematically connected to the trial and death of Socrates.
3 hrs.(seminars); two terms
Prerequisite: Open only to Level IV students.

POL SCI 4CC3 SELECTED TOPICS ON THE STATE AND BUSINESS
This seminar will investigate topics concerning the relationship between state action and the organization and activities of the business community.
3 hrs.(seminars); one term
Prerequisite: Political Science 2G6, 2P6, 3X6, and 3Z6 are recommended.

POL SCI 4D6 COMPARATIVE STUDIES IN ETHNICITY AND POLITICS
A study of the impact of ethnic and racial factors upon the political process in comparative contexts, but focussing principally on South Africa.
3 hrs.(seminars); one term
Prerequisite: Previous course in Political Science. Same as Sociology 4V6.

POL SCI 4DD6 CRITIQUES OF MARX’S THOUGHT
Specific topics in Marx’s thought, such as class struggle, imperialism, crisis theory, the role of the state and others, will be evaluated in the light of contemporary criticism.
2 hrs.(seminars); two terms
Prerequisite: Political Science 3K6, or a comparable course in either Sociology or Philosophy; or permission of the instructor.

POL SCI 4E6 LIBERAL-DEMOCRATIC THEORY AND MARKET SOCIETY
This seminar will seek to trace the emergence and to assess the adequacy of the contemporary liberal-democratic theory of the welfare and regulatory state.
2-3 hrs.(seminars); two terms
Prerequisite: A previous course in Political Theory.

POL SCI 4F6 HUMAN RIGHTS: INTERNATIONAL AND NATIONAL
An examination of the concept of human rights as reflected in international and national declarations and practices. The focus will be on "liberal" and "Marxist-Leninist" interpretations and the specific content of human rights.
3 hrs.(seminars); two terms
Prerequisite: A previous course in International or Comparative Politics.

POL SCI 4G6 COMPARATIVE PUBLIC POLICY
A critical analysis of the formation, content and impact of public policy within advanced industrial societies.
3 hrs.(seminars); two terms
Prerequisite: A previous course in Comparative or Canadian Politics. Not open to students with credit in Political Science 3X6.

POL SCI 4H6 THE POLITICS AND ADMINISTRATION OF PUBLIC ENTERPRISE
An examination of the origins, development and challenges to public enterprise; the management and control of such organizations; Canadian focus in the context of the United States and Europe.
3 hrs.(seminars); two terms
Prerequisite: Registration in Level IV Honours Political Science.

POL SCI 4IE++ DIRECTED READINGS AND INDEPENDENT RESEARCH FOR HONOURS STUDENTS
Directed reading assignments and independent study of a research problem through published materials and/or field inquiry. Students will be required to formulate the result of their research in scholarly fashion. The subject matter is to be different from that covered in 4Z6 if the student is enrolled in both courses. Two terms
Prerequisite: Registration in Level IV Honours Political Science. Students must obtain permission of the instructor concerned prior to registering in this course.

POL SCI 4J6 COMPARATIVE POLITICS: COMMUNIST POLITICAL SYSTEMS
A comparative analysis of the political ideologies, institutions, and practices of communist political systems.
Seminar; two terms
Prerequisite: Permission of the instructor. Offered in alternate years.
POL SCI 466 ADVANCED TOPICS IN PUBLIC ADMINISTRATION
An examination in depth of one or more of the important topics, problems, or perspectives in the study of public administration.
3 hrs. (seminar); two terms.
Prerequisite: Political Science 326; open only to Level IV students.

POL SCI 466 ISSUES IN INTERNATIONAL POLITICS
An examination of selected topics in international politics and foreign policy.
2 hrs. (seminars); two terms.
Prerequisite: Permission of the Instructor.

POL SCI 466 CANADIAN PUBLIC POLICY
An examination of the patterns of public policy in Canada and a critical evaluation of several types of explanation.
Seminar (S); two terms.
Prerequisite: Political Science 2G6, and another course in Political Science beyond Level I. Open only to Level IV students.

POL SCI 493 POLITICAL PARTIES
A critical examination of theoretical approaches to parties and party systems, and a selective application of these ideals to different societies.
3 hrs. (seminars); one term.
Prerequisite: A previous course in Comparative or Canadian Politics.

POL SCI 494 DEVELOPING POLITICAL SYSTEMS
Application of comparative techniques to the analysis of politics in selected systems of the non-Western world.
3 hrs. (seminars); two terms.
Prerequisite: Permission of the instructor.

POL SCI 496 CANADIAN POLITICAL THEORY
An investigation into the character of Canadian liberalism and the various critiques of liberalism found in the works of G.P. Grant, C.B. Macpherson, George Woodcock and other Canadian political theorists.
3 hrs. (seminar); two terms.
Prerequisite: Permission of the instructor.

POL SCI 497 MODELS FOR POLITICAL ANALYSIS
A close examination of the way in which various 'models' or modes of explanation are employed in contemporary political analysis.
2 hrs. (seminar); two terms.
Prerequisite: A previous course in Political Theory is recommended. Open only to Level IV students.

POL SCI 496 PROBLEMS OF POLITICAL PHILOSOPHY
A study in detail and in depth of writings by a limited number of political thinkers, focussing upon one of the central problems of political philosophy.
2 hrs. (seminars); two terms.
Prerequisite: A previous course in Political Theory.

POL SCI 496 INTERNATIONAL COMMUNIST MOVEMENT
This seminar is designed to examine the role of Communism as a major force in contemporary international politics.
3 hrs. (seminars); two terms.
Prerequisite: Political Science 256.

POL SCI 496 QUEBEC POLITICS
The political ideology of Quebec-based parties and movements, the impact of industrialization upon Quebec culture, and the economic implications of separatism.
3 hrs. (seminar); two terms.
Prerequisite: Political Science 2G6, and another course in Political Science beyond Level I.

POL SCI 496** HONOURS ESSAY
A major piece of scholarly writing designed to cap the undergraduate Honours programme in Political Science. The subject matter is to be different from that covered in 416, if the student is enrolled in both courses.
Two terms.
Prerequisite: Registration in Level IV Honours or Combined Honours Political Science and another subject. For registration in the summer, written permission of the Course Coordinator is required.

For Graduate Courses, see Calendar of School of Graduate Studies.

Psychology
Faculty as of January 15, 1986

L. G. Allan/Chairman

Professors
Lorraine G. Allan/B.A., M.A. (Toronto), Ph.D. (McMaster)
Ian M. Begg/B.A., M.A., Ph.D. (Western)
Lee R. Brooks/A.B. (Columbia), M.S., Ph.D. (Brown)
D. William Carment/B.A. (Saskatchewan), M.A., Ph.D. (Toronto)
Martin Daly/B.A. (Toronto), M.A. (McGill), Ph.D. (Toronto)
Bennett G. Galet/A.B. (Princeton), M.A., Ph.D. (Pennsylvania)

Bernard R.W. Heron/M.A., Ph.D. (McGill)
Larry L. Jacoby/B.A. (Washburn), M.A., Ph.D. (Southern Illinois)
Herbert M. Jenkins/A.B. (Oberlin), Ph.D. (Harvard)
Alfred B. Kristofferson/B.S., M.A., Ph.D. (Michigan)
Betty A. Levy/B.A. (Dalhousie), M.A., Ph.D. (Toronto)
Stephen W. Link/B.A. (Colorado), Ph.D. (Stanford)
Daphne M. Maurer/B.A. (Swarthmore) M.A. (Pennsylvania) Ph.D. (Minnesota)
G. Rolfe Morrison/B.Sc., M.Sc. (McGill), Ph.D. (Brown)
P. Lynn Newbigging/B.A. (Saskatchewan), M.A. (Toronto), Ph.D. (London)
John R. Platt/B.A. (Kansas), Ph.D. (Texas)
Roy M. Pritchard/B.Sc., Ph.D. (Reading)
Ronald J. Racine/B.Sc. (Oregon), M.Sc., Ph.D. (McGill)
Larry E. Roberts/B.A., Ph.D. (Minnesota)
Shepard Siegel/A.B. (New York), M.S., Ph.D. (Yale)
Grant K. Smith/B.Sc., Ph.D. (McGill)

Associate Professors
Richard Y. Bournis/B.Sc. (McGill), M.A., Ph.D. (Bristol)
Denys de Catanzaro/B.A., M.A. (Carleton) Ph.D. (British Columbia)
Harvey Weingarten/B.Sc. (McGill), M.S., M. Phil, Ph.D. (Yale)

Assistant Professors
Richard B. Day/B.A. (Massachusetts), M.A. (Iowa), Ph.D. (McMaster)
Donna Lamping/B.A. (Waterloo), Ph.D. (Harvard)

CURRICULUM 1986-88

Department Notes:
1. The University reserves the right to limit enrolment in any course. Where priorities have to be established, first consideration will be given to Honours B.Sc. and B.A. Psychology students.
2. Registration in all courses marked ** listed as selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

PSYCH 1A6 GENERAL PSYCHOLOGY
A broad survey of the subject matter of psychology. Topics covered include physiological psychology, perception, learning, animal behaviour, development, cognition, psychopathology, and social psychology.
3 hrs (lects. and tuts.); two terms.
Prerequisite: Open.

PSYCH 2A3 THEORIES OF HUMAN DEVELOPMENT
A general survey of human development with an emphasis on the childhood years.
3 lects.; one term
Prerequisite: Psychology 1A6. Not open to students who have credit in Psychology 3G3 or 3M6.

PSYCH 2B3 PERSONALITY
An introduction to the scientific study of personality which will consider theory, assessment and research in five approaches to personality: psychodynamic, biological, trait, behavioural and humanistic.
3 lects.; one term
Prerequisite: Psychology 1A6.

PSYCH 2C3 INTRODUCTION TO SOCIAL PSYCHOLOGY
An overview of research and theory in areas such as social perception, attitude and attitude change, social influence, interpersonal attraction, altruism, aggression, small group processes.
2 lects. 1 tut.; one term
Prerequisite: Psychology 1A6.

PSYCH 2D6 SENSATION AND PERCEPTION
An intensive study of sensory and perceptual processes. The emphasis is on experimental findings, theoretical explanations, and methods employed in the study of these processes.

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PSYCHOLOGY

3 lects.; two terms
Prerequisite: Psychology 1A6. Not open to students registered in an Honours Programme in Psychology, or to students receiving credit for Psychology 3W6.

PSYCH 2G3 PSYCHOLOGICAL STATISTICS
An introduction to descriptive statistics and to the logic of statistical inference. This course is intended to provide an understanding of statistical procedures commonly found in the psychological literature.
3 lects.; one term
Prerequisite: Mathematics IIIL, or any other 3 units of Mathematics, and registration in B.A. Psychology. Not open to students who are registered in, or have received credit for, Mathematics 1F6, or Psychology 2R6, or Statistics 2R6, or equivalent.

PSYCH 2H3 HUMAN LEARNING AND COGNITION
The psychological study of knowledge and how people use it. Topics include pattern recognition, remembering and reasoning.
3 lects., one term
Prerequisite: Psychology 1A6.

PSYCH 2R6 RESEARCH DESIGN AND STATISTICS FOR PSYCHOLOGISTS
Statistical principles in the design and analysis of experiments in psychology. Parametric and non-parametric techniques for single sample, two sample and multi-sample designs.
3 lects.; two terms
Prerequisite: One of Mathematics IAl6, 1F6, 1M3, 1N6 and registration in a Psychology programme. Not open to students who have completed Statistics 2D3, 2G4, 2M3, 2R6 or 3H3.
A student receiving credit for Psychology 2G3 may receive only three additional units credit for Psychology 2R6.

PSYCH 2T3 PRINCIPLES OF CONDITIONING
An experimental survey of conditioning processes based on the study of animal behaviour.
3 lects.; one term
Prerequisite: Psychology 1A6.

PSYCH 2U3 LABORATORY IN ANIMAL CONDITIONING
Students undertake experimental exercises intended to demonstrate principles of simple learning. Experiments are conducted at times of the students' choosing within normal hours of operation.
Tuts., lab. by appointment; one term
Prerequisite: Psychology 2T3. Permission of the department must be obtained by March 1.
Enrolment is limited.

PSYCH 2W6 NEUROPSYCHOLOGY
Neural organization and the relationship between human brain function and behaviour.
3 lects.; two terms
Prerequisite: Psychology 1A6.

PSYCH 3B3 DEVELOPMENTAL PSYCHOPATHOLOGY
A study of the etiology of abnormal human behaviour, including a survey of behavioural abnormalities and adjustment problems specific to children.
3 lects.; one term
Prerequisite: Credit, or registration in Psychology 3N6; or permission of the instructor.

PSYCH 3C6 SOCIAL PSYCHOLOGY LABORATORY
Students collect, analyse and interpret data, and in the second term carry out a research project of their own design.
2 lects., 1 lab. (3); two terms
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 2C3, and Psychology 2R6 or Statistics 2R6; or permission of the instructor.
Enrolment is limited.

PSYCH 3D3 SELECTED TOPICS IN SOCIAL PSYCHOLOGY
Topics will include interpersonal and cross-cultural communication, equity and social exchange, inter-group relations. Topics may change year to year.
2 lects., 1 tut.; one term

PSYCH 3DD3 PSYCHOLOGICAL ASPECTS OF AGING
An examination of the cognitive and social psychological aspects of aging: sensation, perception, attention, memory, intelligence, communication, personality, attitudes and mental health.
3 hrs. (lects. and seminars); one term
Prerequisite: Psychology 1A6 and Gerontology 1A6 or Social Science 2G6; or permission of the instructor.
Same as Gerontology 3D3.

Students in a Psychology programme (except those in Gerontology and Psychology) must register for this course as Psychology 3DD3.

PSYCH 3E3 SENSORY PROCESSES AND PERCEPTION LABORATORY
Interactive computer controlled visual and auditory phenomena are used to demonstrate the principles of human and artificial perception and information processing.
1 lab. (3); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 2D3, or credit or registration in Psychology 3W6, and Psychology 2R6 or Statistics 2R6; or permission of the instructor.
Enrolment is limited.

PSYCH 3F6 PHYSIOLOGICAL PSYCHOLOGY I
Topics include membrane physiology, neurochemistry, sensory and motor functions, and the physiology of motivation, learning, and memory. Designed particularly for students in the Faculty of Science.
3 lects.; two terms
Prerequisite: Registration in Honours or B.Sc. Psychology, or registration in Level III or IV of a Biology or Biochemistry programme; or permission of the instructor.

PSYCH 3G3 DEVELOPMENT DURING INFANCY
Social and cognitive development in the first two years of life. Topics include fetal development, development of perception, memory and concepts.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a Psychology programme; or permission of the instructor. Not open to students who have completed Psychology 3M6.

PSYCH 3H3 INTELLECTUAL DEVELOPMENT AFTER INFANCY
The development of perception, memory, language and concepts after infancy.
3 lects.; one term
Prerequisite: Psychology 3G3, and completion of or registration in Psychology 2G3 or 2R6. Not open to students who have completed Psychology 3M6.

PSYCH 3K3 PSYCHOLOGICAL MEASUREMENT
Theory of psychological testing and measurement. Topics include the statistical bases and assumptions of measurement, test validity and reliability and the measurement of human characteristics.
3 lects.; one term
Prerequisite: Psychology 1A6, and Psychology 2G3, or 2R6 or Statistics 2R6; or permission of the instructor. Students with grades less than B- in Psychology 2G3 are advised not to enroll in this course.

PSYCH 3L6 ABNORMAL PSYCHOLOGY
Topics basic to clinical psychology, including models of behavioural disorder, classification of abnormal behaviour, evaluation of diagnostic practice, and determinants and treatment of mental illness.
3 lects.; two terms
Prerequisite: Credit or registration in one of Psychology 2T3, 2W6, or 3F6; or registration in Level III or IV of Nursing, or permission of the instructor.

PSYCH 3P3 PSYCHOLOGICAL TOPICS IN THINKING
Areas to be covered include human inference, decision making, and creative problem solving.
3 lects.; one term

PSYCH 3Q3+ INDIVIDUAL STUDY I
A library project that may extend over both terms. Students intending to register must first consult a faculty member and the course co-ordinator.
Prerequisite: Permission of the course co-ordinator. Not open to students who are registered in, or who have received credit for Psychology 3Q3.

PSYCH 3QQ+ INDIVIDUAL LAB STUDY I
A laboratory project that may extend over both terms. Students intending to register must first consult a faculty member and the course coordinator.
Prerequisite: Permission of the course coordinator. Not open to students who are registered in, or who have received credit for, Psychology 3QQ.

PSYCH 3R3 INTRODUCTION TO ANIMAL BEHAVIOUR
The development, stimulus control, and function of behaviour as seen in evolutionary perspective. Instinctive behaviour, learned behaviour and their interactions.
3 lects.; one term
Prerequisite: Registration in a Psychology programme, or in a four-level programme in Biochemistry or Biology; or permission of the instructor.

PSYCH 3S3 ANIMAL BEHAVIOUR LABORATORY
Experiments involving a wide variety of animal species, both vertebrate and invertebrate.
1 lab. (3); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 3R3, and registration in a four-level programme in Psychology or Biology; or permission of the instructor.
Enrolment is limited.

PSYCH 3T3 SOCIOBIOLOGY
Social behaviour of people and other animals from the perspective of evolutionary theory. Topics include aggression, altruism, kinship, parent-offspring interaction, sex and reproduction.
3 lects.; one term
Prerequisite: One of Anthropology 2D3, 2E3, Biology 2C3, 3J3, Psychology 3R3.

PSYCH 3U3 HUMAN MEMORY
Cognitive processes involved in encoding, storage and retrieval will be discussed in terms of current theories of memory and information processing.
3 lects.; one term
PSYCH 3V3 LABORATORY IN HUMAN MEMORY AND COGNITION
Experiments illustrating important issues in human memory and cognition. Problems in the design, analysis, and reporting of experiments will be emphasized. Individual projects required.
1 lab. (3); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 3U3, and credit or registration in Psychology 2R6 or Statistics 2R6.
Enrolment is limited.

PSYCH 3W6 PSYCHOPHYSICS AND PERCEPTION
Theories, methods, and data of psychophysics are presented and used in the analysis of sensation, perception, and cognition. Quantitative theories and data are stressed, but phenomenology is considered.
3 lects.; two terms
Prerequisite: Credit or registration in Psychology 2G3 or 2R6, or Statistics 2R6; or permission of the instructor. Not open to students receiving credit for Psychology 2D6.

PSYCH 3X3 SELECTED TOPICS IN BEHAVIOUR MODIFICATION
Major issues and controversies in contemporary behaviour modification. Consideration is given to novel theoretical accounts, and to experimental bases for such techniques as systematic desensitization, aversion therapy, and punishment.
3 lects.; one term
Prerequisite: Psychology 2T3, and registration in a Psychology programme; or permission of the instructor.

PSYCH 3Y3 SELECTED TOPICS IN BEHAVIOUR THEORY
Issues of contemporary interest in animal learning and behaviour will be examined in depth.
3 lects.; one term
Prerequisite: Psychology 2T3, and registration in a Psychology programme.

PSYCH 3Z3 RESEARCH METHODS IN PSYCHOLOGY
An advanced course examining the principles and techniques of research and data analysis in psychology.
3 lects.; one term
Prerequisite: Psychology 2R6, and registration in Honours Psychology.

PSYCH 4A3 CONTEMPORARY TOPICS IN HISTORICAL PERSPECTIVE
Discussion of the background and current status of several issues of contemporary interest.
3 hrs. (lects. and seminar); one term
Prerequisite: Registration in Level IV Honours Psychology, or permission of the instructor.

PSYCH 4B3 HISTORY OF PSYCHOLOGY
An historical account of the main lines of development of psychology.
3 lects.; one term
Prerequisite: Registration in Level IV Honours Psychology, or permission of the instructor.

PSYCH 4D6 PSYCHOLOGY THESIS
Students conduct research projects with individual faculty members. Three copies of a completed thesis must be submitted by the end of the term.
Prerequisite: Registration in Level IV Honours Psychology and permission of the course co-ordinator. If Psychology 3Q3, 3QQ3, 4Q3, or 4QQ3 is taken concurrently with Psychology 4D6, a different faculty member must supervise each course.

PSYCH 4F3 NEURAL MECHANISMS I
Neurobiology at an advanced level. Topics include membrane biophysics, electrophysiology and pharmacology of excitable cells, synaptic and dendritic mechanisms and neural plasticity.
3 lects.; 1 term
Prerequisite: Psychology 3F6 or Biology 3U6, and registration in Level IV of Honours Psychology, Biology or Biology/Psychology, or permission of the instructor. Not open to students who have completed Psychology 4E7.

PSYCH 4G3 NEURAL MECHANISMS II
Seminars and laboratory experience in current problems in neurobiology.
2 hour seminar, 3 hours lab.; 1 term
Prerequisite: Psychology 4F3; or permission of the instructor. Not open to students who have completed Psychology 4E7.
Enrolment is limited.
Permission of the Department must be obtained by March 1.

PSYCH 4H3 PHYSIOLOGICAL PSYCHOLOGY II
A critical examination of current issues in physiological psychology.
3 hours (lect. or seminar); 1 term
Prerequisite: Psychology 3F6, and registration in Level IV Honours Psychology or Biology/Psychology, or permission of the instructor.

PSYCH 4Q3** INDIVIDUAL STUDY II
A library project that may extend over both terms. Students intending to register must first consult a faculty member and the course co-ordinator.
Prerequisite: Permission of the course co-ordinator. Open only to students in Level IV of an Honours Psychology programme. Not open to students who are registered in, or who have received credit for, Psychology 4QQ3.

PSYCH 4QQ3** INDIVIDUAL LAB STUDY II
A laboratory project that may extend over both terms. Students intending to register must first consult with a faculty member and the course co-ordinator.
Prerequisite: Permission of the course coordinator. Open only to students in Level IV of an Honours Psychology programme. Not open to students who are registered in, or who have received credit for, Psychology 4QQ3.

For Graduate Courses see Calendar of School of Graduate Studies.

Religious Studies
Faculty as of January 15, 1986
J. Robertson/Chairman

Professors
John G. Arapura/B.A. (Searampore College, and Bishop's College, Calcutta), S.T.M. (Union Theological Seminary), M.A., Ph.D. (Columbia)
A. Eugene Combs/B.A. (Trinity, San Antonio), M.Div. (Union Theological Seminary), Ph.D. (Columbia)
Phyllis Granoff/B.A. (Radcliffe College), Ph.D. (Harvard)

Yun-hua Chang/B.A. (Visva-Bharati)
Ben F. Meyer/B.A. (Gonzaga, Spokane), Ph.L. (Mount St. Michael's, Spokane), M.A. (Gonzaga), M.S.T. (Santa Clara), S.T.L. (Alma, Los Gatos), S.S.L. (Istituto Biblico), S.T.D. (Gregorian)

Johannis J. Mok/B.D. (Union Theological Seminary), M.A. (Columbia)
John C. Robertson/B.A. (Texas Wesleyan College), B.D. (Southern Methodist), Th.M. (Union Theological Seminary), M.A., Ph.D. (Yale)

Ed P. Sanders/B.A. (Texas Wesleyan College), B.D. (Southern Methodist), Th.D. (Union Theological Seminary), B.D. (Southern Methodist, Part-time)

Krishna Sivaraman/M.A. (Anna University, Madras), Ph.D. (Banaras)

Paul Younger/Ph.B. (LaFayette, M.A. (Banaras), B.D. (Sarapmore), Th.M., M.A., Ph.D. (Princeton)

Associate Professors
Albert I. Baumgarten/A.B. (Columbia), B.H.L. (Israel Theological Seminary), M.A., Ph.D. (Columbia, Part-time)
Alan M. Cooper/A.B. (Columbia), M.Phil., Ph.D. (Yale)
Louis I. Greenspan/M.A. (Dalhousie), Ph.D. (Brandeis)

David R. Kinsley/B.A. (Drew), B.D. (Union Theological Seminary, Th.D. (Union Theological Seminary), Part-time)

Alan Mendelson/A.B. (Kenyon College), M.A. (Brandeis), Ph.D. (Chicago)

Koichi Shimohara/B.L., M.L. (Tokyo), Ph.D. (Columbia)

Gerard Vallee/B.A. (Laval), M.A. (Montreal), Ph.D. (Munster)

Assistant Professors
Ian G. Weeks/A.B., M.A. (McMaster), M.A. (Montreal)

S.R. Westerholm/B.A., M.A. (Toronto), D.Th. (Lund)
Wayne K. Whillier/B.A. (Sir George Williams), Ph.D. (McMaster)

CURRICULUM 1986-88

Department Notes:
1. Students are advised to consult the Department's Handbook, which will be available prior to registration, for a list of the courses offered in the current year.

2. Registration in all courses marked ** listed as selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar under Sessional Dates.

3. The course list is divided by Level. The Advanced Study courses are at the end of the list. Level IV Honours students are normally expected to register for at least 6 units of Advanced Study (Religious Studies 4A6, 4B6, 4C6, 4D6, 4E6, 4F6, 4G6). The format of these courses varies from year to year, but they are usually either seminars or reading courses. Students should plan their programme in consultation with the instructors of the Honours seminar and a Departmental Undergraduate Advisor.
RELIG ST 1B6 WORLD RELIGIONS
An introduction to religion through an examination of Hinduism, Jainism, Buddhist¬
ism, Confucianism, Taoism, Shinto, Judaism, Christianity and Islam.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 1E6 IDEAS OF LOVE
A conceptual and historical study of the ideas of love that have shaped Western thought, experience and belief.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 1F6 WAR AND THE PROBLEM OF MEANING
This course uses lectures, films, and selected writings from religion, politics and literature to examine, in a comparative manner, the ways in which different traditions have understood the meaning and end of war.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 1G3 RELIGION IN CROSS-CULTURAL PERSPECTIVE
An introduction to religion through a study of such themes as religious founders, religious experience, and religious institutions in different religious traditions.
2 lects., 1 tut.; one term
Prerequisite: Open. Students are encouraged to take Religious Studies 1H3 as a supplement to this course.

RELIG ST 1H3 RELIGIOUS REVIVALIZATION AND DISSENT
A study of different types of recent dissent from establishment religion. Feminist thought, liberation theology and modern cults will be examined.
2 lects., 1 tut.; one term
Prerequisite: Open. Students are encouraged to take Religious Studies 1G3 as a supplement to this course.

RELIG ST 2A6 DEATH AND DYING IN HUMAN EXPERIENCE
A reflection on death as a problem, and a mystery in light of both contemporary knowledge and selected religious literature.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 2A3 MYSTICISM IN HINDU AND CHRISTIAN TRADITIONS
An exploration of the unique and common characteristics of mysticism in the Hindu and Christian traditions, both in its philosophical and popular expression through the study of selected myths.
2 lects., 1 tut.; one term
Prerequisite: Open. Offered in 1987-88.

RELIG ST 2B6 IMAGES OF THE DIVINE FEMININE
The course will focus on the ways in which various religious traditions have perceived the divine in feminine terms. The course will also deal with certain spiritual heroines from among various religious traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 2C6 MORAL ISSUES
An introduction to moral philosophy accented biomedical ethics. Issues like abortion, human experimentation, euthanasia, and genetic screening will be investigated in cooperation with members from the Faculty of Health Sciences.
2 lects., 1 tut.; one term
Prerequisite: Open. Students in Level II and above. Same as Philosophy 2D3.

RELIG ST 2CC3 SPECIALISTS IN THE SACRED
A study of common religious types: shamans, mystics, priests, and saints, and an attempt to discern their distinctive characteristics.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 2D6 THE BIBLICAL WORLD: AN INTRODUCTION TO THE BACKGROUND OF THE OLD TESTAMENT
The social and political world of the Old Testament period (second millennium to 300 BCE). Special attention will be given to the nature of the physical environment and to the results of archaeology.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 2DD3 THE FIVE BOOKS OF MOSES
The central teachings of the Pentateuch (Genesis-Deuteronomy) in the religious life and history of ancient Israel and in Western thought. 2 lects., 1 tut.; one term
Prerequisite: Open. For a study of the whole Hebrew Bible, Religious Studies 2D6, 2DD3, 2EE3, 3M3 are recommended.

RELIG ST 2E6 INTRODUCTION TO THE STUDY OF THE NEW TESTAMENT
A survey of early Christian history and New Testament literature. Attention is paid to the Jewish background to Christianity and to the contemporary Jewish Hellenistic worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2G6 may not take this course for credit.

RELIG ST 2E3 THE PROPHETS
The role and teaching of biblical prophets in their ancient setting and their impact on modern religious life and thought.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 2F6 HISTORY OF ANCIENT JUDAISM
A study of Judaism from the Babylonian Exile through the Rabbinic Period, with emphasis on the growth of religious movements and the political status of Jews and Judaism.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST 2G3 RELIGIOUS TRADITIONS OF THE EAST
A broad survey of major themes and problems in the study of the religions of the East.
2 lects., 1 tut.; one term
Prerequisite: Open. A Level I Religious Studies course is recommended. Not available to students with credit in Religious Studies 3M3.

RELIG ST 2H3 ISSUES IN WAR AND PEACE
Religious thinking and practice on militarism, the restraint of war and paths to peace, including just war, nonviolence, pacifism, and revolution.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 2I3 CHRISTIANITY IN THE PATRISTIC PERIOD (100-800)
The development of Christianity in the first centuries C.E. in relation to competing alternatives such as Judaism, Graeco-Roman cults and philosophies.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 2H6 may not take this course for credit.
Offered in 1986-87.

RELIG ST 2I3F LA PENSEE CRETIENNE A L'EPOQUE PATRISTIQUE (100-800)
La rencontre du christianisme avec la culture hellenistique vue a travers les ecrits des Peres de l'Eglise. Attention speciale sera accordee a l'oeuvre de s. Augustin.
3 lects.; one term
Prerequisite: Open.
Offered in 1986-87. Same as Religious Studies 2I3.

RELIG ST 2J6 INDIA: ITS CULTURE, SOCIAL HISTORY, RELIGION AND PHILOSOPHY
A systematic study of the intellectual and spiritual traditions of India. The course will include the political, economic and social thought, as well as religion and philosophy.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2G6 may not take this course for credit.

RELIG ST 2J3 CHRISTIANITY IN THE MEDIEVAL PERIOD (800-1500)
The development of Christianity in the Middle Ages and its relation to the political and intellectual context. Primary texts will illustrate typical aspects of medieval religion, learned and popular.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3K3 may not take this course for credit.
Offered in 1986-87.

RELIG ST 2K3 MYTH
Major definitions and theories of myth are discussed in conjunction with primary readings from mythological texts.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

RELIG ST 2K3 CHRISTIANITY IN THE 16TH CENTURY
The place of the Reformation movement in the development of Christianity, its background, context, and sequels. Attention given to the life and thought of Martin Luther and his impact on Western culture.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3K3 may not take this course for credit.
Offered in 1987-88.

RELIG ST 2L3 CHRISTIANITY AFTER 1600
The development of Christianity (Protestant and Catholic) from the 17th to the 20th centuries. Attention given to the interaction between secular and religious movements, and to Christianity's reaction to world-wide challenges.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

RELIG ST 2M6 EAST ASIAN RELIGIONS
An introduction to Chinese religion and philosophy from early periods to the present. The course will treat Confucianism, Taoism, Buddhism, and Western influences on China.
2 lects., 1 tut.; two terms
REUG ST 2NN3 RELIGIOUS TRADITIONS OF THE WEST
A broad survey of major themes and problems in the study of the religions of the West.
2 lecs., 1 tut.; one term
Prerequisite: Open. A Level I Religious Studies course is recommended.

REUG ST 203 THE QURAN
Selections from the Qur'an will introduce students to some of the major themes of Islam; works of modern and traditional scholarship will supply historical and religious contexts.
2 lecs., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3CC3 may not take this course for credit.
Offered in alternate years.

REUG ST 2P3 ROOTS OF MODERN ISLAM
Problems in the modern Islamic world and their roots in Islamic history and tradition. Topics: religions and politics; Shi'ism; the status of women; problems of nationalism; Islam and the West.
2 lecs., 1 tut.; one term
Prerequisite: Open.
Offered in alternate years.

REUG ST 2Q03 CULTS IN NORTH AMERICA
Cults and sects, particularly Asian, that have become prominent in North America (the Unification Church, Hare Krishna movement, etc.). Special attention to charismatic personalities and to the depogramming controversy.
2 lecs., 1 tut.; one term
Prerequisite: Open.

REUG ST 2RR3 RELIGIOUS THOUGHT IN THE NOVELS OF TOLSTOY AND DOSTOYEVSKY
A critical examination of the treatment of religion in the major novels of Tolstoy and Dostoyevsky.
3 lecs.; 1 term
Prerequisite: Open to students in Level II and above.
Some as Russian 283.

REUG ST 253 MODERN JUDAISM
A survey of the most important trends in Jewish life and thought from the Middle Ages to the present. These include religious movements, Zionism, and responses to the holocaust.
2 lecs., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3M6 may not take this course for credit.
Offered in 1987-88.

REUG ST 25S3 WOMEN AND RELIGION
A study of the status and roles of women in several religions, such as Hinduism, Buddhism, Confucianism, Christianity, Judaism, and Islam. Important women religious figures and feminist theology will also be studied.
2 lecs., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

REUG ST 273 YOGA: THEORY AND PRACTICE
A study of both the theoretical and practical sides of Yoga, beginning with the famous aphorisms of Patanjali; its importance and relevance for today.
2 lecs., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3WW3 may not take this course for credit.

REUG ST 2TT6 INTRODUCTION TO ISLAM
An introduction to the major themes of Islamic religion. The beginnings of Islam, and the growth and elaboration of the main aspects of Islamic tradition: scripture, prophetic tradition, law, theology, and mysticism.
3 lecs.; two terms
Prerequisite: Open.

REUG ST 2V3 INDIAN ART AND RELIGION
Indian art in relation to its religious background; the problem of the relationship between art and religion.
2 lecs., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3V3 may not take this course for credit.
Offered in 1987-88.

REUG ST 2V33 BIBLICAL LITERATURE
A survey introduction to biblical literature (Old Testament, New Testament, and selected Apocrypha and Pseudepigrapha) and the history of biblical interpretation to meet the particular needs of students of Western literature.
2 lecs., 1 tut.; one term
Prerequisite: Open.
Same as Comparative Literature 2G3.

REUG ST 2W3 RELIGION AND GOOD GOVERNMENT
This course investigates the issues of the enlightened ruler, the right of civil disobedience, and the obligations of citizenship in the religious traditions of India, China, and the West.
2 lecs., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

REUG ST 2WW3 HEALTH, HEALING, AND RELIGION
The relation between ideas about health and views of the world (cosmologies). The ways in which views of health and healing are bound up with religious views in reference to shamanism, traditional Chinese and classical Indian medicine, and some aspects of modern medical practice.
2 lecs., 1 tut.; one term
Prerequisite: Open.

REUG ST 2X3 GREEK AND ROMAN BACKGROUND TO EARLY CHRISTIANITY
A description and analysis of selected Greek and Roman social and political institutions which helped to form the background to the life of early Christians and the New Testament writers. The topics surveyed include: the spread of the Greek language and culture, Roman provincial government and the Roman army, travel by land and sea, the life of major cities, education and literature.
3 lecs.; one term
Prerequisite: Open.
Same as Classical Civilization 2X3.

REUG ST 2X6 RELIGIOUS FOUNDATIONS OF POLITICAL ORDER, EAST AND WEST
A comparative study of Genesis and Chandogya Upanisad at discerning their teachings about the political ordering of human beings.
2 lecs., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 1C6 may not take this course for credit.
Offered in 1987-88.

REUG ST 2Y6 PSYCHOLOGY AND RELIGION
A critical examination of major western psychological theories of religion and interpretations of religious experiences in light of these theories.
2 lecs., 1 tut.; two terms
Prerequisite: Open to students in Level II and above.

REUG ST 2Z3 GREEK AND ROMAN RELIGION
A study of the role of religion in Greek and Roman public and private life.
3 lecs.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2Z3.

REUG ST 2Z6 COMPARATIVE IDEAS OF GOD, CHRISTIAN AND HINDU
A study of the nature of the divine in the Christian and Hindu religious traditions.
2 lecs., 1 tut.; two terms
Prerequisite: Open.

REUG ST 303 RELIGIOUS STUDIES 303
A study of the major denominations in Canada. Their history and their relation to national, regional and class identity.
2 lecs., 1 tut.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Sociology 303.

REUG ST 3BB3 MAJOR DENOMINATIONS IN CANADA
A study of the major denominations in Canada, their history and their relation to national, regional, and class identity.
2 lecs., 1 tut.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Sociology 3BB3.

REUG ST 3C3 DIVINATION AND PHILOSOPHY OF I-CHING OR THE BOOK OF CHANGES
An exploration of I-ching's divination techniques and its philosophical interpretation of man, the world, and the cosmic.
2 lecs., 1 tut.; one term
Prerequisite: Open.
Offered in 1986-87.

REUG ST 3D3 GOD, REASON AND EVIL
An examination of religious understandings of the nature of reason and evil, and the issues these concepts raise for holding religious beliefs.
2 lecs., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3D6 may not take this course for credit.
Offered in 1986-87.

REUG ST 3F3 APPROACHES TO THE STUDY OF RELIGION
A study of the various ways religious phenomena can be studied, e.g. psychologically, sociologically, philosophically, theologically, comparatively, etc. Attention is also given to the history of the discipline of religious studies.
RELIGIOUS STUDIES

2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2NN3, 2003, or permission of instructor.

RELIG ST 3J6 RELIGION AND MODERN SOCIETY
An introduction to the thoughts and theories of scholars who have studied the relation between religion and society. In the first term, the emphasis will be on pre-World War II writings. In the second term, the empirical materials of the sociology of religion since World War II will be surveyed.
2 lects., 1 tut.; two terms
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies or Sociology.
Same as Sociology 3M6.

RELIG ST 3J6 PRIMITIVE RELIGIONS
A critical examination of major anthropological and psychological theories of primitive religion and primitive modes of classification.
2 lects., 1 tut.; two terms
Prerequisite: Open.
Offered in 1987-88.

RELIG ST 3K3 INTRODUCTION TO HELLENISTIC JUDAISM
An examination of the mutual interaction of Judaism and Hellenism: the impact of Greek thought on Judaism and the contribution of Hellenistic Jewish philosophy.
2 lects., 1 tut.; one term
Prerequisite: Any of Religious Studies 2NN3, 2E6, 2FF6, 2G6, 2X3, 223; or permission of the instructor.
Offered in 1987-88.

RELIG ST 3K3 RECENT DEVELOPMENTS IN CHRISTIAN THEOLOGY
A study of what some major Christian thinkers have been saying recently about the meaning of Christ in the modern world.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

RELIG ST 3L3 THE MYSTICS OF ISLAM
A study of the phenomenon of mysticism will provide the framework for examination of Islamic mysticism (Sufism), concentrating on the mystics’ use of, and influence on, Islamic tradition.
2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2TT6 or 203; or permission of the instructor.
Offered in alternate years.

RELIG ST 3L3 RELIGION AND HUMAN NATURE
What is the nature of human nature and its fulfillment? A study of recent philosophical, scientific and religious anthropology.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1987-88.

RELIG ST 3M3 ISRAELITE POETRY AND WISDOM
An exploration of the relation between literary art and religious expression through a consideration of biblical poetry and wisdom literature. Special attention to the Book of Job. 2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2NN3, or 2DD3 or 2EE3; or permission of the instructor.

RELIG ST 3M3 SCEPTICISM, ATHEISM, AND RELIGIOUS FAITH
Is religious faith essential to, inimical to, or irrelevant to authentic human existence? A study of Nietzsche and Kierkegaard.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3UU6 may not take this course for credit.
Offered in 1986-87.

RELIG ST 3N3 THE INDIVIDUAL AND SOCIETY IN JAPANESE TRADITION
An examination of the Japanese social order and the place of the individual within it. Examples will be drawn from Japanese religion and culture.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3K6 may not take this course for credit.
Offered in 1987-88.

RELIG ST 3N3 THE ENCOUNTER OF SCIENCE AND RELIGION
The study of the history of the encounter since the 17th century, especially issues related to Darwin’s theory of evolution, and to the development of the scientific method.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3UU6 may not take this course for credit.
Offered in 1986-87.

RELIG ST 3N3 THE FOURTH GOSPEL
An examination of the historical and literary backgrounds of the Gospel of John followed by a study of its context, major themes, and distinctive contribution to Christian thought.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2NN3, 2E6, 2G6, 2R6; or permission of the instructor.
Offered in 1987-88.

RELIG ST 3P3 INDIAN PHILOSOPHY
A concise, connected account of Indian philosophy using Hindu, Buddhist and Jaina canonical writings as well as later philosophical writings.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 3P6 may not take this course for credit.
Offered in 1986-87.

RELIG ST 3Q6 THE BUDDHIST TRADITION
An historical and philosophical study of Buddhism in India, China and Japan.
2 lects., 1 tut.; two terms
Prerequisite: One of Religious Studies 2003, 206, 2MM6, 2B6; or permission of the instructor.
Offered in 1986-87.

RELIG ST 3R3 RELIGION AND IDENTITY
An examination of the roles or functions of religion in the development of personal and group identities, using both empirical and theoretical materials.
2 lects., 1 tut.; one term
Prerequisite: Open.
Same as Sociology 3R3.

RELIG ST 3S3 MONKS AND MAGICIANS: APPROACHES TO THE STUDY OF RELIGIOUS BIOGRAPHIES
Students will read selections of major religious biographies from the Christian, Hindu, Buddhist, and Taoist traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1986-87.

RELIG ST 3T3 MODERN RESEARCH IN THE LIFE AND TEACHINGS OF JESUS
An examination of the views of representative modern scholars with an analysis of the texts on which their views rest, along with a consideration of the problem of the relationship between faith and historical events.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2NN3, 2E6, 2G6, 2R6; or permission of the instructor.
Offered in 1987-88.

RELIG ST 3X3 THE LETTERS OF PAUL
An examination of the principal themes in Paul’s letters, with special emphasis on his Christology, anthropology, and soteriology. Modern scholarly views will be considered.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2NN3, 2E6, 2G6, 2R6; or permission of the instructor.

RELIG ST 3XX6 CIVIL RELIGIONS, EAST AND WEST
An analysis and critique of the concept of civil religion through a comparative study of selected theologico-political writings, with particular attention to the place and function of primary religious texts and authority in such civil form.
Lecture and seminar: two terms
Prerequisite: Open. Students are encouraged to take or to have taken Religious Studies 2XX6 as a complement to this course, as well as a course in Political Science and/or Philosophy.
Offered in 1987-88.

REQUIRED LEVEL IV COURSES FOR HONOURS STUDENTS

RELIG ST 4F3 APPROACHES TO THE STUDY OF RELIGION
A seminar in which important works representing different methodologies for the study of religion will be examined and discussed in detail.
1 (2 hr.) seminar; one term
Prerequisite: Religious Studies 3F3, and enrollment in Honours Religious Studies.

RELIG ST 4G3 HONOURS SEMINAR
A seminar in which the substance of the advanced research conducted in Advanced Study courses by participants will be presented and discussed by all members of the seminar.
1(2hr.) seminar; one term
Prerequisite: Religious Studies 4F3.
ADVANCED STUDY COURSES
RELIB ST 4AA6** Advanced Study in Hindu Religious History
RELIB ST 4BB6** Advanced Study in Buddhist and East Asian Religious History
RELIB ST 4CC6** Advanced Study in Early Jewish and Christian Sources
RELIB ST 4DD6** Advanced Study in Religion and Western Thought
RELIB ST 4EE6** Advanced Study in Indian Philosophy
RELIB ST 4EE6** Advanced Study in Hebrew Bible and Interpretation
RELIB ST 4W6** Advanced Study of Religion
RELIB ST 4Y3** Advanced Study of Religion

SANSKRIT
SANSKRIT 3A6 INTRODUCTION TO SANSKRIT GRAMMAR
Basic course in the elements of Sanskrit grammar. No previous knowledge of Sanskrit is required.
3 lects.; two terms
Prerequisite: Open.
SANSKRIT 4B6 READING & SANSKRIT TEXTS
Intermediate course with readings in selected texts.
3 lects.; two terms
Prerequisite: SANSKRIT 3A6 or equivalent.

HEBREW
HEBREW 2A6 HEBREW
The inductive study of the Hebrew language, leading to the mastery of the general principles of grammar and syntax. Prose work throughout the year.
3 lects.; two terms
Prerequisite: Open.
HEBREW 3A6 INTERMEDIATE HEBREW
Extensive readings in Biblical prose (selections from some or all of the following: The Pentateuch, Former Prophets, Ruth and Esther), and some readings in the second term in Rabbinic literature (Midrash and Aggada).
2 terms
Prerequisite: Hebrew 2A6 or equivalent.

For Graduate Courses, see Calendar of School of Graduate Studies.

Romance Languages
Faculty as of January 15, 1986
G. Erasmis/Chairman
W.F. Hanley/Associate Chairman

Professors Emeriti
Marie L. Stock/L. (Queens), M.A. (McGill), Ph.D. (Columbia)

Professors
Antonio G. Alessio/D.Litt. (Genoa) (Italian)
Stello Cro/L. en L. (Buenos Aires), Dott. Ling. e Lett. (Venice) (Italian)
Cesar Rouben/L. en S. (Paris-Sorbonne), B.A. (Sir George Williams), M.A., Ph.D. (McGill) (French)

Associate Professors
Caroline Bayard/L. és L., M. és L. (Toulouse), M.A., Ph.D. (Toronto) (French)
John D. Browning/B.A., M.Phil. (London), Ph.D. (Essex) (Spanish)
Gabriele Erasmis/B.A. (Yale), M.A., Ph.D. (Minnesota) (Italian)
William F. Hanley/B.A. (Toronto), M. és L. (Paris-Sorbonne), D.Phil. (Oxford) (French)
Maeveleire Jea/L. és L. (Bordeaux), M.A., Ph.D. (Montreal) (French)
W. Norman Jeeves/B.A., M.A. (Cambridge), L. és L. (Bordeaux) (French)
Charles E. Jose/B.A. (Western), M.A. (Toronto) (French)
Pilar Martinez/B.A., M.S., Chem. (Madrid), M.A. (Middlebury), Ph.D. (Madrid) (Spanish)
Foiglio Minelli/B.A., M.A. (Western), Ph.D. (Brown) (Spanish)
Owen R. Morgan/B.A., M.A. (Nottingham) (French)

Gabriel Moyal/B.A. (McGill), M.A., Ph.D. (Toronto) (French)
Elaine F. Nardocchio/B.A. (St. Francis-Xavier), M.A. (Middlebury), Ph.D. (Laval) (French)
Brian S. Pocknell/M.A. (Manchester), D. de l’U. (Paris-Sorbonne) (French)
Anna Whiteside/B.A. (Nottingham), M.A., Ph.D. (British Columbia) (French)

Assistant Professors
Vincent A. Betti/B.A., L. és L. (Laval) (French)
Vittorina Cecchetto/B.A., M.A., Ph.D. (Toronto) (Italian)
L. Diane Dyer/B.A., M.A., B.L.S., Phil. M. (Toronto) (Italian)
Michael Klifier/B.A. (British Columbia), M.A. (Michigan), Ph.D. (Cornell) (French)
Dominique Lepicq/L. és L. (Caen), M.A. (Ottawa), Ph.D. (Toronto) (French)

FRENCH CURRICULUM 1986-88
Beginners’ Language Course
FRENCH 126 BEGINNERS’ INTENSIVE FRENCH
An intensive audio-visual course for developing the four language skills (listening, speaking, reading and writing) with emphasis on the first two. The normal sequel to this course is French 11B6.
5 hrs. (including lab. practice); two terms
Prerequisite: Open, except to graduates of Grade 12 French or Grade 13 French. Not open to Francophones. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative. Enrolment is limited.

Intermediate and Advanced Language and Literature Courses
FRENCH 1A6 INTRODUCTION TO FRENCH STUDIES: ADVANCED LEVEL
Review of grammar, oral and written practice, and introduction to literary analysis by the reading of selected French and/or French-Canadian texts. For students intending to enter B.A. or Honours French.
4 tuts.; two terms
Prerequisite: Grade 12 or Grade 13 French, or French 126; or permission of the Department. Students with Francais 12 or 13 may be required to take an appropriate alternative. Not available to students with credit in or registered in French IA6.

FRENCH 1B6 INTERMEDIATE FRENCH
Review of grammar, oral and written practice. For students not intending to enter a programme in French.
4 tuts.; two terms
Prerequisite: Grade 12 or Grade 13 French, or French 126; or permission of the Department. Students with Francais 12 or 13 may be required to take an appropriate alternative. Not available to students with credit in or registered in French IA6.

FRENCH 2A3 FRENCH LANGUAGE PRACTICE: WRITTEN
Grammar and composition.
2 tuts.; two terms
Prerequisite: French 1A6 or 1B6.

FRENCH 2C3 FRENCH LANGUAGE PRACTICE: ORAL
Development of conversational skills.
2 tuts.; two terms
Prerequisite: Registration in a programme in French; or permission of the Department. Departmental permission slip required.
Enrolment is limited.

FRENCH 2F3 THE CIVILIZATION OF FRENCH CANADA
The study of the socio-political and religious evolution of early French Canada and the reflection of these factors in French-Canadian culture: journalism, music, architecture.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.

FRENCH 2F3 THE CIVILIZATION OF FRENCH CANADA II
The study of the socio-political, cultural and linguistic evolution of contemporary French Canada and the reflection of these factors in French-Canadian literature, journalism, music and cinema.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.

FRENCH 2G3 FRENCH LANGUAGE PRACTICE: ELEMENTARY TRANSLATION
An introduction to translation techniques (French to English and English to French) and to the use of pertinent reference material.
3 tuts.; one term
Prerequisite: A grade of at least B — in French 1A6 or a grade of at least B in French 1B6; or permission of the Department. Departmental permission slip required.
Enrolment is limited.
ROMANCE LANGUAGES

FRENCH 2H3 INTRODUCTION TO FRENCH LINGUISTICS
An introduction to the descriptive analysis of language (phonology, morphology, syntax, semantics) with special reference to French.
3 tuts.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH 2JJ3 NINETEENTH-CENTURY FRENCH LITERATURE I
Selected novels, plays and poems representative of the main currents of 19th-century French literature.
3 lects.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH 2JJ3 NINETEENTH-CENTURY FRENCH LITERATURE II
Selected themes appearing in the works of the major French writers of the 19th century.
3 lects.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH 2W3 TWENTIETH-CENTURY FRENCH LITERATURE I
Aspects of the development of 20th-century literature to the end of the Second World War.
3 lects.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH 2W3 TWENTIETH-CENTURY FRENCH LITERATURE II
Aspects of the development of 20th-century literature since the Second World War.
3 lects.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH 3AA3 THE MODERN FRENCH-CANADIAN NOVEL
Representative novels by contemporary authors with emphasis upon the relationship between technique and meaning.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3, or permission of the Department.

FRENCH 3BB3 CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dube and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3, or permission of the Department.

FRENCH 3C3 FRENCH LANGUAGE PRACTICE: WRITTEN
Advanced grammar and composition; introduction to stylistics.
2 tuts.; two terms
Prerequisite: A grade of at least C+ in French 2A3; or permission of the Department.

FRENCH 3CC3 FRENCH LANGUAGE PRACTICE: INTERMEDIATE TRANSLATION
A course designed for the systematic comparison of French and English, including comparative stylistics, with special reference to problems in the translation of texts of a general nature.
3 tuts.; one term
Prerequisite: French 2G3, French 2A3; or permission of the Department. Departmental permission slip required.
Enrolment is limited.

FRENCH 3E3 APPLIED LINGUISTICS AND SECOND-LANGUAGE LEARNING
An examination of various aspects of second language acquisition as applied to the teaching of French, with special emphasis on psycholinguistic factors.
3 lects.; one term
Prerequisite: French 2H3 and registration in a programme in French; or permission of the Department.

FRENCH 3F3 FRENCH LANGUAGE PRACTICE: ORAL
This course includes discussion of modern French institutions and culture.
2 tuts.; two terms
Prerequisite: French 2C3 and registration in a programme in French; or permission of the Department. Departmental permission slip required.
Enrolment is limited.

FRENCH 3G3 GENERAL AND COMPARATIVE PHONETICS
Elementary questions of phonetic theory (physiological basis, speech sounds in isolation and in sequence, the syllable, the phoneme, prosodic features, graphemics); followed by a comparison of the modern French and English systems of sounds.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.

FRENCH 3I3 FRENCH SOCIOLINGUISTICS
The study of linguistic variations within French-speaking communities with special reference to the Canadian situation.
3 lects.; one term
Prerequisite: French 2H3 and registration in a programme in French; or permission of the Department.

FRENCH 3K3 EIGHTEENTH-CENTURY FRENCH LITERATURE I
The early 18th century with emphasis on Montesquieu, Motteville and Prevost, and on the early writings of Voltaire.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3K3 EIGHTEENTH-CENTURY FRENCH LITERATURE II
Texts representing the main aspects of Enlightenment thought and literature from the publication of the preliminary discourse of the Encyclopédie to the Revolution.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3M3 THE EIGHTEENTH-CENTURY FRENCH NOVEL
A study of the genesis and themes of representative 18th-century novels.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3Q3 SEVENTEENTH-CENTURY FRENCH LITERATURE I
A study of selected plays by Corneille, Molière and Racine.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3Q3 SEVENTEENTH-CENTURY FRENCH LITERATURE II
A consideration of selected themes as they appear in the works of major French writers of the 17th century.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3R3 MEDIEVAL FRENCH LANGUAGE AND LITERATURE
An introduction to the Old French language and a study of selected medieval texts.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3Y3 FRENCH CINEMA
An introduction to French Cinema from its beginnings to the present, through detailed critical analysis of major works.
2 tuts.; one term
Prerequisite: Dramatic Arts 2X6, or French 1A6 or 1B6; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. May be taken as an elective only by students in a programme in Dramatic Arts.

FRENCH 3Z3 AFRICAN AND CARIBBEAN FRENCH LITERATURE
Origins of the Negritude movement to the present.
2 lects.; two terms
Prerequisite: French 2F3 or 2FF3, or permission of the Department.

FRENCH 4A3 FRENCH LANGUAGE PRACTICE
Advanced stylistics and composition.
2 tuts.; two terms
Prerequisite: A grade of at least C+ in French 3C3 or 3C4 and registration in an Honours programme in French; or permission of the Department.

FRENCH 4B3 FRENCH LANGUAGE PRACTICE: ADVANCED TRANSLATION
Practice in the translation into English of texts of a specialized nature (e.g., administration, business, politics).
3 tuts.; one term
Prerequisite: French 3CC3; or permission of the Department. Departmental permission slip required.
Enrolment is limited.
FRENCH 4C3 FRENCH MORPHOLOGY AND SYNTAX
A study of articles treating various morphological and syntactic problems. Both functional and generative approaches will be examined.
3 Lects.; one term
Prerequisite: 18 units of French including French 2H3 and registration in a programme in French; or permission of the Department.
Offered in 1986-87.

FRENCH 4E3 HISTORY OF THE FRENCH LANGUAGE AFTER 1600
Among the topics discussed will be vocabulary growth; loan words; slang; popular, literary and regional language; syntax and phonetic changes.
3 Lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
Offered in 1986-87.

FRENCH 4F3 TOPICS IN EIGHTEENTH-CENTURY FRENCH LITERATURE
1986-87: Voltaire
Specific texts by Voltaire related to the works of other writers of the time.
1987-88: Eighteenth-Century French Thought
A study of the thought of the period as seen through the writings of selected authors.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including French 3K3 or 3KK3 and registration in a programme in French; or permission of the Department.
French 4F3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4G3 TOPICS IN FRENCH POETRY
1986-87: Poets and Humour
Games poets play with words, rhymes, forms, satire and parodies from 16th-century vertical puzzle poems to 20th-century concrete poetry and picture poems.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
French 4G3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4J3 FRENCH LITERATURE OF THE RENAISSANCE
Characteristic themes of Renaissance humanism as they appear in the works of Rabelais, Montaigne, and selected poets.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 4L3 TOPICS IN FRENCH AFRICAN AND CARIBBEAN LITERATURE
1987-88: The novels and short stories of the Senegalese writer Sembene Ousmane
1988-89: The novels and short stories of the Senegalese writer Sembene Ousmane

FRENCH 4N3 TOPICS IN THE FRENCH NOVEL
1987-88: Women Writers of Quebec
A close reading of selected novels of Emile Zola.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including 2F3 or 2FF3 and registration in a programme in French; or permission of the Department.
French 4N3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4P3 TOPICS IN FRENCH CRITICISM (FROM STRUCTURALISM TO SEMIOTICS)
1987-88: The Unconscious and Twentieth-Century Fiction
A study of the psychological, philosophical, and political meanings of the unconscious in contemporary fiction, as analyzed by recent French structuralist theories.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
French 4P3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4Q3 STUDIES IN MEDIeval FRENCH LITERATURE
A survey of medieval French literature: songs and poetry of the troubadours and trouvères; selections from the Chanson de Roland, Chrétien de Troyes’ romances and other narrative works (lais, Roman de la Rose, Roman de Renart, fabliaux), and from secular theatre. Modernized French versions will be used. Selected texts in Old French will be analyzed.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, and registration in a programme in French; or permission of the Department.

FRENCH 4T3 INDEPENDENT STUDY
The student will prepare under the supervision of a faculty member a research paper involving independent research in an area of study in which the student has demonstrated a high level of basic knowledge.
Prerequisite: Registration in Level IV of the Honours programme in French and permission of the French 4T3 Committee.

FRENCH 4U3 TOPICS IN FRENCH-CANADIAN LITERATURE
1986-87: Women Writers of Quebec
Selected texts by Quebec women writers: issues, ideologies, textual aspects of both women’s writing and feminist discourse.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including 2F3 or 2FF3 and registration in a programme in French; or permission of the Department.
French 4U3 may be repeated, if on a different topic, to a total of six units.

FRENCH 43X LINGUISTICS AND MODERN FRENCH LITERARY CRITICISM (FROM STRUCTURALISM TO SEMIOTICS)
General linguistics applied to literary analysis. Includes narrative structures, pragmatics and sign theory.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. Not open to students with credit for French 4XX3.
Offered in 1987-88.

FRENCH 4Y3 TOPICS IN TWENTIETH-CENTURY FRENCH LITERATURE
1986-87: The Unconscious and Twentieth-Century Fiction
A survey of selected Freudian theoretical texts and French fictional texts.
1987-88: Sartre and Existentialism
Selected readings from the works of Sartre. Not available to students with credit in French 4W3.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
French 4Y3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4Z3 THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (French, Italian and Spanish). The course will trace the evolution of sound systems (phonology), forms (morphology) and sentence structures (syntax) through a study of representative texts.
3 Lects.; one term
Prerequisite: Completion of 60 or more units and registration in a French programme.
Offered in alternate years.
Same as Italian 423 and Spanish 423.

ITALIAN CURRICULUM 1986-88

Department Note:
Italian 216 is taught in English and is open as an elective to qualified students registered in any University programme.

Beginners’ Language Courses
ITALIAN 1Z6 BEGINNERS’ INTENSIVE ITALIAN
An intensive beginners’ course designed for students from a non-Italian background. This course gives the student a basic knowledge of Italian grammar, while emphasizing spoken Italian.
5 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 13 Italian, or students with credit in or registered in Italian 1Z6. No student who either speaks or understands an Italian dialect or Standard Italian may register in the course without the permission of the Department.

Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
Enrolment is limited.

ITALIAN 1Z26 BEGINNERS’ INTENSIVE ITALIAN FOR DIALECT SPEAKERS
An intensive beginners’ course designed for students who come from an Italian background or understand an Italian dialect or Standard Italian. The course gives the student a basic knowledge of Italian grammar while emphasizing spoken Italian.
5 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 13 Italian, or students receiving credit for, or registered in, Italian 1Z6.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
Enrolment is limited.

Intermediate and Advanced Language and Literature Courses
ITALIAN 1A6 INTERMEDIATE ITALIAN
An intensive review of the grammatical structures of Italian and an introduction to composition, together with oral practice.
4 hrs.; two terms
Prerequisite: Grade 13 Italian; or permission of the Department. Not available to students with credit in or registered in Italian 2Z6.
ITALIAN 2A3 INTENSIVE ORAL PRACTICE IN ITALIAN
A conversation course designed to improve oral and aural proficiency in Italian.
2 hrs.; two terms
Prerequisite: Italian 1Z6, Italian 1Z2S; or permission of the Department. For students registered in a programme in Italian, this course may be used as an elective only.
ITALIAN 2D6 ADVANCED ITALIAN
This course studies the basics of Italian syntax in order to improve the student's written and oral proficiency in the language.
3 hrs.; two terms
Prerequisite: Italian 1A6 or 2Z6 with a grade of at least C- or permission of the Department.
ITALIAN 2E6 INTRODUCTION TO ITALIAN LITERATURE
A study of the development of Italian literature from its beginnings to the 20th century. Special emphasis will be placed on major authors and works.
3 lects.; two terms
Prerequisite: Italian 1A6 or 2Z6 and registration in a programme in Italian; or permission of the Department.
ITALIAN 2F6 ITALIAN LITERATURE IN TRANSLATION
A survey course exploring the major Italian writers from Dante to the present. Texts will be read in English translation.
A reading knowledge of Italian is not required.
3 lects.; two terms
Prerequisite: Open to students in Level II and above. For students registered in a programme in Italian, this course may be used as an elective only. This course is taught in English and open as an elective to qualified students registered in any University programme.
Offered in alternate years.
ITALIAN 2G6 ITALIAN GRAMMAR PRACTICE
An intensive review of the grammatical structures of Italian and an introduction to composition, together with oral practice.
4 hrs.; two terms
Prerequisite: Italian 1Z6 or Italian 1Z2S; or permission of the Department. Not available to students registered in or with credit in Italian 1A6.
ITALIAN 3A3 NINETEENTH-CENTURY ITALIAN NOVEL
A study of the prose literature of the 19th century with special emphasis on the works of Manzoni and Verga.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3G3.
ITALIAN 3D4 ITALIAN STYLISTICS & ORAL PRACTICE
An introduction to the study of Italian stylistics for the purpose of developing a sense of style in the written language.
2 hrs.; two terms
Prerequisite: Italian 2D6 with a grade of at least C- or permission of the Department.
ITALIAN 3G3 ITALIAN ROMANTIC POETRY
A study of the poetry of the Romantic Era with special emphasis on the works of Foscolo, Manzoni, Leopardi.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3A4.
ITALIAN 3L3 ITALIAN HUMANISM
An analytical and comparative study of the scientific and literary ideas of the 14th, 15th and 16th centuries.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3O3.
ITALIAN 3M3 TWENTIETH-CENTURY ITALIAN NOVEL
A study of the major Italian novelists of the 20th century with emphasis placed on neorealism and its influence on contemporary Italian culture.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3O3.
ITALIAN 3O3 ITALIAN RENAISSANCE LITERATURE
An introduction to the study of the Italian epic with special emphasis on the works of Ariosto and Tasso.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3L3.
ITALIAN 3P3 ITALIAN THEATRE OF THE 19TH AND 20TH CENTURIES
A study of 19th- and 20th-century Italian drama with special emphasis on the works of Pirandello.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3Q3.
ITALIAN 3Q3 ITALIAN THEATRE FROM THE 16TH TO THE 18TH CENTURIES
A study of Italian Theatre from the 16th to the 18th century.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of the Department.
Alternates with Italian 3P3.
ITALIAN 3R6 THE ITALIAN TRECENTO
The historical background of the 14th century. A study of the major works of Dante, Petrarch and Boccaccio.
3 lects.; two terms
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of Department.
ITALIAN 4A3 ITALIAN CRITICISM
A study of the major trends in Italian literary criticism from De Sanctis to the present day.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of Department.
Alternates with Italian 4C3 and 4J3.
ITALIAN 4C3 THE LITERATURE OF THE RISORGIMENTO
A study of the period of 1816-1873 in Italian literature through selected texts, with reference to the political and social background.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of Department.
Alternates with Italian 4A3 and 4J3.
ITALIAN 4J3 CONTEMPORARY ITALIAN POETRY
A study of the major Italian poets of the 20th century with special emphasis on Saba, Montale, Ungaretti, Quasimodo.
3 lects.; one term
Prerequisite: Italian 1A6 or 2Z6; Italian 2E6; or permission of Department.
ITALIAN 4M4 INTENSIVE COMPOSITION, STYLISTICS AND ORAL PRACTICE IN ITALIAN
An advanced language study course designed to develop the student's skills in composition, stylistics and conversation. Practice materials will be drawn from 20th-century literary works for the purpose of language study.
2 lects.; two terms
Prerequisite: A grade of at least C - in Italian 3D4, and registration in an Italian programme; or permission of the Department.
ITALIAN 4P3 DANTE
The vision of Dante: a study of Paradiso and readings from the Vita Nuova, and the Convivio.
3 lects.; one term
Prerequisite: Italian 3R6; or permission of the Department.
ITALIAN 4Z3 THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (French, Italian and Spanish). The course will trace the evolution of sound systems (phonology), forms (morphology) and sentence structures (syntax) through a study of representative texts.
3 lects.; one term
Prerequisite: Completion of 60 or more units and registration in an Italian programme.
Offered in alternate years.
Same as French 4Z3 and Spanish 4Z3.
SPANISH CURRICULUM 1986-88
Beginners' Language Course
SPANISH 1Z6 BEGINNERS' INTENSIVE SPANISH
A course designed to cover the rudiments of the language, to teach correct expression in writing and in conversation, and to provide preparation for more advanced work in Spanish.
4 hrs.; two terms
Prerequisite: Open, except to students with credit in Grade 12 or Grade 13 Spanish or equivalent.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
Enrolment is limited.
Intermediate and Advanced Language and Literature Courses
SPANISH 1A6 INTERMEDIATE SPANISH
A course designed to further the student's command of the language in its oral and written forms. There will be some review of basic grammar, but emphasis will be upon composition, expansion of vocabulary, and the more advanced aspects of the language.
4 hrs.; two terms
Prerequisite: Grade 12 or Grade 13 Spanish, Spanish 1Z6; or permission of the Department.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
SPANISH 2A4 LANGUAGE PRACTICE
A course devoted to the expansion of vocabulary, the improvement of comprehension, the development of style in written Spanish, and the achievement of greater confidence in the spoken language.
2 tuts.; two terms
Prerequisite: Spanish 1A6, or permission of the Department.

SPANISH 2B3 INTRODUCTION TO THE CULTURE OF SPAIN
A course which surveys the development of Spanish art, literature, and politics from the earliest times.
3 lects.; one term
Prerequisite: Spanish 1A6 or 126, or permission of the Department.

SPANISH 2C3 INTRODUCTION TO THE CULTURE OF SPANISH AMERICA
A survey of the development of Spanish America from Maya times to the present day.
3 lects.; one term
Prerequisite: Spanish 1A6 or 126, or permission of the Department.

SPANISH 2E6 CRITICAL APPROACHES TO LITERATURE IN SPANISH
A course which acquaints the student with some of the critical techniques involved in the appreciation of literature in Spanish, and which provides practice in essay writing.
3 lects.; two terms
Prerequisite: Spanish 1A6.

SPANISH 3A4 ADVANCED LANGUAGE PRACTICE
A course which provides opportunities to develop a deeper awareness of style and a greater command of the spoken and written language. Elements of syntax and translation will be included.
2 tuts.; two terms
Prerequisite: Spanish 1A6.

SPANISH 4A4 STYLISTICS
The study of basic stylistic concepts applied to literary texts.
2 tuts.; two terms
Prerequisite: Spanish 3A4.
Offered in 1986-87.

SPANISH 4B3 MODERN SPANISH THEATRE
A study of plays by Spanish playwrights of the 20th century, including Benavente, Lorca, Buero Vallejo, and Caso.
3 lects.; one term
Prerequisite: Spanish 2E6
Offered in 1987-88.

SPANISH 4B3 SPANISH THEATRE OF THE GOLDEN AGE
A study of plays by major Spanish playwrights of the period 1550-1680, including works by Cervantes, Lope, Tirso, Calderon, in English translation.
Prerequisite: Spanish 2E6
Offered in 1986-87.
Same as Dramatic Arts 4DD3.

SPANISH 4C3 GOLDEN AGE PROSE
1986-87: The Picarosque Novel
A study of the prose of the 16th and 17th centuries, with special emphasis on the picaresque mode.
1987-88: El Quijote
An analytical study of Cervantes' masterpiece with some consideration of the interpretations and viewpoints of major critics.
3 lects.; one term
Prerequisite: Spanish 2E6.

SPANISH 4E3 THE SPANISH AMERICAN NOVEL BEFORE 1950
A study of the development of the Spanish American Novel up to the middle of the 20th century.
3 lects.; one term
Prerequisite: Spanish 2E6
Offered in 1986-87.

SPANISH 4E3 THE SPANISH AMERICAN NOVEL: THE BOOM GENERATION
An examination of the themes and trends of the Spanish American novel of the boom generation including works by Garcia Marquez, Donoso, Fuentes, and Cortazar in English translation.
3 lects.; one term
Prerequisite: Spanish 2E6. Not available to students with credit in Spanish 3F3.
Offered in 1987-88.
Same as Comparative Literature 3F3.

SPANISH 4I3 MODERN SPANISH NOVEL
1986-87: 20th Century
A study of major 20th century novels, including works by Baroja, Cela, Goytisolo, Fierlosio, Laforet, and Delibes.
1987-88: 19th Century
A study of the novel of the second half of the 19th century in the context of the stylistic trends and intellectual history of the period.
3 lects.; one term

Prerequisite: Spanish 2E6.

SPANISH 4J3 MODERN SPANISH POETRY
1986-87: Modern Spanish Poetry
Major developments in this century, with emphasis on the poetry of Juan Ramhon Jimenez, Machado, and Lorca.
1987-88: Spanish American Poetry
A study of the major trends. Such poets as Ruben Dario, Vallejo and Neruda will be included.
3 lects.; one term
Prerequisite: Spanish 2E6.

SPANISH 4K3 POETRY OF THE MODERN PERIOD
1986-88: The Spanish American Short Story
A survey of the development of the Spanish American short story from Quiroga to Borges and Garcia Marquez.
1987-88: Medieval
A survey of the major themes present in writings of the period 1100 to 1500. Early love poetry, the Poema de mio Clod, the Libro de Buen Amor, and the Celestina will be studied. Modern versions of the earlier works will be used.
3 lects.; one term
Prerequisite: Spanish 2E6.

SPANISH 4L4 TRANSLATION TECHNIQUES
A course designed to develop linguistic skills and to prepare students interested in doing post-graduate work at a school for translators. 2 tuts.; two terms
Prerequisite: Spanish 3A4.
Offered in 1987-88.

SPANISH 4Z3 THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (Spanish, French, and Italian). The course will trace the evolution of sound systems (phonology), terms (morphology) and sentence structures (syntax) through a study of representative texts.
3 lects.; one term
Prerequisite: Completion of 60 or more units and registration in a Spanish programme.
Offered in alternate years.
Same as French 4Z3 and Italian 423.

For Graduate courses see Calendar of School of Graduate Studies.

Russian
(See Slavic Studies, Russian)

Sanskrit
(See Religious Studies, Sanskrit)

Science

CURRICULUM 1986-88
These Science courses are primarily designed for students in the Humanities and Social Sciences, to give an appreciation of important areas of modern science. These courses do not assume any specific background in science. Enrollment in each is limited to 100 students, but most of the courses are not oversubscribed.

Other Science courses that may be of interest to students in the Humanities and Social Sciences are offered by Department. They are:

- Biochemistry 2E3 Introductory Biochemistry
- Biology 1G6 Introduction to Biology
- Chemistry 1B6 General Chemistry
- Chemistry 2D3 Introductory Organic Chemistry
- Geography 1A6 Physical Geography
- Mathematics 2H3 Ideas in Mathematics
- Physics 2J3 Physics of Musical Sound
- Physics 2K3 Mechanics

SCIENCE 2A3 THE NATURE OF MATTER
Contemporary ideas about the structure of atoms and molecules; the collective behaviour of large numbers of atoms in solids, liquids, and gases and the technological implications of such behaviour.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV of a non-science programme. No mathematics is required.

**SCIENCE 2C3 CONTINENTAL DRIFT AND PLATE TECTONICS**

A review of modern ideas of crustal movement, the origin of volcanoes and earthquakes and the construction of mountain belts, as portions of the crust drift and collide. 

2 lects.; 1 tut.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme. Not open to students who are registered or have credit in, Geology 1A3, 1A6, or 1C3.

**SCIENCE 2D3 ASTRONOMY**

A survey of modern and historical concepts in astronomy. Light and the telescope; distance measurement in space; the structure and evolution of stars, galaxies, cosmology.

3 lects.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme. Grade 12 Mathematics required.

**SCIENCE 2G3 MAN'S SUPPLY OF FOOD**

Man's food requirements; how food is produced; alternative approaches to alleviating world hunger.

3 lects. or 2 lects., 1 tut.; one term

Prerequisite: Registration in Level II, III, or IV of any programme.

**SCIENCE 2H3 THE MOLECULAR BASIS OF LIFE**

A survey of the molecular basis of life; the current revolution in biology caused by recombinant DNA technology and its implications for the future.

3 lects.; or 2 lects., 1 tut.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme. Grade 12 Mathematics required.

**SCIENCE 2J3 PHYSICS AND THE ENERGY PROBLEM**

Kinetic and potential energy; renewable and non-renewable sources of power and their distribution; entropy production. Conservation, storage and efficient use of energy waste.

3 lects.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme. Grade 12 Mathematics required.

Offered in 1985-86 and in alternate years.

**SCIENCE 2K3 HEREDITY, EVOLUTION AND THE ENVIRONMENT**

Introduction to the principles of human genetics and evolutionary biology, the adaptation of organisms to their environment, biological diversity and integrated ecosystems.

3 lects.; or 2 lects. and 1 tut.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme.

**SCIENCE 2L3 EARTH RESOURCES AND THE ENVIRONMENT**

Origin and exploration of one deposits and fossil fuels. Water resources and their pollution; radioactive waste disposal.

2 lects., 1 tut.; one term

Prerequisite: Registration in Level II, III, or IV of a non-science programme. Not open to students who are registered or have credit in, Geology 1A3, 1A6 or 1C3.

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**Slavic Studies**

**Faculty as of January 15, 1986**

W. Smymiw/Chairman

Professor Emeritus

Louis J. Shein/B.A. (Dubuque), M.A., Ph.D. (Toronto), B.D. (Honoris Causa), Knox College (Toronto)

Professor

Samuel D. Citoran/B.A. (McMaster), Ph.D. (Toronto)

Associate Professors

Nina S. Kolesnikoff/M.A. (Moscow State), Ph.D. (Alberta)

Walter Smymiw/B.A. (McMaster), M.A., Ph.D. (Toronto)

George Thomas/B.A., Ph.D. (London)

**CURRICULUM 1986-88**

Department Notes:

The following courses are taught in English and are open as electives to qualified students registered in any University programme.

Russian 2A6 Nineteenth-Century Russian Literature in Translation

Russian 2B3 Religious Thought in the Novels of Tolstoy and Dostoevsky

Russian 3D3 Russian Drama Since 1800

Russian 3E3 Studies in the Russian Novel: Dostoevsky

Russian 3N6 Twentieth-Century Russian Literature in Translation

Russian 3T3 Studies in the Russian Novel: Tolstoy

**POLISH**

**POLISH 1B6 BEGINNERS' POLISH**

An introduction to basic conversational and written Polish, teaching the skills of listening, speaking, reading, and writing.

3 hrs. (lects. and lab. practice); two terms

Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

**POLISH 2B6 INTERMEDIATE POLISH**

A course designed to further the student's command of oral and written Polish. It will concentrate on developing conversational skills as well as studying basic grammatical structures and rules of composition.

3 hrs.; two terms

Prerequisite: Polish 1B6 or permission of the Department.

**RUSSIAN**

**BEGINNERS' LANGUAGE COURSE**

**RUSSIAN 1Z6 BEGINNERS' INTENSIVE RUSSIAN**

An introduction to basic grammar of conversational Russian.

4 hrs. (lects. and lab. practice); two terms

Prerequisite: Grade 13 Russian or permission of the Department.

**RUSSIAN 2C6 INTERMEDIATE LANGUAGE STUDY**

3 lects., 1 lab.; two terms

Prerequisite: Grade II, Russian 1B6, or permission of the Department.

**RUSSIAN 2B3 RELIGIOUS THOUGHT IN THE NOVELS OF TOLSTOY AND DOSTOEVSKY**

The aim of this course is to examine critically the treatment of religious thought in the major novels of Tolstoy and Dostoevsky.

3 lects.; one term

Prerequisite: Open to students in Level II and above. Same as Religious Studies 2B3.

Offered in alternate years.

**RUSSIAN 3C6 ADVANCED LANGUAGE STUDY**

3 lects., 1 lab.; two terms

Prerequisite: Russian 2C6.

**RUSSIAN 3D3 RUSSIAN DRAMA SINCE 1800**

An introduction in translation to the major works of Russian theatre.

2 lects.; one term

Prerequisite: Open to students in Level II and above.

Same as Dramatic Arts 3D3.

**RUSSIAN 3E3 STUDIES IN THE RUSSIAN NOVEL: DOSTOEVSKY**

A detailed study in translation of the major novels of Fedor Dostoevsky, with particular emphasis on the literary and philosophical problems encountered in his work.

2 lects.; one term

Prerequisite: Open to students in Level II and above.

Offered in alternate years.

**RUSSIAN 3N6 TWENTIETH-CENTURY RUSSIAN LITERATURE IN TRANSLATION**

Prominent Soviet writers, such as Gorky, Leonov, Sholokhov, Pasternak, and Solzhenitsyn, viewed against the broader cultural, historical, and social spectrum. Soviet films will supplement the lectures and readings.

2 lects., 1 tut.; two terms

Prerequisite: Open to students in Level II and above.

Offered in alternate years.

**RUSSIAN 3T3 STUDIES IN THE RUSSIAN NOVEL: TOLSTOY**

A detailed study of the major novels of Lev Tolstoy in translation, with particular emphasis on the literary and philosophical problems encountered in his work.

2 lects.; one term

Prerequisite: Open to students in Level II and above.

Offered in alternate years.
RUSSIAN 4C6 CONVERSATION AND ADVANCED COMPOSITION
3 lects.; two terms
Prerequisite: Russian 3C6.

RUSSIAN 4G3 TOPICS IN RUSSIAN LITERATURE I
Soviet Short Stories
Readings in original.
1 lect., 1 tut.; one term
Prerequisite: Russian 2C6.

RUSSIAN 4H6 INDEPENDENT RESEARCH
A reading and research course under the supervision of a member of the Department. A major paper is required together with a formal oral examination by three faculty members.
Prerequisite: Open to Level IV students with a weighted average of at least 8.0 and 24 units of previous work in Russian beyond Level I and permission of the Chairman of the Department.

RUSSIAN 4I3 TOPICS IN RUSSIAN LITERATURE II
19th-Century Lyric Poetry
Readings in original.
1 lect., 1 tut.; one term
Prerequisite: Russian 2C6.

RUSSIAN 4J3 TOPICS IN RUSSIAN LANGUAGE I
The Study of Russian Vocabulary
Readings in original.
3 lects.; one term
Prerequisite: Russian 2C6; or permission of the Department.

RUSSIAN 4K3 TOPICS IN RUSSIAN LANGUAGE II
The Structure of the Russian Sentence
Readings in original.
3 lects.; one term
Prerequisite: Russian 2C6.

SERBO-CROATIAN
SERBO CR 126 INTRODUCTION TO SERBO-CROATIAN
An introduction to basic conversational and written Serbo-Croatian. The essential grammar of the language will be taught. Readings will be in both the Cyrillic and Latin scripts.
3 hrs.(lects. and lab. practice); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

SERBO CR 226 INTERMEDIATE SERBO-CROATIAN
Review of grammar, oral practice and compositions; readings in the original of representative authors of both Cyrillic and Latin scripts and in ekavian and jekavian variants of the literary language.
3 hrs.; two terms
Prerequisite: Serbo-Croatian 126; or permission of the Department.

UKRAINIAN
UKRAIN 126 INTRODUCTION TO UKRAINIAN
An introduction to conversational and written Ukrainian, basic elements of grammar, elementary composition, selected readings.
4 hrs.(including lab.); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

UKRAIN 2A6 INTERMEDIATE UKRAINIAN
Review of grammar, oral practice, and compositions; readings in the original from representative authors.
4 hrs.(including lab.); two terms
Prerequisite: Ukrainian 126; or permission of the Department.

Social Science
CURRICULUM 1986-88

SOC SCI 2B6 INTRODUCTION TO THE STUDY OF PEACE
The concept of peace; an analysis of contemporary war and of conditions for peace, grounded in specific case studies; the roles of values, ideologies and strategies in the attainment of peace; peace research as a discipline.
3 hrs.(lects. and discussions); two terms
Prerequisite: Open.

SOC SCI 2E3 SELECTED TOPICS IN INTERDISCIPLINARY STUDIES I
An interdisciplinary examination of selected topics of current interest to social scientists. Topics will vary from year to year.
3 hrs.(lects. and seminars); one term
Prerequisite: Students interested in this course should consult the Office of the Associate Dean (Studies) of the Faculty of Social Sciences concerning the topics to be examined in any year.

SOC SCI 2F3 SELECTED TOPICS IN INTERDISCIPLINARY STUDIES II
An interdisciplinary examination of selected topics of current interest to social scientists. Topics will vary from year to year. (This course should not normally be considered as an extension of Social Science 2E3.)
3 hrs.(lects. and seminars); one term
Prerequisite: Students interested in this course should consult the Office of the Associate Dean (Studies) of the Faculty of Social Sciences concerning the topics to be examined in any year.

SOC SCI 2G6 INTRODUCTION TO GERONTOLOGY
An introduction to gerontology as an interdisciplinary study of aging. The course will focus on philosophical, historical, biological, psychological, sociological, economic and social aspects of aging and will examine health care as well as social policies in respect to an aging population.
3 hrs.(lects. and discussions); two terms
Prerequisite: Open.

Same as Gerontology 1A6

SOC SCI 3B3 CREATIVITY AND HUMAN INTERACTION I
A study of the motivations of some representative writers and of the psychological processes in literary creativity. Psychoanalytic and psychiatric contributions to understanding the subject will be considered.
3 lects.; one term
Prerequisite: Permission of the Instructor. Not available to students with credit in English 3L3, or Sociology 2B3 or 2X3.

Same as English 3K3 (1986-87) and Sociology 353.

SOC SCI 3C3 CREATIVITY AND HUMAN INTERACTION II
Obsessional creativity as an organizing mode in the culture of periods of accelerated change; with emphasis on modern literature.
2 lects., 1 tut.; one term
Prerequisite: One of Social Science 3B3, Sociology 353, or English 3K3; or permission of the instructor. Not available to students with credit in Sociology 2B3 or 2X3.

Same as Sociology 353.

Social Work
Faculty as of January 15, 1986

J. McEwan Macintyre/Director

Professors Emeriti
Cyril Greenland/M.Sc. (North Wales), Ph.D. (Birmingham)
Harry L. Perry/Dip. Theol. (Union College, British Columbia), B.A., M.S.W. (British Columbia)

Professor

Associate Professors
Jean M. Jones/B.A. (Western), M.S.W. (McGill)
Kalervo I. Kinanen/Dip. S.W. (Helsinki), B.A. (McMaster), M.S.W. (British Columbia)
J. McEwan Macintyre/B.A., M.S.W. (British Columbia), D.S.W. (Southern California)
Ramesh Mishra/B.S., Ph.D. (London)
David J. Tucker/B.A. (New Brunswick), M.S.W. (McGill), D.S.W. (Toronto)

Assistant Professors
Lorna F. Hurst/B.A. (Calgary), B.Soc/Admin. (Flinders), M.S.W. (Manitoba), Ph.D. (Toronto)
L. William Lee/B.A. (St. Thomas, Texas), M.S.W., Adv. Dip. S.W. (Toronto)
James J. Rice/B.A. (Sir George Williams), B.S.W., M.S.W. (Calgary), Ph.D. (Exeter)
Sally Palmer/B.A. (Western), B.S.W., M.S.W., Ph.D (Toronto)
Sociology

Social Work

Muriel Santilli/B.A. (Humber College), M.A. (Columbia), M.S.W. (SUNY, Buffalo)
Boris Stein/B.A., M.S.W. (McGill)

Lecturers

Ralph A. Brown/B.A., M.S.W. (Waterloo), D.S.W. (UCLA)

Associate Members

J.A. Byles/B.A., M.S.W. (Western), B.S.W. (Washington), (Dept. of Psychiatry)
M.J. Dear/B.A., M.P.B. (London), Ph.D. (Pennsylvania), (Dept. of Psychology)
J.A. Johnson, M.P.B. (Minnesota), (Dept. of Economics)

Curriculum 1986-88

Department Notes:
1. Except when designated as 1, these courses are open only to students registered in the Combined B.A./B.S.W. Programme, or the B.S.W. programme for a second degree.
2. Registration in all courses marked *; select as selected topics, with written permission of the Department. Registration with appropriate permission must be completed by all students, including those registered in the combined B.A./B.S.W. or B.S.W. Second Degree Programmes, no later than the last day for registration as stated in the Calendar under Sessional Dates.

Purpose and values of social welfare programmes and services. Social welfare policy and the social security system in Canada in historical perspective. Lectures and discussion; two terms

Social Work 2C3 Theory for Social Work Practice
Knowledge base; social work values, fields of practice and types of intervention. Lectures, films, discussions, small task groups; one term

Social Work 2D3* Interpersonal Communication and Interviewing
Theories of interpersonal communication. Basic skills in interpersonal communication and interviewing. Lectures, discussions, exercises; one term

Prerequisite: Permission of the School of Social Work is required.

Enrolment is limited.

Social Work 2E3 Human Growth and Development in the Social Environment
Human development throughout the life span with emphasis on the interaction between the person and social contexts and social work concerns at each developmental stage. Lectures and discussions (3 hrs.); one term

Prerequisite: Completion of or registration in Psychology 2A3.

Social Work 3C3* Social Aspects of Health and Disease
Exploration of the meaning of health and sickness in our society. Organization and delivery of health care. Consideration of ethical and other issues. Lectures, discussion and selective use of community resources; one term

Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Enrolment is limited.

Social Work 3D9 Theory of General Social Work I
Social work intervention processes; interviewing; development of basic skills in formation of relationships with individuals, families, groups and communities. Students participate in defining learning goals and experiences. Seminars, workshops, field practice equivalent to 10 hours per week; two terms (option of equivalent summer block placement)

Prerequisite: Social Work 2B6, 2C3, 2D3, 2E3.

Enrolment is limited.

Social Work 3G3* Social Welfare Policy and Practice
Role of values and assumptions in the development of welfare policies. Analysis of key concepts in policy planning. Study of policy and programmes in selected areas. Lectures and seminars; one term.

Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.

Enrolment is limited.

Social Work 3H3* Justice and Social Welfare
Human rights and role of law in enhancing civil liberties in Canada. Social work, law and social change. Study of selected issues and review of administrative discretion. Seminars; one term

Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. or B.H.Sc. credit by undergraduates not in Social Work.

Enrolment is limited.

Social Work 3J3* Technology and Social Welfare
Problems of social policy posed by the impact of technology in such areas as work and leisure, income maintenance, participation in decision making and social planning. Seminars; one term

Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Enrolment is limited.

Social Work 3N3 Selected Theories of Social Work Intervention
Examination and analysis of strategies of intervention in working with individuals and groups in social work. Seminars; one term

Prerequisite: Enrolment in, or completion of, Social Work 2E3. Not available to students with credit in Social Work 4N3.

Social Work 303 Human Sexuality
Basic information on anatomy, physiology, psychology, sociology and sexuality of the human being. Attitudinal self-awareness, communication skills, values regarding sexual identity and roles; analysis of policy issues. Seminars; one term

Social Work 3P3* Concentrated Studies in Social Work Practice
Completion of a major project focusing on a selected social work problem or issue. Tuts.; two terms

Prerequisite: Permission of the supervising instructor.

Social Work 3R3 Social Work with Groups
This course will provide a theoretical knowledge of group practice models for social work within an historical and didactic social work framework. Lectures, discussions and tutorials; one term

Social Work 4D12 The Practice of General Social Work II
Combined field experiences and seminars to deepen understanding and refine practice skills. Students spend the equivalent of two days per week in social agencies, or with other organizations, in supervised practice. Seminars, group supervision, field practice; two terms. Option of equivalent block placement. Prerequisite: Social Work 3D9.

Enrolment is limited.

Social Work 4G3* Selected Social Issues and Social Work
Critical examination of social work practice or social welfare policy in respect to selected social issues. Topics will vary from year to year and the School should be consulted for details for any particular year. Seminars; one term

Prerequisite: Permission of the School of Social Work is required by all students. This course may be repeated if on a different topic.

Enrolment is limited.

Social Work 4H3 Human Service Organizations: Structures and Processes
Relationships of structures and processes to patterns of service delivery. Knowledge and skills necessary for organizational diagnosis; empirical study of an organization is required. Seminars; one term

Social Work 4J3* Social Change and Social Welfare
Critical examination of the meaning of social change as a concept and event. Review of strategies of social change and of attempts to effect social change. Seminars; one term

Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Enrolment is limited.

Independent study of a particular issue of interest in social welfare, and completion of a major essay or project. Discussion and tutorials; two terms

Prerequisite: Permission of the supervising instructor.

Enrolment is limited.
SOC WORK 4M3++ INTERNATIONAL AND COMPARATIVE SOCIAL WELFARE
Comprehensive perspective on problems of social structures in shaping social welfare institutions. Scope and limits of international collaboration. Seminars; one term
Prerequisite: Permission of the School of Social Work is required by all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Enrolment is limited.

SOC WORK 403 COMMUNITY WORK
Analysis of major community work strategies, historical antecedents, current developments and future potential in Canada. Student participation in the analysis of a community project expected. Seminars; one term
Prerequisite: Registration or credit in Social Work 3D9; or permission of the instructor.

SOC WORK 493 PROFESSIONAL ISSUES
Seminar focused upon the status, roles and values, of the professional social worker in contemporary society. Seminars; one term
Prerequisite: Registration or credit in Social Work 3D9.

SOC WORK 4Q3** DATA ANALYSIS AND RESEARCH DESIGN
Application of statistical concepts and techniques to the analysis and presentation of social policy data and the design of policy related studies. Seminars; one term
Prerequisite: A course in statistics; permission of the instructor is required for all students.

This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Enrolment is limited.

SOC WORK 4T3 SOCIAL WORK PRACTICE WITH WOMEN
Study of feminist and non-sexist social work practice (individuals, groups and in the community) and implications for women of selected social policies. Seminars; one term

SOC WORK 4V3 SOCIAL WORK PRACTICE WITH THE AGED
A critical analysis of the social context in which the aged live, and an examination of social work methods as they apply to the aged. Seminars; one term

SOC WORK 4W3 CHILD WELFARE
This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers. Lectures, discussions, skills development: one term.

Prerequisite: Social Work 2B6, 2C3, 2D3 and 2E3.

SOC WORK 4X3 FAMILY IN SOCIAL WORK PRACTICE
Examination of relevant aspects of family theory for social work practice; models of family intervention and therapy. Seminars; one term

Prerequisite: Registration in, or credit in, Social Work 3D9; or permission of the instructor. Not available to students with credit in Social Work 3K3.

SOC WORK 4Y3 METHODS OF APPLIED SOCIAL RESEARCH
Examination of the conceptual framework of scientific inquiry relating to social work research and practice. Survey of selected research from other disciplines relevant to social work. Seminars; one term

Not available to students with credit in Social Work 3K3.

For Graduate Courses see Calendar School of Graduate Studies.

SOCIAL WORK

Robert E. Blumstock/B.A., M.A. (City College, N.Y.), Ph.D. (Oregon)
Richard A. Brymer/B.A., M.A. (Texas), Ph.D. (Michigan State)
Carl J. Cuneo/B.A., M.A., Ph.D. (Waterloo)
Jack W. Haas/B.S. (SUNY, Brockport), Ph.D. (Syracuse)
Franklin W. Henry/Ph.B. (Marquette), M.A., Ph.D. (Catholic University of America)
Roy W. Homosty/B.S.P., M.A. (University of British Columbia), Ph.D. (SUNY, Buffalo)
Rhoda E. Howard/B.A., M.A., Ph.D. (McGill)
Graham K. Knight/B.A. (Kent), M.A., Ph.D. (Carleton)
Cyril H. Levert/B.A., M.A. (Waterloo), Ph.D. (Freie Universitat, Berlin)
Gerald Rosenblum/A.B. (California, Berkeley), M.S. (Oregon), A.M., Ph.D. (Princeton)
Dusky L. Smith/B.A. (Oklahoma), M.A. (Ohio State), Ph.D. (SUNY, Buffalo)
Jane Synge/M.A. (Aberdeen), Ph.D. (London)

Vivienne Walters/B.A., M.A. (Sheffield), Ph.D. (McGill)

Assistant Professors
Charlene Mail/B.A. (Ottawa), M.A. (Calgary), Ph.D. (York)
Jack Richardson/B.A., M.A., Ph.D. (Toronto)
R.H. Storey/B.A. (Toronto), M.A. (Dalhousie), Ph.D. (Toronto)

Associate Members
P. Donnelly/(Physical Education) B.A. (N.Y.), M.A., Ph.D. (Massachusetts)
L. Greenspan/(Religious Studies) M.A. (Dalhousie), Ph.D. (Brandeis)
J. Mol/(Religious Studies) B.D. (Union Theological Seminary), M.A., Ph.D. (Columbia)

CURRICULUM 1986-88

Department Notes:
1. Students should consult the Department’s Handbook for Undergraduates, 1986-87 or 1987-88 which will be available prior to registration, for fuller course descriptions and any changes in the list of courses offered in 1986-87 or 1987-88. Students should check the Department’s Handbook in order to find the term in which “one term” courses are offered.

2. Sociology 1A6 and several other courses are divided into independent sections. For more information, see the Sociology Department’s Handbook for Undergraduates. This booklet gives course descriptions for the various Sociology 1A6 sections.

3. Registration in all courses marked ** listed as selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

4. The University reserves the right to limit enrolment in any course.

SOCIAL 1A6 AN INTRODUCTION TO SOCIOLOGY
A survey of the areas of research which interest the sociologist. Interpretation of human action from the standpoint of the group. Emphasis is given to contemporary culture and society, although there is reference to primitive cultures and societies. 2 lects., 1 tut., two terms
Prerequisite: Open.

SOCIAL 2C6 DEVIANT BEHAVIOUR
An analysis of deviant behaviour and conformity in relation to social structure and processes, and a discussion of problems of control within the social system. 3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIAL 2D6 THE HUMAN GROUP
An examination of the individual in social interaction, with emphasis upon relationships between these and social structure. 3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2E6 RACIAL AND ETHNIC GROUP RELATIONS
The course will deal primarily with the study of racial and ethnic group relations in Canada and the United States. 3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
SOCIOL 2H6 A SOCIOLOGICAL ANALYSIS OF CANADIAN SOCIETY

The application of sociological concepts to the character and social structure of Canada, with particular emphasis on its major social class, regional, and ethnic divisions.

3 hrs. (lects. and discussion); two terms
Prerequisite: Open.

SOCIOL 2I3 THE SOCIOLOGY OF ORGANIZATIONS I

A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor. Not open to those students with credit in Sociology 3P3 prior to 1973-74.
Same as Labour Studies 3I3.

SOCIOL 2J3 CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS

Selected problems in contemporary sociology. Topics will vary and the department should be consulted for details for any particular year.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 2K3 CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS

Same as Sociology 2J3.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 2M6 INDUSTRIALIZATION AND DEVELOPMENT

Introduction to theories of modernization and underdevelopment with comparative empirical content.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 2O6 SOCIAL STRATIFICATION

A broad comparative study of social class and social mobility.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 2P6 THE SOCIOLOGY OF EDUCATION

A comprehensive analysis of educational institutions in modern society.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 2Q6 SOCIOLOGY OF WOMEN

An analysis of the status and objective condition of women in Canada (including theories of socialization and of stratification).

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 2S6 INTRODUCTION TO SOCIOLOGICAL THEORY

An introduction to the foundations, rise and development of sociological theory.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 2U6 SOCIOLOGY OF THE FAMILY

An analysis of kinship and family units in comparative, historical, and contemporary perspective.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 2V6 OCCUPATIONS AND PROFESSIONS

An examination of the occupational structure of industrial society, the changing nature of work, and problems associated with such change.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor. Not open to students with credit in Sociology 2S3 or 3A6.

SOCIOL 2W6 SOCIOLOGY OF SOCIAL PROCESSES

Macro-analysis of sport in society: investigation of the relationship between sport and other social institutions.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 2X3 PSYCHOANALYTIC APPROACHES TO LITERARY TEXTS

The basic assumptions and methods of psychoanalytic criticism will be studied with reference to selected texts in drama, fiction and poetry from Shakespeare to the present.

One term
Prerequisite: Not open to students receiving credit for Sociology 3S3 or 3SS3. Same as English 3B3.

SOCIOL 2Y3 INTRODUCTION TO QUANTITATIVE STUDIES

The course is designed to develop those skills necessary to understand and evaluate research studies in sociology using quantitative methods. Descriptive statistics and basic inferential techniques will be examined.

3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours or B.A. Sociology; or Honours Anthropology; or Social Work; or permission of the instructor. Not open to students who are registered in, or have received credit for, a statistics course. Enrolment is limited.

SOCIOL 2Z3 INTRODUCTION TO SOCIOLOGICAL RESEARCH

This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined.

3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours or B.A. Sociology, and Sociology 1A6; or permission of the instructor.
Enrolment is limited. Same as Anthropology 2Z3.

SOCIOL 3A3 EUROPEAN SOCIOLOGICAL THEORY

An advanced examination of classical and contemporary European sociological theory.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 3U3 or 2S6; or permission of instructor. Not open to students with credit in Sociology 3A6.

SOCIOL 3A3 THE SOCIOLOGY OF MASS MEDIA

The development of the mass media (the press, magazines, radio, television), with particular attention to their social organization, how information and news are produced, and effects upon social attitudes and behaviour.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of instructor.

SOCIOL 3B3 SELECTED TOPICS IN THE SOCIOLOGY OF EDUCATION

An examination of selected topics in the sociology of education.

3 hrs. (lects. & discussion); one term
Prerequisite: At least 18 units of Sociology, or permission of instructor.

SOCIOL 3B3 MAJOR DENOMINATIONS IN CANADA

A study of the major denominations in Canada, their history and their relation to national, regional and class identity.

2 lects. 1 tut.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Religious Studies 3BB3.

SOCIOL 3C6 SOCIO-ECONOMIC DEVELOPMENT

Selected topics in the sociology of underdeveloped countries, including social stratification, revolution, the place of women, and processes of social change. In 1986-88, the course will focus on Africa.

3 hrs. (lects. and seminars); two terms
Prerequisite: At least 18 units of Sociology, or any Level II course in Political Science, or permission of instructor.
Same as Political Science 3B6.

SOCIOL 3CC3 SOCIAL MOBILITY

An examination of the determinants and consequences of movements up and down the social scale. Such movements will be considered in comparative and historical perspective. Students should have a quantitative background.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 2Y3 or 2Z3 or equivalent; or permission of instructor.

SOCIOL 3D3 SPECIAL TOPICS IN THE SOCIOLOGY OF THE FAMILY

An advanced course allowing detailed study of selected topics in the Sociology of the Family.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 3D3 SPORT AND SOCIAL PROCESSES

Macro-analysis of sport in society: investigation of the relationship between sport and other social institutions.

3 hrs. (lects. and discussion); one term
Same as Physical Education 3P3.

With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

SOCIOL 3E3 SPORT AND SMALL GROUP DYNAMICS

Micro-analysis of sport in small social systems: investigation of the dynamics of involvement in sport encounters, the team as a small group, and sport sub-cultures.

3 hrs. (lects. and discussion); one term
Same as Physical Education 3P3.

With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

SOCIOL 3F6 POLITICAL SOCIOLOGY

A survey of social and state institutions, focussing on current debates in the field.

3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3G3 SOCIOLOGY OF HEALTH CARE

The social determinants of illness and of the organization of the health care sector.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment is limited.

SOCIOL 3G3 SPECIAL TOPICS IN THE SOCIOLOGY OF DEVIANCE

An advanced course allowing detailed study of selected topics in the Sociology of Deviance.

Topics will vary from year to year.

3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 2G6.
SOCIOL 3H6 RESEARCH TECHNIQUES AND DATA ANALYSIS
A comprehensive introduction to the principles of research methods and data analysis in the social sciences.
3 hrs. (lects. and labs.); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 313 SOCILOGICAL INQUIRY
An examination of the issues of explanation that separate positivist sociology from subjectivist-historical sociology and critical-marxist sociology. The course focuses on the issues which link social theory and methodology.
3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours Sociology; or permission of the instructor.

SOCIOL 3J3 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS
An examination of selected topics of contemporary interest to sociologists. Students should consult the Department concerning the topics to be examined.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3K3 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS II
Same as Sociology 3J3.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3L3 SELECTED TOPICS IN OCCUPATIONAL SOCIOLOGY
An advanced course allowing detailed study of one or more topics of special interest.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.
Offered in alternate years.

SOCIOL 3M6 RELIGION AND MODERN SOCIETY
An introduction to the thoughts and theories of scholars who have studied the relation between religion and society. In the first term, the emphasis will be on pre- World War II writings. In the second term, the empirical materials of the sociology of religion since World War II will be surveyed.
3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3N3 THE SOCIOLOGY OF KNOWLEDGE AND CULTURE
An analysis of the origins, development and functions of ideas, images, and other cultural representations through which knowledge about society, its institutions, and practices, is formed, distributed and used.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3O3 ADVANCED SOCIOLOGICAL RESEARCH
This course will provide a detailed study of selected qualitative methods in Sociology.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3P3 AMERICAN SOCIOLOGICAL THEORY
An advanced examination of classical and contemporary American sociological theory.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 253 or 256; or permission of the instructor. Not open to students with credit in Sociology 3A6.

SOCIOL 3P3 CANADIAN SOCIOLOGICAL THEORY
An examination of the more or less unique contributions of French and English Canadians to sociological theory. Emphasis is on the Laval and Toronto schools, and their left-nationalist progeny and critics.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 253 or 256; or permission of the instructor.

SOCIOL 3Q3 NATIVE AND ETHNIC RELIGIONS IN CANADA
A study of the effect of religion on native and ethnic identity, frontier religion and the new sects and cults.
2 lects., 1 tut.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Religious Studies 3B3.

SOCIOL 3R3 RELIGION AND IDENTITY
An examination of the roles or functions of religion in the development of personal and group identities, using both empirical and theoretical materials.
2 lects. 1 tut.; one term
Prerequisite: Open.
Same as Religious Studies 3R3.

SOCIOL 3S3 CREATIVITY AND HUMAN INTERACTION I
A study of the motivations of some representative writers, and of the psychological processes in literary creativity. Psychoanalytic and psychiatric contributions to understanding the subject will be considered.
3 lects.; one term
Prerequisite: Permission of the instructor. Not available to students with credit in Sociology 253 or 256 or 3Q3, or in Sociology 3Z3.
Same as English 3K3 (in 1986-87) and Social Science 3B3.

SOCIOL 3S3 CREATIVITY AND HUMAN INTERACTION II
Obsessional creativity as an organizing mode in the culture of periods of accelerated change, with emphasis on modern literature.
2 lects., 1 tut.; one term
Prerequisite: One of Social Science 3B3, Sociology 3S3, or English 3K3; or permission of the instructor. Not open to students with credit in Sociology 2B3 or 2X3.
Same as Social Science 3C3.

SOCIOL 3T3 THE SOCIOLOGY OF URBAN AREAS
Sociological analysis of urban structure and development, and the social consequences of urbanization.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3U6 THEORIES OF MASS SOCIETY
A careful study of a few books by writers who have looked at the possible tension between equality and liberty in the modern world and at the problem posed for constitutional democracy by "mass" cultural and political phenomena.
3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Same as Political Science 3L6.

SOCIOL 3V3 COMPARATIVE INDUSTRIAL SOCIETIES
The similarities and differences of various modern industrial societies will be examined through discussion of various postulated determinants of the structure and processes of such societies.
3 hrs. (lects. and discussion); two terms
Prerequisite: At least 18 units of Sociology; or permission of the instructor. Not open to students with credit in Sociology 2F6, or 3V6.

SOCIOL 3W3 HISTORICAL METHODS IN SOCIOLOGY
An examination of methods for incorporating historical data and archival sources into sociological argument.
3 hrs. (seminar and discussions); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3X3 SOCIOLOGY OF AGING
This course deals with changing population structure, economic support of the aged, family of later life, the sociology of retirement, widowhood, death, bereavement, and institutionalization.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL 3Y3 THE SOCIOLOGY OF ORGANIZATIONS II
An advanced course which allows detailed examination of relevant theories and research, including those to which the student was introduced in Sociology 213.
3 hrs. (lect. and discussion); one term
Prerequisite: Sociology 213; or permission of the instructor.
Offered in alternate years.

SOCIOL 3Z3 ETHNIC RELATIONS
An analysis of political, social and economic change in selected locales.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of instructor.

SOCIOL 4B6 FIELD STUDY METHODOLOGY
This course provides students an opportunity to engage in first hand sociological research using field study methods, particularly participant observation.
3 hrs. (seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIOL 4C6 SELECTED PROBLEMS IN SOCIOLOGICAL RESEARCH
Students will undertake a class project which involves quantitative materials.
3 hrs. (seminar); two terms
Prerequisite: Sociology 3H6.

SOCIOL 4D3 CRITIQUES OF SOCIOLOGICAL THEORY
A discussion of various sociological and non-sociological critiques of sociological theory.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 2S3 or 256; or permission of the instructor.

SOCIOL 4E3 COMPUTER APPLICATION
A class in sociological research involving computer use.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 3H6; or permission of instructor.

SOCIOL 4F3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH
A critical discussion, centered on selected books and articles, of various strategies using comparative methods for studying societies.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 2M6; or permission of the instructor.
Offered in alternate years.
SOCIOLOGY

SOCIO 4H3 SELECTED TOPICS IN THE SOCIOLOGY OF ORGANIZATIONS
An advanced course allowing detailed study of aspects of organizational analysis of special interest.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 213; or permission of the instructor.

SOCIO 4I3 SPECIAL TOPICS IN SOCIOLOGICAL THEORY
An advanced critical analysis of special topics/issues in sociological literature. The content of this course will vary from year to year; please consult the departmental handbook.
3 hrs. (seminar); one term
Prerequisite: Sociology 2S3 or 2S6, and registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4J3 SELECTED TOPICS IN SOCIOLOGY I
Topics of contemporary interest to sociologists, with emphasis upon current theory and research. Students should consult the Department concerning the topics to be examined.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIO 4K3 SELECTED TOPICS IN SOCIOLOGY II
Same as Sociology 4J3.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIO 4L3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH II
Same as Sociology 4F3.
Offered in alternate years.

SOCIO 4M3** DIRECTED RESEARCH I FOR HONOURS STUDENTS
Directed study of a research problem through published materials and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form.
One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIO 4N3** DIRECTED RESEARCH II FOR HONOURS STUDENTS
Same as Sociology 4M3.
One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIO 4O3 REGIONALISM AND REGIONAL DEVELOPMENT IN CANADA
An examination of regional divisions and disparities in Canada as a social, cultural and economic phenomenon. Emphasis will be placed on the causes of uneven development in Canada, and the impact of regional development policy on the society and economy of Canada's regions.
3 hrs. (seminar); one term
Prerequisite: Credit in Sociology 2H6; or permission of the instructor.

SOCIO 4Q3 INDIVIDUAL AND SOCIETY I
An intensive examination of selected problems involving the relationship of individuals to social structures.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4R3 INDIVIDUAL AND SOCIETY II
An intensive examination of selected problems involving the relationship of individuals to social structures.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4S3 SPECIAL TOPICS IN CANADIAN SOCIETY I
An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4T3 SPECIAL TOPICS IN CANADIAN SOCIETY II
An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4V6 SPECIAL TOPICS IN RACIAL AND ETHNIC RELATIONS
A study of the impingement of ethnic and racial factors upon the political process in comparative contexts, but focussing principally on South Africa.
3 hrs. (seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.
Same as Political Science 4D6.

SOCIO 4X3 LABOUR AND SOCIETY
The course will focus on the emergence of labour organizations during the course of modernization and the factors determining the political outlook of labour.
3 hrs. (seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

For Graduate Courses see Calendar School of Graduate Studies.

Spanish
(See Romance Languages, Spanish)

Statistics
(See Mathematics and Statistics)

Ukrainian
(See Slavic Studies, Ukrainian)
Academic Services and Research Facilities

Academic Services

THE UNIVERSITY LIBRARY

G.R. Hill, B.A.(Newcastle), M.A.(Lancaster), M.L.S.(Western)/University Librarian

The University Library System consists of Mills Memorial Library (Arts), the Innis Room in Kenneth Taylor Hall which contains a collection of Business materials, the H.G. Thode Library of Science and Engineering, the Lloyd Reeds Map Library located in the Burke Science Building and the Health Sciences Library housed in the Health Sciences Centre. Union catalogues covering all libraries are available and stacks are open to all library users.

The collection in 1985 contained over 1,394,824 volumes, about 990,564 microform items, 159,699 non-print items and 2,136 linear metres of archival material. There is a substantial collection of government publications and current periodical titles number over 14,450.

To help readers, service is maintained at key points such as Reference and Periodicals in the various libraries. Introductory library tours and subject related seminars are given and pamphlets describing the hours and services of the different areas are available.

The William Ready Division of Archives and Research Collections in Mills Library contains rare books, manuscripts, and special book and archival collections which afford many opportunities for original research. Of outstanding interest are the Bertrand Russell Archives, a massive collection of correspondence and manuscripts supported by books, journal articles, secondary literature, tapes, films and personal memorabilia. The 27,000 volume collection of eighteenth-century British material is one of the major Canadian collections in the field. Among more modern materials are the papers of Vera Brittain, Marian Engel, Anthony Burgess, Pierre Berton, Farley Mowat, Peter Newman, Matt Cohen and many others. Business interests are reflected in such files as the General Steel Wares Archives, the Macmillan of Canada Archives, and the McClelland and Stewart Archives. Canadian social and political interests are documented in papers from the Canadian Union of Students, the Canadian Youth Congress, the SUPA/CUCN&D papers, and other related collections. There are holdings of the records of a number of labour unions including U.S.W.A. Local 1005, U.S.W.A. District 6, United Glass and Ceramic Workers (Canada), and the Hamilton and District Labour Council.

Publications

McMaster University Library Research News

Russell, the Journal of the Bertrand Russell Archives

Monographs with the imprint of the McMaster University Library Press.

Staff

Baker, Lynda, B.A. (Univ. of California (Berkley)), M.L.S. (Toronto)/Librarian

Reference Services, Health Sciences Library

Ball, Kathryn, B.A. (Laurentian), M.L.S. (Western)/Librarian, Reference Services

Bayley, Elizabeth Grace, B.A. (McMaster), M.L.S. (Western)/Cataloguing Librarian, Health Sciences Library

Blackwell, Kenneth Milton, B.A. (Victoria), M.L.S. (Western), M.A. (McMaster), Ph.D. (Guelph)/Russell Archivist

Chan, Ruby M.C., B.S.S. (Ottawa), B.L.S. (Toronto)/Librarian, Processing Services

Cook, David E., B.A., M.L.S. (Toronto)/Documents Librarian

Donkin, Kate, B.A. (Toronto), M.A. (McMaster)/Map Curator, Lloyd Reeds Map Library

Findlay, Peggy Eleanor, B.A. (York), M.L.S. (Dalhousie)/Information Services Librarian, Science & Engineering

Fitzgerald, Dorothy A., B.A. (Mt. St. Vincent), M.L.S. (Dalhousie)/Health Sciences Librarian

Fleming, Thomas Leslie, B.A. (St. Mary's University), M.A., M.L.S. (Dalhousie)/Head of Public Services, Health Sciences

Haslett, Mark, B.A. (Toronto), M.L.S. (Western)/Acquisitions Librarian, Collections

Hayton, Elizabeth Elise, B.Sc. (McGill), M.L.S. (Toronto)/Coordinator, Circulation Services

Hill, Graham Roderick, B.A. (Neucaastle), M.A. (Lancaster), M.L.S. (Western)/University Librarian

Holmes, John/Rare Books Preservation Specialist

Hurst, Jean McEwen, B.A. (Saskatchewan), M.L.S. (Toronto), Librarian, Processing Services

Koger, Merike, B.A. (McMaster), M.L.S. (Toronto)/Librarian, Reference Services

Kraav, Margarita, B.A. (McMaster), M.S. (Columbia)/Associate University Librarian for Systems Development

Lawrence, Arthur, A.I.B./Associate Director, Library Administration

McGee, Margaret Liddell, B.A. (McMaster), M.A. (Glasgow), A.L.A./Associate University Librarian, Reader Services

Mazur, Carol Many, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Reference Services

McPherson, Myrna, B.A., M.L.S. (Toronto)/Librarian, Processing Services

Michits, Linda Rose, B.A. (McMaster), M.L.S. (Western)/Librarian, Reference Services

Monley, Judith, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Processing Services

Nunn, Victor, B.A. (York), M.L.S. (Western)/Assistant University Librarian for Collections Management and Development

Panton, Linda W., B.A. (Mount Allison), M.L.S. (Western)/Coordinator of Hospital Libraries

Parke, Valerie Jeanette, B.A., M.L.S. (Western)/Librarian, Reference Services

Pasi, Narender Nath, M.A. (Punjab), M.L.S. (Delhi and Toronto)/Head of Reference Services

Pepper, Sheila Letitia, B.A., M.A. (McMaster), B.L.S. (Toronto)/Business Librarian

Pickett, Beatrice Marion, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Processing Services

Porter, Anne, B.A. (Principia College), M.L.S. (Toronto)/Interlibrary Loan Librarian

Racheter, Carol, B.A., B.L.S., M.L.S. (Toronto)/Director of Processing Services

Ridley, A. Michael, B.A. (Guelph), M.A. (New Brunswick), M.L.S. (Toronto)/Head of Technical Services, Health Sciences

Siroonian, Harold A., M.Sc. (McMaster), M.S. in L.S. (Columbia)/Associate University Librarian, Science & Engineering

Spadoni, Carl, B.A. (Wilfrid Laurier), M.A. (McMaster), Ph.D. (Waterloo), M.L.S. (Toronto)/Archivist, Health Sciences

Spence, Tafila A., M.A. (Glasgow), B.L.S. (Toronto)/Serials Librarian

Stewart, Charlotte, B.A. (Toronto), M.L.S. (Western)/Director of Research Collections

Szpak, Stefan, B.A., M.L.S. (Wayne State)/Librarian, Processing Services

Thomson, Donna K., B.A. (York), M.L.S. (Toronto)/Catalogue Standards Librarian, Processing Services

Tooke, Elaine M., B.A., M.L.S. (Western), M.Sc. (Dalhousie)/Reference Librarian, Science & Engineering

Trainor, Mary Anne, B.A. (McMaster), M.L.S. (Toronto)/Acquisitions and Serials Librarian, Health Sciences

Whiteman, D. Bruce, B.A. (Trent), M.A., M.L.S. (Toronto)/Librarian, Research Collections

COMPUTER SERVICES: IPACS

(Information Processing & Academic Computing Services)

Keech, Gerald L., B.A.Sc., M.Sc., Ph.D./Director, IPACS

Blanche Carlene/Control & Accounting Supervisor, ACS

Bryce, James T., B.Sc./Manager, central Academic Computing Service

Fleming, William H., M.Sc., Ph.D./Associate Director, Special Systems, Academic

Gowland, Douglas M., C.A., C.M.C./Associate Director, IPS
IPACS provides computing services in support of both academic and non-academic applications. The facilities available for academic use include a Control Data CYBER 170/730 dual processor system, a VAX 8600, an IBM model 4381 computer with a FPS 264 processor, two Vax 11/780 and one Vax 11/785, as well as several smaller computers. Student time-sharing terminal and microcomputer areas are located in the Burke Sciences Building, Rooms 240-245, The John Hodgins Engineering Building, Room 234A, Senior Sciences Building, Room 131 and in Kenneth Taylor Hall, Room 910.

User assistance is available during the Fall and Winter terms in each of these terminal areas. Assistance is also available, year round, in the main User Services offices located in Burke Sciences Building, Room 246, for Science and Engineering, and in Kenneth Taylor Hall, Room B123 for Business, Humanities, Social Sciences and Health Sciences. Elective courses for credit are offered by the Department of Computer Science. IPACS provides seminars and short non-credit courses.

In addition to the facilities operated by IPACS, there are numerous minicomputers and micro-processors located in Departments to support the academic programme needs for the study and use of computers.

THE INSTRUCTIONAL DEVELOPMENT CENTRE
A.C. Blizzard, B.Sc., M.S.C., Ph.D./Director
D.E. Roy, B.A., M.A./Educational Consultant
D.J. MacLellan, B.S.W., M.S.W./Educational Consultant

The Instructional Development Centre (IDC) is a resource centre for people who teach at McMaster: individual faculty members and teaching assistants (tutors, demonstrators, markers) as well as departments and other groups.

The Centre works closely with the University Committee on Teaching and Learning. This group, which includes the Chairman of the M.S.U. Academic Affairs Committee, two graduate students and faculty members from all six Faculties, provides policy guidance for the Centre, makes recommendations to the University on issues affecting teaching and learning conditions and provides grants for teaching and learning development projects. The following represents some of the Centre's activities.

Teaching and Learning Grants: The IDC consults with applicants on their proposals and assists them with projects. It also provides administrative services for the Grants program.

Programs for Teaching Assistants: The Centre plans and organizes TA-Day, a campus-wide orientation program for teaching assistants. It also offers a series of short courses on teaching for senior Ph.D. students.

Workshops, Seminars and Conferences: A wide variety of events is offered, conducted by McMaster faculty, visiting resource people and IDC staff. Generally, the topics are ones requested by instructors or departments or are reports by people who have completed Teaching and Learning Grants projects. Subjects typically include research on learning and teaching methods (e.g. lecturing, small group discussion, simulations, the use of microcomputers in education).

Consultation: A major part of the Centre's work is discussing current courses with instructors. The instructor or department provides the expertise in the course content. The Centre provides information on ways for instructors to evaluate and refine courses. It also arranges contacts with other experienced people and assistance in trying new approaches.

The Centre has a long history of collaboration with student efforts to support excellence in teaching. For example, the IDC provided consultation refinements to the MSU Teaching Awards program and the MSU Handbook The Disabled Student as well as grants the MSU has received for its own teaching and learning projects.

Resources: The IDC has a library of books on university teaching and learning, example audio-visual materials and microcomputer programs. It also has video-tape equipment (for use in workshops and for taping classes at the request of instructors) and some microcomputer equipment for familiarization seminars and for faculty to use in evaluating educational software.

Students, especially those working as teaching assistants, are invited to visit the centre, in General Sciences room 205, or to telephone 4540.

AUDIO VISUAL SERVICES
McMaster Audio Visual Services provides a complete media service to faculty, staff and students at McMaster. These services include: television production, editing and tape duplication; audio recording, tape and cassette editing, high speed tape duplication; A/V equipment distribution (all kinds of projectors, audio and video tape recorders, etc.); film reservations; A/V equipment repair; graphic art - for design, charts and graphs for publication, display or poster presentations; photography including location and studio photography, black and white or colour copy, film processing and slide duplication.

For further information, please refer to the A/V Services located in the Health Science Complex, Room 1G1 or telephone extension 2303, or Burke Sciences Bldg., Room B213B, telephone 2761.

UNIVERSITY ART GALLERY
E. Semie, B.A./Gallery Assistant

Opened in 1967, the University Art Gallery is located in Togo Salmon Hall, Room 114. With two galleries of over 3,000 square feet, it has all the professional facilities for a year-round programme of exhibitions, either organized by McMaster or loaned to the University by such organizations as the National Gallery of Canada and the Art Gallery of Ontario.

The Permanent Collection consists of approximately 3,000 Canadian and European art works with a specialized collection of over 180 German Expressionist prints.

The Gallery is open daily except Mondays and Saturdays. Call Local 3081 for further information.

Research Facilities

COMMUNICATIONS RESEARCH LABORATORY
Simon Haykin,B.Sc., P.H.D., D.Sc., F.R.S.C., F.I.E.E./Director

The Communications Research Laboratory (CRL) operates in the Faculty of Engineering. It has a membership of 12 full-time and 2 part-time faculty members, laboratory manager, a full-time staff of 11 research engineers, and 2 technologists, and a graduate student population of over 30 students.

The research programme of the CRL is devoted to signal processing, communications, microwaves, and optical computing with applications to radar, sonar, search-and-rescue satellites, digital radio and digital satellite communications. It has pioneered many new theoretical concepts and system designs with practical applications. Indeed, the CRL has established itself as one of the leading centres of research in signal processing and communications, for which it is recognized both nationally and internationally.

The CRL has established invaluable links with many government research laboratories and companies. It derives its funding from research grants awarded by the Natural Sciences and Engineering Research Council, and research contracts. Its total revenue is in excess of 1 million dollars per annum.

In the formation of its research programmes and activities, the CRL is assisted by an Advisory Committee with membership drawn from government agencies and the electronics and telecommunications industry of Canada.

McMASTER INSTITUTE FOR ENERGY STUDIES

Dr. M.L. Kliman/Director

The Institute was established in 1980 by a group of engineers, scientists and social scientists at McMaster who recognized the inter-disciplinary nature of the problems involved in efficiently providing our society with usable energy. Its purpose is to coordinate, promote and support
energy research and energy education. The MIES office collects and disseminates information on economic, political, scientific and technological developments relating to energy; provides aid in the organization and finance of interdisciplinary research projects; organizes seminars and conferences; and publishes the Energy Newsletter three times yearly.

McMASTER INSTITUTE FOR MATERIALS RESEARCH
J.A. Johnson

Research in the chemistry, engineering, metallurgy and physics of solid materials is supplemented through a multidisciplinary Institute for Materials Research. Forty-seven faculty members from ten academic departments in the faculties of science and engineering, as well as graduate students and research fellows associated with them, share research space and facilities in the John Hodgins Engineering and Senior Sciences Buildings. The principal areas of research include: lattice dynamics; kinetics and diffusion; mechanical properties; microelectronic and optical devices; optical materials; phase transformations; thermodynamics; radiation damage; structure determination; surface science.

McMASTER INSTITUTE FOR MOLECULAR BIOLOGY AND BIOTECHNOLOGY
Dr. S.T. Bayley, B.Sc., Ph.D./Interim Director

The purpose of the Institute is to promote and strengthen research and teaching in molecular biology at the University, and to develop links with industry so that research ideas can be exploited commercially. Research in molecular biology is an active focus for faculty members in departments within the Faculties of Science, and Health Sciences and includes: regulation of gene expression, differentiation, membrane and organelle biogenesis, viral oncology and modes of viral replication, and applied medical topics such as development of monoclonal antibodies and recombinant DNA techniques for diagnostic purposes. The Institute brings faculty members in these research areas together to exchange ideas and techniques. It also allows the development of new areas of research and serves to foster the research of biologists not at present using the techniques of molecular biology. As a part of these roles, the Institute operates a central facility and serves as a teaching resource for graduate and senior undergraduate courses in molecular biology and biotechnology.

McMASTER INSTITUTE FOR POLYMER PRODUCTION TECHNOLOGY
Dr. A.E. Hamielec/Director
Dr. J.F. MacGregor/Associate Director

Polymers are found in products which affect every aspect of our lives: synthetic fibres in our clothes; latex in paints and adhesives; specialty polymer enamels and coatings; synthetic rubbers; contact lenses; medical implants.

The McMaster Institute for Polymer Production Technology (MIPPT) is a research institute that is unique in placing a major emphasis on reaction engineering and computer process control of industrial polymer production processes. This has resulted in a current roster of industrial members which includes 16 of the world’s leading polymer companies: Akzo Chemie (Netherlands); ALKarl Chemicals; Avery International; Dow Chemical Canada; E.I. du Pont de Nemours; GenCorp (formerly General Tire); Goodyear; ICI (British parent company of CIL); S.C. Johnson & Son; Monsanto Plastics & Resins; Nalco Chemical; Neste Oy (Finland); Novacor Chemicals (Alberta); Polysar; Rohm & Haas; Union Carbide.

18 faculty members from the departments of chemical engineering, chemistry and the faculty of business are associated with the Institute as well as 10 graduate students, 4 post doctoral fellows, 2 visiting scientists, 2 research associates, and 6 support staff.

The Institute facilities include: a fully instrumented, computer-controlled pilot plant with several stainless-steel reactor vessels; local control computers and access to a VAX for computer control and computer simulation studies; advanced analytical facilities that allow the complete characterization of polymer samples; an ampoule laboratory in which small-scale studies are performed.

There are currently 32 research projects underway in the areas of: Mathematical modelling for the purpose of predicting the behaviour of industrial processes and thereby developing improved or completely new processes; industrial control of polymer plants; studies of water soluble polymers (for example, for enhanced oil recovery) and for fines retention in the pulp and paper industry; fundamental studies of a replacement for styrenics; research on a novel high temperature process invented by Dr. Hamielec for the production of specialty copolymers used in the coatings industry; development of polymer reactor models for safety calculations; and an investigation of the injection moulding (RIM) of thermoplastics as an alternative to the traditional methods of producing molded polymer parts (such as for the automobile industry); methods development for the characterization of polymers.

McMASTER NUCLEAR REACTOR (MNR)
Butler, Michael Paul, B.Eng., M.Eng., P.Eng./Chief Reactor Supervisor
Copley, John R. D., M.Eng./Professional Scientist and Associate Professor (part-time) of Chemistry

Ernst, Peter I.C., B.Eng., M.Sc./Reactor Manager
Harvey, John W., B.Sc., Ph.D./Senior Health Physicist
Landsberger, Sheldon, B.Sc., M.Sc., Ph.D./Professional Scientist
LoPresti, Christopher S., B.Eng./Reactor Supervisor
Smith, Donald R., B.Sc., Ph.D./Director, MNR, and Professor (part-time) of Chemistry and Engineering Physics

The McMaster Nuclear Reactor (MNR), which has been operating on the McMaster campus since 1959, is the only medium power research reactor in Canada. MNR is also the only reactor at a Canadian university with adequate power to enable scientists and engineers to explore the many types of research requiring neutron or gamma radiation: nuclear science, applications of nuclear methods, neutron scattering, neutron radiography, high flux activation analysis, isotope production, applications of radioisotopes, and many other areas.

MNR is a MTR open pool-type research reactor producing neutron fluxes up to 1 x 10^{14} neutrons/cm²/second when operating at a power output of 5 megawatts (thermal). It utilizes plate-type enriched uranium 93% in U^{235} and is moderated and cooled with light water. The open pool concept provides easy access to the reactor core and its experimental facilities, making it a very flexible research reactor. Special facilities are continually being developed to accommodate new research requirements.

The reactor building is strategically located relative to the Science, Engineering, and Health Science Faculties, and is available to all departments for both educational and research activities, and in the establishment of new fields of investigation resulting in a far-reaching effect on education and research at McMaster University. The reactor is also used in commercial, industrial and health applications and by researchers from other major universities and from industry and government laboratories.

OFFICE OF GERONTOLOGICAL STUDIES
Dr. Ellen B. Ryan/Director
Professor Karl Nianan/Associate Director

This Office co-ordinates multi-disciplinary and multi-faculty initiatives in education and research in gerontology. The section of the office encompasses both the University and the community, with the office acting as a forum for the exchange of information about various aspects of aging.

The office’s activities are supported by University funding, while specific projects are funded by public agencies and private foundations.

The proposed Honours B.A. and B.A. programmes in Gerontology and Another Subject will be administered by this office. Students may contact the Office for information on education and research in gerontology, and health and social services available for an aging population.

URBAN DOCUMENTATION CENTRE
Mrs. Cathy Moulder/Documentalist

The Urban Documentation Centre is a specialized research collection in the subject areas of urban studies. Established in 1968, the UDC was one of the first urban affairs collections in Canada. It still maintains a unique position in this area, providing information and services to the Hamilton-Wentworth community as well as to McMaster's faculty and students.

The UDC's collection consists of approximately 23,000 items, mainly paperbound-format reports from all levels of government, planning boards, housing associations, community groups and many other sources. The special collection of series of publications from Canadian, American and European universities is a unique resource of discussion papers, working papers, bibliographies and reprints. The UDC sub-
scribe to about 125 periodical titles and offers its own index service to their contents. It specializes in current planning information for the Hamilton-Wentworth Region, including newspaper clippings files, and maintains a good general collection in the subject areas of urbanization, regional development, urban social problems, planning, transportation, economics, housing, urban research and methodology and environmental concerns. The UDC publishes a monthly listing of new acquisitions.

The Urban Documentation Centre is located in the General Sciences Building, Room 415, telephone extn. 4278.
Dean of Student Affairs

R. Heinzi/(Acting) Dean

The Dean of Student Affairs heads a variety of specialized student service offices. These offices include the Director of Residence Life, Manager of Residence Administration, Off-Campus Housing Office, Student Counselling Service, International Students' Advisor, Student Health Service and Student Financial Aid.

The Dean is happy to meet with individuals and representatives of student organizations with problems, concerns, questions or suggestions on any matter relating to student life and services on campus. The Dean's Office is located in the Commons Building, Room 101A, telephone extension 4649.

RESIDENCES

Dr. J. Metford/Director of Residence Life
Mrs. B.A. Stewart/Manager of Residence Administration

The University owns and operates nine on-campus residences accommodating 2365 students. Eight traditional-style residences are most of three women's residences (758), two men's residences (347) and three co-educational residences (780). These residences are for single undergraduate students and are provided with staple articles of furniture including desks, chairs, beds, mattresses, pillows and bedding. Students provide their own towels and are responsible for the cleanliness of their individual rooms although a linen change is made weekly.

Sixty per cent of the traditional spaces are reserved for freshmen students and admission is based on academic standing. All students in these eight residences are required to take the food plan which provides for lunch and dinner (Monday to Friday) for the full academic year.

In addition, an apartment-style residence (Bates Residence) accommodates five hundred and two (502) men and women students. The apartments are unfurnished (except for a stove, refrigerator, carpeting and drapes) and are set aside for upperclass students including a limited number of graduate and transfer students and special cases. The food plan is optional.

The University does not provide any on-campus facilities for married students. Students in this category may wish to use the services of the Off-Campus Housing Office.

The responsibility for the overall administration of the University Residence System lies with the Director of Residence Life. The Director determines policy and develops programs. For each Residence, the Director appoints one Hallmaster from the University community to serve as a mentor and leadership figure within the Residence. The Director of Residence Life works with resident student government and Hallmasters to fashion a maturing residence community in which self-discipline is maximized and the need for University-imposed sanctions is minimal. The Hallmasters work with the student government and students on collective projects and individual personal concerns. The Residence Life Office is located in the Commons Building, Room 101E, telephone ext 4223.

The Manager of Residence Administration is responsible for admission systems, withdrawals, waiting lists and administrative support for Residence Life Staff. The Manager reports to the Director of Residence Life. Enquiries for residence information should be directed to the Residence Administration Office in the Commons Building, Room 115, telephone ext 3271.

Students applying to McMaster will receive a letter of instruction concerning application for residence. Letters of Acceptance from the Registrar's Office will be accompanied by forms concerning residence application. Offers of residence will be confirmed upon receipt of a deposit, which will be applied to residence fees. If space is available and assigned, this deposit is not refundable.

Students interested in residing on campus any time between May 1 and August 31 should apply directly to the Conference Office, Commons Building, 101C. Applications and advance reservations are available from March 1 each year.

The Residence System is one of a group of specialized student service areas headed by the Dean of Student Affairs.

OFF CAMPUS HOUSING SERVICE

This office maintains a daily updated listing of available accommodations in the Hamilton and surrounding areas. These listings are posted in the Commons Building Lobby on a bulletin board. The office also supplies brochures, maps and free phones for local calling. The Off-Campus Housing Service is located in the Commons Building, Room 101A, Extension 4649.

STUDENT COUNSELLING SERVICE

W. Wilkinson/(Acting)Director
P. Henton/Counselling Psychologist
D. Lawson/Career Counsellor
D. Palmer/Academic Skills Counsellor
V. Reid/Career Counsellor

The Student Counselling Service is a resource provided by the University to promote the personal, academic and career development of McMaster students.

Many counselling, assessment and information services and programs are offered by the counselling staff to help students deal with their problems, clarify and achieve their goals and gain the most from their university experience.

Concerns which students commonly wish to discuss include those related to social, family and peer relationships, and feelings about themselves which interfere with their academic and personal effectiveness. Many students seek help in defining their interests and abilities in order to make important decisions about their academic programmes and careers. Some experience difficulties with their studies, or wish to maximize their efficiency in studying. Others want to improve their interpersonal and communication skills.

In addition to individual counselling services, comprehensive group programmes are presented regularly in such areas as educational and career planning, communication and assertiveness skills, human relations and stress management. Seminars and workshops are held on such topics as preparing for university, effective study methods, essay writing, and various areas related to career development and the employment search process.

The office maintains a career and education information library containing material which is available for reference use to all members of the University community and the general public.

The office also acts as an administrative centre for such frequently required academic tests as the Graduate Record Examinations, the Law School Admission Test and the Medical College Admission Test. Contacts and transactions between students and counsellors are made under voluntary, private and confidential conditions. Whenever required, students are given assistance in locating other specialized helping sources both on and off campus.

Students who wish to talk with a counsellor are invited to visit the office in Hamilton Hall Room 302 or telephone Extension 4711.

INTERNATIONAL STUDENTS' ADVISOR

Patrick J. Fernando/Advisor

The office is available to all foreign students for consultation, advice and direction in numerous areas of concern, providing information regarding immigration matters, accommodation, orientation, etc. The office is located in Hamilton Hall Room 401, telephone ext. 4748.

STUDENT HEALTH SERVICE

Health services are available for the use of undergraduate students throughout the academic term. A physician holds office hours from 9:30 a.m. to 5:00 p.m. weekdays.

Registered nurses are on-duty from 8:30 a.m. until 5:30 p.m. The facility is located in McKay Hall Residence on the ground floor. The telephone number is 525-9140.
Student Financial Aid

Please refer to the description of services under the section Financial Information in this Calendar.

McMaster University Alumni Association

Giving and receiving. These are the twin facets of the role of members of the McMaster University Alumni Association, which seeks to serve its members, and seeks ways and means for its members to serve their University. Founded in 1895, just eight years after McMaster was incorporated, the association now includes more than 50,000 alumni.

The affairs of the association are managed by its council, which includes elected officers and representatives, branch presidents, committee chairpersons, and the alumni representatives on McMaster's Board of Governors and Senate. Between the four regular meetings of this council each year, the association is directed by an executive committee which includes the officers and selected councillors.

At the grass roots level, several geographic branches operate; but what's earning emphasis nowadays is the growing number of academic based chapters which include alumni who share a common discipline while at McMaster; nursing, medicine, divinity, social work and MBA chapters currently are active.

The link between the association and the University is provided by the Office of Alumni Affairs, located on the second floor of the Alumni Memorial Hall. Initiating and coordinating alumni activities, and providing the association, its branches and committees, with support services, this office has the continuous task of maintaining up-to-date records of all graduates and former students.

Together, this office and the association attempt to be responsive to the many and diverse interests of the alumni by providing continuing education programmes, supplying material for the University's magazine for its graduates, arranging for alumni access to many University facilities and functions, sponsoring an annual Grad's Day (when all alumni are encouraged to return to campus for reunions), among other activities.

In turn, the association works to benefit alma mater by encouraging alumni to acquaint worthy students with the advantages of attending their University and to serve as informal public relations representatives for McMaster in their own communities, by electing able representatives to the University Board of Governors and Senate, by inviting alumni to give financial support to the University, and in other ways.

Of course, such efforts represent only the tip of the iceberg; there is much more of value that can be accomplished in the future through the energetic involvement of more alumni.

Athletics

Dr. M.E. Keyes/Director

The School of Physical Education and Athletics offers a variety of programmes so that all students have the opportunity to keep fit, compete in athletics at their own level, and enjoy sports of their choosing.

For those with a more competitive outlook, a highly developed and very popular intramural programme is in full swing from early fall until late spring.

For those who possess still higher skills, the intercollegiate programme provides an exciting challenge to both men and women. The fine performances of student athletes and the social involvement of student spectators are focal points of student life on campus.

Student Government and Activities

The McMaster Students Union's purpose is to represent the concerns, and service the needs of over 9,800 full-time students. Every undergraduate student who is registered in 18 units or more, is a member of the McMaster Students Union (MSU), and as such is entitled to all its benefits and services.

The MSU is governed by the Student Representative Assembly (SRA), a council of up to 35 of its full-time members. All but two are elected in March by their fellow students in various faculties; each has a proportionate number of seats relating directly to the size of the faculty. The President and Treasurer are the remaining two members of the SRA. The President is elected in February by the entire student body and the Treasurer is elected by the SRA from the general student body. Students who have questions about student government, or wish to bring a matter before the SRA, should contact their representative, the President, or the Vice-President.

The duties of the SRA are: to set policy for the MSU; to approve annual budgets; and to make decisions on capital purchases. Under the direction of the SRA, committees have been established in the areas of academics, teaching awards, student services, finances, external affairs, and special events. The committees are composed of assembly members, and interested MSU members-at-large. Undergraduates are encouraged to become involved in any of the committee areas. Vacancies are announced in the student newspaper, The Silhouette.

The McMaster Students Union Inc. operates a variety of services for students, including a grocery store, Day Care Centre, Games Room and two full-time pubs. The MSU staffs an Ombudsman Office to help students with problems, either internal or external to the University, and a Research Department to handle research into a variety of student-related concerns. The Programming Department organizes Orientation, Homecoming, Winter Carnival and major concerts. The Silhouette and the campus radio station CFMU, 93.3, are both owned and operated by the McMaster Students Union Inc. The MSU funds over 80 clubs and societies which encompass a kaleidoscope of areas/topics including academic, political, religious, cultural and general interest.

Information about the MSU and its services can be found in the student handbook (the Mac Almanac), the MSU Info Office (room 226, Hamilton Hall), and at the MSU General Offices (room 217, Hamilton Hall, 525-9140, ext. 2003).

Full-time undergraduates are urged to visit Hamilton Hall and to participate in the many student organizations and services. (Through their membership in the MSU, full-time undergraduate students are also affiliated with the Canadian Federation of Students, and the Ontario Federation of Students (CFS/OFS). For information about both of these organizations, contact the MSU)

McMaster Association of Part-time Students (MAPS)

MAPS exists to look after the special interests of part-time students, who have a different educational experience than full-time students. University fees for these students include an assessment to support the Association.

Your Association's lounge and office are open all year from 10:00 am - 9:30 pm Monday to Thursday, 10:00 am to 2:00 pm Friday, when classes are in session. MAPS Executive Director, Ms. Judy Worsley, is available to help students. If you have a question pertaining to university procedure or a problem of any kind, Judy can either supply the answer or put you in touch with someone who can.

The part-time student newsletter, LINK, is published on a regular basis, and will be sent to your professor for distribution to you. If you do not receive a copy, call or drop by the office.

MAPS provides the opportunities and methods for part-time students to communicate their needs and ideas to university officials, by ensuring representation on university governing bodies and committees, and by the Association's direct contact with university administrators on matters such as course availability, evening services and tuition fees.

COPUS, the Canadian Organization of Part-time University Students, works at the provincial and national levels to improve programme avail-
ability, financial aid and equality under the tax laws for part-time students. MAPS is a member of this group of universities.

If you are a part-time student, MAPS is for you. It is a way to bridge the gap between you and the university, by helping you feel a part of McMaster’s student body. We urge you to participate as often as possible in the academic and social events which will be available to you at McMaster.

The MAPS lounge and office are located in Kenneth Taylor Hall, Room 102, telephone 525-9140, ext 2021. Phone or visit (through their membership in MAPS, part-time students are also affiliated with the Canadian Organization of Part-time University Students (COPUS). For information about this organization, please contact the MAPS office.)

Services to Students

UNIVERSITY CHAPLAINS

Catholic and Protestant chaplains on campus provide a wide range of student services in worship, discussion groups, pastoral counseling, and social action. At least one of the chaplains is available during the day in the office, and students can always call the chaplain’s residences for appointments at other times. The chaplains support many student activities as well as caring for personal and religious needs. Their office is in Wentworth House, Room 108; telephone extension 4207.

Chapel Services:

There is a chapel service at 10:30 a.m. in the University Chapel, on Mondays, Tuesdays, Wednesdays and Fridays during the university session. These services are conducted by members of the student body or by members of the faculty. There is also a weekly communion in the Chapel on Thursdays at 12:30 p.m. followed by a lunch at 1:00 p.m. The Chapel is open for private devotions each weekday from 8:15 a.m. to approximately 10 p.m. After 5 p.m. it may be necessary to enter the chapel through the Divinity College building.

STUDENT PLACEMENT SERVICE

The Student Placement Office (Canada Employment Centre) operates on a year-round basis to facilitate hiring of graduates, undergraduates, and recent alumni of all disciplines into permanent, temporary and part-time employment. Located in Hamilton Hall, Room 409, office hours are 8:30 a.m. to 4:30 p.m., Monday to Friday, telephone 525-9140, extension 4253.

Major national employers conduct on-campus interviews from October to March for career and summer employment. In co-ordinating this recruitment program, the Student Placement Office posts announcements on its own and departmental bulletin boards; provides the standardized University and College Placement Association application forms, and forwards them for pre-screening; maintains related job and employer reference material; schedules employment interviews. Students should register at the Placement Office in September to prepare for this program.

A direct referral service to more immediate part-time and career jobs also operates throughout the calendar year. Bulletin boards should be checked regularly.

In addition, Student Placement maintains a library of reference material on a large number of potential private and public sector employers. Staff are available to meet students on an individual basis to offer job referral assistance and to discuss career-related concerns such as resume development, preparing for interviews and conducting an effective job search.

FOOD SERVICES

The University operates a number of eating places on campus serving a variety of food items. Dining rooms for the use of students registered in meal plans are located in the Refectory and in the Commons Building. Students not in residence may purchase plans from the Food Services Department in the Commons Building. Coffee shops are strategically located on the campus, in Senior Sciences Building, Togo Salmon Hall, Kenneth Taylor Hall, and the Rathskellar. Check with the Food Services Department for hours of operation. Food service is also available in a student-operated facility in Wentworth House, in the cafeteria in McMaster University Medical Centre. Supplemented these facilities are vending machines at many locations about the campus.

PARKING

Travel to and from the University on foot, by public transportation and in car pools is encouraged in order to minimize the accumulation of motor vehicles on Campus. Since many people find it necessary to use their motor vehicle, however, the University operates a parking service which is available to faculty, staff, students and visitors.

Limited parking facilities are available on campus, for which parking permits are required. These may be obtained from the Parking Office in the E.T. Clarke Centre upon payment of the prevailing parking fee and upon presentation of a current student identification card and vehicle registration. Special arrangements can be made for disabled parking privileges.

Drivers are responsible for becoming familiar with parking regulations. Violations are subject to fine. Disregard of violation charges may result in suspension of parking privileges, tow-away at owner’s expense, and/or prosecution under the general law, including the Highway Traffic Act, the Trespass to Property Act and the City of Hamilton Private Parking By-law No. 75-155.

BOOKSTORE

The University Bookstore, owned and operated by the University, is located in the lower level of Gilmour Hall. A Health Sciences Branch is located in the McMaster University Medical Centre. In addition to course books, the Bookstore maintains a wide range of supplementary reading materials, both academic and general. Stationery supplies and other items are also stocked. Charge accounts may be opened after registration.

POST OFFICE

Located in the basement of Gilmour Hall, the Post Office offers full postal service.
Undergraduate Academic Awards

The University Senate, acting on behalf of generous benefactors and donors to the University, bestows academic awards on entering, in-course and graduating students in order to encourage and recognize high levels of scholarship. In recognizing such scholarly achievement, the University requires all recipients of academic awards to fulfill a set of general conditions, in addition to meeting the particular conditions attached to individual academic awards. These general conditions are outlined below and at the beginning of each section which describes the various types of award. The general conditions have been established in order to ensure both equity in competition and an adequate overall academic standing. Any interpretation of the conditions attaching to academic awards is solely the prerogative of the Undergraduate Council.

TERMINOLOGY

(A complete explanation of the terminology used to describe Academic Awards is provided in the sections of the Calendar described below.)

The Winter Session is the period from September to April as defined in the Sessional Dates on pages 4 and 5.

Baccalaureate degrees are those listed under Degrees and Programmes, the abbreviations of which start with the letter 'B'.

Continuing, Occasional, and Post-degree Students are defined under Admission Requirements and are students not registered in degree programmes.

University Average (UA), Cumulative Area Average (CAA), Graduation Average (GA), Level, and Reviewing Period are defined under Academic Regulations.

The Sessional Average is the weighted average of the grades in all courses (excluding any designated 'Extra') taken during the Winter Session immediately prior to the May review.

A full load is the number of units specified in the Calendar for an individual level of a programme (e.g., Honours Biology and Psychology, Level II: 33 units) or, if the Calendar does not specify the programme work by individual levels, the average number of units per level.

1. General Conditions Relating to All Academic Award Recipients

1.1 The University Academic Awards listed below are provided exclusively for students entering, registered in, or graduating from their first baccalaureate degree programme at McMaster University. Students registered in a second undergraduate degree programme, Continuing Students, Occasional Students, and Post-degree Students are not eligible for these awards.

1.2 A student may be named the winner of an unlimited number of University Academic Awards but may retain the monetary benefits of:

a. travel scholarships and awards such as books and medals; and

b. awards continued from a previous year (including entrance scholarships), except as provided by the particular terms of an award; and

c. either one award greater than or equal to the value of a Senate Scholarship and one award of less than the value of a Senate Scholarship, or two awards of less than the value of a Senate Scholarship.

When a student is named the winner of an award but may not retain the monetary benefits because of the conditions listed above, the next student eligible to receive both the award and its monetary benefits will be named the winner of the award.

1.3 All awards for which a student is named the winner and receives the monetary benefits will be shown on the student's official record; all awards for which a student is named the winner but does not retain the monetary benefits will be shown on the student's official record honoris causa.

1.4 The monetary benefits of travel scholarships, awards won by part-time students and graduating students, and awards such as books and medals will be disbursed directly to the student.

1.5 The monetary benefits of other awards will be disbursed only if the recipient is then registered as a full-time student in a baccalaureate degree programme at McMaster University in the next Winter Session after the award was earned and then will be allocated in the following manner:

a. first the monetary benefits will be credited to the student's academic fees account up to the value of the academic fees prescribed for a full-load of work specified in the Calendar for the level and programme in which the student is registered;

b. then amounts in excess of the above will be disbursed directly to the student in November.

1.6 Awards credited to the student's fees account are not refundable in cash under any circumstances.

1.7 Awards credited to the student's academic fees account may be used only to defray academic fees for baccalaureate degree courses taken during the Winter Session in which the account is credited with the awards. Students wishing to defer the benefits of an award to a later session should apply to the Academic Awards section of the Office of the Registrar. Approval of applications is not automatic, and deferments are not normally granted for more than one calendar year.

1.8 Students holding four-year full-fees scholarships who choose to accelerate their programme and to complete their degree earlier than normal by completing Summer Session courses and who wish to employ the benefits of their award to defray the academic fees for such courses should apply to the Academic Awards section of the Office of the Registrar. Approval of applications is not automatic.

1.9 The University reserves the right not to grant an award in the absence of a suitable candidate, and to limit the number of awards when there are too few suitable candidates. The University also reserves the right to withdraw, or amend the terms of, any award.

1.10 The particular terms for University Academic Awards are listed below in the following sections:

SECTION 2. AWARDS FOR ENTERING STUDENTS

The McMaster Scholars Programme
Other Scholarships Open to Canadian Students
Scholarships Open to Ontario Students
Merit Awards Open to Ontario Students

SECTION 3. AWARDS FOR FULL-TIME IN-COURSE STUDENTS

Medal
General Scholarships and Prizes
Senate Scholarships
Residence Scholarships
Travel Scholarships

SECTION 4. SINGLE ACHIEVEMENT AWARDS FOR FULL-TIME AND PART-TIME STUDENTS

SECTION 5. AWARDS FOR PART-TIME IN-COURSE STUDENTS

SECTION 6. AWARDS FOR GRADUATING STUDENTS

Medals
Ring
Scholarships and Prizes

In order to find a specific award, use the Index for Academic Awards.
2. Academic Awards for Entering Students

2.1 These awards are provided exclusively for students qualifying for admission to Level I of a baccalaureate degree programme.

2.2 In order to be considered for an entrance scholarship, students must obtain at least a first-class average in the secondary school credits required for University admission. All students who meet this requirement and who apply for early admission to the University within not more than two years of completion of their secondary school studies will automatically be considered as applicants for entrance scholarships, unless a separate application is explicitly required by the particular terms of the award.

2.3 In addition to meeting the General Conditions listed in Section 1, entrance scholarship recipients will begin their studies in the next Winter Session. Students wishing to defer the benefits of an award to a later session should apply to the Academic Awards section of the Office of the Registrar. Approval of applications is not automatic, and deferrals are not normally granted for more than one calendar year.

2.4 Unless otherwise specified, recipients may retain an entrance scholarship which provides for awards beyond Level I while registered in a baccalaureate degree programme and until graduation or for four years (five years if registered in a five-level programme), whichever is less. In order to retain such scholarships, students must complete each successive Winter Session at the University a full load corresponding at least to:
   a. either the minimum number of units specified in the Calendar for their level and programme;
   b. or, if the Calendar does not specify the programme work by individual levels, the average number of units per level;
   and must maintain a University Average of at least 9.5 and obtain no F grades.

THE McMaster Scholars Programme
Each year up to five students who are Canadians or landed immigrants and entering from a secondary school may be awarded the title McMaster Scholar. At any Time there may be no more than 16 McMaster Scholars registered in undergraduate programmes. Applications are required and must be submitted not later than March 31. Applicants will be asked to provide a resume, an essay and letters of recommendation. Details may be obtained from the Academic Awards Officer.

Value: $10,000 ($2,500 a year for up to four years).

The McMaster Scholars programme incorporates the following awards:

THE GEORGE AND NORA ELWIN SCHOLARSHIPS
Established in 1979 by bequest of George and Nora Elwin of Hamilton.

Value: $7,300 ($1,825 a year for up to four years).

THE LILLIAN AND LEROY PAGE SCHOLARSHIP
Established in 1982 by donation of the Lillian and Leroy Page Foundation for a student from the Hamilton area entering the Faculty of Science.

Value: $7,300 ($1,825 a year for up to four years).

OTHER SCHOLARSHIPS OPEN TO CANADIAN STUDENTS
Open to Canadian students from any province or territory of Canada.

THE ALUMNI ASSOCIATION SCHOLARSHIPS
Established in 1961 by the McMaster University Alumni Association as a memorial to former members of the McMaster faculty in recognition of their contribution to higher learning. Awarded on the basis of general proficiency in the subjects required for admission to students from any province or territory of Canada.

Value: Two scholarships, each up to four years’ academic fees.

THE JOSEPHINE MAGEE SCHOLARSHIP
Established in 1959 by bequest of Josephine Magee of Hamilton. Awarded on the basis of general proficiency in the subjects required for admission to students from any province or territory of Canada.

Value: Up to four years’ academic fees.

SCHOLARSHIPS OPEN TO ONTARIO STUDENTS
The following scholarships are open to any student applying for admission from an Ontario secondary school within two years of completing the Secondary School Honour Graduation Diploma. The recipients of these scholarships will be determined primarily on the basis of those grades submitted for early admission in the Grade 13 work which qualifies the applicant for the Secondary School Honour Graduation Diploma.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS SCHOLARSHIP
Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to a student entering the Faculty of Engineering.

Value: $750.

THE CAWESCO CLUB SCHOLARSHIPS
Established in 1981. Two scholarships to be awarded: one to a student entering the Faculty of Business and one to a student entering the Faculty of Engineering.

Value: $500 each.

THE CHANCELLORS’ SCHOLARSHIPS
A variable number will be awarded to students entering a full-time programme of study.

Value: One year’s academic fees.

THE HELEN M. CURREY SCHOLARSHIP
Established in 1941 by bequest of Helen Maud Currey of Drumbo, Ontario. To be awarded every four years, the twelfth award to be made in 1988.

Value: Up to four years’ academic fees.

THE DOFASCO SCHOLARSHIP
Established in 1955 by the Dominion Foundries and Steel Company. To be awarded to a student who is a Canadian citizen and is entering an engineering programme.

Value: $7,300 ($1,825 a year for up to four years).

THE DUNDAS SCHOLARSHIPS
Established in 1984 from funds donated anonymously. A variable number of scholarships will be awarded to students from Dundas and surrounding area entering full-time programmes of study.

Value: One year’s academic fees.

THE EATON FOUNDATION SCHOLARSHIP
Established in 1982 by The Eaton Foundation. To be awarded to a student entering the Faculty of Business.

Value: Up to four years’ academic fees.

THE H.P. FRID SCHOLARSHIP
Established in 1982 by the family of H.P. Frid in his memory. To be awarded to a promising student entering a full-time programme of study.

Value: One year’s academic fees.

THE MERRILL FRANCIS GAGE ENTRANCE SCHOLARSHIP
Established in 1982 from the estate of Merrill Francis Gage of Hamilton. To be awarded to a keyboard student entering the Faculty of Music, to judge the Department of Music, has attained outstanding musical proficiency.

Value: $1,000.

THE GOVERNORS’ SCHOLARSHIPS
A variable number will be awarded to students entering a full-time programme of study.

Value: Up to four years’ academic fees.

THE HAMILTON SPECTATOR SCHOLARSHIP
Established in 1955 by the Hamilton Spectator. To be awarded to a student from Hamilton and district.

Value: $7,300 ($1,825 a year for up to four years).

THE JOHN HODGINS MEMORIAL SCHOLARSHIP
Established in 1985 by his wife, Jean, in memory of Dr. John W. Hodgins in recognition of his extraordinary contributions in founding the Faculty of Engineering which he served with distinction as the first Dean. To be awarded to an outstanding student entering the Faculty of Engineering.

Value: One year’s academic fees.

THE NELLIE P. HOGG SCHOLARSHIPS
Established in 1965 by bequest of Nellie P. Hogg of Hamilton. Two scholarships will be awarded to women students entering a full-time programme of study.

Value: Up to four years’ academic fees.

THE DR. HARRY LYMAN HOOKER ENTRANCE SCHOLARSHIPS
Established in 1981, and resulting from the bequest of Dr. H.L. Hooker. Sixteen scholarships will be awarded to students entering a full-time programme of study with the highest standing in Grade 13.

Value: $7,300 ($1,825 a year for up to four years).

THE AMELIA MORDEN, PAARDEBURG CHAPTER, I.O.D.E., SCHOLARSHIP
Established in 1966 by the Paardeburg Chapter, I.O.D.E. To be awarded to a student from a secondary school in Hamilton who attains an average of at least 70.0% in Grade 13 and who has a satisfactory record with respect to character, personality, and activities. Preference to be given to children of service or ex-service personnel.

Value: $150.

THE JURY SCHOLARSHIP
Established in 1941 by bequest of J.H. Jury of Bowmanville, Ontario. To be awarded to a student from a Bowmanville high school, preference to be given to students enrolling in Humanities or Social Sciences.

Value: Up to four years’ academic fees.
UNDERGRADUATE ACADEMIC AWARDS

THE LLOYD MEMORIAL SCHOLARSHIP
Established in 1956 in memory of Henry Hoyes and Lizzie Lloyd by their children. Grade 13 subjects to be included are: Physics, Chemistry, two credits of Mathematics, and either Biology or a third credit of Mathematics. Value: Up to four years’ academic fees.

THE ALBERT MATTHEWS SCHOLARSHIP
Established in 1920. Grade 13 subjects to be included are Latin and a language other than English. Value: Up to four years’ academic fees.

THE HAROLD MATTHEWS MEMORIAL SCHOLARSHIP
Established in 1917. Grade 13 subjects to be included are French and either German or Spanish. Value: Up to four years’ academic fees.

THE ISABELLA CAMPBELL McNEE SCHOLARSHIP
Established in 1915 and augmented in 1926. Grade 13 subjects to be included are three credits of Mathematics and Physics. Value: Up to four years’ academic fees.

THE MOULTON COLLEGE ENTRANCE SCHOLARSHIP
Established in 1980 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949. To be awarded to a woman student entering a full-time programme of study. Value: Up to four years’ academic fees.

THE ALVIN I. OGILVIE SCHOLARSHIPS
Established in 1904 by bequest of Alvin I. Ogilvie of Hamilton. Five scholarships will be awarded to students entering full-time programmes of study. Value: One year’s academic fees.

THE D.E. THOMSON SCHOLARSHIP
Established in 1909 and augmented in 1915. Grade 13 subjects to be included are English and either Latin or French. Value: Up to four years’ academic fees.

THE FRANK THOROLFSON MEMORIAL SCHOLARSHIP
Established in 1978 in memory of Professor Frank Thorolfsen, first Chairman of the Department of Music. One or two scholarships to be awarded to students entering Music I who, in the judgment of the Department, have attained high scholastic achievement and musical proficiency. Value: $750 each.

THE WHEELER SCHOLARSHIP
Established in 1915. Grade 13 subjects to be included are: History, English and a language other than English. Value: Up to four years’ academic fees.

MERIT AWARDS OPEN TO ONTARIO STUDENTS
Merit Awards are granted on the basis of academic standing and contribution to school and community life in extracurricular activities and work.

THE McMASTER MERIT AWARDS
Made available from time to time by authorization of the Board of Governors of the University. Value: Forty awards of $800 each.

THE LESLIE A. PRINCE MERIT AWARDS
Established in 1979 in honour of Leslie A. Prince, Dean of Students, by his friends and colleagues upon the occasion of his retirement and in recognition of his outstanding contribution to the University community. Value: Two awards of $800 each.

3. Academic Awards for Full-time In-Course Students
The following awards are based on competition across the University or within a faculty or programme.

3.1 These awards, which are granted in June or November, are provided exclusively for full-time students qualifying on the basis of work included at the May review (or deferred examinations resulting therefrom) in other than their graduating session.

3.2 In addition to meeting the General Conditions listed in Section 1, a student must complete during the Winter Session immediately prior to the May review a full load of work corresponding at least to:
   a. either the minimum number of units specified in the Calendar for their level and programme;
   b. or, if the Calendar does not specify the programme work by individual levels, the average number of units per level; and must obtain a University Average of 8.0 and no F grades.

3.3 For students who complete a full load of work in the Winter Session as described above a Sessional Average will be computed, which is the weighted average of the grades in all courses (excluding any designated ‘Extra’) taken during that Session. The Sessional Average will be used to determine academic standing for the awards listed below, unless otherwise stated in the terms of a particular award.

3.4 The Sessional Average will be used to break any tie in the competition for awards which are based on another academic criterion.

MEDAL
THE GOVER Norris GENERAL'S MEDAL
Given by Her Excellency the Governor General of Canada. To be awarded to the student who has completed at least 60, but not more than 80, units beyond Level I of a four or five-level programme, and ranks highest in scholarship, in personal character and in influence.

GENERAL SCHOLARSHIPS AND PRIZES
THE AARON PRIZE
Established in 1964 by Fannie Aaron (’44). To be awarded to the student who attains the highest Cumulative Area Average in the three-Level English programme after completion of at least 30, but not more than 45, units beyond Level I. Value: $25.

THE AMERICAN CANADA INC. SCHOLARSHIP
Established in 1983. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Commerce and who attains the highest Sessional Average (at least 9.5). Value: $1,000.

THE AMERICAN SOCIETY FOR METALS (ONTARIO CHAPTER) SCHOLARSHIP
Established in 1971 by the local Chapter. To be awarded to the student who has completed at least 30, but not more than 85, units beyond Level I of Ceramic Engineering, Honours Materials Science or Metallurgical Engineering and who attains the highest Sessional Average (at least 9.5). Value: $1,400.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS UNDERGRADUATE SCHOLARSHIPS
Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to students with the highest Sessional Average in engineering programmes after the completion of each of (a) Engineering I; (b) at least 35, but not more than 55, units beyond Level I; and (c) at least 70, but not more than 90, units beyond Level I. Value: $375 each (three awards).

THE A.H. ATKINSON PRIZE
Established in 1980 by Atkinson Engineering Consultants Limited. To be awarded to the student in a Civil Engineering programme who achieves the highest average in Civil Engineering 3G4 and 3J4, taken in one Session. Value: $200.

THE J. DOUGLAS BANKIER MEMORIAL SCHOLARSHIP
Established in 1977 in memory of Professor J. Douglas Bankier by his friends, colleagues, and former students. To be awarded to the student who has completed at least 60 units beyond Level I of an Honours or Major programme in the Department of Mathematics and Statistics, who obtains the highest Sessional Average and who, in that Session achieves a grade of at least 8 in Statistics 3D6. Value: $400.

THE SCOTT BARTLETT MEMORIAL PRIZE
Established in 1985 in memory of Scott N. Bartlett by his family and friends. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of the Honours Commerce Programme and who, in the judgment of the Faculty of Business, has achieved high standing in Commerce 3FA3 and 3FB3, taken in one Session. Value: $100.

THE M. BANKER BATES SCHOLARSHIP
Established in 1975 by Dr. M. Banker Bates and augmented in 1978 in his memory by his family, friends and colleagues. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of a programme in Commerce and who attains the highest Sessional Average. Value: $375.

THE BEAUTY COUNSELORS OF CANADA SCHOLARSHIP
Established in 1956 by Beauty Counselors of Canada Limited. To be awarded to the student entering Level II of Honours Biochemistry, Honours Chemistry, Honours Biochemistry and Chemistry, or Honours Applied Chemistry who attains the highest Sessional Average in Natural Sciences I. Value: $375.

THE LOUISE E. BETTGER SCHOLARSHIPS IN MUSIC
Established in 1982 in memory of Louise E. Bettger of New Hamburg, Ontario, by her nieces and nephews. Three scholarships to be awarded to students in a programme in Honours Music who, in the judgment of the Department of Music, ...
are outstanding: (a) one in the area of choral or vocal music to a student who has completed Music 1 or at least 30, but not more than 75, units beyond Level I; (b) one to a keyboard student who has completed at least 30, but not more than 75, units beyond Level I; and (c) one to a student who has completed Music I and who has demonstrated overall musical excellence.
Value: $400 each.

THE J. P. BICKELL SCHOLARSHIPS
Established in 1955 by the J. P. Bickell Foundation to encourage interest in the study of geology and metallurgy. Two scholarships to be awarded, normally one to the student entering Level II of Honours Geology, Honours Chemistry and Geology, or Honours Materials Science, and the other to the student entering Level II of Chemical Engineering or Metallurgical Engineering, who secure the highest average in at least 12 units in any two of chemistry, geology, physics in Level I and a Sessional Average of at least 9.5. A scholarship is tenable for three years provided the recipient maintains a Cumulative Area Average or Cumulative Engineering Average of at least 10.0.
Value: $3,000 each ($1,000 each year).

THE BRIAN BLAKEY MEMORIAL SCHOLARSHIP
Established in 1979 in memory of Dr. Brian Blakey, Professor of French, by his friends, colleagues and former students, on behalf of his wife, Dorothy. To be awarded to the student who attains the highest Sessional Average on completion of at least 60, but not more than 75, units beyond Level I of an Honours programme in Dramatic Arts, French, Italian, Spanish, Classics, English, German or Russian. Students in all programmes except Dramatic Arts must have taken at some point Linguistics 1A6 or Anthropology 1B6 and achieved in it a grade of at least B-
Value: $600.

THE BRAMPTON BRICK LIMITED CERAMIC SCHOLARSHIP
Established in 1980. To be awarded to the student who has completed at least 35, but not more than 50, units beyond Level I of Ceramic Engineering with the highest Sessional Average, which must be at least 9.5.
Value: $1,000.

THE BRIEN SCHOLARSHIP IN PHILOSOPHY
Established in 1944 by Dr. J. W. Brien of Windsor. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Philosophy and who has the highest Cumulative Area Average.
Value: $550.

THE JOSEPHINE STAPLES BRIEN SCHOLARSHIP
Established in 1936 by Dr. J.W. Brien of Windsor. To be awarded to a woman student who is entering her graduating Session and who qualifies on the basis of academic standing and interest in undergraduate activities.
Value: $375.

THE DR. AND MRS. F. R. BRITTON SCHOLARSHIP IN MATHEMATICS
Established in 1962 by Dr. and Mrs. F. R. Britton and augmented by Mrs. Britton's bequest in 1982. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Mathematics which attains the highest Cumulative Area Average and is not the holder of an award of greater monetary value than this scholarship. Tenable in Levels III and IV provided that the recipient maintains satisfactory standing in an Honours programme in which mathematics, pure or applied, is the major subject of study.
Value: $1,500 ($750 each year).

THE CRISPIN CALVO PRIZE
Established in 1978 in memory of Professor C. Calvo by his family and friends. To be awarded to a student who has completed at least 60 units beyond Level I of an Honours programme in Chemistry and who, in the judgment of the Department, shows particular promise in thermodynamics.
Value: $225.

THE ELLA HALSTEAD CAMPBELL PRIZE
Established in 1978 by Mrs. Verna Caskey and Miss June Caskey in memory of Ella Halstead Campbell. To be awarded to a keyboard student registered in Music 1E4, 2E4, 3E4 or 4E4 who is outstanding in the judgment of the Department of Music.
Value: $200.

THE CANADIAN REFRACTORIES SCHOLARSHIPS
Established in 1975 by the Canadian Refractories Division, Dresser Industries Canada, Limited. Two scholarships to be awarded to students who have completed at least 35 units beyond Level I of Ceramic Engineering and who, in the judgment of the Department of Materials Science and Engineering, show particular promise in the field of Ceramic Engineering or Materials Science.
Value: $500 each.

THE NORMAN N. CASKEY MEMORIAL PRIZE
Established in 1983 by Mrs. Verna Caskey and Miss June Caskey in memory of husband and father. To be awarded to a student who has completed Music 1 or at least 30, but not more than 75, units beyond Level I of a programme in Honours Music and who, in the judgment of the Department of Music, has demonstrated musical excellence.
Value: $100.

UNDERGRADUATE ACADEMIC AWARDS

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION PRIZE
Established in 1963 by the Hamilton Chapter of the Certified General Accountants Association of Ontario. To be awarded to a student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Commerce and who, in the judgment of the Faculty of Business, has achieved an outstanding Sessional Average and a high standing (a grade of at least A –) in Commerce 2AA3.
Value: $150.

THE CHEMICAL INSTITUTE OF CANADA (HAMILTON SECTION) PRIZES
Established in 1984 by the Hamilton Section. To be awarded to students who have completed at least 30, but not more than 50, units beyond Level I: (a) one to a student in an Honours programme in Chemistry, Honours Applied Chemistry, or Chemistry Major who attains high standing in chemistry; (b) one to a student in the Honours Biochemistry or Honours Biochemistry and Chemistry programme who attains high standing in biochemistry and organic chemistry; and (c) one to a student in a programme in Chemical Engineering who attains the highest Cumulative Engineering Average.
Value: $50 each.

THE CHEMICAL INSTITUTE OF CANADA PRIZES
Established in 1947 by the Chemical Institute of Canada. To be awarded to students who have completed at least 60, but not more than 80, units beyond Level I: (a) one to a student in an Honours programme in Chemistry, Honours Applied Chemistry, or Chemistry Major who attains high standing in chemistry; (b) one to a student in the Honours Biochemistry or Honours Biochemistry and Chemistry programmes who attains high standing in biochemistry and organic chemistry; and (c) one to a student in a programme in Chemical Engineering who attains the highest Cumulative Engineering Average.
Value: Medal and certificate (three awards).

THE CLARKSON GORDON SCHOLARSHIP
Established in 1952 by Clarkson Gordon. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours Economics programme, and who, in the judgment of the Department of Economics, has achieved a high Sessional Average and has demonstrated leadership in undergraduate extracurricular activities.
Value: $450 and book.

THE CLASSICAL STUDIES PRIZE
Established in 1978 by Professor D.M. Shepherd. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I in an Honours programme in Classical Studies and who, in the judgment of the Department of Classics, shows most promise.
Value: $100.

THE COOPERS AND LYBRAND SCHOLARSHIP
Established in 1986. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of a Commerce programme, attaining an average of at least 9.0 in Level II accounting courses in that Session, and who, in the judgment of the Faculty of Business, has demonstrated high academic achievement and leadership.
Value: $850.

THE CUMIS LIFE INSURANCE COMPANY SCHOLARSHIP
Established in 1962 commemorating 25 years of the Company’s operations in Canada. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of a Commerce programme, and who, in the judgment of the University, has demonstrated high academic achievement and leadership.
Value: $500.

THE CYANAMID CANADA INC. SCHOLARSHIPS
Established in 1961. To be awarded to the students who have completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Chemistry and of Chemical Engineering who have attained the highest Sessional Average.
Value: $500 and $275 (two awards; one in each programme).

THE D. M. DAVIES PRIZE
Established in 1984 by friends, colleagues and former students in recognition of Professor Douglas Davies for his outstanding contribution to the Department of Biology during 34 years of service. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in Biology and has attained the highest average in at least 12 units of senior level courses in whole-animal biology, taken in one Session.
Value: $250.

THE DIGITAL EQUIPMENT CORPORATION SCHOLARSHIPS
Established in 1984. To be awarded to a student who has completed at least 35, but not more than 50, units beyond Level I in a programme in Computer Engineering with a high Cumulative Engineering Average.
Value: $200 and certificate.
THE DOW CHEMICAL OF CANADA LIMITED SCHOLARSHIP
Established in 1976. To be awarded to the student who has completed at least 70, but not more than 85, units beyond Level I of the Chemical Engineering programme, has achieved notable academic standing, has demonstrated leadership in extracurricular activities, and is not a holder of another scholarship.
Value: $900.

THE HORACE A. DULMAGE PRIZE IN PHILOSOPHY
Established in 1976 in honour of Professor Horace A. Dulmage by his colleagues and friends upon the occasion of his retirement from McMaster University. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of an Honour’s programme in Philosophy and who, in the judgment of the Department of Philosophy, has achieved the most notable standing.
Value: $200.

THE L.F. EULL PRIZE
Established in 1980 by Group Eight Engineering Limited. To be awarded to the student in an Electrical Engineering programme who achieves the highest average in Electrical Engineering 3N3 and 353, taken in one Session.
Value: $200.

THE BARBARA FRANCIS SCHOLARSHIP
Established in 1985 by Laura Dodson (’56) in memory of her sister. To be awarded to the student in the Arts and Science Programme beyond Level I who has displayed outstanding achievement in both arts and science.
Value: $350.

THE HAROLD AND GERTRUDE FREEMAN SCHOLARSHIP IN FRENCH
Established in 1981 by members of the Class of ’43 as a grateful tribute to Professor Harold A. Freeman, long-time teacher of French at the University and honorary president of the Class in its junior year, and his wife, Gertrude. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of a programme in Honours Music and who, in the judgment of the Department of Music, has demonstrated excellence in performance on a keyboard or orchestral instrument.
Value: $350.

THE GENERAL REFRACTORIES SCHOLARSHIP
Established in 1955 by an anonymous donor in memory of Dr. A.E. Mackenzie. To be awarded in any discipline.
Value: $500.

THE MERRILL FRANCIS GAGE SCHOLARSHIP
Established in 1982 from the estate of Merrill Francis Gage of Hamilton. To be awarded to a student who has completed at least 30, but not more than 75, units beyond Level I of a programme in Honours Music and who, in the judgment of the Department of Music, has demonstrated excellence in performance on a keyboard or orchestral instrument.
Value: $500.

THE GEOLOGY BOOK PRIZE
Established in 1955 by an anonymous graduate of Year ’47 in memory of Dean C.E. Burke. To be awarded to a student who has completed at least 30, but not more than 45, units beyond Level I in an Honour’s programme in Geology and who, in the judgment of the Department, attains high standing in geology.
Value: $50, for books.

THE J.W. GILL PRIZES
Established in 1944 by bequest of J.W. Gill, B.A., Principal of Hamilton Technical School. Nine scholarships to be awarded on the basis of Cumulative Area Averages after completion of at least 60, but not more than 75 units, beyond Level I of Honours B.Sc. programmes. Ordinarily, not more than one scholarship will be awarded in any one discipline.
Value: $250 each.

THE H.B. GREENING BOOK PRIZE
Established in 1969 by bequest of Gladys Powis Greening in memory of her husband, Herald Benjamin Greening. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honour’s Music programme and who, in the judgment of the Department, has demonstrated excellence in music.
Value: $150, for books.

THE RUTH AND JACK HALL PRIZE
Established in 1983 by Jackie MacDonald in memory of her parents. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of an Honour’s Major programme in Computer Science, or at least 70, but not more than 90, units beyond Level I of a Computer Engineering programme, and who attains the highest Cumulative Area Average or Cumulative Engineering Average.
Value: $200.

THE RONALD K. HAM MEMORIAL PRIZE
Established in 1971 in memory of Professor R.K. Ham by his friends and former colleagues. To be awarded to the student who has completed at least 60 units, beyond Level I and who, in the judgment of the Department of Materials Science and Engineering, shows most promise as a materials scientist or engineer.
Value: $125.

THE HAMILTON CHEMICAL ASSOCIATION PRIZE
Established in 1953 by the Trustees of the Hamilton Chemical Association in memory of Dean C.E. Burke. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honour’s programme in Chemistry and who has the highest Cumulative Area Average.
Value: $225.

THE HAMILTON ECONOMIC DEVELOPMENT COMMISSION SCHOLARSHIPS
Established in 1976. (a) Two scholarships to be awarded on the basis of Sessional Average to students entering Level II of a Commerce programme. (b) Four scholarships to be awarded on the basis of the Cumulative Commerce Averages after completion of the Winter Session immediately prior to entering the Third Year Elsewhere Programme.
Value: $750 each (six awards).

THE DONALD HART SCHOLARSHIP
Established in 1985 by Mrs. Pamela Hart and Joel Jordan in honour of Donald Neil Hart (’70). To be awarded to a student who has completed at least 30, but not more than 45, units beyond Level I of a Commerce programme and who, in the judgment of the Faculty of Business, has achieved high standing in the required Level II Commerce courses.
Value: $400.

THE ROSE HILL SCHOLARSHIP
Established in 1985 by the alumni, faculty and staff of the School of Physical Education and Athletics as a tribute to Professor Rose Hill, long-time teacher, coach and administrator in the School. To be awarded to a student who has completed at least 32, but not more than 45, units beyond Level I of the Physical Education programme and who, in the judgment of the School, best demonstrates the philosophy of physical education espoused by Professor Hill throughout her career, namely, excellence in scholarship and leadership and participation in sport, dance or fitness.
Value: $400.

THE DR. THOMAS HOBLEY PRIZE
Established in 1936 by bequest of Mrs. A. McNeil of Windsor. To be awarded to a woman student on the basis of the Sessional Average obtained in the penultimate level of a programme in economics or political science.
Value: $250.

THE DR. HARRY LYMAN HOOKER SCHOLARSHIPS
Established in 1981, and resulting from the bequest of Dr. H.L. Hooker. Awarded for overall academic excellence (Sessional Average of at least 9.5) to students in undergraduate programmes, with the exception of those in their graduating Session and those retaining scholarships of $1,000 or greater. Each year quotas are established for each Faculty and other academic units in proportion to the number of full-time undergraduate students who obtain a Sessional Average of 9.5 or greater. Currently, approximately 130 scholarships are available annually.
Value: $1,200 each.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (HAMILTON SECTION) PRIZES
Established in 1961. To be awarded to the two students who have completed at least 70, but not more than 90, units beyond Level I of Electrical Engineering who attain the highest and second highest Cumulative Engineering Averages.
Value: $100 and plaque; and $75.

THE INTERMETCO LIMITED SCHOLARSHIP
Established in 1977. To be awarded to the student who has completed at least 70, but not more than 90, units beyond Level I of a programme in Mechanical Engineering and who, in the judgment of the Department, has attained notable standing.
Value: $675.

THE ITCA COMMUNITY INVOLVEMENT PRIZE
Established in 1982 by Italian Canadian Community Involvement Incorporated. To be awarded to the student who has attained the highest Sessional Average after completion of at least 60, but not more than 75, units beyond Level I of an Honour’s programme in Italian. The recipient must have graduated from a secondary school in the Hamilton area.
Value: $150.

THE IVEY SCHOLARSHIP
Established in 1971 by Professor and Mrs. G.S. French in memory of Mr. and Mrs. J.E. Ivey, the parents of Mrs. French. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of Honours Music and who, in the judgment of the Department of Music, has attained notable standing.
Value: $125.
THE A.I. JOHNSON SCHOLARSHIP
Established in 1977 in memory of Dr. A.I. Johnson by his friends and former colleagues. To be awarded to a student who has completed at least 110, but not more than 130, units beyond Level I of an Engineering and Management programme. Award to be based on distinguished academic performance during the student's undergraduate career. Consideration will also be given to noteworthy contribution in extracurricular activities. Value: $650 and certificate.

THE KATHLEEN MARY JOHNSTON MEMORIAL PRIZE
Established in 1963 by Lawrence D. Johnston in memory of his wife. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Religious Studies and who attains the highest Cumulative Area Average. Value: $125.

THE SMITH MEMORIAL SCHOLARSHIP
Established in 1941 by bequest of J.H. Jury of Bowmanville. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of the Honours History programme and who attains the highest Cumulative Area Average. Value: $150.

THE STANFORD N. KATAMBALA GEOLOGY PRIZE
Established in 1965 by contributions from friends and associates of Stanford N. Katambala, a Year III Honours Geology student from Tanzania, killed in a mine accident in northern Ontario in September, 1964. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in Honours Geology and who attains high standing in geology. Value: $50.

THE GEORGE P. AND LEATHA M. KEYS SCHOLARSHIPS
Established in 1982 by Mrs. Leatha Keys. Three scholarships to be awarded to students who, in the judgment of the Departments of Computer Science and Systems, and of Mathematics and Statistics, have demonstrated outstanding achievement in Honours and Major programmes in those Departments. (a) one to a student who has completed at least 30, but not more than 75, units beyond Level I of the Computer Science programme; (b) one to a student who has completed at least 60, but not more than 75, units beyond Level I of a Mathematics programme; and (c) one to a student who has completed at least 60, but not more than 75, units beyond Level I of a Statistics programme. Value: $500 each.

THE KIT MEMORIAL SCHOLARSHIP
Established in 1936 by the Hamilton Branch of the Canadian Women's Press Club (now the Media Club of Canada, Hamilton Branch) in memory of the brilliant journalist and writer, the first president of the Canadian Women's Press Club, Kathleen Blake Coleman, widely known on this continent as Kit. To be awarded to a woman student either on completion of at least 30 units beyond Level I on the basis of journalistic ability or, on completion of at least 60, but not more than 75, units beyond Level I of an Honours programme in English, on the basis of Cumulative Area Average. Value: $225.

THE GERRY LAARSKLER SCHOLARSHIP IN PHILOSOPHY
Established in 1983 by Laarssker Photography Inc. To be awarded to a student who has completed at least 30 units beyond Level I of a programme in Philosophy and who, in the judgment of the Department, has made the most notable contributions to the Department's activities. Value: $500.

THE RAY LAWSON SCHOLARSHIPS
Established in 1975 by the Honourable Ray Lawson, O.B.E., D.C.L., D.Cn.L., LL.D., K.G.St.J., Lieutenant-Governor of Ontario from 1946 to 1952. Two scholarships to be awarded for the highest Cumulative Engineering Averages in an Engineering and Management programme: one to a student who has completed at least 70, but not more than 90, units beyond Level I, and one to a student who has completed at least 110 units beyond Level I. Value: $500 each.

THE MACKIE SCHOLARSHIP
Established in 1982 by Linda L. Gadsby ('64) in memory of her mother. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Mathematical Sciences and who attains the highest Sessional Average. Value: $500.

THE BETTY MacMILLAN PRIZE
Established in 1960 by her classmates in memory of Elizabeth Johnstone MacMillan ('50). To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I in an Honours programme in Sociology and who, in the judgment of the Department of Sociology, is the most promising student. Value: $150.

THE LIANNE MARKS SCHOLARSHIP
Established by her family, in 1980 as a bursary and in 1985 as a scholarship, in honour of Lianne Marks, a student at McMaster University (1977-80). To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in Sociology and who, in the judgment of the Department of Sociology, has demonstrated outstanding academic achievement and has made notable contribution to the campus or community by participation in activities other than sports. Value: $600.

THE McGRÉGOR-Smith-BOYD MEMORIAL SCHOLARSHIP
Established in 1910 by the Class of 1912 in Arts, in memory of their classmates, Percy Neil McGregor, Lee Wilson Smith, and George William Boyd, and subsequently remembered by bequest from Professor R. Wilson Smith, father of Lee Wilson Smith. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I in Honours English and History and who has the highest Sessional Average. Value: $600.

THE BOYD MCLAY SCHOLARSHIP IN PHYSICS
Established in 1977 to commemorate the contributions of Dr. A. Boyd McIay (’22) to teaching and research in optics and spectroscopy at McMaster University from 1930 to 1967. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of an Honours or Major programme in Physics with a high Sessional Average. Value: $300.

THE MCMASTER NURSING ALUMNI PRIZE
Established in 1984 by the Nursing Chapter of the McMaster University Alumni Association. To be awarded to a student who has completed at least 70, but not more than 85, units beyond Level I of the B.S.C.N. programme and who, in the judgment of the School of Nursing, has demonstrated leadership while participating in undergraduate activities. Value: $100.

THE SIMON McNALLY SCHOLARSHIPS
Established in 1972 by S. McNally and Sons, Limited, in honour of Simon McNally. One or two scholarships to be awarded to Canadian citizens completing at least 35, but not more than 50, units beyond Level I of a Civil Engineering programme. Awards are based on scholarship and evidence of practical engineering experience and background. Value: $650 each.

THE J. J. MILLER PRIZE
Established in 1984 by friends, colleagues and former students in recognition of Professor J.J. Miller for his outstanding contribution to the Department of Biology during 37 years of service. To be awarded to a student entering Level IV of the Honours Biology programme with an outstanding Cumulative Area Average and a grade of at least A in Biology 3E3 in Level III. Value: $250.

THE MICHAEL J. MORTON MEMORIAL BOOK PRIZE
Established in 1979 in memory of Dr. M.J. Morton. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in an Honours or Major programme in Chemistry and who, in the judgment of the Department of Chemistry, is outstanding in the field of inorganic chemistry. Value: $175, for books.

THE ELIZABETH MOSGROVE SCHOLARSHIP
Established in 1959 by bequest of John W. Mosgrove in memory of his mother. To be awarded to sons of members of Her Majesty's Canadian Armed Forces on the basis of Sessional Average. Value: $350.

THE MOULTON COLLEGE SCHOLARSHIPS
Established in 1957 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949 for the expansion of Moulton College. Two scholarships to be awarded to the women students of Moulton Hall with the highest Sessional Averages: one after completion of at least 30, but not more than 45, units beyond Level I, and one after completion of at least 60, but not more than 75, units beyond Level I. Value: $800 each.

THE MURATA ERIE NORTH AMERICA, LTD. SCHOLARSHIPS IN CERAMICS AND ELECTRONICS
Established in 1982. Two scholarships to be awarded on the basis of scholarship, general technical awareness and participation in university and community activities: (a) one to a student who attains the highest Sessional Average on completion of at least 70, but not more than 85, units beyond Level I of Ceramic Engineering and who in that Session attains a grade of at least A in Materials 3B4; (b) one to a student who attains the highest Sessional Average on completion of at least 70, but not more than 85, units beyond Level I of Electrical Engineering and who in that Session attains an average of at least 10.0 in Electrical Engineering 3B4 and 3F4. Value: $600 each.

THE ANNE MURRAY SCHOLARSHIP
Established in 1985 in memory of Anne M. Murray (’82) by her family. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in German with the highest Sessional Average. Value: $300.

THE NIEMEIER SCHOLARSHIP
Established in 1938 and augmented in 1952 by Dr. O.W. Niemeier. To be awarded to the student who attains the highest Cumulative Area Average at the completion of at least 38, but not more than 55, units beyond Level I of the Nursing programme. Value: $300.
THE FREDRIC P. OLSEN BOOK PRIZE
Established in 1974 in memory of Professor F.P. Olsen by his family, friends and former colleagues. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in an Honours or Major programme in Chemistry and who, in the judgment of the Department of Chemistry, shows particular promise as an experimental scientist.
Value: $150, for books.

THE PAYKIN SCHOLARSHIP
Established in 1957 in memory of Barney David Paikin (‘33), by Mrs. Barney David Paikin and Morris Paikin. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I and who, in the judgment of the Department of Classics, is most promising in a programme in Classics, Greek or Latin.
Value: $50.

THE F.W. PAULIN SCHOLARSHIP
Established in 1981 by the Canadian Engineering and Contracting Co. Limited in honour of its founder. To be awarded to a student who has completed at least 70, but not more than 85, units beyond Level I of Civil Engineering, or at least 110, but not more than 130, units beyond Level I of Civil Engineering and Management. Award is based on scholarship (Sessional Average of at least 9.5) and evidence of leadership, self-motivation, and practical aptitude appropriate for a future in the construction industry.
Value: $1,100.

THE PRICE WATERHOUSE AND CO. SCHOLARSHIP
Established in 1959 by Price Waterhouse and Co. To be awarded to the outstanding student on the basis of qualifications and academic record after completion of at least 60, but not more than 75, units beyond Level I of a Commerce programme. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.
Value: $350.

THE PSYCHOLOGY SOCIETY PRIZES
Established in 1985 by the Psychology Society and the Faculty and Alumni of the Department of Psychology. Three prizes to be awarded to students who have completed at least 60, but not more than 75, units beyond Level I of a Psychology programme. Award is based on scholarship (Sessional Average of at least 9.5 andCumulative Average Area in the Honours History programme.
Value: $200.

THE GLADYS BALLANTYNE PARKER PRIZE
Established in 1953 in memory of Gladys Ballantyne Parker by her father, Harry Ballantyne. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I and who, in the judgment of the Department of Classics, shows particular promise as an experimental scientist.
Value: not more than 75, units beyond Level I of an Honours programme in History.

THE E. OLSEN BOOK PRIZE IN HISTORY
Established in 1973 by friends and colleagues of Professor E.T. Olsen on his retirement, in recognition of his outstanding contribution to the Department of History. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I, and who, in the judgment of the Department, attains the most notable standing in an Honours programme in History.
Value: $75, for books.

THE BEN SAUER SCHOLARSHIP
Established in 1984 by Mr. Ben Sauer. To be awarded to a student entering Level II of a Commerce programme on completion of at least 30, but not more than 45, units of the Business I programme with an outstanding Sessional Average. The recipient must not be a holder of another scholarship.
Value: $700.

THE SHEILA SCOTT SCHOLARSHIP IN ENGLISH
Established in 1983 by graduates of McMaster University and friends in honour of Sheila Scott, Dean of Women from 1945 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of the Honours English programme, and who has achieved the highest Cumulative Area Average.
Value: $350.

THE LARRY SEFTON SCHOLARSHIPS
Established in 1985 by the Hamilton Steelworkers Area Council in memory of Larry Sefton, area supervisor (1946-53) and director of District 8 (1953-73) of the United Steelworkers of America, to recognize his commitment to education, to working people, to unions and to the City of Hamilton. Two scholarships to be awarded: one to a student entering Level II of a Labour Studies programme who, in the judgment of the Committee of Instruction for Labour Studies, achieves notable standing in Level I, and one to a student entering Level III of a Labour Studies programme with the highest Cumulative Area Average in Level II of a Labour Studies programme.
Value: $300 each.

THE SHELL CANADA SCHOLARSHIPS IN ENGINEERING AND MANAGEMENT
Established in 1983. Four scholarships to be awarded on the basis of scholarship and demonstration of independent creative effort in Engineering 4A1 or 5A1 project reports: two to students who have completed at least 70, but not more than 90, units beyond Level I, and two to students who have completed at least 110 units beyond Level I of an Engineering and Management programme.
Value: $700 each (four awards).

THE SHENSTONE PRIZE
Established in 1903 by J.N. Shenstone of Toronto, and continued by members of his family. To be awarded to the student in Natural Sciences I who attains the highest standing in two of the Level I courses in chemistry, physics and biology.
Value: $175.

THE GERALD AND VERA SIMPSON MEMORIAL SCHOLARSHIP
Established in 1957 by the children in memory of their parents. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I in Honours Physics or Honours Chemistry and Physics with a high Cumulative Area Average.
Value: $300.

THE E. SMYRE MEMORIAL SCHOLARSHIPS
Established in 1972 by the Patricia Smyre Memorial Fund Committee. Two awards, one in the three-Level English and the other in the three-Level Psychology (BA) programme, to the student in each programme who attains the highest Sessional Average after completion of at least 30, but not more than 45, units beyond Level I.
Value: $350 each.

THE SONS OF ITALY MEMORIAL SCHOLARSHIP
Established in 1983 by graduates of McMaster University and the CUMIS Insurance Societies in memory of C. Gordon Smith, who was their first Vice President and Chief Agent in Canada. Two scholarships to be awarded for the highest Sessional Average in an Honours programme in the Faculty of Humanities; one award to a student who has completed at least 30, but not more than 45, units beyond Level I, and one to a student who has completed at least 60, but not more than 75, units beyond Level I.
Value: $750 each.

THE PATRICIA A. SMYRE MEMORIAL SCHOLARSHIP
Established in 1983 by the Patricia Smyre Memorial Fund Committee. Two awards, one in the three-Level English and the other in the three-Level Psychology (BA) programme, to the student in each programme who attains the highest Sessional Average after completion of at least 30, but not more than 45, units beyond Level I.
Value: $350 each.

THE SONS OF ITALY OF ONTARIO SCHOLARSHIP
Established in 1971 by the Order Sons of Italy of Ontario. To be awarded to the student who has completed at least 30, but not more than 75 units beyond Level I of a programme in Commerce and who obtains the highest Sessional Average and in that Session attains a grade of at least A in Commerce 3A3.
Value: $500.

THE SONS OF ITALY OF ONTARIO SCHOLARSHIP
Established in 1971 by the Order Sons of Italy of Ontario. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I and who, in the judgment of the Department of Romance Languages, has achieved the most notable standing in an Honours programme in Italian.
Value: $300.

THE SONS OF ITALY OF ONTARIO SCHOLARSHIP
Established in 1973 by the South Ontario (formerly Niagara) Economic Development Council. Two scholarships to be awarded to the students who have completed at least 60, but not more than 75, units beyond Level I of the Honours Geography programme and who elect Geography 406 in their graduating Session. Awards are based on scholarship and interest in undertaking studies relating to regional development and regional planning in the Niagara Peninsula.
Value: $900 each.

THE SALVATORE SPIATELLE MEMORIAL PRIZE
Established in 1984 by the Spitalle family. To be awarded to the student who has completed at least 30, but not more than 75, units beyond Level I of an Honours programme in Italian and who, in the judgment of the Department of Romance...
Languages, has demonstrated academic excellence and an active involvement in community life. Value: $100.

THE S.L. SQUIRE SCHOLARSHIPS
Established in 1938 by bequest of S.L. Squire of Toronto. Four awards to be made to students in any Level I programme who attain the highest standing in two of Mathematics 1A6, 1B4, 1G6, 1H5, 1N6, and in other tests provided for this scholarship by the Department of Mathematics and Statistics. Value: $400 each.

THE CLARENCE L. STARR PRIZE
Established in 1946 in memory of Dr. C.L. Starr, M.D., LL.D., F.A.S.S., Professor of Surgery in the University of Toronto, and an honorary alumnus of McMaster University (LL.D. 1922). To be awarded to the student in Nursing I who attains the highest Sessional Average. Value: $200.

THE MABEL STOAKEY SCHOLARSHIP
Established in 1956 by the Young Women’s Canadian Club of Toronto (now the Career Women’s Canadian Club of Toronto). To be awarded to a woman student who has completed at least 30, but not more than 45, units beyond Level I, and who gives evidence of outstanding academic achievement and leadership. Value: $350.

THE JUANITA LEBARRE SYMINGTON SCHOLARSHIP
Established in 1981 by The Women’s Art Association of Hamilton in memory of Juanita LeBarre Symington. To be awarded to the student entering the graduating Session of the Honours Art programme with the highest Cumulative Area Average. The recipient must be from the Hamilton-Wentworth Region. Value: $300.

THE T.H.B. SYMONS SCHOLARSHIP IN CANADIAN STUDIES
Established in 1978. To be awarded to the student who attains the highest Cumulative Area Average in Canadian Studies after completion of at least 60, but not more than 75, units beyond Level I in a programme in Canadian Studies. Value: $250.

THE HUGH R. THOMPSON MEMORIAL PRIZE
Established in 1960 in memory of Dr. Hugh R. Thompson. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of Honours Geography or Honours Geography and Geology with the highest Sessional Average. Value: $200.

THE DR. R.A. THOMPSON SCHOLARSHIP IN MATHEMATICS
Established in 1954 by bequest of Dr. William Bethune, in memory of R.A. Thompson, B.A., LL.D., Principal of Central College Institute, Hamilton, from 1897-1919, in recognition of his contribution to education in Hamilton. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of Honours Computer Science, Honours Computer Science and Mathematics, Honours Computer Science and Statistics, Honours Mathematics or Honours Statistics, and who achieves a high Cumulative Area Average. Value: $300.

THE THORNE RIDDELL SCHOLARSHIP
Established in 1956 by Pettit, Hill and Bertram, Toronto, and continued after amalgamation of firms. To be awarded to an outstanding student on the basis of qualifications and academic record after the completion of at least 60, but not more than 75, units beyond Level I of a Commerce programme and who attains a high Sessional Average and in that Session attains an average of at least 10.0 in Commerce 3AA3 and 3AB3. Value: $350.

THE TOUCHE ROSS AND CO. SCHOLARSHIP
Established in 1962. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of a Commerce programme and who attains a high Sessional Average and in that Session attains an average of at least 10.0 in Commerce 3AA3 and 3AB3. Value: $300.

TRAC SCHOLARSHIPS
Established in 1984 by The Refractories Association of Canada. Two scholarships to be awarded, one in Ceramic Engineering and one in Chemical Engineering, to a student in each programme who attains a high Sessional Average on completion of at least 35, but not more than 50, units beyond Level I. Value: $500 each.

THE UNIVERSITY WOMEN’S CLUB OF HAMILTON SCHOLARSHIP
Established in 1945 by the University Women’s Club of Hamilton. To be awarded to the woman student who attains the highest Sessional Average in the penultimate level of her programme. Value: $750.

THE UWC PAST PRESIDENTS’ PRIZE
Established in 1976 by the Past Presidents of the University Women’s Club of Hamilton on the occasion of the Club’s 50th anniversary. To be awarded to the woman student who has completed at least 70, but not more than 90, units beyond Level I of a programme in Engineering with the highest Cumulative Engineering Average. Value: $100.

THE VAREY SCHOLARSHIP
Established in 1978 by J.C. Varey, Dundas, in memory of Albert E. Varey. To be awarded to the student who attains high standing in an Honours programme in Biology and who, in the judgment of the Department of Biology, shows an innovative approach to the study of ecology. Value: $250.

THE WEIZS FAMILY FOUNDATION SCHOLARSHIP
Established in 1982. To be awarded to the student in the Honours Commerce programme with the highest Sessional Average (at least 9.5) on completion of at least 60, but not more than 75, units beyond Level I. Value: $1,300.

THE EMANUEL WILLIAMS SCHOLARSHIP IN PHYSICS
Established in 1948 by Arabel M. Williams of Port Colborne as a memorial to her brother. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Physics with the highest Cumulative Area Average and a Sessional Average of at least 9.5. Value: $1,000.

THE JANICE WILSON MEMORIAL PRIZE
Established in 1961 in memory of Janice Mary Wilson of Stoney Creek. To be awarded to the woman student who has completed at least 30, but not more than 45, units beyond Level I of the Honours History programme and attained the highest Cumulative Area Average. Value: $50.

THE WOMEN’S ART ASSOCIATION SCHOLARSHIPS
Established in 1969. Two awards to be made, one to a student entering Level II and the other to a student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Honours Art or Honours Art History with the highest Sessional Average. The recipients must be from the Hamilton-Wentworth Region. Value: $200 each.

THE WOMEN’S CANADIAN CLUB OF HAMILTON SCHOLARSHIP IN CANADIAN STUDIES
Established in 1982 by the Women’s Canadian Club of Hamilton. To be awarded to the student with the highest Sessional Average after completion of at least 30, but not more than 45, units beyond Level I in a programme in Canadian Studies. Value: $500.

THE IVOR WYNNE MEMORIAL PRIZE
Established in 1971 in memory of Ivor Wynne, Dean of Students. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in the Physical Education programme for outstanding achievement in the programme. Value: $250.

THE LILLIAN AND MANUEL ZACK SCHOLARSHIP
Established in 1984 by Lillian and Manuel Zack (’40) of Hamilton. To be awarded to a student who has completed at least 70, but not more than 85, units beyond Level I of the B.Sc. N. programme and who, in the judgment of the School of Nursing, has demonstrated achievement, initiative, and commitment to gerontological nursing through clinical practice, term papers, research interest, or community activities and who pursues these interests in Level IV. Value: $600.

SENATE SCHOLARSHIPS
The following scholarships are awarded for general academic proficiency at the discretion of the Undergraduate Council.

Every full-time student who is eligible for review in May but is not graduating in any programme in any Faculty or other academic unit will be eligible for consideration for a Senate Scholarship, provided that he or she attains a Sessional Average of 9.5 in addition to meeting the conditions noted in Section 3, above.

In 1986, the value of a Senate Scholarship is $600.

Each year, quotas of Senate Scholarships are established for each Faculty and other academic units in proportion to the number of full-time undergraduate students enrolled. Currently there are about 200 Senate Scholarships, all of which are funded by the donors listed below.

THE EDGAR ASHALL MEMORIAL SCHOLARSHIP
Established in 1965 by bequest of his Wife and family, in honour of Captain Antony F. Pickard, O.B.E., C.D., R.C.N. (Ret’d).
UNDERGRADUATE ACADEMIC AWARDS

THE HILDA SAVAGE MEMORIAL SCHOLARSHIP
Established in 1960 by bequest of Bertha Savage.

THE SOMERVILLE SCHOLARSHIPS
Established in 1966 by bequest of William L. Somerville, architect of the McMaster University buildings of 1930.

THE STOBO SCHOLARSHIP
Established in 1957 by bequest of William Q. Stobo.

THE UNIVERSITY SCHOLARSHIPS
Made available from time to time by authorization of the Board of Governors of the University.

THE MARGUERITE Z. YATES SCHOLARSHIP
Established in 1960 by bequest of Mrs. W.H. Yates of Hamilton.

THE YATES SCHOLARSHIPS

RESIDENCE SCHOLARSHIPS
Nine scholarships were established in 1982 by the University for students in residence at the University. Three were named in honour of Sheila Scott, Dean of Women from 1965 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service.

In addition to meeting the conditions noted in Section 3 (above), the recipients must express intent to live in residence in the following academic year. The monetary benefits will be credited to residence fees in January.

The following scholarships are awarded to the student in each residence with the highest Sessional Average (at least 9.5) in an undergraduate programme, with the exception of those in their graduating Session:

Sheila Scott Scholarships for Brandon Hall (2 awards)
Sheila Scott Scholarship for Wallingford Hall
Bates Residence Scholarship
Edwards Hall Residence Scholarship
Matthews Hall Residence Scholarship
McKay Hall Residence Scholarship
Whidden Hall Residence Scholarship
Woodstock Hall Residence Scholarship

In 1986, the value of each scholarship is $300.

TRAVEL SCHOLARSHIPS
Students who wish to be considered for these awards should consult the Academic Awards Officer before December 1.

THE A.G. ALEXANDER SCHOLARSHIPS
Established in 1938 and augmented in 1946 by Sir Douglas Alexander, and members of his family, in memory of Archibald Grieg Alexander. Two scholarships to be awarded to students who have completed at least 60, but not more than 75, units beyond Level 1 on the basis of excellence in a modern language or languages, English, and History (with emphasis on French). The purpose of the scholarships is to enable the winners to study abroad during the vacation before the final Winter Session.

Value: $4,000 each.

THE JOAN JACKSON DUNBAR TRAVEL SCHOLARSHIP
Established in 1960 by Mayor Lloyd D. Jackson (’09), LL.D (’55) and Mrs. Jackson of Hamilton in memory of their daughter, Joan (’40). To be awarded to a woman student who has completed at least 60, but not more than 75, units beyond Level 1 of an Honours programme in English for excellence in the work of the programme (with emphasis on English). The winner must have secured all her secondary school education in Canada. The award is to be used for study and travel in the United Kingdom and Continental Europe during the vacation before the final Winter Session.

Value: $4,000.

THE HOWARD P. WHIDDEN SCHOLARSHIP
Established in 1941 by the Honourable Jacob Nicol (’00) of Sherbrooke, Quebec, in honour of Chancellor Howard P. Whidden, with a view to fostering relations of friendship and understanding between French-speaking and English-speaking Canadians. To be awarded to a student in his/her penultimate Level who shows ability and promise in the use of the French language. The recipient will spend some weeks of residence and study in a French-Canadian home during the summer vacation.

Value: $750.

THE T. RUSSELL WILKINS MEMORIAL SCHOLARSHIP
Established in 1963 by bequest of Mrs. T. Russell Wilkins (B.A. ’18 Brandon, M.A. ’32), daughter of former Chancellor Howard P. Whidden, in memory of her husband, Dr. T. Russell Wilkins (’11). To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level 1 of an Honours or Major programme in any one of the following subject fields (singular or in combination): Biochemistry, Biology, Chemistry, Geology, Materials Science, Physics. Candidates for this scholarship must have attained high standing in the subjects of their programme and must, in addition, have demonstrated a lively interest in the humanities and in the human and social implications of scientific developments. The purpose of the scholarship is to enable the winner to spend the summer before the final Winter Session in travel and study outside Canada.

Value: $4,000.

4. Single Achievement Awards for Full-time and Part-time Students

The following awards are based on competition across the University or within a faculty or programme for a single achievement.

4.1 These awards, which are granted in June or November, are provided for either full-time or part-time students qualifying on the basis of achievement during the Summer or Winter Sessions immediately preceding the May review (or deferred examinations resulting therefrom).

4.2 In addition to meeting the General Conditions listed in Section 1, a student must obtain at the most recent review a University Average of at least 8.0 and no F grades.

4.3 The University Average will be used to break any tie in the competition for these awards.

THE AMBASSADOR OF SPAIN BOOK PRIZES
Established in 1982. To be awarded to in-course students for excellence in Spanish studies.

THE AMERICAN-STANDARD PRIZE
Established in 1978. To be awarded to the student in the Ceramic Engineering programme who attains the highest grade in Geology 2B4.

Value: $100.

THE SIDNEY L. BLUM SCHOLARSHIP
Established in 1969 by friends and associates in memory of Sidney L. Blum. To be awarded to a student in the Social Work programme who submits the most significant research paper, essay or report of a major project in the field of social justice.

Value: $300.

THE RUBEN BROWN BOOK PRIZE IN ENGLISH
Established in 1970 by bequest of Mrs. Edgar Brown. To be awarded to a student in a Level I programme for the most creative essay in a Level I English course.

Value: $50.

THE CANADIAN CLUB OF HAMILTON SCHOLARSHIP
Established in 1956 by the Canadian Club of Hamilton. To be awarded to the student who attains the highest standing in one of History 3C3, 3V6 or 3Z6.

Value: $150.

THE JAMES ROBERTSON CARRUTHERS MEMORIAL PRIZE
Established in 1984 in memory of James Robertson Carruthers (’74) by his family and friends. To be awarded to the student who attains the highest standing in History 2H6 (American history).

Value: $100.

THE CITIZEN ACTION GROUP PRIZE
Established in 1984 by the Citizen Action Group, Hamilton, to honour Professor Harry L. Penny, founding Director of the School of Social Work and Board Member of Citizen Action Group. To be awarded to the student in a Social Work programme who submits an essay or report based on the student’s field work experience that best addresses the need for innovative or non-traditional social work practice.

Value: $250.

THE CLASSICS BOOK PRIZES
Two prizes established by Professor A.G. McKay in 1963. To be awarded to: (a) the student who attains the highest average in Classical Civilization 2B3 and 2C3 or Art History 2B3 and 2C3, taken in one Session; and (b) the student with the highest standing in Latin 2C3.

THE CONSUL GENERAL OF ITALY BOOK PRIZE
Established in 1982. To be awarded each year to in-course students for excellence in Italian studies.

THE BEATRICE CORRIGAN MEMORIAL BOOK PRIZE
Established in 1980 in memory of Professor Beatrice Corrigan by her friends and colleagues. To be awarded alternately to the student who achieves the highest standing in Italian 3F3 and to the student who achieves the highest standing in Italian 303.

Value: $75.
THE H.W. McCREADY PRIZE
Established in 1958 by William H. McCreary of Midland in honour of his parents, J. Herbert Creanston (1875) and Eva Wilkins Cranston (1877). Two prizes to be awarded for excellence in the study of Canadian literature: (a) one for the highest grade in English 2G6, and (b) one for the highest grade in English 2C3.
Value: $200; (b) $150.

THE DRAMATIC ARTS BOOK PRIZE
Established in 1974 by Professor Ronald W. Vince. To be awarded to the student who attains the highest standing in Dramatic Arts 1A6.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) PRIZE
Established in 1962. Awarded to the student in Engineering I who attains the highest grade in Engineering I.C4.
Value: $50.

THE FRENCH GOVERNMENT BOOK PRIZES
Awarded from time to time to in-course students for proficiency in Level I and in Level II French.

THE GEOGRAPHY PRIZE
Established in 1985 by the Geography Branch of the McMaster University Alumni Association in recognition of Dr. Lloyd G. Reeds for his contribution to teaching during more than 35 years of service. To be awarded to the student who attains the highest grade in Geography 2E3 (geography of Canada).
Value: $50.

THE GERMANY BOOK PRIZE
Awarded from time to time for in-course students for proficiency in Level III German.

THE GILMOUR MEMORIAL PRIZE
Established in 1927 by Year '27, in memory of Dr. Joseph Leeming Gilmour, Honorary President of their first year in 1923, and subsequently enlarged by his children. To be awarded to the student who attains the highest standing in Religious Studies 2E6.
Value: $100.

THE GREEK COMMUNITY OF BURLINGTON AND DISTRICT SCHOLARSHIP
Established in 1983. To be awarded to the student who obtains the highest standing in Greek 2A6.
Value: $250.

THE MUNICIPAL CHAPTER OF HAMILTON, I.O.D.E., PRIZE
Established in 1944 by the Municipal Chapter of Hamilton, Imperial Order Daughters of the Empire. To be awarded to the student who attains the highest standing in a Level I History course.
Value: $175.

THE INTER NATIONS (BONN) BOOK PRIZE
Awarded from time to time to in-course students for proficiency in German studies.

THE DR. S.P. KILMASKO PRIZE
Established in 1973. To be awarded to the student who attains the highest standing in Ukrainian 2A6.
Value: $50.

THE SAM LAWRENCE PRIZE
Established in 1957 by the East Hamilton Independent Labour Party C.C.F. Club in honour of Sam Lawrence. To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in labour economics.
Value: $225.

THE MacGIBBON SCHOLARSHIP
Established in 1970 by bequest of Professor Duncan A. MacGibbon ('08). To be awarded to the student in an Honours programme in Economics who, in the judgment of the Department of Economics, stands highest in economic history.
Value: $400.

THE WILLIAM MACKENZIE MEMORIAL PRIZE
Established in 1977 in memory of Professor William Mackenzie by his friends and colleagues. To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in Economics 3&4 (Economic Development) or, in exceptional circumstances, for work in a related area.
Value: $200.

THE ELEANOR DORBUSH MARPLES PRIZE
Established in 1985 by Mrs. Barbara Niedermeier and her family in memory of her sister. To be awarded to a student who, in the judgment of the Department of Art and Art History, has demonstrated outstanding achievement in Art History 3V3.
Value: $100.

THE H.W. McCREADY PRIZE IN BRITISH HISTORY
Established in 1981 in memory of Professor H.W. McCready, a member of the Department of History from 1943 to 1975, by former students, colleagues, and friends. To be awarded to the student who attains the highest standing in History 2N6.
Value: $100.

THE JOHN MCDIARMID PRIZE
Established in 1966. To be awarded to the Engineering student who obtains the highest standing in Physics 103.
Value: $100.

THE NEOSID CERAMIC ENGINEERING PRIZE
Established in 1978 by Neosid (Canada) Limited. To be awarded to the student who has completed at least 75, but not more than 90, units beyond Level I in the Ceramic Engineering programme and who attains the highest standing in Ceramics 404 or 4P4.
Value: $50.

THE DERRY NOVAK SCHOLARSHIP
Established in 1984 by the Political Science alumni and colleagues in honour of Professor Derry Novak. To be awarded to the student in a Political Science programme who, in the judgment of the Department, has achieved high standing in Level III courses in political theory or political philosophy.
Value: $300.

THE PHYSICAL EDUCATION PRIZES
Established in 1982. Two prizes to be awarded: (a) one to the student on completion of the courses in Level III of the Physical Education programme who, in the judgment of the School of Physical Education and Athletics, has submitted an outstanding paper/project, and (b) one to the student on completion of the courses in Level III of the Physical Education programme who, in the judgment of the School of Physical Education and Athletics, has demonstrated outstanding improvement in academic standing throughout the programme.
Value: $50 each.

THE PROCOR LIMITED SCHOLARSHIP
Established in 1962. To be awarded to the student registered in a programme with concentration in Russian studies who attains the highest standing in Russian 2A6.
Value: $150.

THE RAND MEMORIAL PRIZE OF CLASS '98
Established by the Class of '98 in Arts, on the occasion of the 25th anniversary of graduation, 1923, in memory of Chancellor Theodore Harding Rand, to encourage original literary work. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I and who, in the judgment of the Department of English, has made the most notable original contribution to student publications.
Value: $250.

THE LARRY SAYSER PRIZE IN CHINESE HISTORY
Established in 1983 in memory of Larry P. Sayer ('82) by his friends. To be awarded to the student who, in the judgment of the Department of History, has demonstrated outstanding achievement in at least six units of course work in Chinese history.
Value: $300.

THE SERBIO-CROATIAN BOOK PRIZES
Established in 1982. Three prizes to be awarded to the three in-course students who achieve the highest standing in Serbo-Croatian 126.

THE SOCIAL WORK PRIZES
Established in 1982. Two prizes to be awarded to (a) the student who has attained the highest grade in Social Work 2B6, and (b) the student who has attained the highest grade in Social Work 3D9.
Value: $50 each.

THE ANNE STEIN MEMORIAL PRIZE
Established in 1971 by friends and colleagues of Anne Stein. To be awarded to a student in the programme in Social Work who submits a significant statement pertaining to some philosophical issue or dilemma faced by the social worker in contemporary society.
Value: $100.

THE SWISS MINISTER TO CANADA BOOK PRIZES
Established in 1950 and awarded from time to time to in-course students for proficiency in French, German, or Italian.

THE KENNETH W. TAYLOR BOOK PRIZE
Established in 1976 by his children in memory of Dr. Kenneth W. Taylor ('21), LL.D. ('50). To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses within the area(s) of monetary economics and financial institutions and of public finance.
Value: $125.

THE MICHAEL THOMSON MEMORIAL BOOK PRIZES
Established in 1975 by the members of the Departments of German and Russian in memory of Michael Thomson, Supervisor of the McMaster University language laboratory from 1961 to 1975. Three prizes, one to be awarded to the student who attains the highest standing in German 126, and the other to the student who attains the highest standing in Russian 2C6.
Value: $50 each.

THE JOHN TOTH MEMORIAL PRIZE
Established in 1983 in memory of John Toth by his friends. To be awarded to the student who attains the highest standing in Latin 126.
Value: $50.
THE UNIVERSITY PRIZES FOR SPECIAL ACHIEVEMENT

Established in 1973. Two prizes to be awarded in each Faculty and other academic units to students who exhibit exceptional skill and originality in a creative project (such as an essay, poem, sculpture, mathematical or scientific problem, engineering design) or a related series of such projects.
Value: $150 each.

THE R.M. WILES MEMORIAL BOOK PRIZE

Established in 1975 in memory of Professor Roy McKeen Wiles by his friends and colleagues. To be awarded to the student who, in the judgment of the Department of English, has written the best essay on a topic relating to English literature of the period 1660-1800.
Value: $225, for books.

5. Academic Awards for Part-time In-Course Students

The following awards are based on competition across the University or within a faculty or programme.

5.1 These awards, which are granted in November, are provided exclusively for part-time students regularly registered in fewer than 24 units in any session and qualifying on the basis of work included at the most recent review in other than their graduating session.

5.2 In addition to meeting the General Conditions listed in Section 1, a student must obtain at the most recent review a University Average of at least 8.0 and no F grades.

5.3 The University Average will be used to break any tie in the competition for these awards.

THE TED ALLEN BOOK PRIZE

Established in 1984 in memory of Frederick J. Allen, an employee and part-time student at McMaster University. To be awarded to the part-time student who attains the highest standing in English 2H6 (American literature).
Value: $50, for books.

THE ALUMNI ASSOCIATION SCHOLARSHIPS

Established in 1974 by the McMaster University Alumni Association and later augmented by bequest of Harold E. Amy. Two scholarships to be awarded to part-time students with the highest University Average at the most recent review.
Value: $350 each.

THE SIDNEY L. BLUM SCHOLARSHIP

Established in 1981 in memory of Sidney L. Blum. To be awarded to a part-time student in the Social Work programme who submits the most significant research paper, essay or report of a major project in the field of social justice.
Value: $300.

THE WILLIAM J. McCALLION SCHOLARSHIPS

Five scholarships named in 1984 in honour of Professor McCallion (B.A. '43, M.A. '46), first Dean of the School of Adult Education from 1970 to 1978, in recognition of his outstanding contribution to adult education and to the Department of Mathematical Sciences during 41 years of service. To be awarded to part-time students with the highest University Average at the most recent review.
Value: $250 each.

THE LARRY SEFTON SCHOLARSHIPS

Established in 1985 by the Hamilton Steelworkers Area Council in memory of Larry Sefton, area supervisor (1946-53) and director of District 6 (1953-73) of the United Steelworkers of America, to recognize his commitment to education, to working people, to unions and to the City of Hamilton. Two scholarships to be awarded to part-time students: one to a student entering Level II and one to a student entering Level III of a Labour Studies programme who, in the judgment of the Committee of Instruction for Labour Studies, achieve notable standing in Level I and Level II, respectively. In the absence of a qualified candidate, the award will be made to a full-time student.
Value: $300 each.

THE ANNE STEIN MEMORIAL PRIZE

Established in 1981. To be awarded to a part-time student in the Social Work programme who submits a significant statement pertaining to some philosophical issue or dilemma faced by a social worker in contemporary society.
Value: $100.

THE UNIVERSITY SCHOLARSHIPS

Established in 1978. Fifteen scholarships to be awarded to part-time students with the highest University Average at the most recent review.
Value: $250 each.

6. Academic Awards for Graduating Students

The following awards are based on competition across the University or within a faculty or programme.

6.1 These awards, which are granted in May, are provided exclusively for graduating students qualifying on the basis of achievement in their baccalaureate degree programme.

6.2 In addition to meeting the General Conditions listed in Section 1, a student must obtain:
   a. a Graduation Average of at least 8.0;
   b. at the most recent review a University Average of at least 8.0;
   c. no F grades in the courses last taken equal to:
      i. either the number of units specified in the Calendar for the final level of their programme;
      ii. or, if the Calendar does not specify the programme work by individual levels, the final 30 units of work.

MEDALS

THE CHANCELLOR'S GOLD MEDAL

Established in 1938. To be awarded to the student in the graduating class of a four or five-Level programme who, on the basis of scholarship and leadership, is judged to be the outstanding student in the class.

THE E.H. AMBROSE GOLD MEDAL

Established in 1971 by Clarkson Gordon in memory of his former Hamilton partner, E.H. Ambrose, member of the University's Board of Governors from 1957 to 1967 and its Chairman, 1965 to 1967. To be awarded to the student in the graduating class of a Commerce programme who, on the basis of scholarship and leadership, is judged to be the outstanding member of the class.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS GOLD MEDAL

Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to the graduating student in Engineering having the highest Graduation Average.

THE BASU MEDAL

Established in 1984 in memory of Professor Sanjoy Basu by friends, colleagues and accounting organizations. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has displayed outstanding achievement in accounting and has attained an average of at least 10.0 in any four of Commerce 4AA3, 4AB3, 4AC3, 4AD3, 4AE3, 4AF3.

THE EZIO CAPPADOCIA MEDAL

Established in 1986 by Professor E. Cappadocia on the occasion of his retirement from the Department of History. To be awarded to a student graduating from an Honours History programme who, in the judgment of the Department of History, has displayed outstanding achievement and has contributed to the Department's activities.

THE J.E.L. GRAHAM MEDAL

Established by the Faculty of Social Sciences in 1982 in recognition of Professor J.E.L. Graham for his outstanding contributions to the Faculty and the University during 32 years of service. To be awarded to the student graduating class who, on the basis of scholarship, is judged to be an outstanding member of the class.

THE AMELIA HALL MEDAL

Established in 1985 by members of the Class of '28 in recognition of Amelia Hall ('38), D. Lit. (75), one of the great pioneers of Canadian theatre and a consummate actress, who performed on Canadian stage, screen, radio and television for 35 years. To be awarded to a graduating student who, in the judgment of the Committee of Instruction for Dramatic Arts, has made a significant contribution to drama during the student's University career.

THE HUMANITIES MEDALS FOR SPECIAL ACHIEVEMENT

Established by the University in 1982. Up to five medals to be awarded to graduating students in the Faculty of Humanities in recognition of outstanding achievement in scholarship and contributions to the cultural and intellectual life of the University including such areas as the creative and performing arts faculty and government.

THE HURD MEDAL

Established in 1956 by Donald W. Hurd ('49) in memory of his father, Dean William Burton Hurd. To be awarded to a student at graduation for distinguished achievement in an Honours programme in which economics is a major field of study.

THE R.C. MCIVOR MEDAL

Established by the Faculty of Social Sciences in 1982 in recognition of Professor R.C. McIvor, former Dean of the Faculty, for his outstanding contributions to the Faculty and the University during 35 years of service. To be awarded on the recommendation of the Faculty of Social Sciences to the full-time student in the graduating class who, on the basis of scholarship, is judged to be the outstanding member of the class of Social Sciences graduates.
RING
THE BURKE MEMORIAL RING
Presented by science graduates of the University in memory of Dean C.E. Burke.
To be awarded to a graduate of a B.Sc. programme who is named to the Deans' Honour List and who has made the most outstanding contribution to undergraduate activities.

SCHOLARSHIPS AND PRIZES
THE CAMERON D. ALLEN BOOK PRIZE
Established in 1978 in memory of Cameron D. Allen. To be awarded to a student graduating from an Honours programme in Geography who, in the judgment of the Department, shows outstanding achievement in studies in climatology.
Value: $50, for books.

THE ANTHROPOLOGY PRIZE
Established in 1982. To be awarded to the graduating student who has completed a programme in Anthropology primarily on a part-time basis and who, in the judgement of the Department, has demonstrated outstanding academic achievement.
Value: $50.

THE WILLIAM AND LIDA BARNES MEMORIAL PRIZE IN HISTORY
Established in 1969 by their son, William D. Barns, of Morgantown, West Virginia. To be awarded to the graduand who, in the judgment of the Department of History, has attained the most notable standing in Honours History.
Value: $900.

THE MARION BATES BOOK PRIZE
Established in 1967, Centennial Year, by the Alumni members of the McMaster Alumni Association in honour of Marion Bates, Dean of Women from 1947 to 1965. To be awarded to a student at graduation for high standing in the Canadian history of an Honours programme in History.
Value: $100, for books.

THE ABE BLACK MEMORIAL PRIZES
Established in 1982 by friends and colleagues of Dr. A.H. Black in memory of a distinguished member of the Department of Psychology from 1958 to 1978. Four prizes to be awarded to: (a) the student who attains the highest Graduation Average in an Honours B.A. programme in Psychology; (b) the student who attains the highest Graduation Average in the Honours B.Sc. programme in Psychology; (c) the student who attains the highest Graduation Average in Honours Biology and Psychology (Life Sciences); (d) the student who, in the judgment of the Department of Psychology, demonstrated outstanding achievement in Psychology 4D6 (Honours thesis).
Value: (a) $50; (b) $50; (c) $50; (d) $75.

THE RUTH BURKE MEMORIAL PRIZE
Established in 1963 by Dr. and Mrs. Herbert S. Armstrong in memory of Mrs. Charles E. Burke. To be awarded to the student in Nursing who attains the highest Graduation Average. The Prize is a set of engraved sterling silver coffee spoons.

THE CANADIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS BOOK PRIZE
Established in 1985. To be awarded to the student who has attained the highest Graduation Average in the Occupational Therapy programme.
Value: $50, for books.

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION PRIZE
Established in 1982 by the Certified General Accountants Association of Ontario. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has displayed outstanding achievement in accounting and has attained an average of at least 10.0 in Commerce 3A43, 3B43, 4A43 and 4B43.
Value: $150.

THE DENTON COATES MEMORIAL SCHOLARSHIP
Established in 1982 in memory of Denton E. Coates ('70) by his friends. To be awarded to the graduand who, in the judgment of the Department of Materials Science and Engineering, has demonstrated outstanding achievement in independent research as exemplified by the senior thesis in Materials 4K4.
Value: $300.

THE LAURA DODSON PRIZE
Established in 1985 by Laura Dodson ('56). To be awarded to the student graduating from the Honours Arts and Science Programme who has displayed outstanding achievement in both arts and science.
Value: $150.

THE EUROPEAN HISTORY PRIZE
Established in 1986 by Professor Ezzo Cappadocia, on the occasion of his retirement from the Department of History, in memory of his mentor, Professor Frank H. Underhill. To be awarded to a student graduating from an Honours History programme, who in the judgment of the Department of History, has displayed outstanding achievement in the European history courses consistently throughout the degree programme.
Value: $100.

THE FINANCIAL EXECUTIVES INSTITUTE PRIZE
Established in 1983 by the Hamilton Chapter of the Financial Executives Institute. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has demonstrated outstanding achievement in courses in finance.
Value: $200.

THE IROQUOIS TROPHY
Established in 1970 by the Department of Mechanical Engineering. Presented to a graduating mechanical engineer on the basis of academic excellence, participation in campus societies, clubs, or other activities, and general leadership. A replica of the Trophy is permanently held by each winner.

THE BURTON R. JAMES MEMORIAL PRIZE
Established in 1974 by his friends and colleagues in honour of Burton R. James ('39), Controller, 1963-71, Assistant Vice-President - Administration, 1971-73, McMaster University. To be awarded to the student who obtains the highest Graduation Average in a Commerce programme.
Value: $150.

THE FRANK E. JONES PRIZE
Established in 1982 in honour of Professor F.E. Jones for his outstanding contributions to the Department of Sociology. To be awarded to the full-time student with the highest Graduation Average in an Honours Sociology programme.
Value: $50.

THE RUTH LANDES PRIZE
Established in 1981 in honour of Professor Ruth Landes for her outstanding contributions to the Department of Anthropology. To be awarded to the graduating full-time student in a three-Level programme in Anthropology who, in the judgment of the Department, has demonstrated outstanding academic achievement.
Value: $50.

THE AGNES AND JOHN MACNEILL MEMORIAL PRIZE
Established in 1946 by bequest of Annie May MacNeill ('03). To be awarded to the student graduating from an Honours programme in English who has attained the most notable standing in English throughout the degree programme.
Value: $200.

THE CATHERINE MACNEILL PRIZE
Established in 1946 by bequest of Annie May MacNeill ('03). To be awarded to a woman student in her graduating year who has attained notable standing in scholarship and has shown qualities of leadership.
Value: $200.

THE PILAR MCCANDLESS MEMORIAL PRIZE
Established in 1984 by friends and colleagues in memory of Professor E.L. McCandless, a humanitarian and distinguished member of the Department of Biology from 1964 to 1983. To be awarded to a student who achieves an outstanding Graduation Average in an Honours programme in Biology.
Value: $200.

THE WALTER SCOTT MCLAY SCHOLARSHIP
Established in 1918 in honour of Dean McClay, by his daughter, Mrs. R.R. McLaughlin (Marjorie McClay '25) and further enlarged in 1950 by A.H. Wilson of Woodstock. To be awarded to the student who attains the highest Graduation Average in an Honours programme in English.
Value: $300.

THE E.S. MOORE PRIZE IN GEOLOGY
Established in 1956 by Elwood S. Moore, L.L.D. ('55). To be awarded to the student graduating in an Honours programme in Geology who, in the judgment of the Department of Geology, has attained the most notable standing in geology.
Value: $150.

THE P.L. NEWBIGGING PRIZES
Established in 1982 in recognition of Dr. Lynn Newbigging for his outstanding contributions to the Department of Psychology. Four prizes to be awarded to students with the highest Graduation Average: (a) one to a full-time student in the three-Level B.A. programme in Psychology; (b) one to a student in a B.A. programme in Psychology who has completed the programme primarily on a part-time basis; (c) one to a full-time student in the three-Level B.Sc. programme in Psychology; and (d) one to a student in a B.Sc. programme in Psychology who has completed the programme primarily on a part-time basis.
Value: $50 each.

THE ONTARIO PHYSIOTHERAPY ASSOCIATION BOOK PRIZE
Established in 1985 by the Ontario Physiotherapy Association (Hamilton Branch). To be awarded to the student who has attained the highest Graduation Average in the Physiotherapy programme.
Value: $100, for books.

THE HARRY L. PENNY PRIZE
Established in 1984 in recognition of Professor Harry L. Penny, founding Director of the School of Social Work, for his outstanding contribution to the School. To be awarded to the student with the highest Graduation Average in the Social Work programme.
Value: $50.

THE PHYSICAL EDUCATION PRIZE
Established in 1982. To be awarded to the graduating student who, in the judgment of the School of Physical Education and Athletics, has submitted an outstanding paper/project.
Value: $50.

UNDERGRADUATE ACADEMIC AWARDS
UNDERGRADUATE ACADEMIC AWARDS

THE POLITICAL SCIENCE PRIZES
Established in 1982. Two prizes to be awarded to graduating students who, in the judgment of the Department of Political Science, have demonstrated outstanding academic achievement: (a) one to a full-time student in an Honours programme in Political Science, and (b) one to a student who has completed a programme in Political Science primarily on a part-time basis.
Value: $50 each.

THE POLITICAL SCIENCE HONOURS ESSAY PRIZE
Established in 1982. To be awarded to the student who, in the judgment of the Department of Political Science, has demonstrated outstanding achievement in Political Science 426.
Value: $50.

THE LLOYD REEDS PRIZES
Established in 1983 in recognition of Dr. Lloyd G. Reeds for his outstanding contributions to the Department of Geography during 35 years of service. Four prizes to be awarded: (a) one to the student who attains the highest Graduation Average in an Honours B.A. programme in Geography; (b) one to the student who attains the highest Graduation Average in an Honours B.Sc. programme in Geography; (c) one to the student who attains the highest Graduation Average in a three-Level B.A. or B.Sc. programme in Geography; and (d) one to the student who, in the judgment of the Department of Geography, has demonstrated outstanding achievement in Geography 46C.
Value: $50 each.

THE RELIGIOUS STUDIES PRIZES
Established in 1982. Two prizes to be awarded to students with the highest Graduation Average in a three or four-Level programme in Religious Studies: (a) one to a student who has completed the programme on a full-time basis, and (b) one to a student who has completed the programme primarily on a part-time basis.
Value: $50 each.

THE RELIGIOUS STUDIES HONOURS ESSAY PRIZE
Established in 1982. To be awarded to the student who, in the judgment of the Department of Religious Studies, has demonstrated outstanding achievement in Religious Studies 46G3.
Value: $50.

THE RICHARD SLOBODIN PRIZE
Established in 1982 in honour of Professor Richard Slobodin for his outstanding contributions to the Department of Anthropology. To be awarded to the graduating full-time student in an Honours Anthropology programme who, in the judgment of the Department, has demonstrated outstanding academic achievement.
Value: $50.

THE SOCIOLOGY PRIZES
Established in 1982. Two prizes to be awarded to students with the highest Graduation Average: (a) one to a student who has completed a three-Level programme in Sociology on a full-time basis; and (b) one to a student who has completed a programme in Sociology primarily on a part-time basis.
Value: $50 each.

THE SOCIETY OF CHEMICAL INDUSTRY MERIT AWARDS
Established in 1961. Three plaques are awarded to the (a) Chemical Engineering graduand, (b) Honours Biochemistry or Honours Biochemistry and Chemistry graduand, and (c) Honours Applied Chemistry, Honours Chemistry, Honours Chemistry and Geology, or Honours Chemistry and Physics graduand, who have attained the highest Graduation Average (a minimum of 9.5) and have completed the programme in the normal number of years.
Supplementary Student Financial Aid

Bursaries

All bursaries are awarded by the Awards Committee on the basis of a general bursary application form. These application forms are available from the Student Financial Aid Office, Divinity College, Room 229, in November and February of each academic year. Any person who is registered as a student of McMaster University is eligible to apply.

THE ATKINSON CHARITABLE FOUNDATION BURSARIES
A fund has been made available for the assistance of able students resident in Ontario. A number of awards will be made on the basis of financial need and other considerations, according to regulations suggested by the Foundation.

THE J.P. BICKELL BURSARIES
The J.P. Bickell Foundation provides a sum of money for the assistance of students specializing in geology. Recommendations are made by the Department of Geology.

THE AUBREY DALGLEISH BURSARY
Established in 1985. To be awarded to a student in any programme with special preference given to handicapped students and/or students in the Faculty of Business.

Value: $250.00

THE EDITH E. FERRIE BURSARIES
Established in 1965 by the late Edith E. Ferrie. To be awarded to students in any programme.

THE EMMA FOX BURSARIES
Established in 1961 by the Wallingford Hall Committee of which Emma Fox was treasurer from 1918 to 1958. To assist female students in any programme.

THE JAMES EDWARD GRADER MEMORIAL BURSARY
Established in 1964 by his brother. To be awarded to an able student specializing in Geology. Application should be made to the Department of Geology.

THE CITY OF HAMILTON BURSARIES
Established in 1959 by the City of Hamilton to commemorate the visit of Her Majesty Queen Elizabeth II and His Royal Highness Prince Philip to Hamilton in July, 1959. To assist Hamilton students.

THE HAMILTON CITIZENS’ MEMORIAL BURSARIES
Established in 1947 by the Hamilton Citizens’ Committee for War Services. Proceeds to be used for undergraduate bursaries primarily to aid dependent children of veterans from Wentworth County killed or disabled in World War II.

THE M.A. (JACK) HASSAL BURSARY
Established by the Hamilton and District Chartered Accountants’ Discussion Group in 1982 in memory of M.A. (Jack) Hassal. To assist a student in Commerce who is a Canadian citizen or permanent resident of Canada. Preference to be given to students majoring in Sociology. After graduation, recipients will be expected to reimburse the fund to the extent of their award so that the fund can assist increasing numbers of students.

THE J.A. MELLOMI MEMORIAL BURSARY
To be awarded to a student in any programme.

THE A.H. RAYMOND C. LABARGE MEMORIAL BURSARIES
Established in 1973 by friends and associates in memory of Raymond C. Labarge ('36) of Ottawa. Four bursaries are available, one in each of: (a) Level II and III of a programme in Commerce, (b) Level II of a three-level programme in the Faculty of Social Sciences, (c) Level III of an Honours programme in the Faculty of Social Sciences. Applicants should have a record of academic performance that has normally been at the upper second-class level or higher. They should also have demonstrated a sense of social awareness, shown interest in and concern for others and been an active participant in University or general community affairs. Value: $500 each.

THE LIANNE MARKS BURSARY
Established by her family in 1980, in memory of Lianne Marks, a student at McMaster University, to assist students who are Canadian citizens or permanent residents of Canada. Preference to be given to students majoring in Sociology. After graduation, recipients will be expected to reimburse the fund to the extent of their award so that the fund can assist increasing numbers of students.

THE MCMASTER WOMEN’S CLUB MEMORIAL BURSARY
Established in 1985 by the McMaster Women’s Club to assist a student beyond Level I in the University’s B.Sc.N. programme.

THE JAMES AND ELIZABETH ROBERTS BURSARIES
Established in 1957 by R.H. Roberts in memory of his parents to assist any male student of good academic standing.

THE BAILEY HAMILTON BURSARIES
Established in 1982 by the McMaster Students’ Union. To assist those undergraduate MSU members who demonstrate pressing financial need.

THE UNIVERSITY WOMEN’S CLUB MEMORIAL BURSARY
Established in 1960 by the University Women’s Club of Hamilton. To be awarded to female students in any programme.

THE UNIVERSITY WOMEN’S CLUB BURSARIES
Established in 1960 by the University Women’s Club of Hamilton. To be awarded to female students in any programme.

THE YATES BURSARIES

Short-Term Emergency Loans

Unless otherwise specified, application should be made to the Director of Student Financial Aid, Divinity College, Room 229.

THE A.H. ATKINSON LOAN FUND
Established in 1967 by A.H. Atkinson to assist engineering students.

THE DEAN OF WOMEN’S EMERGENCY FUND
Established and continued by the McMaster alumnae and individual benefactors to assist female students. This fund is now administered by the Director of Student Financial Aid.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) LOAN FUND
Established by the Hamilton Section of the Engineering Institute of Canada to assist engineering students.

THE HAMILTON AUTOMOBILE CLUB PAST PRESIDENTS MEMORIAL LOAN FUND
Established in 1963 by the Hamilton Automobile Club as a tribute to its deceased past presidents. To be used to assist engineering students.

THE LOUISE HOLMES MEMORIAL LOAN FUND
Established in 1958 by her parents in memory of Louise Holmes, B.A. ('48). To assist female students in any programme.

Value: $500.00

THE UNIVERSITY WOMEN'S MEMORIAL BURSARIES
Established in 1982 by the University Women’s Club of Hamilton. To be awarded to female students in any programme.
SUPPLEMENTARY STUDENT FINANCIAL AID

THE I.O.D.E. LOAN FUNDS
Through the generosity of a number of the local Chapters, Imperial Order Daughters of the Empire, funds are provided to assist female students in any programme or as specified.

A. Edith M. Griffen Loan Fund.  
   Established in 1957 by Paardeburg Chapter, I.O.D.E., in honour of Mrs. H.S. Griffen.

B. Princess Martha Chapter, I.O.D.E., Loan Fund.  
   Established in 1975.

C. Emma Frances Pratt Chapter, I.O.D.E., Loan Fund.  
   Established in 1958. To assist female students in Levels III or IV of any programme.

D. Muriel Clark Riddell Loan Fund.  
   Established in 1964 by the Right Honourable Stanley Baldwin Chapter, I.O.D.E.

E. S.H. Hilda Chapter, I.O.D.E., Loan Fund.  
   Established in 1961.

F. Sovereign Chapter, I.O.D.E., Loan Fund.  
   Established in 1960. To assist female students in the final level of any programme.

G. Margaret B. Sutterby Memorial Fund.  
   Established in 1955 by the 67th University Battery Chapter, I.O.D.E.

H. Wentworth Chapter, I.O.D.E., Loan Fund.  
   Established in 1953.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS LOAN FUND
Established in 1968 by the Hamilton Section of the Institute of Electrical and Electronics Engineers. To assist students in a programme in Engineering.

THE RUSSELL E. LOVE MEMORIAL LOAN FUND
Established in 1951 by bequest through the Optimist Club of Hamilton. To assist male students in the penultimate or final level of an Arts programme.

THE McILROY LOAN FUND
Established in 1956 by the University Women’s Club of Hamilton. To assist female students in the final level of any programme.

THE McMASTER ENGINEERING SOCIETY LOAN FUND
Established in 1971 by the McMaster Engineering Society for the provision of loans to engineering students.

THE PI BETA PHI FRATERNITY LOAN FUND
Established in 1958 by the local alumnae of Pi Beta Phi. To assist female students in any Level IV Honours Arts or Science programme.

THE PROFESSIONAL ENGINEERS’ WIVES’ ASSOCIATION LOAN FUND
Established in 1972 by the Professional Engineers’ Wives’ Association to provide loans for engineering students.

THE SOCIETY OF AUTOMOTIVE ENGINEERS (ONTARIO SECTION) LOAN FUND
Established in 1962 by the Ontario Section of the Society of Automotive Engineers. To assist students in a programme in Engineering.

THE IVOR WYNNE MEMORIAL LOAN FUND
Established in 1971 in memory of Ivor Wynne, Dean of Students. To assist students in any programme.

THE UNIVERSITY LOAN FUNDS
Small short-term emergency loans from the University funds are available to assist students in any programme.
### Governing Bodies

#### Board of Governors (1985-86)

**EX OFFICIO**
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M.W. Cortiula
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P.P.H. Lin
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G.M. Ross, B.Sc.(Hons.)
N.L. Segall, B.Sc., M.Eng.
One vacancy to be filled

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The Reverend Melvyn R. Hillmer, B.A., B.D., Th.D., Principal of the Divinity College
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HOW TO GET TO THE UNIVERSITY
FROM TORONTO: From Hwy. 403, take the Main St. West exit, turn left at the top of the ramp, then immediately turn right onto Newton St. Proceed along Newton, crossing King St., and turn left onto Sterling St. and on to the Campus.

FROM BRANTFORD: Take Hwy. 403 to the Aberdeen exit. Turn left at the top of the ramp onto Longwood Rd. to King St. Turn left at King to the second traffic lights. Right onto Sterling St. and on to the campus.

LEGEND
- wheelchair curb ramp
- wheelchair building entry
- shuttle bus stop
- underground parking
- building accessible, incl. washrooms, telephones