UNDERGRADUATE CALENDAR
1982-84
McMaster University

Undergraduate Calendar

1982-1984

Faculties of Business, Engineering, Health Sciences, Humanities, Science and Social Sciences.

The University reserves the right to change information contained in this calendar, and, because of source 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 in 1982-83, and
2. the term in which a course is to be offered.

Directory for Correspondence

Mailing Address: McMaster University
Hamilton, Ontario, L8S 4L8
Telephone: Area code 416, number 525-9140

The following University offices may be addressed using the appropriate postal code.

Admission to Undergraduate Studies
Assistant Registrar (Admissions and Liaison) Gilmour Hall (L8S 4L8) (ext. 4034, 4796)

Health Sciences Admissions
Assistant Registrar (Health Sciences) Health Sciences Centre (L8S 4J9) (ext. 2115)

Student Financial Aid
Director of Student Financial Aid Divinity College (L8S 4L8) (ext. 4317)

Scholarships and Prizes
Academic Awards Officer Gilmour Hall (L8S 4L8) (ext. 4789)

Schedules and Reservations
Assistant Registrar (Schedules) Gilmour Hall (L8S 4L8) (ext. 4453)

Transcripts and Records
Associate Registrar (Records) Gilmour Hall (L8S 4L8) (ext. 4457)

On-campus housing for women
Dean of Women
Divinity College (L8S 4K1) (ext. 4371)

On-campus housing for men and co-educational residences
Dean of Men
Commons Building (L8S 4K1) (ext. 4223)

Off-campus housing
Housing Service
Commons Building (L8S 4K1) (ext. 4347)

Employment opportunities
Student Placement Office
Hamilton Hall (L8S 4K1) (ext. 4253)

Advice on personal problems
Director of Student Counselling Services
Hamilton Hall (L8S 4K1) (ext. 4711)

Advice for overseas students
Overseas Students Advisor
Hamilton Hall (L8S 4K1) (ext. 4748)

Grievances
Secretary of the Senate
University Hall (L8S 4K1) (ext. 4370)
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Using the Calendar

The information in this Calendar is arranged in the sequence most appropriate for use by a prospective or new student. Sessional dates, admission procedures, regulations, and fees appear first, followed by the various degree programmes by Faculty.

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

At McMaster, undergraduate degree programmes are offered by six faculties: Business, Engineering, Health Sciences, Humanities, Science and Social Sciences. The programmes are described by department in the Faculty section of the Calendar. The programme descriptions specify which courses have to be taken in order to obtain a Bachelor's degree.

After consulting the programmes, you will note that some courses are required and that you may also choose electives. At this stage, you will probably wish to look at the courses offered by the University. Courses are listed by the teaching departments of the University in alphabetic sequence toward the back of the Calendar.

Other Publications

UNDERGRADUATE STUDIES
McMaster Divinity College Calendar
Post-Graduate Medical Programme 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

CERTIFICATE AND PROFESSIONAL STUDIES
Professional designations, certificate and correspondence programmes/ available from the School of Adult Education

GENERAL INTEREST NON-CREDIT STUDIES
Brochures about non-credit programmes and special offerings/ available from the School of Adult Education
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 1930’s. The University, itself, was founded in 1887; after its initial years in Toronto, the University was moved to Hamilton in 1930. The University became non-denominational in 1957, but the historic Baptist connection has been continued through the separately incorporated McMaster Divinity College. Over 10,000 full-time students attend McMaster University, and of these 1,200 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. Summer Evening courses are taught in the period from May to August, and Summer Day courses during July and August. The University also provides courses in centres located outside Hamilton, for which full credit is granted.

Undergraduate teaching is conducted through the Faculties of Business, Engineering, Health Sciences, Humanities, Science, and Social Sciences. The Schools of Physical Education and Athletics, and Social Work are part of the Faculty of Social Sciences. In addition, the University has recently instituted an Arts and Science Programme which is multi-disciplinary in scope.

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), Russian and Slavic Studies. The Faculty of Social Sciences offers programme in Anthropology, Economics, Geography, 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., B.Sc. Honours and Major levels. Programmes are offered in Applied Chemistry, Biochemistry, Biology, Chemistry, Computer Science, Geography, Geology, Mathematics, Metallurgy and Materials Science, 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 offers 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 both the Honours B.Com. and B.Com. degrees. In addition the Faculty cooperates with the Faculty of Engineering to offer the Bachelor of Engineering and Management programme.

The Faculty of Engineering offers the Bachelor of Engineering programme in Ceramics Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Manufacturing Engineering, Mechanical and Metallurgical Engineering, and Engineering Physics. The Faculty, in cooperation with the Faculty of Business, offers the Engineering and Management programme which is normally completed in five years.

This Calendar describes the requirements of all the undergraduate degree programmes offered by McMaster University and contains a complements list with descriptions of all the courses offered by the University.

For students interested in pursuing Honours degree programmes in Modern Languages (French, German, Italian, Spanish), it is possible to 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 clinical requirements for practicums in the programmes in Medicine, Nursing, Occupational Therapy, Physiotherapy, and Social Work are taken through the facilities of various hospitals and community agencies in the Hamilton area. Many of the Engineering, and Engineering and Management programmes involve summer projects.

Most of the over 700 members of the University faculty hold doctoral degrees in the areas of their specialization and enjoy the distinction of attracting the highest per capita research funding based on peer assessment in Canada. Faculty members are expected to teach at both the graduate and undergraduate levels and are involved in the academic counselling of students. To assist faculty and graduate teaching assistants the University has operated for a number of years the Instructional Development Centre, which 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 University Library is a member of the Research Libraries Association and contains over one million volumes, including subscriptions to over 8,000 periodicals. 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 two large Control Data computers: CDC 6400 and CYBER 170/730, Hewlett Packard HP 3000, an IBM 3031, a VAX 11/780 for instructional use in the Faculty of Engineering, and a variety of micro-computers plotting devices and graphics terminals. The CDC 6400 computer is used exclusively for undergraduate instruction. Programmes in the Faculty of Health Sciences are housed in the facilities of the McMaster University Medical Centre.

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 eastern end of Lake Ontario. The campus is reserved for pedestrian traffic. Residential accommodation on the campus is available for over 2,000 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 and Hamilton Place, an auditorium which seats over 2,000 persons and includes a studio theatre. 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

**DATES FOR 1982-83 WINTER SESSION**

**FOR BOTH FULL-TIME AND PART-TIME STUDENTS**

<table>
<thead>
<tr>
<th>1982</th>
<th>1983</th>
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</thead>
<tbody>
<tr>
<td>Thursday, May 27 to Saturday, May 29</td>
<td>Wednesday, January 5</td>
</tr>
<tr>
<td>Friday, June 25</td>
<td>Classes begin for second term, and for</td>
</tr>
<tr>
<td></td>
<td>courses offered from January to June.</td>
</tr>
<tr>
<td>Monday, August 16 to Wednesday, August 18</td>
<td>Friday, January 14</td>
</tr>
<tr>
<td>Thursday, September 2 to Wednesday, August 18</td>
<td>Last day for registration and for</td>
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<tr>
<td></td>
<td>changing registration in second-term</td>
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<tr>
<td></td>
<td>courses and courses offered from</td>
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<tr>
<td></td>
<td>January to June.</td>
</tr>
<tr>
<td>Wednesday, September 8 to Friday, September 24</td>
<td>Monday, January 31</td>
</tr>
<tr>
<td>Saturday, October 9 to Monday, October 11</td>
<td>Friday, February 11</td>
</tr>
<tr>
<td>Friday, October 15</td>
<td>Classes begin for courses offered from</td>
</tr>
<tr>
<td></td>
<td>February to June.</td>
</tr>
<tr>
<td>Friday, October 29</td>
<td>Last day for withdrawing from</td>
</tr>
<tr>
<td></td>
<td>second-term or full-year courses.</td>
</tr>
<tr>
<td>Friday, November 12</td>
<td>Last day for changing registration in</td>
</tr>
<tr>
<td>Wednesday, December 8 to Friday, December 10</td>
<td>February to June courses. Last day for</td>
</tr>
<tr>
<td></td>
<td>changing programme and completing a</td>
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<tr>
<td></td>
<td>Graduation Information Card for</td>
</tr>
<tr>
<td></td>
<td>graduation at Spring Convocation.</td>
</tr>
<tr>
<td>Wednesday, December 22</td>
<td>Mid-term Recess.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday, May 26 to Saturday, May 29</td>
<td>Friday, April 1</td>
</tr>
<tr>
<td>Friday, June 24</td>
<td>Tuesday, April 12</td>
</tr>
<tr>
<td>Tuesday, August 16 to Thursday, August 18</td>
<td>Thursday, April 14</td>
</tr>
<tr>
<td>Thursday, September 1 to Wednesday, August 7</td>
<td>Saturday, April 28</td>
</tr>
<tr>
<td>Friday, September 23</td>
<td>May (to be announced)</td>
</tr>
<tr>
<td>Saturday, October 8 to Monday, October 10</td>
<td>Thursday, May 26 to Saturday, May 28</td>
</tr>
<tr>
<td>Friday, October 14</td>
<td>Friday, June 25</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td></td>
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<tr>
<td>Wednesday, December 7 to Friday, December 9</td>
<td></td>
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<tr>
<td>Wednesday, December 21</td>
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</tr>
</tbody>
</table>

### Dates for 1983-84 Winter Session

**FOR BOTH FULL-TIME AND PART-TIME STUDENTS**

<table>
<thead>
<tr>
<th>1983</th>
<th>1984</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday, May 26 to Saturday, May 29</td>
<td>Tuesday, January 3</td>
</tr>
<tr>
<td>Friday, June 24</td>
<td>Classes begin for second term, and for</td>
</tr>
<tr>
<td></td>
<td>courses offered from January to June.</td>
</tr>
<tr>
<td>Tuesday, August 16 to Thursday, August 18</td>
<td>Thursday, January 12</td>
</tr>
<tr>
<td>Thursday, September 1 to Wednesday, August 7</td>
<td>Monday, January 30</td>
</tr>
<tr>
<td>Friday, September 23</td>
<td>Classes begin for courses offered from</td>
</tr>
<tr>
<td>Saturday, October 8 to Monday, October 10</td>
<td>February to June.</td>
</tr>
<tr>
<td>Friday, October 14</td>
<td>Last day for withdrawing from</td>
</tr>
<tr>
<td></td>
<td>second-term or full-year courses.</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td>Last day for changing programme and</td>
</tr>
<tr>
<td>Wednesday, December 7 to Friday, December 9</td>
<td>completing a Graduation Information Card</td>
</tr>
<tr>
<td>Wednesday, December 21</td>
<td>for graduation at Spring Convocation.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday, May 26 to Saturday, May 29</td>
<td>Tuesday, February 14</td>
</tr>
<tr>
<td>Friday, June 24</td>
<td></td>
</tr>
<tr>
<td>Tuesday, August 16 to Thursday, August 18</td>
<td>Monday, February 27 to Saturday, March 3</td>
</tr>
<tr>
<td>Thursday, September 1 to Wednesday, August 7</td>
<td>Friday, March 9</td>
</tr>
<tr>
<td>Friday, September 23</td>
<td></td>
</tr>
<tr>
<td>Saturday, October 8 to Monday, October 10</td>
<td>Monday, April 9</td>
</tr>
<tr>
<td>Friday, October 14</td>
<td>Wednesday, April 11 to Saturday, April 29</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td>Friday, April 20</td>
</tr>
<tr>
<td>Wednesday, December 7 to Friday, December 9</td>
<td>May (to be announced)</td>
</tr>
<tr>
<td>Wednesday, December 21</td>
<td>Thursday, May 24 to Saturday, May 26</td>
</tr>
<tr>
<td></td>
<td>Monday, June 25</td>
</tr>
</tbody>
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### DATES FOR 1982 SUMMER (EVENING) SESSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday, May 12</td>
<td>Classes begin. Last day for registration and changes of registration.</td>
</tr>
<tr>
<td>Tuesday, May 18</td>
<td>Victoria Day - No classes.</td>
</tr>
<tr>
<td>Monday, May 24</td>
<td>Last day for withdrawing from a course offered only in the first half of the Session.</td>
</tr>
<tr>
<td>Friday, May 28</td>
<td>First-term classes end. Examinations in first-term courses begin.</td>
</tr>
<tr>
<td>Thursday, June 24</td>
<td>Second-term evening courses begin. Dominion Day - No Classes.</td>
</tr>
<tr>
<td>Friday, July 16</td>
<td>Friday, July 16 Last day for withdrawing from second-term or full-session courses in the Summer (Evening) Session.</td>
</tr>
<tr>
<td>Monday, August 2</td>
<td>Monday, August 2 Civic Holiday - No Classes.</td>
</tr>
<tr>
<td>Monday, August 15</td>
<td>Monday, August 15 Summer Session classes end.</td>
</tr>
<tr>
<td>Thursday, August 18</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday, October 28</td>
<td>Last day for applications for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td>Friday, November 11 Autumn Convocation.</td>
</tr>
<tr>
<td>Friday, December 9</td>
<td>Friday, December 9 Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Wednesday, December 22</td>
<td>Wednesday, December 22 Classes end.</td>
</tr>
</tbody>
</table>

### DATES FOR 1983 SUMMER (EVENING) SESSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>Wednesday, May 11</td>
<td>Classes begin. Last day for registration and changes of registration.</td>
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<td>Tuesday, May 17</td>
<td>Victoria Day - No classes.</td>
</tr>
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<td>Monday, May 23</td>
<td>Last day for withdrawing from a course offered only in the first half of the Session.</td>
</tr>
<tr>
<td>Friday, May 27</td>
<td>First-term classes end. Examinations in first-term courses begin.</td>
</tr>
<tr>
<td>Thursday, June 23</td>
<td>Second-term evening courses begin. Dominion Day - No Classes.</td>
</tr>
<tr>
<td>Friday, June 24</td>
<td>Last day for withdrawing from second-term or full-session courses in the Summer (Evening) Session.</td>
</tr>
<tr>
<td>Monday, August 1</td>
<td>Monday, August 1 Civic Holiday - No Classes.</td>
</tr>
<tr>
<td>Monday, August 15</td>
<td>Monday, August 15 Summer Session classes end.</td>
</tr>
<tr>
<td>Thursday, August 18</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday, October 28</td>
<td>Last day for applications for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td>Friday, November 11 Autumn Convocation.</td>
</tr>
<tr>
<td>Friday, December 9</td>
<td>Friday, December 9 Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Wednesday, December 21</td>
<td>Wednesday, December 21 Classes end.</td>
</tr>
</tbody>
</table>

### DATES FOR 1982 SUMMER (DAY) SESSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, July 2</td>
<td>Classes begin. Last day for registration and changes of registration.</td>
</tr>
<tr>
<td>Monday, July 5</td>
<td>Last day for withdrawing from a course offered only in the first half of the Session.</td>
</tr>
<tr>
<td>Thursday, July 8</td>
<td>Second-term day classes begin.</td>
</tr>
<tr>
<td>Friday, July 23</td>
<td>Last day for withdrawing from a course offered only in the second half or offered for the duration of the Summer (Day) Session.</td>
</tr>
<tr>
<td>Thursday, July 29</td>
<td>Monday, August 2 Civic Holiday - No Classes.</td>
</tr>
<tr>
<td>Monday, August 13</td>
<td>Monday, August 13 Summer Session Examinations and Deferred Examinations from April Examinations.</td>
</tr>
<tr>
<td>Monday, August 16</td>
<td>Monday, August 16 to Wednesday, August 18 Last day for applications for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, October 29</td>
<td>Friday, October 29 Autumn Convocation.</td>
</tr>
<tr>
<td>Friday, November 12</td>
<td>Friday, November 12 Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, December 10</td>
<td>Friday, December 10 to Wednesday, December 22 Classes end.</td>
</tr>
<tr>
<td>Wednesday, December 22</td>
<td>Wednesday, December 22 Summer Session Examinations and Deferred Examinations from April Examinations.</td>
</tr>
</tbody>
</table>

### DATES FOR 1983 SUMMER (DAY) SESSION

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, July 4</td>
<td>Classes begin. Last day for registration and changes of registration.</td>
</tr>
<tr>
<td>Tuesday, July 5</td>
<td>Last day for withdrawing from a course offered only in the first half of the Session.</td>
</tr>
<tr>
<td>Friday, July 8</td>
<td>Second-term day classes begin.</td>
</tr>
<tr>
<td>Monday, July 25</td>
<td>Last day for withdrawing from a course offered only in the second half or offered for the duration of the Summer (Day) Session.</td>
</tr>
<tr>
<td>Thursday, July 28</td>
<td>Monday, August 1 Civic Holiday - No Classes.</td>
</tr>
<tr>
<td>Monday, August 15</td>
<td>Monday, August 15 Summer Session Examinations and Deferred Examinations from April Examinations.</td>
</tr>
<tr>
<td>Tuesday, August 16</td>
<td>Tuesday, August 16 to Thursday, August 18 Last day for applications for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, October 28</td>
<td>Friday, October 28 Autumn Convocation.</td>
</tr>
<tr>
<td>Friday, November 11</td>
<td>Friday, November 11 Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, December 9</td>
<td>Friday, December 9 to Wednesday, December 21 Classes end.</td>
</tr>
<tr>
<td>Wednesday, December 21</td>
<td>Wednesday, December 21 Summer Session Examinations and Deferred Examinations from April Examinations.</td>
</tr>
</tbody>
</table>
Application Procedures

Important Dates
Because of the large number of applications we receive, we have to establish deadlines. You should apply by the dates below, otherwise we cannot guarantee that your application can be considered. Many of our programmes have a limited number of places so it is in your own interest to apply early.

November 15  Medicine — for admission in the following September
March 15      Labour Studies, Social Work
April 1       Nursing
April 15      Summer evening courses
May 31        Summer day courses
July 15       Winter Session courses commencing in September
November 30   Winter Session courses commencing in January

Former McMaster Students
If you have previously registered at McMaster, but did not attend last year, you must write to the Dean of Studies of the appropriate Faculty to seek readmission, 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 extensions 4796, 4797 and 4798). Your application will be considered by the appropriate Faculty committee.

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, Nursing I, Physical Education I, Natural Sciences I and Social Sciences I.

Programmes Entered Above Level I
Canadian Studies, Engineering Management, Labour Studies and Social Work begin at Level II. Medicine commences after three years of undergraduate study and Level IV is the level of entry to the Occupational Therapy and Physiotherapy programmes.

Admission requirements appear in this calendar in the general admissions and Health Sciences admissions sections. If your qualifications do not fit the requirements exactly you should write to Undergraduate Admissions, Room 120, Gilmour Hall, McMaster University or Health Sciences Registry, Room 1B7, McMaster Medical Centre.

Medicine, Nursing and Physiotherapy and Occupational Therapy
If you wish to enter any of these programmes you should obtain the appropriate application form from the Health Sciences Registry (McMaster University Medical Centre, Room 1B7, telephone 525-9140 Extension 2114).

Applicants with Disabilities
The university encourages disabled persons to apply for admission to its programmes, and will attempt to make special arrangements to assist such persons in their educational endeavours. However, some programmes may include requirements which cannot be met by some persons, or may require modification for individual students. Those with disabilities are advised to discuss their intended programmes with the Assistant to the Registrar who will identify the appropriate faculty adviser with whom they should speak. Although there are many obstacles to overcome, experience has shown that students with differing disabilities have been able to complete a variety of programmes at McMaster.

Enquiries
If you have enquiries, please contact:

Edie Rochkin  (525-9140 extension 4796) about admission
or Liz McCallum, Admissions Officers about admission requirements and (Programmes other than Health Sciences)

Elaine Rhodes  (525-9140 extension 2114) about any matters related to Health Sciences programmes.
Assistant Registrar (Health Sciences)

Chris Jewell, Stu Reid or Paul Thomson Liaison Officers about visits to the University, brochures, university programmes and suitable Grade 13 programmes.

Doug Allaby  (525-9140 extension 4317) about Financial Aid, Canada Student Loans, and OSAP.

Michael Tremblay  (525-9140 extension 4455) about special arrangements for disabled persons.
Assistant to the Registrar

Olga Tynowski  (525-9140 extension 4789) about Scholarships.
Assistant Registrar (Programmes other than Health Sciences)

Sheila Scott  (525-9140 extension 4789) about Women’s Residences.
Assistant Registrar (Health Sciences)

Brian Harrison  (525-9140 extension 4223) about Men’s and Coeducational Residences.
Assistant Registrar

Academic Counselling for Those Offered Admission
If you are offered admission, you will be asked to confirm that you will attend. 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.
Application Procedures
(Programmes entered in Level I)

The application procedures differ according to whether:
1. you wish to enter a degree programme or not;
2. you wish to be a full-time or part-time student;
3. you wish to enter Level I or receive credit for University level work already completed, and
4. you are registered in an Ontario secondary school now.
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.
APPLICATION PROCEDURES

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. Preprinted 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</td>
<td>MX</td>
</tr>
<tr>
<td>Business</td>
<td>MB</td>
</tr>
<tr>
<td>Engineering</td>
<td>ME</td>
</tr>
<tr>
<td>Humanities</td>
<td>MH</td>
</tr>
<tr>
<td>Music</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Science</td>
<td>MS</td>
</tr>
<tr>
<td>Nursing</td>
<td>MN</td>
</tr>
<tr>
<td>Physical Education</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences</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. Obtain an application form (OUAC 105) from the Admissions Office (Gilmour Hall, Room 120, telephone 525-9140, extensions 4796, 4797, 4798). 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</td>
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<tr>
<td>Business</td>
<td>MB</td>
</tr>
<tr>
<td>Engineering</td>
<td>ME</td>
</tr>
<tr>
<td>Humanities</td>
<td>MH</td>
</tr>
<tr>
<td>Music</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Science</td>
<td>MS</td>
</tr>
<tr>
<td>Nursing</td>
<td>MN</td>
</tr>
<tr>
<td>Physical Education</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>ML</td>
</tr>
</tbody>
</table>

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

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 extensions 4796, 4797, 4798). 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 enter as:
1. part-time students; or
2. non-degree students (Occasional or Continuing); or
3. second-degree candidates.

Obtain a McMaster application form from the Admissions Officer (Gilmour Hall, Room 120, telephone 525-9140, extensions 4796, 4797, 4798). You will be provided with more information procedures at that time.

PROCEDURE E:

This procedure applies to applicants who wish to register as “Listeners”. (A listener may attend classes, but does not write assignments nor examinations. Neither will a Listener receive a grade for the course.)

Write, visit or phone the School of Adult Education in order to register as a Listener (Commons Building, telephone 525-9140, extension 4321).

Application to the School of Social Work

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. Students 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 Assistant Registrar (Admissions) AND to the School of Social Work.

Application to the School of Social Work should be made before March 1. 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.

Application to Medicine, Occupational Therapy and Physiotherapy

Admission requirements and procedures are described in the Faculty of Health Sciences section of this Calendar.
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.

A. Admission from Ontario Secondary Schools

We know that a variety of experimental programmes is offered in 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 Assistant Registrar (Admissions) who will ensure that your application is carefully considered.

EARLY ADMISSION FROM ONTARIO SECONDARY SCHOOLS

If you have already attained standing in each of the Grade 13 required to enter the programme of your choice at McMaster University, you may be granted Early Admission; this may also be granted to an applicant who expects to acquire such standing later in the year.

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:

Subject | Mark | Credits | Marks x Credits
--- | --- | --- | ---
Subject A | 66 | 1 | 66
Subject B | 70 | 1 | 70
Subject C | 80 | 1.5 | 120
Subject D | 56 | 0.5 | 28
Subject E | 72 | 1 | 72
Subject F | 60 | 1 | 60

"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 I (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);
2. a minimum of two Grade 13 credits have been completed with high academic standing (80% or higher, or the equivalent);
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

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.

Arts and Science

Admission is by selection and candidates may be interviewed. Required:

1. one Grade 13 credit in English,
2. one Grade 13 credit in Mathematics,
3. additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a weighted average of at least 75%. Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

Business

Enrolment in Business I is limited and admission is by selection. The following are the minimum requirements for consideration:

1. At least one Grade 13 credit in Mathematics (preferably Calculus),
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 66.0%.

Since Business I enrolment is limited, the minimum overall average of 66.0% will not guarantee admission. An average of approximately 70% will probably be required.

Engineering

Enrolment in Engineering I is limited and admission is by selection. Experience indicates that students with weighted Grade 13 averages of 75% or greater have a good chance of success in Engineering programmes. Students with a standing lower than 75% who nevertheless provide evidence of unusual promise will also be considered. Required:

1. overall weighted average of more than 70.0% in six credits offered for the Secondary School Honour Graduation Diploma, AND
2. weighted average of more than 70.0% in the following five credits: three Grade 13 credits of Mathematics, and one Grade 13 credit of Physics, and one Grade 13 credit of Chemistry.

(Students in this group take the Engineering I programme.)

Students offering only four of the five area subject requirements (including Calculus) with high standing, will be considered. (Students in this group take an adapted Engineering I programme to be determined in consultation with the Associate Dean of Engineering.)

The Faculty strongly recommends 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.

Humanities

Required:

1. Grade 13 English,
2. another Grade 13 language (if you have not met this requirement, you may be admitted on the understanding that you take a language other than English at Level I),
3. additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall average of 60.0%.

If you intend to take Art 1B6 or Art 1D6, you must submit a portfolio to show your interests and ability, to the Chairman of the Department of Art and Art History in the spring. Drawings are especially helpful in making this assessment. The portfolio should contain drawings from nature in several media, for example, a self portrait, a still life or a landscape. Late applications will be considered if places are available in the class.
ADMISSION REQUIREMENTS

Music I

The academic requirements are the same as for Humanities I. In addition applicants must successfully complete a music audition 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 tests;
4. written examination on rudiments of theory (Grade 2 level);
5. demonstration of basic keyboard skills (for non-keyboard performers). (Students failing this may be admitted and required to enrol in a special section of Music 1DD2);
6. interview.

Applicants for Music I should make arrangements with the Department of Music for the audition.

Natural Sciences I

Admission to Natural Sciences I is by selection. Students with weighted Grade 13 averages of 70% 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,
3. One Grade 13 credit of Biology, or Chemistry, or another Mathematics, 4.
A weighted average of at least 60% in Calculus and the two additional credits specified above,
5. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with an overall average of at least 60%

We strongly recommend that students present at least one of Grade 13 Biology, Chemistry, or Physics when meeting the above requirements. Additional Mathematics (Algebra and/or Relations and Functions) and a senior level English course are also desirable.

Nursing I

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

Required:
1. Grade 12 Mathematics;
2. Grade 12 Chemistry;
3. Two from Grade 12 English, another language, Mathematics, Biology, Physics;
4. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

Health regulations 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.

Physical Education I

Admission is by selection and an overall average of more than 60.0% will probably be required.

There are no specific Grade 13 subject areas which are required for admission to Physical Education I. Mathematics, at least to Grade 12, is required. It is recommended that applicants take at least one of Grade 13 Biology, Chemistry or Physics, and, when available, Grade 13 Physical Education.

Social Sciences I

The Faculty of Social Sciences does not require specific Grade 13 subjects for admission. You must have passed Mathematics, at least to Grade 12, although applicants who are not able to comply may nevertheless be considered.

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

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

An overall average of more than 60.0% will probably be required for admission.

B. 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 advanced credit will normally be given to well-qualified students who have completed at least two years of work.

In 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.

C. 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 in only 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.

D. Admission From Other Canadian Provinces

Students from other Canadian provinces who meet the following minimum requirements are encouraged to apply.

Province Qualifications Required
Alberta Grade 12
British Columbia Grade 12
Manitoba Grade 12
New Brunswick Year I Memorial University of Newfoundland
Newfoundland Grade 12
Prince Edward Island Year I University of Prince Edward Island
Quebec Year I CEGEP (General Course)
Saskatchewan Grade 12

For guidance on the subject requirements for the specific Level I programme you wish to enter, see section A above.

E. Admission From Other Countries

Great Britain and the West Indies

Required:
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, (e.g., two of Mathematics, Chemistry, and Physics for Engineering I; Mathematics (pure or applied) and one other science for Natural Sciences I);
3. an average of at least "D" in the two Advanced Level subjects for non-limited enrolment programmes;
4. an overall average of first-class honours standing is required for limited enrolment programmes.

Hong Kong

Required:
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, (e.g., two of Mathematics, Chemistry and Physics for Engineering I; Mathematics (pure or applied) and one other science for Natural Sciences I);
3. an average of at least “D” 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.

**United States of America**

Students with high standing from Grade 12 of an accredited high school in the U.S.A. may apply for admission. 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.

**Other 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. Details of this test will be sent upon receipt of a formal application for admission.

**F. Special Students (Mature Students)**

**Full-time Study**

If you do not meet the normal admission requirements, you may be admitted “on 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; AND
2. you have not attended school on a full-time basis for at least two years; AND
3. you obtain a satisfactory standing on a scholastic aptitude test (held in 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 (see also part K of this section) or professional designation at McMaster University or the equivalent. Information concerning the date of final application and other details may be obtained from the Assistant Registrar (Admissions).

**Part-time Study**

If you do not meet the normal admission requirements, you may be considered for admission as a part-time student “on 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 or one seven-unit course per session; the Winter Session extends from September to April and the Summer Session from May to August. Normally, these first courses shall 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, and
2. If your weighted average is less than 4.0, you will be required to withdraw.

**G. Students Transferring From Other Universities**

If you wish to transfer to McMaster University, you will normally offer credit only for courses which you have achieved at least a “C” (third-class honours 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. Details of this test 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 the Academic Regulations (see Academic Regulations). The University will not accord to students transferring to McMaster privileges which would not be granted by their own universities.

**H. Graduates Applying for a Second Undergraduate 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 (see Academic Regulations). Application forms are obtainable from the Assistant Registrar (Admissions).

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

**I. Continuing 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 (or, exceptionally, certain graduate classes). Continuing students who wish to take Commerce or Engineering courses must re-apply for each session on an application form obtainable from the Assistant Registrar (Admissions).

Continuing students who wish to take courses offered by Faculties 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.

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 Dean concerned.

Continuing students in regular session are required to take a minimum of 24 units of work to qualify as “full-time students” for the purpose of the Ontario Student Awards Programme (see Financial Assistance).

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.

**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**

Advance credit may be granted 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 of Faculty. This policy became effective with applications to Summer School 1980. Application forms are obtainable from the Assistant Registrar (Admissions).

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.

Financial Information

The fees payable by a student are composed of an academic fee and incidental fees. The academic fees payable are calculated on a per unit basis up to the maximum stated under "standard fee" shown in the 1981-82 fee schedule, below. The full incidental fees are payable by full-time students, i.e. those taking 24 units or more.

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

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.

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

UNDERGRADUATE FEES AND PAYMENT DATES

Fees cover the student's portion of the tuition cost, campus health services, student organizations, athletics, registration, library, examinations and diplomas, and are payable by all students attending McMaster University. The preceding fees do not cover the Ontario Health Insurance Plan, which is the personal responsibility of the student.

The University reserves the right to assess 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.

Upon receiving official acceptance from the Registrar's Office and upon completion of registration, a student is responsible for the full payment of all academic fees as defined in this Calendar.

Failure to comply with payment dates will result in a late payment fee. 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. At any date after fees become due, a student's academic privileges may be cancelled for non-payment. Any of the foregoing may apply until such time as the fees, or any part of the fees are paid in full, or until acceptable arrangements are made with the Chief Accountant in the Business Office, the Dean of Men or the Dean of Women.

No student shall be eligible for any examination, examination results, transcripts, certificates, diplomas, or the payment of awards of any kind, until fees and any other accounts owed to the University are paid.

Full-time students should note that fees are payable in full during the registration period in September. Prepayment of academic fees is encouraged to simplify the registration process (see below Prepayment of Academic Fees). Payments through instalments and by deferrals are also available, with the first payment due upon registration and a post-dated cheque for the balance, including a service charge of $15, due in January.

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

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.

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

Cheques must be made payable to "McMaster University". Any cheque not accepted and returned by the bank must be covered and include an additional administrative charge. Amounts of $5 will be assessed for N.S.F. cheques, and $2 for cheques issued on non-chequing accounts or payments stopped by the student.

"Listener" students not seeking credit may be admitted at one-half of the standard fee upon application to the School of Adult 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".

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

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

Full-time fees charged during 1981-82 and which are subject to change were as follows for an academic load of 28 units or more:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Standard Supplementary Fee</th>
<th>Payable in August</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSINESS</td>
<td></td>
<td></td>
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<tr>
<td>Business</td>
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<td>$1014.00</td>
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<td>I/Commerce</td>
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<td></td>
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<tr>
<td>HUMANITIES/SOCIAL SCIENCES</td>
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<tr>
<td>Art/Art</td>
<td>930.00</td>
<td>1014.00</td>
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<tr>
<td>History/Social Work</td>
<td></td>
<td></td>
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<tr>
<td>Music/Physical</td>
<td>944.00</td>
<td>1028.00</td>
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<td>Education</td>
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<td>All programmes</td>
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<td>ENGINEERING</td>
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<td>Science and Engineering</td>
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<td>Management II, IV</td>
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<tr>
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All programmes

Part-time programmes

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<th>Subject</th>
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<td>631.00</td>
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</tbody>
</table>
For academic loads between 24 and 27 units, the fee was $0.75 per unit plus full supplementary fees. For students taking less than 24 units, the fee was $33.00 per unit plus a supplementary fee of $0.75 per unit for membership in the McMaster Association of

Prepayment of Academic Fees
In order to simplify and expedite registration in September, the University has established a system of paying academic and residence fees in advance.

All students should pay full fees for the session, or the first installment of fees, according to the fee schedule on or before August 15. Students must fill in the fee prepayment form and send it together with a cheque, which may be post-dated to August 15, to the Business Office. By doing so, you will reduce the time needed to complete Registration in September. Late payment of fees will result in the levying of an extra fee.

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. Any known differences between the amount of scholarship, etc., and first installment should be paid by August 15. Students being sponsored by outside organizations, e.g., vocational rehabilitation services, R.C.M.P., Canadian Armed Forces, etc., are requested to bring copies of fee authorizations at the time of registration. Deferrals may be granted in certain other special circumstances, provided that the student can show satisfactory evidence of ability to pay at a later date.

Residence and Food Service Fees

Regular Session
Residence fees in 1981-82, with corresponding dates for payment of these fees, for students living on campus for the period September 7 to the end of the spring examinations were:

<table>
<thead>
<tr>
<th>Residence and Food Service Fees</th>
<th>Payable in Full by Aug. 15</th>
<th>Payable by Aug. 15</th>
<th>Payable in January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residences</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>room and board</td>
<td>$1875</td>
<td>$1300</td>
<td>$590</td>
</tr>
<tr>
<td>Apartments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1, 3, 4 and 6 bedrooms (per person) room only</td>
<td>945</td>
<td>650</td>
<td>310</td>
</tr>
<tr>
<td>Food Plan Only</td>
<td>935</td>
<td>650</td>
<td>295</td>
</tr>
</tbody>
</table>

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.

It is not normally possible to allow mid-year withdrawals.

Students will be assessed for unwarranted breakage.

A complete and current schedule of residence charges and payment dates may be obtained upon application to the Dean of Women or the Dean of Men.

Residence fees should not be paid with academic fee payments, except when the residence application has been accepted in writing.

Full payment of fees must be completed by January.

Please note that a service charge of $15 is added to fees not paid in August.

Students, Alumni, Transient Visitors, and School Children in Groups
Room Only: May to September

<table>
<thead>
<tr>
<th>Residence and Food Service Fees</th>
<th>Payable in Full by Aug. 15</th>
<th>Payable by Aug. 15</th>
<th>Payable in January</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Occupancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Nights</td>
<td>$11 per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Week</td>
<td>50 per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second &amp; Successive</td>
<td>30 per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Occupancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual Nights</td>
<td>14 per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First Week</td>
<td>60 per person</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second &amp; Successive</td>
<td>40 per person</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Room rates include all bedding, including 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.

Miscellaneous Fees
As a guide, the following fees were in effect for the 1981-82 academic year:

<table>
<thead>
<tr>
<th>Fees</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campus health service (optional for part-time (day) students)</td>
<td>$12.00</td>
</tr>
<tr>
<td>McMaster Student Union Fee for part-time students/per unit to 24 units</td>
<td>$0.75</td>
</tr>
<tr>
<td>Fees for extra classes/six units</td>
<td>202.50</td>
</tr>
<tr>
<td>Transcripts, up to 6 copies ordered and processed at the same time</td>
<td>$2.00</td>
</tr>
<tr>
<td>Failure to file an advance registration by students in course before the due date</td>
<td>$25.00</td>
</tr>
<tr>
<td>Administrative fee for students reinstated following cancellation for non-payment of fees</td>
<td>$25.00</td>
</tr>
<tr>
<td>Installment charge</td>
<td>$15.00</td>
</tr>
<tr>
<td>Formal examination re-read procedure</td>
<td>$25.00</td>
</tr>
<tr>
<td>Duplicate Income Tax Certificate</td>
<td>$3.00</td>
</tr>
<tr>
<td>Fee for special examinations/per paper</td>
<td>$25.00</td>
</tr>
<tr>
<td>Letter of permission</td>
<td>$10.00</td>
</tr>
</tbody>
</table>

Refunds
Students who are forced by illness or other personal reasons to withdraw from courses are entitled to a partial refund of their fees. These refunds will be paid according to a schedule which will be sent to each student when the fee schedules are sent in the summer preceding September registration. Refunds are determined by the date on which notices of withdrawal are received at the office of the Dean of the appropriate Faculty. Only students whose written notices of withdrawal are received at this office by the end of the first week of lectures will be entitled to a full refund of fees. Four weeks should be allowed for the processing of refund cheques.

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 $75. While 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 $30 in Level I; $75 in Level II, and $125-$150 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 ($104 in 1980) 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...
services within ten days. Accident expenses to dental plates, crowns, fillings, glass frames, include X-ray, ambulance, dental treatment, prescribed drugs, wheelchairs or similar appliances. Reimbursement is not made for under the Ontario Health Insurance Students involved in laboratory or field work are particularly encouraged to investigate such coverage.

Health Services Fee
The supplementary health services fee of $12 includes reimbursement of expenses up to $1,000 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.

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 four plans:
- Ontario Study Grant Plan
- Canada Student Loans Plan
- Ontario Student Loans Plan
- Ontario Special Bursary Plan

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, and which provides loans to needy students for completion of any level of study. Maximum assistance under this plan is about one-half of standard costs at an Ontario institution.

Loans are available to full-time students enrolled at recognized post-secondary institutions anywhere in the world.

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.

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

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

Registration

The purpose of registration is to record officially your selection of programme and course. This is done before or at the beginning of the 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.

Regulations

APPROVAL OF PROGRAMMES
You are responsible for the completeness and accuracy of your registration. Your programme and course selection must be approved by the Dean of Studies of your Faculty. Similarly, you must obtain approval from the Dean of Studies for any change, including the dropping of courses.

EXTRA WORK
If you wish to take more than the normal number of courses prescribed for a level, you may do so only with the permission of the Dean of 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.

REPETITION OF COURSES
To repeat a course for which credit has been obtained, you need approval of your Dean of Studies. There is no limited 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.

SELECTION OF ELECTIVES
After you have completed Level I, you may take no more than 12 additional units of courses beginning with the digit 1 in a three-level degree programme, and no more than 18 additional units of courses beginning with the digit 1 in a four-level degree programme, except where special permission has been obtained from the Dean of Studies. This means that in most Faculties no more than 42 units of courses beginning with the digit 1 may be taken in a three-level programme and no more than 48 in a four-level programme.

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 it is cancelled up to and including the last date for withdrawing from the course. This date is approximately halfway through the instructional period and will vary slightly from year to year.

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.

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 Dean of Studies. Your identity card must be surrendered to the Dean of 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 immediately above entitled Cancellation of a Course.
The regulations which follow are the general regulations of the University. In addition to these general regulations there may be Faculty regulations to which your attention is drawn; they may be more stringent and appear at the beginning of the Faculty sections of this Calendar.

Since the Academic Regulations are continually reviewed, we reserve the right to change the regulation 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, Social Work, and Physical Education appear in the appropriate Faculty sections. In the event of a conflict between the programme regulations for these six programmes and the general regulations in this chapter, the programme regulations take precedence.

Residence Requirements
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 one other Level (approximately 60 units of work) at McMaster University, or
2. by completing the final Level (approximately 90 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 undergraduate degree must be completed at McMaster University.

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 Dean of Studies and pay the appropriate fee. If your Dean of 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 they are the last courses for the degree. 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.

Final 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. Deferred examinations are conducted in April and August for Winter Session courses, and in December for Summer Session courses.

The mid-term tests in December for Level 1 courses and the 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.

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 on campus throughout the examination periods which follow the end of classes since, until such time as the final examination timetable is published, you cannot know at what point during the examination period your examination may be scheduled.

If you miss an examination because of illness you must submit a medical certificate from the Student Health Services or 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.

REGULATIONS
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.

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.

TERMINOLOGY
This glossary of terminology is arranged in alphabetic sequence.

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

Course Numbers (e.g., 1A3) can be deciphered as follows: the initial digit (here 1) indicates the level of the course; the letters (here A) in the middle (here A) identifies the specific courses within the level; and the final digit (here 3) defines the number of units of credit associated with the course.

Cumulative Area Average (CAA) is computed 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.
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 a minimum of 24 units of Area courses, and the case of Honours and Major programmes it is computed on a minimum of 36 units of Area courses. In the case of those Combined Honours programmes which are created from two distinct components two Graduation Averages will be computed using a minimum of 24 units in each of the two components; 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 is greater.

Level is used in two ways:
1. to describe how far through a programme a student has progressed. A student entering the University with the normal admission requirements will be registered in Level I and normally will take 30 units of courses beginning with the digit 1; upon completion of Level I the student will progress to Level II, etc. The number of units required to complete a level will vary from programme to programme, and the method of determining when a level is complete may vary from Faculty to Faculty.
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 (beginning with the digit 2) by students registered in Level II, etc. The level designation is only a guideline, however, in that, subject to academic regulations and programme requirements, students registered above Level I may take Level I electives and students in lower levels may take upper-level courses for which they have the prerequisites.

Programme Probation may be assigned to students who do not meet the normal promotion requirements on the Cumulative Area Average for a programme. The conditions resulting in Programme Probation appear under the programme regulations. A student may be on Programme Probation only once, and the duration will be the longer of one reviewing period or the time taken to attempt at least 12 units of Area courses.

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 is a "reviewing period". 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 as described below. A unit is roughly equivalent to one lecture-hour 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**

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 standard of performance in appropriate Level I courses needed for admission.

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.

The Cumulative Area Average will be computed only if at least 12 units of Area courses have been completed since the average was last computed.

**Grading System**

The grade for a course is normally determined by combining the grades obtained on classwork, assignments, tests, and examinations.

The results of all courses attempted will appear on your transcript.

Effective September 1982, the grading scale is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>12</td>
<td>first class</td>
</tr>
<tr>
<td>A</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>second class</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>third class</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>pass</td>
</tr>
<tr>
<td>D-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>failure</td>
</tr>
</tbody>
</table>

Before submitting a failing grade, the instructor will reassess whatever examples of the student's work are available to him, or her.

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 standing 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 x</td>
<td>6 x 6 =</td>
</tr>
<tr>
<td>B+</td>
<td>6 x</td>
<td>6 x 6 =</td>
</tr>
<tr>
<td>B</td>
<td>3 x</td>
<td>6 x 6 =</td>
</tr>
<tr>
<td>B-</td>
<td>7 x</td>
<td>6 x 6 =</td>
</tr>
<tr>
<td>B+</td>
<td>9 x</td>
<td>3 x 3 =</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td>213</td>
</tr>
</tbody>
</table>

\[
\text{AVERAGE} = \frac{213}{30} = 7.1
\]
In the case of the Cumulative Area Average the average is computed on the basis of the best 80% of the Area course units as shown in the example below.

The grades 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 (21.6 \times 80\% of 27). 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>60</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(6)</td>
<td>48</td>
</tr>
<tr>
<td>B−</td>
<td>7</td>
<td>(3)</td>
<td>18</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>(3)</td>
<td>18</td>
</tr>
<tr>
<td>D+</td>
<td>5</td>
<td>(6)</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>(27)</td>
<td>x 0.6</td>
<td>169.8</td>
</tr>
</tbody>
</table>

\[ \text{CAA} = 169.8 \div 21.6 = 7.9 \]

In the case of the Graduation Average, the average is computed on the basis of the best 80% of the units of Area courses with the appropriate prefix or the required minimum of units of appropriate Area course, whichever 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 (33.6 \times 80\% of 42). If the student had taken only 24 units of appropriate Area courses, all units would have been included in the Graduation Average.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>(Units)</th>
<th>GA Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A−</td>
<td>11</td>
<td>(6)</td>
<td>66</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>(6)</td>
<td>60</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>(3)</td>
<td>27</td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>(3)</td>
<td>24</td>
</tr>
<tr>
<td>B</td>
<td>7</td>
<td>(3)</td>
<td>21</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>(3)</td>
<td>18</td>
</tr>
<tr>
<td>TOTAL</td>
<td>(42)</td>
<td>x 0.6</td>
<td>298.2</td>
</tr>
</tbody>
</table>

\[ \text{GA} = 298.2 \div 33.6 = 8.9 \]

### Deans’ Honour List

Each year outstanding students are recognized by their being named to the Deans’ Honour List for which a minimum average of 10.0 is required. In the case of full-time students, this average must have been attained during a session on at least 30 units. For those who have studied part-time on a continuous basis the assessment will be made at the reviewing period where 30, 60, and 90 units have been completed and at graduation.

### Academic Standing

#### 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 I 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.

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

In the case of part-time students the Associate Dean has the discretion to permit students to take some of the work on 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 2.0. Similarly, two separate Cumulative Area Averages will be computed, one for each 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 readmission. 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 with 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 may register as "irregular" for one reviewing period and take up to 18 units of work that would qualify you to re-enter a programme. This privilege will be granted only once.

#### PROGRAMME REQUIREMENT FOR B.A. AND B.Sc.

### PROGRAMS

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

#### 1. 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 Cumulative Area Average of 7.0 is required, for second-class standing 6.0 and for third-class standing 5.0.

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

#### 2. 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.
3. Major Programmes
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.

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 10.0 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 a major degree may seek to transfer to another programme.

4. 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 10.0 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 Dean of 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 Dean of Studies.

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.

Second Undergraduate Degrees
Credit for courses taken towards a first undergraduate degree may be applied to a second undergraduate degree. 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. The courses which are being taken as extra courses in the session in which you are completing the requirements for a first degree 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.

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.

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 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 of at least 7.0 in specified courses for entry to an Honours programme).

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.

The foregoing 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 Dean of Studies.

Appeal Procedures
The University believes that its policies and regulations should be applied fairly and equitably to all students. The University Senate has established formal procedures so that students who think they may not have been treated fairly in the administration of University regulations may appeal to 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. It is recommended that action be taken expeditiously and, if the formal procedures are to be used, the first step should be taken within 30 days of the alleged grievance arising.
The informal procedures are described below.

Students with grievances which are academic in nature should communicate with their instructor, the Department Chairman and/or the Associate or Assistant Dean of the Faculty, before following the formal procedures.

Students with complaints or grievances about matters which are not academic, should consult those faculty members or officials of the University who may be able to help and, in any case, the Dean of Student Affairs, or the Dean of Men, or the Dean of Women.

If a complaint cannot be resolved by the informal procedures described above, a student may initiate a formal appeal. Advice and information about these procedures may be obtained from the Secretary of the Senate, University Hall, Room 203.

Applicants for admission to an undergraduate degree programme may seek a review of a decision on admission or on the granting of transfer credit, if they believe that the information on which the decision was made was incomplete or incorrect. To initiate such a review, the applicant must write to the Registrar within 30 days of the original decision being mailed and state the grounds for seeking the review. Further information about the procedures may be obtained from the Secretary of the Senate, University Hall, Room 203.

**Academic Dishonesty**

In 1976 the Senate defined Academic Dishonesty and established procedures for dealing with alleged cases of dishonesty. The document containing procedures may be examined in the Office of the Secretary of Senate. 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."

**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 the 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 M.D. Programme 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.

**Transfer of Credit from Professional Programmes to B.A. and B.Sc. Programmes**

Students are advised that transfer of credit between Faculties is handled by the Assistant or Associate Deans (Studies). Full credit may not be given for courses taken in Commerce, Engineering, Nursing, Physical Education, and Social Work programmes when credit is to be transferred by a student seeking admission to B.A. and B.Sc. degree programmes.
McMaster University offers the following undergraduate degrees:

**Faculty of Business**  
_B.Com._ ........................................... 4

**Faculty of Engineering**  
_B.Eng._ .................................................. 4  
_B.Eng.Mgt._ ........................................... 5

All Engineering and Engineering and Management programmes are fully accredited by the Association of Professional Engineers in the Province of Ontario. The qualification, Professional Engineer, is granted in the minimum time of two years of professional employment following the completion of the Engineering degree.

Courses offered in the Engineering and Management programme will be subject to credit toward the C.A. professional qualification. Further information should be obtained from the Faculty of Business.

**Faculty of Health Sciences**  
_B.H.Sc._ .................................................. 1  
_B.Sc.N. (Nursing)_ .................................. 4  
_M.D._ ..................................................... see below

The M.D. (Doctor of Medicine) degree is taken after at least three years of undergraduate study, and is of three years' duration.

**Faculty of Humanities**  
_B.A._ ..................................................... 3  
_B.A. (Honours)_ .................................... 4  
_B.Art.Sc._ ............................................. 3  
_B.Art.Sc. (Honours)_ ............................. 4  
_Mus.Bac._ ............................................. 4

**Faculty of Science**  
_B.Sc._ .................................................... 3  
_B.Sc. (Major)_ ........................................ 4  
_B.Sc. (Honours)_ .................................... 4

**Faculty of Social Sciences**  
_B.A._ ..................................................... 3  
_B.A. (Honours)_ ..................................... 4  
_B.A./B.S.W._ ......................................... 4  
_B.S.W. (Second Degree)_ ........................  
_B.P.E._ .................................................. 4  
_B.P.E. (Second Degree)_ ........................ see below

Honours programmes involve specialized work in one or more departments, and at least second class standing in specified courses required. In the major programmes, at least third class standing in specified courses is required.

The provision exists for a graduate to take a second undergraduate degree and the programme is normally shortened.

**ELECTIVE COURSES AVAILABLE TO LEVEL I STUDENTS**

The following is a partial list of courses available as electives to Level I students, provided that the student has met the 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**  
  _B.A._ 1A3, 1B6, 123
- **Art History**  
  _B.A._ 1A6
- **Biology**  
  _B.A._ 1G6
- **Canadian Studies**  
  _B.A._ 1A6
- **Chemistry**  
  _B.A._ 1B7
- **Chinese**  
  _B.A._ 1Z6
- **Classical Civilization**  
  _B.A._ 1A6
- **Comparative Literature**  
  _B.A._ 1A6
- **Computer Science**  
  _B.A._ 1H3
- **Dramatic Arts**  
  _B.A._ 1A6
- **Economics**  
  _B.A._ 1A6, 1B6
- **English**  
  _B.A._ 1A6, 1B6
- **French**  
  _B.A._ 1A6, 1B6, 1Y3, 1Z6
- **Geography**  
  _B.A._ 1A6, 1B6, 1D6
- **Geology**  
  _B.A._ 1A6, 1B6
- **German**  
  _B.A._ 1A6, 1Z6
- **Greek**  
  _B.A._ 1A6, 1B6, 1Z6
- **History**  
  _B.A._ 1A6, 1B6, 1C6, 1L6
- **Humanities**  
  _B.A._ 1Z6
- **Italian**  
  _B.A._ 1A6, 1Y3, 1Z6, 1Z26
- **Labour Studies**  
  _B.A._ 1A3, 1B3
- **Latin**  
  _B.A._ 1A6, 1Z6
- **Linguistics**  
  _B.A._ 1A6
- **Mathematics**  
  _B.A._ 1A6
- **Music**  
  _B.A._ 1A6
- **Philosophy**  
  _B.A._ 1A6, 1B6
- **Physics**  
  _B.A._ 1A6, 1B6, 1C8
- **Political Science**  
  _B.A._ 1A6
- **Psychology**  
  _B.A._ 1A6
- **Religious Studies**  
  _B.A._ 1B6, 1C6, 1E6, 1F6, 1Z6
- **Russian**  
  _B.A._ 1B6, 1Z6
- **Sociology**  
  _B.A._ 1A6
- **Spanish**  
  _B.A._ 1A6, 1Z6
- **Ukrainian**  
  _B.A._ 1Z6
## 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 Degrees</th>
<th>Course Areas Not Offered As Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropology</td>
<td>B.A.*</td>
<td>B.A.</td>
<td>B.A.*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applied Chemistry</td>
<td>B.A.</td>
<td>B.Sc.</td>
<td>B.A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and Science</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Sciences and Applied Mathematics</td>
<td></td>
<td></td>
<td></td>
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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 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 forty students.

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 in relation to food supply, requires an understanding of the methods and findings of many disciplines; it calls on a liberal education. 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.

The programme offers excellent preparation for advanced study in many professions, including law, medicine, and business administration. It offers excellent preparation for graduate study in many academic disciplines. The programme has also been designed with the career needs in mind of those who seek employment directly from their first degree. Electives may be used to specialize in such work-related subjects as economics, business, psychology, or applied mathematics. In addition, the emphasis on communicative skills, quantitative reasoning, and the art of practical inquiry will prove valuable in the world of work.

Programme for the B.ArtsSc. and B.ArtsSc. (Honours) Degrees

Continuation to Level II requires a weighted average of at least 7.0 in the best 80% of the 30 to 32 units of Level I. All courses completed beyond Level I, except those designated as extra at the time of registration, are Area Courses. Continuation beyond Level II requires a Cumulative Area Average of at least 7.0. Calculation of the Graduation Average for B.ArtsSc. (Honours) includes Arts and Science 2A6 and 2D6.

The degree, B.ArtsSc., is awarded on completion of Level III. The degree, B.ArtsSc. (Honours), is awarded on completion of Level IV.

Area Courses:
All Level II, III and IV Arts and Sciences Courses.

Level I: 30-32 units
R Arts and Science 1A6, 1B6, 1C6; either Biology 1A6 or 1B7; Mathematics 1A6 or mathematics courses approved by the Director as a substitute.

Level II: 30-32 units
R Arts and Science 2A6, 2C6 (may be taken in Level III), 2D6; Statistics 2E6 or mathematics courses approved by the Director as a substitute.

E Electives to make a total of 30 to 32 units.

Level III: 30-32 units
R Arts and Science 2C6 (if not already completed), 3B6, and either 3A6 or 3D6.

E Electives to make a total of 30 to 32 units.

Level IV: 30-32 units
R Either Arts and Science 3A6 or 3D6 (whichever not completed in Level III), either Arts and Science 3C6 or a course approved by the Director; and 6 to 12 units from Arts and Science 4A6, 4A12, 4C6, 4C12.

E Electives to make a total of 30 to 32 units.
The Faculty of Business offers four-level programmes leading to the Honours Bachelor of Commerce degree and the Bachelor of Commerce degree. In Level I, all students are required to establish a foundation in computer science, economics, mathematics, and psychology or sociology. The remainder of the work in Business I is selected from Social Sciences, Humanities, or Science. Upon completion of Level I, students may apply for admission to Commerce Level II.

Commerce II is common to both the Honours B.Com. programme and the B.Com. programme. In Level II, students are introduced to a wide range of business subjects (accounting, finance, marketing, organizational behaviour, statistical analysis for business) and extend their foundation in economics. This early exposure to a broad spectrum of business disciplines provides a good basis upon which students can make informed choices about the directions they wish to pursue in the upper levels of their programmes. The elective portion of Level II is taken from non-Commerce courses.

The Honours B.Com. and B.Com. programmes diverge at Level III. While all students in Levels III and IV complete the same core of required business subjects, the programmes differ in the extent of concentration in Commerce electives. Approximately three-quarters of the work in Levels III and IV of the Honours B.Com. programme is in Commerce subjects; whereas about one-half of the content in these levels of the B.Com. programme is in Commerce courses.

Thus, the Honours programme permits considerably more specialization in Commerce. On the other hand, the Commerce programme facilitates the broadening of horizons through a more substantial amount of work in Social Sciences, Humanities or Science.

In conjunction with the Faculty of Engineering, a five-level programme is offered for the Bachelor of Engineering and Management degree. It provides a full course of study in Chemical, Civil, Computer, Electrical, Engineering Physics, or Mechanical Engineering, and includes a complete core of Commerce subjects. The B.Eng.Mgt. programme is designed for students seeking careers in which management capabilities, as well as technical expertise, will be essential. Details concerning the programme and its academic requirements are given in the Faculty of Engineering section of this Calendar.

If appropriate academic standing has been attained in undergraduate courses, credit will be given towards the Master of Business Administration degree. Normally, this will reduce the M.B.A. programme to one additional academic year beyond the Honours B.Com., B.Com., or B.Eng.Mgt. degree.

Credit towards a variety of professional designations can be obtained within the Honours B.Com., B.Com. and B.Eng.Mgt. programmes. The Institute of Certified Accountants of Ontario requires 45 units of designated course work for academic pre-qualification. With the appropriate academic standing and selection of elective courses, 39 of the 45 credits required for the designation C.A. can be completed within the Honours B.Com. programme. Also, the remaining 6 units may be taken at McMaster as extra courses while undertaking the Honours B.Com. degree or upon its completion. The Society of Management Accountants course of study leading to the R.I.A., the C.G.A. programme of the Canadian Certified General Accountants Association, and the Ontario Personnel Association's requirements for the designation C.P.M., can be substantially fulfilled with the appropriate academic standing and selection of elective courses in the Honours B.Com. programme. In the B.Com. programme, the possibility of obtaining credit towards professional qualifications is more limited than in the Honours B.Com. programme; for instance, 30 credits are available towards the C.A. designation in the B.Com. programme, information concerning credit towards these and other professional designations can be obtained from the Office of the Undergraduate Student Advisor of the Faculty of Business.

The programmes and academic regulations specified in this calendar apply in their entirety to students entering Level I in September, 1982 or thereafter. 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 Registrar (GH-108) or the Office of the Undergraduate Student Advisor (KTH-118).

Part-time Studies

While the Honours B.Com. and the B.Com. programmes can be undertaken through part-time studies, Level IV Commerce courses are rarely offered in even numbers and Summer Sessions (May to August). Part-time students are permitted to take a maximum of 18 units for credit towards the Honours B.Com. degree or the B.Com. degree in any Winter Session (September to April).

Second Undergraduate Degree

Students with an undergraduate degree will not be admitted to either the B.Com. programme or the Honours B.Com. programme. Such students may wish to apply for admission to the M.B.A. programme.

Continuing Students

Graduates of McMaster's Honours B.Com. programme 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".

Academic Regulations

Students enrolled in the Honours B.Com. programme or the B.Com. programme, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations:

CUMULATIVE COMMERCE AVERAGE

The Cumulative Area Average for Commerce programme 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, but excepting those courses required in Business I or designated at registration as Extra.

WORK LOAD

All full-time students must complete a 30-unit load in each Winter Session. Advance credit and credit earned during Summer Sessions may be used to reduce the 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 without the approval of the Associate Dean (Academic Programmes). In no case will this approval 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 B.Com. 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 B.Com. programme. There is no probationary status in either 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 Commerce.

CHANGE OF PROGRAMME

A student in the Honours B.Com. programme can change to the B.Com. programme prior to entering Level IV, provided that the academic requirements of the B.Com. programme are met. The revised programme of work must be approved by the Associate Dean (Academic Programmes). No other changes between these two programmes are possible.
BNCANCE

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 are neither included in the Cumulative Commerce Average nor the Graduation Average (GA), nor are the units 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 either programme. 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 Commerce 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) in March of the year for which re-admission is desired. This application should include reasons as to 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 being become ineligible to continue in Commerce must repeat all the courses of the Level at which he became ineligible to continue unless specific course exemptions are granted. The computation of the Cumulative Commerce Average begins anew at such re-admission.

PREREQUISITES FOR COMMERCE COURSES
Prerequisites for Commerce courses are specified in the course listing. A grade of at least D— must be attained to satisfy any course prerequisite.

COURSE CHANGES
It is the responsibility of the student to ensure that the programme of work undertaken meets the requirements for the degree. All course changes must be made through the Office of the Undergraduate Student Advisor and will be subject to the deadline dates established by the University (see Sessional Dates section of this Calendar).

GRADUATION STANDING
The Graduation Average is the weighted average of all grades in courses taken for Levels III and IV of the programme, excluding Extra courses. A minimum GA of 4.0 is required for graduation from either programme. First-class standing requires at least a 10.0 GA; second-class standing requires at least a 7.0 GA. Third-class standing is specified for students with a GA of less than 7.0.

PROGRAMMES

BUSINESS I: 30 units
R Computer Science 1A3; Economics 1A6; Mathematics 1L3; Mathematics 1M3 or 1A6; Psychology 1A6 or Sociology 1A6.
E Electives to make a total of 30 units (students without Grade 13 Calculus must elect Mathematics 1K3).

COMMERCE
Admission:
Enrolment in Commerce Level II is limited to a maximum of 300 students. Admission is by selection on the basis of the overall weighted average attained in the work designated for Level I. To be considered for Commerce Level II, a Business I student normally must have attained at least a 5.0 weighted average on the first attempt in the 30 units of Level I with no F grades. In addition, the Business I student normally must have completed the full load (30 units) in a single Winter Session (September to April).

A maximum of 50 of the 300 places in Commerce Level II will be given to students from other universities or from other faculties within McMaster University. Academic requirements for admission of transfer students may be more demanding than those for Business I students. Admission beyond Commerce Level II is not possible.

Level II: 30 units
R Commerce 2A3, 2B3, 2FA3, 2MA3, 2QA3, Economics 2G3 or 2L6; Economics 2H3 or 2M6.
Students may substitute Economics 2L6 for 2G3 and Economics 2M6 for 2H3, and should do so if they intend to take a substantial amount of further work in Economics. For each of these substitutions, the specified number of elective units in Level II is reduced by 3.

E 9 units of electives from non-Commerce courses.

HONOURS B.COM.
Requirements for continuation towards the Honours B.Com. degree are specified under 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 Commerce 3AB3, 4AA3, 4AB3, 4AC3, 4AD3, 4AE3, 4AF3.
Group 3 (Finance): Commerce 3FB3, 4FA3, 4FB3, 4FC3.
Group 4 (Marketing and Sales): Commerce 3MB3, 4MA3, 4MB3.
Group 5 (Environment): Commerce 4PB3, 4PC3, 4PD3.
Group 6 (Production and Management Science): Commerce 4QB3, 4QC3.

B.COM.
Requirements for continuation towards the B.Com. degree are specified under 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.
Faculty of Engineering

A.C. Heidebrecht/Ph.D., M.S., B.Sc., P.Eng., Dean of Engineering
M.B. Ives/Ph.D., B.Sc., F.A.S.M., P. Eng., Associate Dean of Engineering
(to be appointed)/Assistant Dean of Engineering (Professional Affairs)
F. Miyasaka, 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 practice of engineering. Modern society is challenged to advance from heedless exploitation of our world to an era of exercising beneficial control of the environment, 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
- Mechanical Engineering
- Metallurgical Engineering

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

The accreditation of engineering programs is the responsibility of the Canadian Accreditation Board (CAB) which is a standing committee of the Canadian Council of Professional Engineers. Provincial Engineering Associations accept the accreditation for admission to the qualification Professional Engineer normally without examination in specific areas. McMaster engineering programs are reviewed regularly by CAB. The current status of program accreditation can be obtained from the office of the Associate Dean of Engineering.

Courses offered in the Engineering and Management program may be credited to the Chartered Accountant professional qualification. Further information should be obtained from the Faculty of Business.

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). 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.

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 an Engineering programme at Level II or above, but excepting those courses required in Engineering I or designated at registration as "Extra".

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, and who has not been placed on probation before, may, at the discretion of the Faculty, and subject to the availability of space, continue on Engineering 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.

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 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. 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.

RE-ADMISSION TO ENGINEERING
A student who is ineligible to continue may apply for re-admission to Engineering after not less than one year of practical work experience. Application for re-admission must be made in writing to the Associate Dean of Engineering in March of the year for which re-admission is desired and should include a recommendation from the current employer. Re-admission is not guaranteed.

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

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 STANDING
Honours standing at graduation will be granted to a student whose Graduation Average (GA), based on all Level III and IV courses not designated EXTRA, is at least 10.0.

Students who have completed year III (B.Eng) or year IV (B.Eng.Mgt.) before September, 1982 will be granted Honours standing at graduation if they achieve an average of at least 10.0 on the work of Level IV (B.Eng.) or Level V (B.Eng.Mgt.) and have achieved first class standing in one previous Year.

Level I Programmes
ENGINEERING I: 38 units
R Chemistry 1A7; Engineering 1C4, 1D3; Mathematics 1H5, 1N6; Physics 1D3, 1E4; Engineering 1A0.
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.

ADAPTED ENGINEERING I
The programme of each student admitted on the selective engineering admission basis (See "Admission: Subject Requirements For Specific Level I programmes: Engineering I") will be determined by the Associate Dean of Engineering in consultation with appropriate members of the Faculties of Science and Engineering.

Programmes for the B.Eng. and B.Eng.Mgt. Degrees
Prerequisite requirements for courses listed for each programme are specified with the course description under "Courses by Departments".

B.ENG. IN CERAMIC ENGINEERING
Admission:
Completion of Engineering I with a weighted average of at least 4.0 (60.0%).

Level II: 38 units
R Chemistry 2A4, 2T4; Engineering 2A5, 203, 2P4; English 2E6; Materials 2F3; Mathematics 2M6; Metallurgy 2C3.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5, 2F4; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.

R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering 2G3 or Commerce 2Q3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; English 2E6; Mathematics 2M6.

R Chemical Engineering 3A4, 3B3, 3D4, 3E3; Chemistry 208; Commerce 2FA3, 3AA3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 or 2F4, 2M5, Engineering 203.
B.ENG.MGT. IN CIVIL ENGINEERING AND MANAGEMENT

Admission:
Admission is by selection but, as a minimum, requires completion of Engineering I, with a weighted average of at least 4.0 (60.0%), including a grade of at least C in Economics 1A6.

Level II: 39 units
R Civil Engineering 2A2, 2B2, 2C4, 2O3; Commerce 2A3A, 2B3A; Economics 2G3, 2H3; Engineering 2P4; English 2E6; Mathematics 2M6.

Level III: 39 units
R Civil Engineering 2B1, 2D3, 3K3, 3M4, 3O4; Commerce 2FA3; Engineering 2C3, 2Q4, 2W4; Mathematics 3J4; Psychology 1A6 or Sociology 1A6.

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 IV: 38-39 units
R Civil Engineering 3A3, 3B3, 3G4, 3J4; 8 or 9 units of Level IV Civil Engineering courses: Commerce 2MA3, 3FA3, 4QA3, 3B3A or 3BB3, 3A3A; Engineering 4A1.

Level V: 37-38 units
R 15 to 16 units of Civil Engineering; Commerce 4PA3; Engineering 3P3, 5A1.
E 9 units Commerce electives selected from Level III and IV Commerce courses; 6 units liberal studies or approved technical electives.

B.ENG. IN COMPUTER ENGINEERING

Admission:
Completion of Engineering I with a weighted average of at least 4.0 (60%).

Level II: 39 units
R Computer Science 2B3, 2L3; Electrical Engineering 2B3, 2D3, 2H3, 2X3; Engineering 2O3, 2P4; English 2E6; Mathematics 2P4, 2Q4.

Level III: 38 units
R Computer Science 3A3, 3E3; Electrical Engineering 3B4, 3C4, 3F4, 3G4, 3H3, 3K4; Engineering 2W4; Mathematics 3K5.

Level IV: 37-38 units
R Computer Science 3C3, 4E5, 4W3; one of Computer Science 4F3, 4J3, 4L3, 4X3; Electrical Engineering 4E3, 4H3; Statistics 3X3.
E 6 units liberal studies elective; 10 or 11 units from Electrical Engineering 3N3, 4A4, 4B4, 4C4, 4G3, 4K4, 4L3, 4N3.

B.ENG.MGT. IN COMPUTER ENGINEERING AND MANAGEMENT

Admission:
Admission is by selection but, as a minimum, requires completion of Engineering I, with a weighted average of at least 4.0 (60.0%), including a grade of at least C in Economics 1A6.

Level II: 38 units
R Commerce 2A3A, 2B3A; Computer Science 2B3, 2L3; Economics 2G3, 2H3; Electrical Engineering 2B3, 2D3, 2H3, 2X3; Mathematics 2P4, 2Q4.

Level III: 39 units
R Commerce 3A3A, 2FA3; Computer Science 3A3; Electrical Engineering 3B4, 3C4; Engineering 2O3, 2P4, 2W4; English 2E6; Mathematics 3K5.

Level IV: 40 units
R Commerce 4QA3; two of Commerce 2MA3, 3FA3, 3B3A or 3BB3; Computer Science 3C3, 3E3; Electrical Engineering 3F4, 3G4, 3H3, 3K4; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3X3.

Level V: 37-39 units
R Commerce 4PA3; one of Commerce 2MA3, 3FA3, 3B3A or 3BB3; Computer Science 4E3, 4W3; one of Computer Science 4F3, 4L3, 4J3, 4L3; Electrical Engineering 4E3, 4H3; Engineering 5A1.
E 9 units Commerce electives selected from Level III and IV Commerce courses; 7 to 9 units selected from Electrical Engineering 4A4, 4B4, 4C4, 4G3, 4K3, 4L3, 4N3.

B.ENG. IN ELECTRICAL ENGINEERING

Admission:
Completion of Engineering I with a weighted average of at least 4.0 (60.0%).

Level II: 37 units
R Electrical Engineering 2B3, 2D3, 2H3, 2X3; Engineering 2O3, 2P4, 2W4; English 2E6; Mathematics 2P4, 2Q4.

Level III: 37 units
R Electrical Engineering 3B4, 3C4, 3F4, 3G4, 3H3, 3K4, 3N3, 3S3; Mathematics 3K5; Statistics 3X3.

Level IV: 36-38 units
R 16 units of Electrical Engineering Level IV courses.
E 6 units liberal studies elective; 14 to 16 units technical electives.

In selecting courses for Level IV of this programme, the following groups of courses are recommended:
- Electronics and Communications: Electrical Engineering 4A4, 4B4, 4C4, 4G4, 4K4, 4L3 or 4M3; Engineering Physics 4B3 or Engineering 3Q3; Engineering Physics 4K3; Power and Control: Electrical Engineering 4A4, 4C4, 4F3, 4H3, 4K4, 4M3, 4N3; Engineering 3Q3; Engineering Physics 4D3; Computer Systems: Electrical Engineering 4A4, 4B4, 4C4, 4F3, 4G3, 4H3, 4K4, 4M3, 4N3; Computer Science 3C3, 3D3; Biomedical Engineering: Electrical Engineering 4A4, 4B4, 4C4, 4F3 or 4M3, 4H3, 4U4; Engineering 4X3; Engineering Physics 4Y3; Biology 1H6; General Electrical Engineering: Electrical Engineering 4A4, 4B4, 4C4, 4F3, 4H3, 4K4, 4M3, 4N3; Engineering 3Q3.

(Students with first class standing in Level III, or with permission of the Chairman, may substitute Electrical Engineering 4J4 for any of the listed courses.)

B.ENG.MGT. IN ELECTRICAL ENGINEERING AND MANAGEMENT

Admission:
Admission is by selection but, as a minimum, requires completion of Engineering I, with a weighted average of at least 4.0 (60.0%), including a grade of at least C in Economics 1A6.

Level II: 36 units
R Commerce 2A3A, 2B3A; Economics 2G3, 2H3; Electrical Engineering 2B3, 2D3, 2X3; Engineering 2O3, 2P4, 2Q4.

Level III: 39 units
R Commerce 3A3A, 2FA3; Electrical Engineering 2H3, 2B4, 3C4, 3H3, 3K4; Engineering 2W4; Mathematics 3K5; Psychology 1A6 or Sociology 1A6.

Level IV (1982-83 only): 39 units
R Commerce 4QA3; two of Commerce 2MA3, 3FA3, 3B3A or 3BB3; Electrical Engineering 3F4, 3G4, 3H3, 3N3; Engineering 4A1; English 2E6; Statistics 3X3.
E 6 units liberal studies or approved technical electives.

Level IV (commencing 1983-84): 39 units
R Commerce 4QA3; Commerce 2MA3, 3FA3, 3B3A or 3BB3; Electrical Engineering 3F4, 3G4, 3N3; Engineering 4A1; English 2E6; Statistics 3X3.
E 6 units liberal studies or approved technical electives.

Level V: 37-39 units
R Commerce 4PA3; one of Commerce 2MA3, 3FA3, 3B3A or 3BB3; Electrical Engineering 3S3; Engineering 5A1.
E 9 units Commerce electives selected from Level III and IV Commerce courses; 18 to 20 units of Electrical Engineering Level IV courses (see note following Level IV Electrical Engineering programme description).

Level V (commencing 1984-85): 37-39 units
R Commerce 4PA3, 3MA3; Electrical Engineering 3S3; Engineering 5A1.
E 7 units Commerce electives selected from Level III and IV Commerce courses; 21 to 23 units of Electrical Engineering Level IV courses.

B.ENG. IN ENGINEERING PHYSICS

Admission:
Completion of Engineering I with a weighted average of at least 4.0 (60.0%).
Level II: 37 units
R Engineering 2O3, 2P4, 2W4; Engineering Physics 2A3, 2E4; English 2E6; Mathematics 2P4, 2Q4; Physics 2C5.

Level III: 36-38 units
R Chemical Engineering 2O4; Engineering Physics 3D3, 3E5; Mathematics 3C6, 3Q4; Physics 3B6, 3M6.
E Liberal studies elective (which may be deferred to Level IV), or approved technical electives to make a total of 36 to 38 units. The following areas and courses are suggested as technical electives for Level III: Biomedical Engineering: Engineering Physics 3X4; Computer Systems: Electrical Engineering 2H3; Solid State Electronics: Engineering 3Q3.

Level IV: 36-38 units
R Engineering Physics 4C2, 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4B3, 4D3, 4G3, 4K3, 4N3, 4S4, 4W3, Physics 4D6.
E 6 units liberal studies elective (if not completed in Level III); approved technical electives to make a total of 36 to 38 units. The following areas and courses are suggested as technical electives for Level IV: Biomedical Engineering: Electrical Engineering 4U4; Engineering 4X3, Engineering Physics 4Y3; Computer Systems: Engineering Physics 4W3, Physics 4D6; Lasers and Electro-Optics: Engineering Physics 4G3, 4K3, 4S4; Nuclear Engineering: Engineering Physics 4D3, 4L3, 4M3, 4N3; Solid State Electronics: Engineering Physics 4B3.

B.ENG.MGT. IN ENGINEERING PHYSICS AND MANAGEMENT
Admission: Admission is by selection but, as a minimum, requires completion of Engineering I, with a weighted average of at least 4.0 (60.0%), including a grade of at least C in Economics 1A6.

Level II: 38 units
R Commerce 2A3, 2B3; Economics 2G3, 2H3; Engineering 2O3, 2P4, 2W4; Physics Engineering 2A7; Mathematics 2P4, 2Q4.

Level III: 38 units
R Commerce 2M3, 3A4, 3F4, 3P4; English 2E6; Mathematics 3C6; Physics 2C5, 2B6; Psychology 1A6 or Sociology 1A6.

Level IV: 37-38 units
R Chemical Engineering 2O4; Commerce 3F3, 4QA3, 3B3 or 3B3; Engineering 4A1; Engineering Physics 3D3, 3E5, 4C2; Mathematics 3Q4; Physics 3M6.
E 3 or 4 units approved technical electives, which may be replaced by liberal studies elective.

Level V: 40 units
R Commerce 4P4; Engineering 5A1; Engineering Physics 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4B3, 4D3, 4G3, 4K3, 4N3, 4S4, 4W3; Physics 4D6.
E 9 units Commerce electives selected from Level III and IV Commerce courses; approved technical electives to make a total of 40 units.

B.ENG. IN MANUFACTURING ENGINEERING
Admission: Completion of Engineering I with a weighted average of at least 4.0 (60.0%).

Level II: 37 units
R Engineering 2M4, 2O3, 2P4, 2Q4, 2W4; English 2E6; Manufacturing Engineering 2C3; Mathematics 2M6; Mechanical Engineering 2A3.

Level III: 38 units
R Engineering 3M3, 3N3; Manufacturing Engineering 3M3; Mathematics 3V6; Mechanical Engineering 3A3, 3C3, 3E4, 3Q4, 3R3. Either Engineering 3R3, Mechanical Engineering 4X3 or 6 units liberal studies elective.

Level IV: 39 units
R Electrical Engineering 3H3; Engineering 4J3; Manufacturing Engineering 4A3, 4M4, 4P2; Mechanical Engineering 4C3, 4D3, 4Q3, 4R3, 4T3, 4Z3.
E Either 6 units liberal studies elective or Engineering 3R3, Mechanical Engineering 4X3, whichever was not completed in Level III.

B.ENG. IN MECHANICAL ENGINEERING
Admission: Completion of Engineering I with a weighted average of at least 4.0 (60.0%).

Level II: 37 units
R Engineering 2M4, 2P4, 2Q4, 2W4; English 2E6; Mathematics 2M6; Mechanical Engineering 2A3, 2B3, 2C3.

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.
E 6 units liberal studies elective; four of the following courses: Ceramics 4O4, Chemical Engineering 4T3, 4V3, Civil Engineering 3K3, Electrical Engineering 3S3, Engineering 3P3, 3Q3, 3R3, 4J3, 4X3, Engineering Physics 4D3, 4X4, Mechanical Engineering 4A3, 4C3, 4D3, 4F3, 4L3, 4T3, 4U3, 4V3, 4W3, 4X3, 4Y3, 4Z3. Electives must be chosen so that no more than 21 units are taken in any one term.

B.ENG. IN MECHANICAL ENGINEERING AND MANAGEMENT
Admission: Admission is by selection but, as a minimum, requires completion of Engineering I, with a weighted average of at least 4.0 (60.0%), including a grade of at least C in Economics 1A6.

Level II: 39 units
R Commerce 2A3, 2B3; Economics 2G3, 2H3; Engineering 2M4, 2P4, 2W4; English 2E6; Mathematics 2M6; Mechanical Engineering 2C3.

Level III: 38 units
R Commerce 3A3, 2F4; Engineering 4Q4; Mathematics 3V6; Mechanical Engineering 2A3, 3D3, 3M3, 3O4, 3R3; Psychology 1A6 or Sociology 1A6.

Level IV: 37 units
R Commerce 2M3, 3F4, 3B3 or 3BB3; Engineering 2O3, 3M3, 4A1; Mechanical Engineering 3A3, 3C3, 3E4, 4C3, 4P2.
E 6 units liberal studies or approved technical electives.

Level V: 38 units
R Commerce 4PA3; Engineering 5A1; Mechanical Engineering 4G3, 4M4, 4Q3, 4R3, 4S3.
E 9 units Commerce electives selected from Level III and IV Commerce courses, excluding the Commerce elective, Being part of the Commerce electives; additional approved technical electives, which must include at least 9 units of Mechanical Engineering, to make a total of 38 units.

B.ENG. IN METALLURGICAL ENGINEERING
Admission: Completion of Engineering I with a weighted average of at least 4.0 (60.0%).

Level II: 38 units
R Chemistry 2A4, 2T4; Engineering 2A5, 2O3, 2P4; English 2E6; Materials 2F3; Mathematics 2M6; Metallurgy 2C3.

Level II Metallurgical Engineering is identical to Level II Ceramic Engineering. Transfer to Level III Ceramic Engineering can therefore be made without course deficiency.

Level III: 35 units
R Chemical Engineering 2O4; Chemistry 3Q3; Engineering 3P3; Materials 3B4, 3D6, 3E6; Mathematics 3V6; Metallurgy 3C3.

Attention is drawn to Metallurgy 4A1, which requires an essay based on employment in the summer between Levels III and IV.

Level IV: 35-37 units
R Engineering 3M3; Materials 4E3; Metallurgy 4A1, 4C4, 4K4, 4L4.
E 6 units liberal studies elective; 10 to 12 units approved technical electives.
Faculty of Health Sciences

In addition to the Health Sciences Centre, education, research and clinical programmes are based at the Hamilton Civic Hospitals, 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.

REGULATIONS GOVERNING ADMISSION AND REGISTRATION IN HEALTH SCIENCE PROGRAMMES

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 re-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.

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

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.

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 supplying documentation or evidence which, at the time, or subsequently is found to be falsified will be withdrawn from 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 Phase IV.

APPLICATION DEADLINES
Specific application procedures are detailed in the appropriate sections of the calendar; the following application deadlines are rigidly adhered to:

- November 15 for admission to the M.D. programme in Medicine the following September.
- April 1 for admission to the B.Sc.N. programme the following September.
- April 15 for admission to the B.H.Sc. programme the following September.

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 on campus 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.
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 is provided in "Postgraduate Medical Education at McMaster: the Integrated Programme", available from the Assistant Registrar (Health Sciences).
- A Northern Ontario medical programme has been developed in co-operation 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 Master of Science 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

This 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.

Objectives of the M.D. Programme

The graduates of McMaster’s M.D. programme will have acquired or developed the knowledge, abilities, and attitudes necessary to qualify for further education in any medical or related health career. The achievement of the general goals should enable a student:

1. To identify and define health problems at both an individual and a community level and to search for information to resolve or manage these problems.
2. To examine the underlying physical, biological and behavioural mechanisms of health problems. This includes a spectrum of phenomena from the molecular to those involving the patient’s family and community.
3. To investigate community health problems and to recommend efficient and effective approaches to deal with environmental, occupational, behavioural, and public policy issues.
4. To recognize, maintain, and develop the personal characteristics and attitudes required for a career in a health profession. These include:
   (a) Awareness of personal assets, limitations, and emotional reactions;
   (b) Responsibility and dependability;
   (c) Ability to relate to, and show concern for, other individuals.
5. To develop the clinical skills and knowledge required to define and manage the health problems of patients, including their physical, emotional, and social aspects, within the context of effective health care.
6. To become a self-directed learner, recognizing personal educational needs, selecting appropriate learning resources, and evaluating personal progress.

7. To assess critically professional activity related to patient care, health care delivery, and health research.

8. To function as a productive member of a small group which is engaged in learning, research, or health care.

9. To be aware of, and to be able to work in, a variety of health care settings.

SPECIFIC REQUIREMENTS FOR ENTRY TO MEDICINE

The admission policy is subject to annual review. Applicants are advised to consult the latest edition of the Ontario Medical School Application Service Instruction booklet, or to 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.

SPECIFIC POLICIES GOVERNING ADMISSIONS

Because of the extensive nature of the selection process, only the academic record of work completed and landed immigrant status (if applicable) existing by the deadline date of November 15 will be considered.

1. Eligibility

Students, except for those qualifying as Special Applicants (see below), before registering in the M.D. programme in September must have completed a minimum of three years in a recognized university. Also, applicants must have at least an overall “B” (second class) average in their university career at the time of application. In computing eligibility averages, the years completed most recently prior to application may be given additional weight. An applicant who offers work from a CEGEP in the province of Quebec is expected to have at least two additional years of university. Applicants who do not meet these academic requirements will not be accepted for admission, unless they qualify for consideration as a Special Applicant.

2. Age

Applicants over 30 years of age will be given full consideration. In comparison to younger candidates, however, they should have demonstrated exceptional personal academic performance and/or contributed significantly to society in the light of available opportunities.

3. 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).

The 440 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 in May whether or not they are accepted for admission in the following September.

4. Previous Academic Experience

There are no course prerequisites. No preference is given to applications from any particular academic background.

5. Graduate Studies

The academic record of applicants engaged in graduate studies will be considered, where appropriate, in order to make a candidate eligible.

6. 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 Landed Immigrant 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 Landed Immigrant 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 applications 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

Special Applicants must:

(a) be at least 24 years of age in the calendar year in which the class commences;

(b) have demonstrated intellectual ability. The applicant must have completed at least four full university undergraduate courses within a 12-month period, or the equivalent, with an acceptably high standard. Other evidence of academic ability will be considered and assessed in the light of the applicant’s other activities and qualifications. This avenue for admission will not be available to students who meet the normal admission requirement of three years of university, but lack the required overall standing;

(c) be qualified for the Hamilton Health Region, the Northwestern Ontario or the Ontario geographic status (see 6 above);

(d) have demonstrated exceptional personal performance and contributed significantly to society in the light of available opportunities.

Applicants who consider themselves eligible for consideration in this category MUST write to the Assistant Registrar (Health Sciences) before making a formal application.

Applicants who do not meet the requirements of the Ontario Student Assistance Program should be in a position to meet an annual financial commitment of at least $8,900.

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 students applying are considered for Year 1.

Application for Deferral of Admission

Application for deferral of admission may be made within two weeks of acceptance of the offer of admission. Deferred admissions are granted only under exceptional circumstances.
**Application Procedure**

Application material may be obtained from the Medical Admissions Office, McMaster University, Health Sciences Centre, Hamilton, Ontario, L8S 3Z5, (Room 1B7), or from the Ontario Medical School Application Service, Box 1328, Guelph, Ontario, N1H 6N8. Completed application forms, the application fee and requested documents must be received by the Ontario Medical Schools Application Service by November 15, 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, received after this date will not be considered. Applicants may be requested to provide more detailed information.

**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 the province regarding registration.

The College of Physicians and Surgeons of Ontario does not conduct a licensing examination. It, however, issues enabling certificates to final year students 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), Extension 2115.

**Student Affairs**

Within the School of Medicine, there is a Student Affairs Office which helps facilitate liaison between students and faculty. A Student Affairs Committee whose membership comprises students, faculty and administrative persons and chaired by the Co-ordinator of Student Affairs is a standing sub-committee of the M.D. Programme Education Committee. This committee meets on a regular basis to deal with student affairs and to recommend policy changes which will be beneficial to the needs of the students.

**Learning Methods**

To achieve the objectives of the M.D. programme students are introduced to patients with health problems within the first phase 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 discussions and a variety of printed, audio and visual 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.

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 and phases 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 or phase, 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 the student advisor while the original is kept in the student's evaluation file.

**The Curriculum Plan**

The M.D. Curriculum is comprised of four phases, an Elective Programme, and revision time. The curriculum plan showing the relative proportion of time accorded to these phases in the 22/3 calendar year programme is illustrated below. (See also Sessional Dates.)

In addition to the general objectives of the M.D. programme listed previously, there are more specific objectives for each of its components. These are outlined below.

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<th>Human Biology</th>
<th>Health and Health Care</th>
<th>Learning to Learn</th>
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**Programme Outline for Phase I**

**Objectives**

The general goal is to lay the groundwork for all subsequent learning in the health field. This goal is approached through three content areas: Human Biology, Health and Health Care, and Learning to Learn. In each of these areas, objectives are specified within three sectors: conceptual, informational and technical.

**September**

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<th>Year I</th>
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<th>Year III</th>
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<td>Phase I</td>
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<td>Elective</td>
<td>Phase III</td>
<td>Phase IV*</td>
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*Phase IV includes a sixteen week elective period."
The basis of the McMaster method is self-directed problem-based learning in small tutorial groups. This strategy is suited to two overall objectives: efficiency and individualization. Nothing is more important throughout a physician's career than being able to learn quickly and relevantly. Problem-based learning, complemented by a thorough conceptual grounding, is not only demonstrably the most efficient approach to learning in such a broad field, but also encourages the tailoring of objectives to the individual student. Our objectives are not sequential in the usual sense; although several things are begun in Phase One, they are not really "completed" until much later.

We consider that the traditional "informal" curriculum of medical school — covering professional roles, values and the socio-political context of medicine — is so important in the 1980's that it must be addressed specifically. Thus, there is a deliberate emphasis upon the relations of health and health care to society. In Phase One, students learn how to use the McMaster system and become familiar with the academic and clinical resource networks which they will use in subsequent phases.

CONTENT

In the human biology area, the purpose is to learn how the human organism at all levels from cell to society relates to its environment. There is exposure to several disciplines, although a careful balance of broad conceptual frameworks with specific micro-models. Key concepts involve the principles of human ecology, homeostasis, phylogenetics and human development, and learning theory. We are primarily concerned with the integration of ideas from three points of view. The informational base concerns the structure and function of the human body and of the human ecosystem. Technical emphasis is upon clinical skills and interviewing, in which "hands-on" examination technique is blended with living anatomy and interactive training.

In health and health care, the purpose is to learn about the context of medicine and to establish a foundation in general health studies. Key concepts involve the characteristics of health, disease and illness, and of both the socio-cultural and ethic dimensions of health care. Social and technological developments will require that physicians of the next generation relate comfortably both with community concerns and with electronic data management — thus, our attention to advocacy and fluency with modern information systems.

Learning skills include critical analysis of evidence, concepts and argument, problem-solving, evaluation, resource utilization, and team operations. We devote a great deal of effort and attention to evaluation, which we view as one of the student's most important learning tools. With increasing levels of sophistication, students are able to monitor and assess their own performances more and more ably, with the result that continuing adjustments to objectives and content are made regularly and easily.

PROGRAMME OUTLINE FOR PHASE II

OBJECTIVES

Generally, to develop the student's understanding of fundamental concepts of cell, tissue, organ, and organism response to various stimuli. More specifically Phase II leads the student to:

(a) An understanding of the relation between the chemical, functional and structural characteristics of a cell in respect to the maintenance of cellular integrity.

(b) An understanding of how stimuli affect this relationship.

(c) An understanding of the relationship between the alterations in cells and the changes that occur in the tissues, organs and the organism as a whole.

In developing an understanding of the fundamental concepts of the response to stimuli of cells, tissues, organs and the whole organism, the student learns that variation is inherent in all the processes which constitute the maintenance of cellular integrity, the external stimuli affecting these relationships, and the alterations which occur in these relationships as a result of response to stimuli.

CONTENT

In Phase II, students are presented with problems the solution of which requires an understanding of the universal concepts of the mechanisms whereby cells, tissues and the organisms respond to stimuli. The subject matter is organized so the students, whatever their backgrounds, can study at a challenging level of detail. In each problem area, the students are able to choose from a number of specific biomedical problems. Throughout the phase, students have supervised contact with patients. This provides the opportunity to develop basic clinical skills while at the same time learning the basic mechanisms of disease.

PROGRAMME OUTLINE FOR PHASE III

OBJECTIVES

Phase III covers 40 weeks of the M.D. Programme. The main theme in this phase is structure and function in health and disease with an emphasis on understanding the mechanism of disease, and relating clinical symptoms and signs to basic physiological and pathological processes. In order to facilitate the achievement of the goals, Phase III is divided into different units based on an organ-system approach. In progressing through this programme, students:

(a) Develop their ability to discern and to approach specialized biomedical problems.

(b) Learn how to derive on their own, and to use most effectively, the information they require to approach the solution of these problems.

(c) Acquire an understanding of the integrated physical and behavioural mechanisms important in maintaining the healthy function of the systems and of the alterations in those mechanisms that give rise to dysfunction or disease.

(d) Learn some techniques of clinical examinations and history-taking as a means of obtaining data in a clinical setting in preparing for Phase IV.

CONTENT

The students in Phase III are encouraged to integrate basic sciences with clinical medicine through the use of problem-based learning. A variety of learning resources are available to students to achieve the objectives of the phase. Students are encouraged to seek and acquire knowledge individually, using books and slide tape shows or utilizing resource people in small or large group sessions. Each organ system in Phase III leads the student to relate the respective system's anatomy, biochemistry and physiology to its specialized pathological chemistry, abnormal physiology, special pathology, microbiology, epidemiology and pharmacology. The behavioural and sociological aspects of disease will also be dealt with in an integrated way. The types of problems presented to students vary according to the particular organ system. In some cases, the problems are based on signs and symptoms; in others, on physiological processes, and, in some cases, on particular and clinical examination with in-depth assessment of problems related to disease models. The student refines general techniques of history-taking and clinical examination with in-depth assessment of problems related to the various organ systems.

PROGRAMME OUTLINE FOR PHASE IV

OBJECTIVES

There are four Phase IV objectives:

1. PROFESSIONAL RESPONSIBILITY

   The acquisition of the authority to invade and intervene in the lives of patients carries with it the obligation to act responsibly:

   (a) Toward patients and their families:
          Students should be able, under appropriate supervision, to take responsibility for the evaluation and care of patients and their families. This is manifested by being there when the patient needs help, by following through on tasks essential to good patient care, by being up-to-date on the patient's progress, by communicating effectively with patients and their families and by respecting the patient's privacy.

   (b) Toward colleagues:
          Students should take responsibility for the education and evaluation of their colleagues. This is manifested by giving feedback and constructive criticism to all other members of the tutorial group and clinical team (both students and faculty), by sharing new knowledge and problem-solving strategies with them, and by collaborating in efforts to assess and improve the quality of care delivered on the Clinical Teaching Unit.
HEALTH SCIENCES

Students should take responsibility for the maintenance and improvement of health in the general population. This is manifested by making efforts to learn about issues (from etiological to health care organizational) that affect health in the community, by speaking out in an informed fashion on issues that affect the public health, and by responding to the community's requests for expert advice and aid.

(d) Toward staff:
Students should be able to recognize and acknowledge limitations in their own knowledge, skills and attitudes and to do something about them. This is manifested:
1. by recognizing knowledge gaps and carrying out self-directed learning (see below);
2. by recognizing one's own emotional reactions to illness and being prepared to talk about them and obtain support as needed;
3. by recognizing that the congruity between the clinician's and patient's value systems, attitudes and behaviours will profoundly affect the clinician's ability to help the patient.

Self-assessment is not an end in itself, but a means to self-improvement and keeping up-to-date; the objective here is a periodic self-monitoring system.

2. CLINICAL SKILLS:
Students should show some competency in the acquisition, collation, recording and interpretation of clinical data. The depth of strictly technical competency in the elicitation of clinical data that will be required at the start of a clinical rotation and acquired during it will be set by each of the clinical departments.

Other elements of clinical skills apply to all rotations, and these will be manifested by:
(a) when obtaining or recording clinical data, the recognition and acknowledgement of variation and error in clinical measurement.
(b) when ordering diagnostic tests, the ability to determine their accuracy, precision, utility and cost and their ranges in sickness and in health.
(c) when recording clinical data, the ability to set up and use some version of the problem-oriented medical record.

3. PROBLEM-SOLVING
When faced with patients, students should be able to execute all of the following steps of biomedical problem-solving:
(a) determine why the patients are seeking help (problem-sensing);
(b) generate hypotheses to explain the patient's problem;
(c) acquire relevant clinical data (from history, clinical exam, laboratory investigation) and relevant biomedical knowledge ranging from molecular to societal structure and function (from various educational resources). In doing so, students should manifest self-direction learning ability (correctly identifying areas of ignorance, efficiently tracking down educational resources, appropriately relating new knowledge back to the patient) and competency in the critical assessment of evidence (correctly identifying the scientific merit of publications related to clinical course and prognosis, to etiology and causation and to claims that preventive therapeutic or rehabilitative manoeuvres do more good than harm).
(d) revise the list of hypotheses in light of this additional knowledge and prepare a problem list (including diagnostic labels and reasonable alternative explanations) and a statement of urgency and functional disability involved in the case (syntheses).
(e) identify residual gaps in one's understanding of the patient, the illness, human biology and health care (evaluation).

4. TEAM
The student should function effectively as a member of a clinical team. This is manifested by the ability to: cooperate with others in caring for the individual patient; communicate with and be understood by others in the team; contribute to team problem-solving so that it is accomplished quicker and better, give and receive feedback on performance.

CONTENT

The Phase IV Programme consists at 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 Center, Hamilton General Hospital, Henderson General Hospital, St. Joseph's Hospital and Chedoke Hospital. The elective experience can be carried out in various ways utilizing local and regional resources.

Electives
Electives are an integral part of undergraduate curriculum at McMaster. They may be considered the epitome of self-directed learning for the student. To define electives, the student must decide what he needs or wants for electives which are appropriate for their own learning objectives. The responsibility for planning electives rests entirely with students and their faculty advisers.

The two main types of electives in the M.D. Undergraduate Programme are:

1. Block Electives: The Block Electives Programme is intended to enable students of varying background and experience to pursue their own interests and design a programme to advance them to 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 some scholastic endeavour in a subject of special interest which may lie outside the normal curriculum
(c) to allow time to revise portions of the M.D. Programme
(d) to examine a health delivery system outside the Hamilton district.

The periods which have been deliberately set aside for block elective activity within the M.D. programme include post-Phase II (4 weeks), mid-Phase III (6 weeks), and during Phase IV (16 weeks). Students are expected to define their elective goals in consultation with their advisers well in advance of the commencement of an elective and they should keep their advisers aware of any changes which might occur in the predefined goals.

2. Horizontal Electives: These are undertaken concurrently with other parts of the curriculum. Areas of interest common to a number of students have been developed into more organized electives to improve utilization of learning resources. These electives are:
(a) Community Physicians: The Community Physicians Elective is offered as an elective to Phase II medical students. Medical students selecting this option have the opportunity, early in their undergraduate training, to develop a continuing personal relationship with a local practising physician who volunteers to accept the student into his or her "family care setting" to provide regular exposure to clinical experience over a 12-month period. Most students who choose this elective spend one-half day weekly or semi-monthly attending the community physician's practice.
(b) Emergency Medicine: The elective is offered in Phase III. Each group of students participate in clinical experience in an Emergency Room.

Electives are equal in stature and importance to other units of the curriculum. All elective experiences must be evaluated and these evaluations form part of the student's record.

FINANCIAL ASSISTANCE

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 3 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.

In addition to Government financial assistance programmes referred to in the Financial Information Section of this Calendar, the following are available.
Maude Abbott Memorial Scholarship Loan Fund. This fund was established by the Federation of Medical Women of Canada. Small loans are available to any woman medical student or first-year intern. In special cases, a loan up to one thousand dollars may be made to a medical woman 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 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 525-2860.

*Final Year Clerkship Stipend.* The Ontario Hospital Services Commission will make a grant of $1,500 to each student, payable in instalments of $125 per month over a period of 12 months, 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 through the Student Affairs Office 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 include: The Ontario Medical Association Bursaries and Loan Fund, The William Andrew Vanderburgh Sr. Memorial Fund and the Ripley Estate Bursary and Loan Fund.

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, these funds are administered by the School's Student Financial Aid Committee to support individual students in their pursuit of specific elective projects or activities. Students are required to submit an application through the Student Affairs Office (Room IB7, Health Sciences Centre) outlining the nature of their work and the need for funds.

STUDENT EXPENSES

The approximate annual expenses (1980-81) for a student in McMaster's M.D. Programme are as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic fees</td>
<td>$1,900</td>
</tr>
<tr>
<td>Room/boarding</td>
<td>2,500</td>
</tr>
<tr>
<td>Meals/board</td>
<td>1,900</td>
</tr>
<tr>
<td>Books</td>
<td></td>
</tr>
<tr>
<td>Equipment (diagnostic)</td>
<td>500</td>
</tr>
<tr>
<td>Household supplies, laundry</td>
<td>900</td>
</tr>
<tr>
<td>Transportation</td>
<td>700</td>
</tr>
<tr>
<td>Total</td>
<td>$8,900</td>
</tr>
</tbody>
</table>

The M.D. programme is academically based at the Health Sciences Centre, McMaster University. However, students use the resources of all the hospitals and many community practices throughout Hamilton. Transportation expenses by car or public transport must be anticipated.

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.

Postgraduate programmes of interest include a diploma in Primary Care in Nursing for registered nurses preparing for family practice work settings, and the Master of Health Sciences (Health Care Practice) interprofessional graduate degree programme for practitioners who wish to prepare themselves as clinicians.

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. 4267). Any applicant wishing to discuss the entrance 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 1B7, 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 NURSING PROGRAMME

The programme offered in the McMaster University School of Nursing leads to the degree Bachelor of Nursing (B.Sc.N.) and is regarded as a professional programme.

The School of Nursing is committed to education, research, and service. The undergraduate programme curriculum evolves from the philosophy of the educational setting, the University, and the goals and purposes of the nursing profession. The University provides a milieu for an encounter with established and developing knowledge and a pathway to creative and enlightened participation in modern society. A broad background of education facilitates the graduates' continuous professional development and gives the necessary foundation for graduate study in nursing.

As students progress in the B.Sc.N. programme, they will find an ever increasing emphasis on interpersonal skills, independent learning, and leadership qualities. 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. This necessitates students taking responsibility for identifying their learning needs and, therefore, utilizing resources and experiences appropriately. Development of interpersonal skills is based on a sensitivity towards people, an awareness of personal potential, and a willingness to grow and share with others. Leadership skills are promoted in the group setting, where students have the opportunity to express themselves and to function as contributing members of peer groups.

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.

Objectives of the B.Sc.N. Programme

Nursing, as one of the health professions, is service oriented. Based upon the school's philosophy, the curriculum enables students to
prepare themselves as effective practitioners of nursing, self-directed persons, and responsible citizens. The achievement of the general goals should enable a student:
1. To apply knowledge from the humanities, biological, behavioural and health sciences in professional practice.
2. To demonstrate ability as a self-directed learner.
3. To demonstrate sensitivity and skill in human relationships and communications.
4. To adhere to the code of ethics of the profession of nursing.
5. To demonstrate skill in the use of the problem-solving method in the practice of nursing.
6. To demonstrate competence in the provision of nursing care.
7. To demonstrate leadership skills in the provision of health care.
8. To demonstrate understanding of the structure and function of health care organizations.
9. To demonstrate knowledge and beginning use of research methodology in the critical assessment of nursing practice.

McMaster graduates are eligible to write the nurse registration examination of the Canadian Nurses Association Testing Service. After completion of registration requirements in Ontario, graduates are generally eligible for registration in other Canadian provinces and in most other jurisdictions throughout the world.

ADMISSION POLICY AND PROCEDURE

ADMISSION POLICY

General Information
Applications for all studies beginning in September must be postmarked no later than midnight of the previous April 1st.

Applications who have difficulty assessing their academic background in relation to the requirements outlined below should write the Assistant Registrar (Health Sciences) for a ruling about their individual applications.

The University reserves the right to grant admission to a limited number of students, and to refuse re-admission to any student whose academic performance or general conduct has been unsatisfactory, or who has withdrawn from the program for a period in excess of one year.

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

Medical Information Requested for Admission
Before registration, students must file with the university information pertaining to their state of health and immunization. Detailed instructions will be provided upon acceptance into the program.

For regulations, see Special Note on Health.

Admission to Level I Nursing
As places in the B.Sc.N. program are limited, admission is by selection of applicants. Possession of published minimum requirements does not guarantee admission. High qualifications are expected of the applicants selected. The usual basis of selection of Ontario applicants currently in Grade 13 is interim marks. Other selection methods (interview, autobiographical letter) may be used.

While a percentage of places for Level I in the program are filled by current Grade 13 applicants, full consideration is given to applicants who have completed Grade 13 in previous years, who are from other Canadian provinces or other countries, or to applicants who qualify for admission as special candidates (mature students, University students, College students). Applicants may be required to come to the University for a selection interview. Failure to attend such an interview will result in withdrawal of the application.

To qualify for consideration, applicants from various backgrounds should normally meet the requirements outlined below. Interested applicants who do not meet stated requirements exactly, should write to the Assistant Registrar (Health Sciences) regarding their eligibility.

Applicants from Ontario Schools
To be eligible for consideration, Ontario candidates should have Grade 12 credit (advanced stream) in Mathematics and have Grade 13 credits in the following subjects:
1. Chemistry and English;
2. One of Mathematics, Biology, Physics; and
3. Additional subjects to qualify for a Secondary School Honour Graduation Diploma.

These requirements become effective for applications in 1984. Before 1984, candidates should have Grade 12 credit in Mathematics (advanced stream) and have Grade 13 credits in the following subjects:
1. Chemistry;
2. At least two of: English, another language, mathematics, biology, physics; and
3. Additional subjects to qualify for a Secondary School Honours Graduation Diploma.

Applicants from Other Canadian Provinces
Applicants from other provinces of Canada will be considered upon presenting certificates which demonstrate their satisfactory standing in subjects recognized as equivalent to the Grade 13 subjects of Ontario. The attention of applicants is especially directed to the subject requirements listed above so that they may make the proper choices.

Applicants from Other Countries
Applicants from other countries will be considered individually. Such applicants should send official certificates related to their academic background and standing with their application. Certificates in a language other than English must be accompanied by notarized English translations.

Applicants who are not proficient in the English language will be required to obtain standing satisfactory to the University in the University of Michigan English Language Test, details of which will be sent upon receipt of a formal application for admission.

Students with high standing from Grade 12 of an accredited high school in the United States may apply for admission. 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 acceptable standing.

Special Applicants
Effective for applicants in 1984 credit in Grade 13 English or its equivalent will be required for all applicants.

A) MATURE APPLICANTS
Applicants who do not meet the normal admission requirements will normally be considered if the following conditions are satisfied:
1. are at least 21 years old or will be in the calendar year in which they propose to commence university studies.
2. have not attended secondary school on a full time basis for at least two years.
3. obtain a satisfactory standing on the Scholastic Aptitude Test (held in June and August) or achieve a minimum of C average in a university academic course taken within the past 3 years.
4. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test.
5. have completed or plan to have successfully completed Grade 13 Chemistry or its equivalent prior to enrolment in the program.

Such applicants will be asked to come to the University for a selection interview. An autobiographical letter may be requested.

B) UNIVERSITY STUDENTS
Applicants who are currently university students will be considered if the following conditions are satisfied:
1. achieve a minimum of a second class standing in their current university programme (students with lower grades due to extenuating circumstances may request special consideration).
2. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test.
3. have completed or plan to have successfully completed Grade 13 Chemistry or its equivalent prior to enrolment in the programme.

Such applicants will be asked to come to the University for a selection interview. An autobiographical letter may be requested.
C) COLLEGE STUDENTS
An applicant from a college programme who does not qualify as a mature applicant will normally be considered if the following conditions are satisfied: Applicants
1. have achieved a minimum of a second class honour standing in their Secondary School Graduation Diploma and in their current College programme;
2. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test.
3. have completed or plan to have successfully completed Grade 13 Chemistry or its equivalent prior to enrolment in the programme. Such applicants will be asked to come to the University for a selection interview. An autobiographical letter may be requested.
Applicants currently enrolled in a diploma nursing programme will be considered on the above conditions. The University does not credit diploma nursing courses.

D) DIPLOMA REGISTERED NURSES
Applicants who are diploma registered nurses normally should satisfy the following conditions: Applicants
1. have current Certificate of Competence as a Registered Nurse in Ontario (or its equivalent as judged by the College of Nurses of Ontario);
2. show evidence of at least two years full-time, or equivalent, nursing practice in an approved clinical setting within the past five years (by year of application/entry);
3. show evidence of scholastic aptitude — usually includes all of the below with priority in the following order:
   (a) evidence of recent educational achievement, e.g. University courses with a B standing, College courses (full year) with a B standing,
   (b) second class standing B or equivalent in a diploma programme,
   (c) Grade 12 or equivalent in advanced stream with a standing of 70%;
4. provide three letters of reference which address performance and ability as a health professional and their potential for success in this programme.
5. provide an autobiographical letter.
Applicants will be asked to come to the University for a selection interview which assess:
(a) reasons for applying to this programme,
(b) reasons for continuing education,
(c) self-assessment abilities,
(d) interpersonal qualities.
Applicants will be asked to come to the University for a selection interview.

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.

All individuals planning to study as part-time students in Nursing should submit their application by April 1st of the calendar year in which studies in Nursing are contemplated. As there is limited enrolment, 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 School of Nursing before engaging in part-time study.

Admission Above Level I
The McMaster Programme is designed for students with and without previous education in nursing.

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 or exemptions for 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.

Diploma registered nurses wishing to be considered for admission to the programme should write to the Assistant Registrar (Health Sciences). Such applicants will be considered on an individual basis. If accepted, they will normally receive 36 units of credit for an approved Community College Nursing programme and additional credit for elective work on the basis of appropriate University courses already completed. Successful applicants would be admitted to Level III of the programme and the course of study would span two full calendar years, if taken on a full-time basis.

ADMISSION PROCEDURE
Applications for all studies beginning in September must be postmarked no later than midnight of the previous April 1st.

Applicants currently in Grade 13 in Ontario will be sent information about the status of their applications in June on the date agreed upon by all Ontario universities for the notification of current Grade 13 applicants to all programmes. Other applicants will be informed after that date. In some cases, the offer of admission is conditional upon the applicant’s meeting academic requirements prior to enrolment.

Application
Applicants currently in Grade 13 apply through the Ontario Universities’ Application Centre. Application forms are available in secondary school guidance offices. These should be completed and forwarded to the application centre, along with the Application Fee, in accordance with the instructions.

Applicants who have completed Ontario Grade 13 in previous years and those possessing other academic backgrounds should write to the Assistant Registrar (Health Sciences) for an application form. This form should be completed and forwarded to the Ontario Universities’ Application Centre, along with the application fee, in accordance with the instructions. Transcripts of marks from the secondary school and any post-secondary educational institution attended should be provided.

Students enrolled in other programmes at McMaster wishing to be considered for transfer to the B.Sc.N. programme should apply through the Office of the Assistant Registrar (Health Sciences) by April 1st.

B.Sc.N. DEGREE PROGRAMME REQUIREMENTS AND CURRICULUM
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.

PROGRAMME FOR DIPLOMA REGISTERED NURSES
The programme of study for diploma registered nurses will articulate 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 academic years if taken on a full-time basis. It is designed to have maximum flexibility, that is, to be available to students on a full-time, part-time or continuing education basis.

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 demonstrate decision-making capacity in specific areas, e.g. primary care.

In Level IV of the programme, each student will choose a particular clinical area in which to develop the knowledge, skills and attitudes specific to that area, e.g. gerontology, mental health, occupational health, etc. This experience will be comprised of
academic study with concurrent clinical practice followed by 6 to 8 weeks of concentrated clinical experience. In this concentrated experience, the student will practice under the supervision of a clinical preceptor.

All students will be prepared for the full scope of practice in the community. In addition, the courses are designed to allow the students to develop areas of specific interest, e.g. critical care, oncology, gerontology, primary care, etc.

The STUDY OF NURSING
The study of nursing is concerned with the person as a total being. The knowledge and skill essential for the care of people of all ages and in various states of health and illness are organized into broad areas of content and practice. Through course content, planned observations, and guided nursing practice in a variety of settings, the student learns to assess the nursing needs of individuals and their families; to give appropriate nursing care to assist individuals and their families to identify and meet their health needs; and to work collaboratively with other members of the health team.

Seminars and group discussions, with emphasis on problem-solving, are a primary method of teaching. 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 patients and clinical settings, focus on nursing problems and processes which students examine critically and to which they apply concepts from nursing and related disciplines.

The format of evaluation has been designed to complement learning in the B.Sc.N. Programme. Evaluation methods have been developed to facilitate a measurement of the achievement of the stated goals of the programme. Evaluation by self, peers and faculty is part of an ongoing process of assessment of the achievement of clinical, course, and programme objectives.

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:

1. NURSING I
   A student in Nursing I must:
   1. pass all courses;
   2. achieve a University Average (UA) of at least 2.5;
   3. achieve an average of at least 4.0 in the Nursing and required Health Science courses; and
   4. 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.

2. AREA COURSES
The Area courses consist of all the Nursing and Health Science courses above Level I.

The following courses are designated “clinical courses”: Nursing 2L6, 2H4, 3X7, 3Y7, 4J7 4K7.

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.

3. CUMULATIVE AREA AVERAGE
The Cumulative Grade Point Average is calculated for the student who has completed the programme.

A student who fails to meet the minimum grade requirements after repeating the course, he or she may not continue in the programme.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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.

9. GRADUATION AVERAGE
The Graduation Average (GA) for the B.Sc.N. programme is based on 36 units or 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.

10. ACADEMIC 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.

PROGRAMME FOR THE B.Sc.N. DEGREE
A
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 additionam 534s from one of psychology, sociology, or anthropology are to be chosen at or above Level II.

NURSING 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.
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 (transcript included) with the certificate from McMaster University.
2. All other transcripts from other post-secondary institutions attended.
3. A letter outlining the candidate’s learning objectives. (Guidelines are available from the Assistant Registrar (Health Sciences).)
4. 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. Transcript of marks of work completed (to date) at Mohawk.
2. All other transcripts from post-secondary institutions attended.
3. A letter from the Programme Chairman assessing the student’s potential to graduate.
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.

APPLICANTS WITH DIPLOMAS IN OCCUPATIONAL THERAPY AND/OR PHYSIOTHERAPY FROM OTHER INSTITUTIONS

For Admission to the Pre-programme Phase as a Continuing Student

Successful applicants must register as continuing students in the Faculty of Health Sciences and must complete a minimum of 31 units of required study in the pre-programme phase before being eligible for admission to the B.H.Sc. Programme.

Admission is by selection as enrolment is limited and possession of these published minimum requirements does not guarantee admission.

The Admissions Committee will review professional training, 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 (including transcript).
2. Eligibility to practise in the jurisdiction which provided the professional training.
3. Canadian citizenship or landed immigrant status.
4. A letter outlining the candidate’s learning objectives. (Guidelines available from the Assistant Registrar (Health Sciences).)
5. An interview.

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 postmarked no later than April 15 for the classes beginning in September.
Transcripts of marks from Mohawk College or other institutions must be provided by the student. All applicants will be informed of the admission decision by June 15.

THE B.H.Sc. PRE-PROGRAMME REQUIREMENTS AND CURRICULUM

The Pre-programme Phase consists of a minimum of 31 units of study completed entirely at the University. Additional course work to a maximum of 43 units may be required at the discretion of the Admissions Committee.

This programme is available either full-time or part-time. Under normal circumstances, the programme should be completed in one year as a full-time student or two 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 in the pre-programme phase. Students who do not meet the requirements on a first attempt will be reviewed by the B.H.Sc. Programme Director, and will require permission to continue in the Programme.

The programme of required study consists of 31 units as follows:

- 12 units from Biochemistry, Biology, Chemistry, Health Sciences;
- 12 units from Anthropology, Psychology, Sociology, Health Sciences;
- 3 units in Problem-based Learning/Clinical Learning.

Upon successful completion of this programme of study as a continuing student the student is admitted to the B.H.Sc. Programme.

THE B.H.Sc. PROGRAMME REQUIREMENTS AND CURRICULUM

The Programme will consist of 18 units of study completed entirely at the University, including four Level IV required courses, and one or more elective courses chosen from available undergraduate offerings at the third or fourth levels. All courses in the programme are area courses. The student must attain a Cumulative Area Average 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 not continue in the programme without the permission of the Director.

The Programme is available in a modified full-load or part-time format. Full-load students will complete 12 to 15 units of course work in term one. The remaining course work may be completed in subsequent terms. Full-load students are advised not to carry a course load of greater than 15 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. A limited number of places will be available in the required courses during the 1982-1983 and 1983-1984 for part-time students.

Students who have completed electives on a part-time basis may transfer to full-load status to complete the required courses during the first term of the Winter Session. Requests for transfers must be received by April 15 of the year in which the student seeks to register.

Under usual circumstances, the programme could be completed by part-time students within three years.

Academic Advisor

All students admitted to either the Pre-programme Phase as a continuing student, or the B.H.Sc. Programme will be assigned an academic advisor. Advisors will be responsible for reviewing the students' programmes of study, both as continuing students and as students in the B.H.Sc. Programme. The advisor is responsible for preparing the student's final academic transcript.

Repetition of a Course

To repeat a course for which credit has been obtained, approval of the B.H.Sc. Programme Director 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

Part-time students must complete the area courses Health Sciences 4A3 and 4B3 before enrolling in 4C3 and 4D3.

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.

B.H.Sc. Programme

Level IV: 18 units
- Health Sciences 4A3, 4B3, 4C3, 4D3.

E 6 units of Level III or IV courses chosen from Health Science and outside the Faculty of Health Sciences. 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
M.P. Halsall/M.A., Ph.D., Associate Dean of Humanities (Studies)
P. Kalinins/Assistant to the Associate Dean
S. Richard/Student Advisor

Humanities are those disciplines which make man more human, or nurture in man his nature as specifically human, because they convey to him the spiritual fruit and achievements of the labour of generations, and deal with things which are worth being known for their own sake, for the sake of truth, or the sake of beauty ... Great poets and thinkers are the foster-fathers of intelligence. Cut off from them, we are simply barbarous. — Jacques Maritain

The Faculty of Humanities embraces nine Departments and several Committees of Instruction, each of them concerned in various ways with the values and aspirations of man:

- Art and Art History
- Canadian Studies
- Classics (including Greek, Latin and Classical Civilization)
- Dramatic Arts
- English
- German
- History
- Music
- Philosophy
- Romance Languages (including French, Italian and Spanish)
- Russian

Undergraduate degrees are offered with specializations in each of these disciplines, as well as a general (or interdisciplinary) Humanities B.A. organized around a topic proposed by the student.

In addition, course concentrations are available in Comparative Literature, Linguistics and Eighteenth-Century Studies.

Although Humanities is a distinct field of study, it repeatedly avails itself of the material of the Social Sciences and the Natural Sciences, particularly in areas where they are especially concerned with human relations and with the nature of the human condition.

The Humanities include any product of the mind and imagination that conveys a powerful sense of the condition of humanity's thoughts and aspirations, fears and dilemmas, and visions. The separate subjects in the areas of the Humanities seem repeatedly to flow into one another, and so may be regarded as a single broad current of humanity's creative and intellectual experience. The materials are perennial and never go out of style.

The essence of study in the Humanities is reflection and examination in the area of the liberal arts. The attainment of precise knowledge and fresh insights is sought through lectures, class discussion, writing and analysis. The ultimate aim remains constant: to cultivate an appreciation for past and present ideas and a capacity to generate new ones; to overcome geographical and temporal parochialism; and to discover historical perspective; to lead students to a realization of the moral and aesthetic values present in the arts and letters and in the writings of philosophers; and to safeguard the historical, value-oriented perspective in an age of rapid and unsettling change when vigorous and informed minds are desperately needed.

Open Electives in Humanities

There are a number of Humanities courses without prerequisites which may be taken as electives. For a full description of these courses, see under appropriate Departments.

LEVEL I PROGRAMMES

The Faculty of Humanities offers two Level I programmes: Humanities I and Music I, for which the admission requirements are different.

HUMANITIES I: 30 units
R 18 units, including three Level I six-unit courses in Humanities subjects: Art and Art History, Canadian Studies, Classical Civilization, Dramatic Arts, English, languages other than English, History, Music, Philosophy.
E 12 units elective. (Students who have obtained an average of at least 80% in Grade 13 may take 6 units extra elective.)

No Humanities I student may take more than 6 units of work in any single discipline except that a Humanities student may take both Art B6 and 1D6; nor may any Humanities I student take more than 18 units of work in languages other than English or more than twelve units of beginners' language courses.

MUSIC I: 32 units
R Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4, 1G2
E 12 units elective, excluding Music.

PROGRAMMES FOR THE HONOURS B.A. DEGREE

Subject to possible timetable restrictions, and with the written approval of the appropriate Departments and the Associate Dean of Humanities (Studies), a student may select any combination of two of the following subjects to make an Honours programme: Art History, Canadian Studies, Classical Civilization, Dramatic Arts, English, French, German, Greek, History, Italian, Latin, Music, Philosophy, Russian and Spanish. Combinations may also be possible with certain Social Sciences disciplines. The student's programme will be arranged in accordance with the practice in Combined Honours Programmes, i.e. to the approximate 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.

Students wishing to enter any programme offered by the Faculty of Humanities and pursue this 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 Civilization
- Dramatic Arts (Combined Honours only)
- 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 B.A.
- Art
- Art History
- Classical Civilization
- Dramatic Arts
- English
- French
- History
- Italian
- Philosophy
- Russian
- Spanish

B.A. IN HUMANITIES

Admission:
Completion of any Level I programme with a grade of at least C- in each of two six-unit Humanities courses. 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. Good preparation for this programme would include Humanities 1B6.

GENERAL REQUIREMENTS

6 units of Sciences from the courses listed under the heading "Science" in the "Courses by Departments" section of this calendar;

6 units of Social Sciences from the Level I courses offered in Anthropology, Economics, Labour Studies, Political Science, Psychology, Religious Studies, Sociology or Urban Geography; and
HUMANITIES

18 units of Humanities consisting of 6 units from each of three Designated Humanities areas:

I. Historical and Philosophical Studies
Canadian Studies 1A6, 2B3, 2C3
Classical Civilization 2L3, 2V3, 2X3, 2Z3, 3M3, 4N3
French 2B3, 2F3, 2FF3, 2N3
History (all courses)
Humanities 1B6
Italian 2H3
Philosophy (all courses)
Russian 156
Spanish 2B3, 2C3

II. Languages and Literatures (excluding beginners' (1Z6-level language courses)
Chinese 2Z26
Classical Civilization 1A6, 2D3, 3A3, 4O3
Comparative Literature (all courses)
English (all courses)
French (excluding 2B3, 2F3, 2FF3, 2N3)
German (all courses)
Greek 2E3, 2F3, 2Q3, 2R3
Italian (excluding 2H3)
Latin 1A6, 2A3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R3
Russian (excluding 1B6)
Spanish (excluding 2B3, 2C3)
Ukrainian 2A6, 3A6

III. The Arts
Art History (all courses)
Classical Civilization 2B3, 2C3, 2E3, 2L3, 2M3, 3G3
Dramatic Arts (excluding courses cross-listed with Literature departments)
Music 1A6, 2A6, 3A6, 3T3, 3U3

The above constitute minimum requirements. Students are urged to fulfill the majority of these requirements by the end of Level I (i.e. the first 30 units of work) and all by the end of Level II (i.e. the first 60 units of work.)

Area Courses:

Humanities 2A6, plus all courses in the two minor areas of concentration.

Levels II and III: 60 units
R \begin{itemize}
  \item Humanities 2A6; at least 12 units of work in addition to the Level I course in each of two Humanities disciplines approved as minor areas of concentration, including at least 6 units above Level II; additional units from the Faculty of Humanities to make a total in all of at least 36 units of Humanities above Level I.
  \item \textbf{E} 24 units of electives.
\end{itemize}

THEMES OF STUDY

Although each student is free to devise a focus for his/her own programme in consultation with the Committee of Instruction and subject to the programme requirements, it is anticipated that many students will be interested in potential themes and areas already identified. These include Mediaeval Studies, Studies in the Renaissance, The Rise of Protestantism, 18th Century Studies, Romanticism and Revolution, Industrial Society, American Studies, Canadian Studies, Comparative Literature, National and/or Area Studies: for example, Germany, Italy, Russia, Britain. Students should note that not every course relevant to their theme of study may be available to them in a given year.

INFORMATION AND COUNSELLING

Course selections must demonstrate some coherent principle of organization. In exceptional cases, the Committee may approve a minor concentration in a cognate discipline outside the Faculty. Note also that no more than 42 units may be taken in any one discipline. Before selecting courses, students are required to consult a member of the Committee of Instruction for the new B.A. programme: Dr. R.H. Johnston, Chairman (extension 4271), Prof. B. Mangrum, Counsellor (extension 4417), Dr. S. Panagiotou, Counsellor (extension 4312), Dr. M. Ross, Counsellor (extension 4496). Also, Mrs. P. Kalnins and Mrs. S. Richard (extension 4326) of the Office of the Associate Dean of Humanities (Studies), CNH-112, can provide valuable information and assistance, as well as advise on a student's admissibility.

Department of Art and Art History

HONOURS ART

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.

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in Art History 1A6, Art 1B6, 1D6.

Area Courses:
All Level II, III and IV Art courses, excluding Art 2D3; all Level II, III and IV Art History courses.

Art History 203 and 2P3 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units
R \begin{itemize}
  \item 42 units of Art including 15 units of Level II Art; and 27 units of Levels III and IV Art, including Art 3C3, and either 4C6 or 4B12; plus 24 units of Art History, including Art History 203 and 2P3; 3 additional units of Level II Art History, and at least one Level III or IV Art History course.
  \item \textbf{E} 24 units of elective, 12 of which may be from Art and/or Art History.
\end{itemize}

B.A. IN ART

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.

Admission:
Completion of any Level I programme with a grade of at least C – in each of Art History 1A6, Art 1B6, 1D6.

Area Courses:
All Level II, III and IV Art courses, excluding Art 2D3; all Level II, III and IV Art History courses.

Levels II and III: 60 units
R \begin{itemize}
  \item 15 units of Art, including 9 units of Level II Art and at least one Level III or IV course in Art; 15 units of Art History, including 12 units of Level II Art History; 6 units from the Faculty of Humanities.
  \item \textbf{E} 24 units elective, 12 of which may be from Art and/or Art History.
\end{itemize}

HONOURS ART HISTORY

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.

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.

Area Courses:
All Level II, III and IV Art History courses.

Levels II, III and IV: 90 units
R \begin{itemize}
  \item 54 units of Art History, including 18 units of Level II Art History and 36 units of Levels III and IV Art History, including two seminars and at least one Level IV Art History course.
  \item \textbf{E} 36 units elective, 24 of which may be from Art History.
\end{itemize}

COMBINED HONOURS IN ART HISTORY AND ANOTHER SUBJECT

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.
**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.

**Area Courses:**
All Level II, III and IV Art History courses.

Levels II, III and IV: 90 units minimum

R 36 units of Art History which must include 12 units of Level II Art History and 24 units of Levels III and IV Art History, including at least one seminar course and at least one Level IV course in Art History.

E To the combined total of approximately 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 HISTORY**
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.

**Admission:**
Completion of any Level I programme with a grade of at least C – in Art History 1A6.

**Area Courses:**
All Level II, III and IV Art History courses.

Levels II and III: 60 units

R 30 units of Art History, including 15 units of Level II Art History and 15 units of Levels III and IV Art History; 6 units from the Faculty of Humanities.

E 24 units elective, 12 of which may be from Art History.

**Canadian Studies**
**COMBINED HONOURS IN CANADIAN STUDIES AND ANOTHER SUBJECT**
No student may register in any Level of this programme without the approval of the Counsellor of the Canadian Studies Committee of Instruction, which should be obtained before completing registration forms in March.

**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. 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.

**Area Courses:**
All Level II, III and IV Canadian Studies courses, and all Canadian Area courses: Anthropology 3A3, 3F3; Art History 3B3; Economics 2K6; English 2C3, 2G6, 3Z3; French 2B3, 2F3, 2FF3; Geography 2E3, 3D3; History 2J6; Music 3T3; Political Science 2G6, 3DD6; Religious Studies 3B3, 3BB3; Sociology 2H6.

Levels II, III and IV: 90 units minimum

R Canadian Studies 1A6 (if not completed in Level I); 36 units of Canadian Studies courses organized as follows: 18 units of Canadian Studies 2A3, 2B3, 3C3, 3D3, 4C3, 4D3 (including at least one Level IV course); and 18 units from interdisciplinary seminars and courses designated as "Canadian Area Courses", including at least 12 units beyond Level II.

E To the approximate 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.

**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 grade 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 Level IV seminars.

Students wishing to combine Canadian Studies with French should follow the appropriate French option described under the heading "Combined Honours in French and Another Subject, Alternative B".

**Department of Classics**
**HONOURS CLASSICAL CIVILIZATION**
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.

**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 1Z6 or Latin 1A6 or 1Z6 in their Level I programme.)

**Area Courses:**
All Level II, III and IV courses in Classical Civilization, Greek and Latin. Greek 1Z6 and Latin 1A6, 1Z6, if not completed in the Level I programme. Ancient History courses: History 2L6, 3D6, 3GG3, 3L6, 4D6, 4I6.

Programme Groups (at least 12 units must be taken from each of two Programme Groups and at least 3 units from each of the other two Programme Groups):
2. Greek and Roman Literature in Translation: Classical Civilization 2E3, 3A3, 3C3, 4A3, 403.
4. Ancient History: History 2L6, 3D6, 3GG3, 3L6, 4D6, 4I6.

Levels II, III and IV: 90 units

R Classical Civilization 2D3, 4F3; 36 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 1D6 if not completed in the Level I programme); 12 units of Latin (including either Latin 1A6 or 1Z6, if not completed in the Level I programme); 6 additional units of Classical Civilization, Greek, Latin or Ancient History.

E 18 units elective, at least 12 excluding Classical Civilization, Greek, Latin and Ancient History.

**COMBINED HONOURS IN CLASSICAL CIVILIZATION AND ANOTHER SUBJECT**
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.

**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.

**Area Courses:**
All Classical Civilization, Greek, Latin and Ancient History courses listed below under Programme Groups.

Classical Civilization 2B3, 2C3, 2D3, 2E3, 2U3, 2V3, History 2L6, and all Level II Greek and Level II Latin courses will be included in calculating the Graduation Average.

Programme Groups (at least 6 units must be taken from each of three Programme Groups):
2. Greek and Roman Literature in Translation: Classical Civilization 2E3, 3A3, 3C3, 4A3, 403.
3. Greek and Latin Language and Literature: Classical Greek 1Z6 (if not completed in the Level I programme), 2E3, 2F3, 2Q3, 2R3, 3L3, 3M3, 4L3, 4M3; Koine Greek 1D6 (if not completed in the Level I programme); either Latin 1A6 or 1Z6 (if neither completed in the Level I programme), Latin 2A3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R3, 3D3, 3L3, 3M3, 4A3, 4G3.


5. Ancient History: History 2L6, 3D6, 3GG3, 3L6, 4D6, 4I6.

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.

Levels II, III and IV: 90 units minimum

R Classical Civilization 2D3, 4F3, 30 additional units from courses listed above under Programme Groups, including at least 6 units from each of any three Programme Groups.

E To the approximate 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 CIVILIZATION

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.

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 1A6, Latin 1Z6 or History 1L6 with a grade of at least C— may be substituted for Classical Civilization 1A6.

Area Courses:

All Classical Civilization, Greek, Latin and Ancient History courses listed below under Programme Groups.

Programme Groups (including at least 6 units from one Programme Group and at least 3 units from each of the other two Programme Groups):


2. Greek and Roman Literature: Classical Civilization 2E3, 3A3, 3C3, 4A3, 4Q3; Classical Greek 1Z6 (if not completed in the Level I programme), 2E3, 2F3, 2Q3, 2R3, 3L3, 3M3, 4L3, 4M3; Koine Greek 1D6 (if not completed in the Level I programme); either Latin 1A6 or 1Z6 (if neither completed in the Level I programme), Latin 2A3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R3, 3D3, 3L3, 4A3, 4G3.


Students are encouraged to take at least 6 units of Greek or Latin. Levels II and III: 60 units

R 24 units from courses listed above under Programme Groups; 12 units from the Faculty of Humanities.

E 24 units elective, 12 of which may be from courses listed above under Programme Groups.

Students in the B.A. programme in Classical Civilization who achieve a weighted average of at least 7.0 in 12 units of Level II Area Courses may be admitted to Honours Classical Civilization in Level III.

HONOURS CLASSICS

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.

Admission:

Completion of any Level I programme with a University Average of at least 2.5 and 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 1A6 or at least B in Latin 1Z6. (Students are encouraged to include Classical Civilization 1A6 in their Level I programme.)

Area Courses:

All Level II, III and IV Greek, Latin and Classical Civilization courses; Ancient History courses: History 2L6, 3D6, 3GG3, 3L6, 4D6, 4I6.

Latin 2G3 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units

R Greek 2E3, 2F3, 2Q3, 2R3; Latin 2A3, 2E3, 2G3, 2Q3, 2R3; 33 units of Levels III and IV Greek and Latin, including Greek 3Q3, 4Q3 and Latin 3Q3, 4Q3; 12 units of Classical Civilization or Ancient History.

E 18 units elective, 6 of which may be from Greek and Latin.

COMBINED HONOURS IN GREEK AND ANOTHER SUBJECT

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.

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. (Students with Grade 13 Greek should consult the Department of Classics.)

Area Courses:

All Level II, III and IV Greek Courses.

Levels II, III and IV: 90 units minimum

R Greek 2E3, 2F3, 2Q3, 2R3; Latin 2A3, 2E3, 2G3, 2Q3, 2R3; 33 units of Levels III and IV Greek and Latin, including Greek 3Q3, 4Q3 and Latin 3Q3, 4Q3; 12 units of Classical Civilization or Ancient History.

E To the approximate 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.

COMBINED HONOURS IN LATIN AND ANOTHER SUBJECT

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.

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 1A6 or at least B in Latin 1Z6.

Area Courses:

All Level II, III and IV Latin courses.

Latin 2G3 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units minimum

R Latin 2A3, 2E3, 2G3, 2Q3, 2R3, 3Q3, 4Q3; 33 units of Levels III and IV Latin.

E To the approximate 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 LATIN

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.

Admission:

Completion of any Level I programme with a grade of at least C— in Latin 1A6 or at least B in Latin 1Z6.

Area Courses:

All Level II, III and IV Latin courses.
Levels II and III: 60 units
R Latin 2A3, 2E3, 2G3, 2Q3, 2R3, and 9 units of Level III or IV Latin; 12 units of Classical Civilization or History 2L6 or 3D6.
E 24 units elective, of which may be from Latin.

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.

**Dramatic Arts**

**COMBINED HONOURS IN DRAMATIC ARTS AND ANOTHER SUBJECT**

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.

**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.

**Area Courses:**
All Level II, III and IV Dramatic Arts courses.

Levels II, III and IV: 90 units minimum
R Dramatic Arts 2A6 plus 6 units of Level II Dramatic Arts; Dramatic Arts 3A6, 3G6, 3K6 (or 3E3), and additional units of Level III or IV Dramatic Arts to make a total of 36 units, which must include at least one Level IV Dramatic Arts course.
E To the approximate 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.

Students are expected to 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 Russian 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.

**B.A. IN DRAMATIC ARTS**

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.

**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.

**Area Courses:**
All Level II, III and IV Dramatic Arts courses.

Levels II and III: 60 units
R Dramatic Arts 2A6 plus 6 units of Level II Dramatic Arts; Dramatic Arts 3A6 and 3K6 (or Dramatic Arts 3G6 and 3E3) and 3 units of Level III or IV Dramatic Arts; and 12 units from the Faculty of Humanities.
E 24 units, of which 12 may be from Dramatic Arts.

**Department of English**

**HONOURS ENGLISH**

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.

**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 or 1B6.

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:**
English 3D3, 3D3, 4E6 (Mediaeval)

**Field II:**
English 313, 3K6, 3T3 (Renaissance)

**Field III:**
English 3V6, 4B6 (17th and 18th Centuries)

**Field IV:**
English 216, 4L3, 4M3 (19th and 20th Centuries)

**Field V:**
English 2G6, 2H6 (North American)

**Field VI:**
English 2B6, 2V6, 4N6 (Genre and Language Studies)

**Area Courses:**
English 2B6, 2G6, 2H6, 2V6, 3D3, 3DD3, 313, 3K6, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6.

Levels II, III and IV: 90 units
R 54 units of English area courses, including 18 units of Level II, 18 units of Level III and 18 units of Level IV.
E 36 units, 24 of which may be from English.

Students wishing to graduate in Honours English must have successfully completed 6 units of non-introductory work in a language other than English. The Department strongly advises students to fulfill this requirement before Level III.

**COMBINED HONOURS IN ENGLISH AND ANOTHER SUBJECT**

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.

**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 or 1B6.

Students wishing to graduate in Combined Honours English and another subject 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 at least five of the six indicated fields must be taken.

**Field I:**
English 3D3, 3D3, 4E6 (Mediaeval)

**Field II:**
English 313, 3K6, 3T3 (Renaissance)

**Field III:**
English 3V6, 4B6 (17th and 18th Centuries)

**Field IV:**
English 216, 4L3, 4M3 (19th and 20th Centuries)

**Field V:**
English 2G6, 2H6 (North American)

**Field VI:**
English 2B6, 2V6, 4N6 (Genre and Language Studies)

The English component of a Combined Honours programme will be as follows:

**Area Courses:**
English 2B6, 2G6, 2H6, 2V6, 3D3, 3DD3, 313, 3K6, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6.

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 approximate 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.

Students wishing to graduate in Honours English combined with another subject other than a language, 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. Students should consult the Department for a list of approved programs.
courses. The Department strongly advises students to fulfill this requirement before Level III.

B.A. IN ENGLISH
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.

Admission:
Completion of any Level I programme with a grade of at least C— in English 1A6 or 1B6.

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:
- English 3D3, 3D3, 4E6 (Medieval)
Field II:
- English 3I3, 3K6, 3T3 (Renaissance)
Field III:
- English 3V6, 4B6 (17th and 18th Centuries)
Field IV:
- English 2I6, 4L3, 4M3 (19th and 20th Centuries)
Field V:
- English 2G6, 2H6 (North American)
Field VI:
- English 2B6, 4N6 (Genre and Language Studies)

Area Courses:
- English 2B6, 2G6, 2H6, 2I6, 3D3, 3DD3, 3I3, 3K6, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6.

Levels II and III: 60 units
R 12 units from English 2B6, 2G6, 2H6, 2I6; 18 units from English 3D3, 3DD3, 3I3, 3K6, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, 4N6; 6 units from the Faculty of Humanities.

E 24 units, 12 of which may be from English.

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. Students should consult the Department for a list of approved courses. The Department strongly advises students to fulfill this requirement before Level III.

Department of German

HONOURS GERMAN
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.

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.

Area Courses:
- All Level II, III and IV German courses, excluding German 2K3, 2L3 and 2Z6.

Levels II, III and IV: 90 units minimum
R 38-40 units of German, including German 2E3; 9 units from German 2A3, 2D3, 2F3, 2G3, 3C4; and either 4C4 and 20 units of Levels III and IV German or 4Z6 and 16 units of Levels III and IV German.

E To the approximate 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 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.

Area Courses:
- German 1A6 and all Level II, III and IV German courses, excluding German 2K3 and 2L3.

German 2A3, 2D3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.

Levels II, III and IV: 91-93 units
R 49-51 units of German which must include German 1A6, 2A3, 2D3, 2E3, 2F3, 2G3, 2Z6; either German 3C4 and 20 units of Levels III and IV German, including at least one Level IV German course or German 4Z6 and 16 units of Levels III and IV German; and 9 units from the Faculty of Humanities or 9 units of work approved by the Department.

E 33 units, 12 of which may be from German.

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.

Students wishing to include the study of German and Austrian history in their programmes are advised to take History 3J6.

COMBINED HONOURS IN GERMAN AND ANOTHER SUBJECT
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.

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.

Area Courses:
- All Level II, III and IV German courses, excluding 2K3, 2L3 and 2Z6.

Levels II, III and IV: 90 units minimum
R 38-40 units of German, including German 2E3; 9 units from German 2A3, 2D3, 2F3, 2G3, 3C4; and either 4C4 and 20 units of Levels III and IV German or 4Z6 and 16 units of Levels III and IV German.

E To the approximate 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 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.

Area Courses:
- German 1A6 and all Level II, III and IV German courses, excluding German 2K3 and 2L3.

German 2A3, 2D3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.

Levels II, III and IV: 91-93 units
R 49-51 units of German which must include German 1A6, 2A3, 2D3, 2E3, 2F3, 2G3, 2Z6; either German 3C4 and 20 units of Levels III and IV German, including at least one Level IV German course or German 4Z6 and 16 units of Levels III and IV German; and 9 units from the Faculty of Humanities or 9 units of work approved by the Department.

E 33 units, 12 of which may be from German.

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.

Students wishing to include the study of German and Austrian history in their programmes are advised to take History 3J6.

B.A. IN GERMAN
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.
Alternative A (for students entering with German 1A6)

Admission:
Completion of any Level I programme including a grade of at least C— in German 1A6.

Area Courses:
All Level II, III and IV German courses, excluding German 2K3, 2L3 and 2Z6.

Levels II and III: 60 units
R 24 units of German, including German 2E3; 9 units from 2A3, 2D3, 2F3, 2G3, 3C4; 8 units of Level III or (with permission) Level IV German; 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.

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.

Area Courses:
German 1A6 and all Level II, III and IV German courses, including German 1A6 and excluding 2K3 and 2L3.

German 2A3, 2D3 and 2F3 will be included in calculating the Graduation Average.

Levels II and III: 60 units
R 24 units of German, including German 1A6, 2E3, 2Z6; 9 units from German 2A3, 2D3, 2F3, 2G3; 12 units from the Faculty of Humanities or 12 units approved by the Department.

E 24 units, 12 of which may be from German.

Department of History

HONOURS HISTORY
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.

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.

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.

E 36 units, 12 of which may be from History courses approved by the Department.

No more than 24 units of History may be taken in any session, no more than 18 in Level II.

With the approval of the Departmental Counsellor, up to 6 units of Level II History may be replaced by Level III History and up to 6 units of Level III History may be replaced by Level II History.

No more than 12 units of Level IV History seminars may be taken in any session; no Level IV seminar may be taken before Level III.

Level Distribution

<table>
<thead>
<tr>
<th>Level</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II</td>
<td>12 units of Level II History; 6 units of Level II or III History.</td>
</tr>
<tr>
<td>Level III</td>
<td>6 units of Level III History; 6 units of Levels III or II History; 6 units of Level IV History.</td>
</tr>
<tr>
<td>Level IV</td>
<td>6 units of Level III History; 12 units of Level IV History.</td>
</tr>
</tbody>
</table>

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 United States. This requirement must be satisfied by the end of Level II.

COMBINED HONOURS IN HISTORY AND ANOTHER SUBJECT
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.

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.

Area Courses:
All Level II, III and IV History courses.

Levels II, III and IV: 90 units minimum
R 12 units of Level II History; 12 units of Level III History; 12 units of Level IV History.

E To the approximate 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.

With the approval of the Departmental Counsellor, up to 6 units of Level II History may be replaced by Level III History, and up to 6 units of Level III History may be replaced by Level II History.

No more than 6 units of Level IV History seminars may be taken in any session; no Level IV seminars may be taken before Level III.

Level Distribution

<table>
<thead>
<tr>
<th>Level</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II</td>
<td>6 units of Level II History; 6 units of Level II or III History.</td>
</tr>
<tr>
<td>Level III</td>
<td>6 units of Level III History; 6 units of Level II History.</td>
</tr>
<tr>
<td>Level IV</td>
<td>6 units of Level III History; 6 units of Level IV History.</td>
</tr>
</tbody>
</table>

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 United States.

B.A. IN HISTORY
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.

Admission:
Completion of any Level I programme with a grade of at least C— in any Level I History course.

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.

No more than 18 units of History may be taken in any session. No Level IV History seminars may be taken before Level III. With the approval of the Departmental Counsellor, 6 units of Level III History may be replaced by Level IV History.

Level Distribution

<table>
<thead>
<tr>
<th>Level</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level II</td>
<td>History 2J6; 6 additional units of Level II History.</td>
</tr>
<tr>
<td>Level III</td>
<td>12 units of Level III History; 6 units of Level IV History with permission.</td>
</tr>
</tbody>
</table>
HUMANITIES

History students who achieve a weighted 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.

In selecting courses, students must ensure that they take at least 6 units in each of the following six fields of History: European, Ancient, Asian, Canadian, British, and United States.

Department of Music

HONOURS PROGRAMMES FOR MUS. BAC. DEGREE

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.

Completion of a Music degree requires considerable daytime attendance.

Programme A: Honours Music (Education)

Admission:
Completion of Music I with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4; successful completion of Music IG2.

Area Courses:
Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2H4, 3E4, 3J4, 3K3, 3L3, 3M4, 3N3, 303, 3T3, 3U3, 4E4, 4K3, 4L3, 4M4, 4N3, 403, 4T3.

Levels II, III and IV: 94 units

R Music 283, 2883, 403, 4P3.

Music IB6, lC2, lCC2, lE4; successful completion of Music IG2.

48 units by the end of Level III

SUBJECT

3K3, 3L3, 3M4, 3N3, 303, 3T3,

COMBINED

Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

E To the approximate 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 MUSIC

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.

Alternative A (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.

Area Courses:
All Levels II, III and IV Music courses, except Music 2G2, 3G2, 4G2.

Levels II and III: 62 units

R Music 1C2, 1CC2, 1D2, 1DD2, 1E4, 1G2, 2A6, 2E4, 2H4; 10 units of Level III or IV Music Area courses.

E 24 units, of which may be from Music.

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

Programme B: Honours Music (History and Theory)

Admission:
Completion of Music I with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1D2, 1DD2, 1E4; successful completion of Music 1G2.

Area Courses:
Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2H4, 3B3, 3BB3, 3C4, 3E4, 3H4, 3J4, 3R3, 3T3, 3U3, 4A4, 4B3, 4BB3, 4C4, 4E4, 4H3, 4J3, 4S4.

Levels II, III and IV: 93 units

R Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2G2, 2H4, 3C4, 3E4, 3H4, 3J4, 3R3, 4C4, 4E4; 9 units from Music 3B3, 3BB3, 3C4, 3E4, 3H4, 3J4, 3R3, 4C4, 4E4; 9 units from Music 3T3, 3U3, 4A4, 4H3, 4J3, 4S4 (only one of 3T3, 3U3 may be taken for R-credit; only one of 4A4, 4S4 may be taken for R-credit).

E 24 units, of which may be from Music.

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

COMBINED HONOURS IN MUSIC AND ANOTHER SUBJECT

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.

Admission:
Completion of Music I with a weighted average of at least 7.0 in Music 1B6, 1C2, 1CC2, 1E4; successful completion of Music 1G2.

Area Courses:
Music 2B3, 2BB3, 2C2, 2CC2, 2E4, 2H4, 3B3, 3BB3, 3C4, 3E4, 3H4, 3J4, 3R3, 3T3, 3U3, 4A4, 4B3, 4BB3, 4C4, 4E4, 4H3, 4J3, 4S4.

Music 2H4 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units minimum

R Music 2B3, 2BB3, 2C2, 2CC2, 2E4, 2H4, 3E4, 4E4 and 12 additional units of Level III or IV Music Area courses.

E To the approximate 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 MUSIC

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.

Alternative A (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.

Area Courses:
All Levels II, III and IV Music courses, except Music 2G2, 3G2, 4G2.

Levels II and III: 62 units

R Music 1C2, 1CC2, 1D2, 1DD2, 1E4, 1G2, 2A6, 2E4, 2H4; 10 units of Level III or IV Music Area courses.

E 24 units, of which may be from Music.

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

Alternative B (for students entering from Music I)

Admission:
Completion of Music I with a weighted average of at least 4.0 in Music 1B6, 1C2, 1CC2 and 1E4; successful completion of Music 1G2.

Area Courses:
All Level II, III and IV Music courses, except Music 2G2, 3G2, 4G2.

Levels II and III: 60 units

R Music 2A6, 2E4, 2H4; 12 additional units of Music Area courses including at least 6 units beyond Level II; 10 units from the Faculty of Humanities, which may include Music.

E 24 units, of which may be from Music.

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

Department of Philosophy

HONOURS PHILOSOPHY

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.
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.

Area Courses: All Level II, III and IV Philosophy courses.

Levels II, III and IV: 90 units
R Philosophy 2A6, 2B3, 2C6, 3A6, 3C3, 3O3, 4H3 and 24 additional units of Philosophy, at least 21 units of which must be Level III or IV Philosophy courses.

E 36 units, 24 of which may be from Philosophy beyond Level I.

COMBINED HONOURS IN PHILOSOPHY AND ANOTHER SUBJECT

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.

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 6 units acceptable to the Department of Philosophy.

Area Courses: All Level II, III and IV Philosophy courses.

Levels II, III and IV: 90 units minimum
R Philosophy 2A6, 2B3, 2C6 and 21 units of Levels III and IV Philosophy.

E To the approximate 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 PHILOSOPHY AND BIOLOGY

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.

Admission: Completion of any Level I programme including Philosophy 1B6 or 1D6 with a grade of at least B—, and Biology 1A6 or 1G6 with a grade of at least B—, and 6 units of Level I Mathematics.

Area Courses: All Level II, III and IV Philosophy courses; Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H6, 3I3, 3J3, 3N6, 3O3, 3Q3, 4E3, 4M3, 4Q3; Chemistry 2O8.

Levels II and III: 60 units
R Philosophy 2A6, 2C6, 2F4; 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

HONOURS FRENCH

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.

Programme A: French 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.)

Area Courses: All Level II, III and IV courses in French, except 2B3 and 2P3.

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, 2J3; one of French 2W3, 2W3; one of French 3K3, 3K3; one of French 3Q3, 3Q3; three-unit Level IV French courses; 15 additional units of French.

E 36 units elective, 18 of which may be from French.

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.

Programme B: French Language and Linguistics

Admission: Completion of any Level I programme with a grade of at least B— in each of French 1A6 and Linguistics 1A6. (French 1B6 with a
grade of at least B may be substituted for French 1A6 with permission of the Department.) Students who are interested in entering this programme, but lack Linguistics 1A6, should consult the Department for ways of meeting the programme requirements.

Area Courses:
- All Level II, III and IV courses in French and Linguistics, except French 2B3 and 2P3, and Linguistics 1A6.

Levels II, III and IV: 90 units
R 18 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 15 units of French/Francophone Literature or Civilization courses; 15 units of French Linguistics courses to be selected from French 3B3, 3E3, 3G3, 3I3, 3R3, 4C3, 4E3, 4X3, 4Z3; 18 units of Linguistics courses beyond Level I approved by Department, including Linguistics 2M6 but excluding French courses.

E 24 units elective, 12 of which may be from French and Linguistics courses.

Upon completion of 60 units of work (including 18 units of required Level II French area courses), and with 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.

COMBINED HONOURS IN FRENCH AND ANOTHER SUBJECT (Alternative A)
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.

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.)

The French component of a Combined Honours Programme will be as follows:

Area Courses:
- All Level II, III and IV courses in French, except 2B3 and 2P3.

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 2B3, 2U3; one of French 2W3; 2W3; one of French 3K3, 3K3; one of French 3Q3, 3Q3; 3Q3; 3Q3; two three-unit Level IV French courses; 6 additional units of French.

E To the approximate 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.

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.

HONOURS FRENCH AND ANOTHER SUBJECT (Alternative B)
Students wishing to combine French with Canadian Studies should follow the option below.

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.

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.)

Area Courses:
- All Level II, III and IV courses in French, except 2B3 and 2P3, 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 French Language Practice; Canadian Studies 1A6 (if not completed in Level II); 18 units of Canadian Studies from 2A3, 2B3, 3C3, 3D3, 4C3, 4D3 (including at least one Level IV course); 15 units of Canadian Area courses, excluding French courses.

E 18 units elective.

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 Combined Honours Canadian Studies and French may be replaced by courses of study at a Canadian francophone or Canadian bilingual university.

B.A. IN FRENCH
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.

Admission:
Completion of any Level I programme with a grade of at least C — in French 1A6. (French 1B6 may be substituted for French 1A6 with permission of the Department.)

Area Courses:
- All Level II, III and IV French courses, except 2B3 and 2P3.

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 2B3, 2U3; one of French 2W3; 2W3; one of French 3K3, 3K3; one of French 3Q3, 3Q3; 3Q3; 3Q3; nine additional units of French; 9 units from the Faculty of Humanities.

E 24 units elective, 12 of which may be from French.

HONOURS ITALIAN
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.

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 B — in Italian 1A6.

Area Courses:
- History 3A3 and all Level II, III and IV Italian courses, excluding Italian 2A3, 2H3 and 2I6.

Levels II, III and IV: 90 units
R Italian 2A6, 3I6, 3D4, 3L3, 3Q3, 3R6, 4L4, 4M3, 4P3; 9 units of Level III and IV Italian courses; History 3A3; 15 units from the Faculty of Humanities, including 6 units of English, if not previously completed.

E Electives, excluding 12 units of Italian, to make a total of at least 90 units.

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.
Area Courses:
Italian 1A6, History 3A3, and all Level II, III and IV Italian courses, excluding 2A3, 2H3 and 2I6.

Levels II, III and IV: 90 units
R Italian 1A6, 2D6, 2E6; 3D4 or 4M3; 3L3, 303, 3R6, 4L4, 4P3; and 3 units of Level III or IV Italian courses; History 3A3; 12 units from the Faculty of Humanities, including 6 units of English, if not previously completed.

E Electives, excluding 12 units of Italian, to make a total of at least 90 units.

Upon completion of 60 units of work (including 12 units of required Level II 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.

**COMBINED HONOURS IN ITALIAN AND ANOTHER SUBJECT**

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.

**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 B — in Italian 1A6.

**Area Courses:**
History 3A3 and all Level II, III and IV Italian courses, excluding Italian 2A3, 2H3 and 2I6.

Levels II, III and IV: 90 units minimum
R Italian 2D6, 2E6, 3D4, 3R6; 3L3 or 303; 4L4, 4M3, 4P3; 3 units of Level III or IV Italian; History 3A3.

E To the approximate 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.

**Area Courses:**
Italian 1A6 and all Level II, III and IV Italian courses, excluding Italian 2A3, 2H3 and 2I6.

Levels II, III and IV: 90 units minimum
R Italian 1A6, 2D6, 2E6; 3D4 or 4M3; 3L3 or 303; 3R6, 4L4, 4P3; and 6 to 8 units of Level III or IV Italian.

E To the approximate 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.

**RECOMMENDED DISTRIBUTION OF ITALIAN AREA COURSES**

<table>
<thead>
<tr>
<th>Level II</th>
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<tr>
<td>Italian 1A6, 2E6.</td>
<td>Italian 2D6, 3R6 and additional units of Levels III and IV Italian to total 15 to 16 units.</td>
<td>Italian 3D4 or 4M3; 4L4, 4P3.</td>
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</table>

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.

**B.A. IN ITALIAN**

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.

**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.

**Area Courses:**
All Level II, III and IV Italian courses, excluding Italian 2A3, 2H3 and 2I6.

Levels II and III: 61 units
R Italian 2D6, 2E6, 3D4, 3R6, 4P3; 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 from 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.

**Area Courses:**
Italian 1A6, all Level II, III and IV Italian courses, excluding Italian 2A3, 2H3 and 2I6.

Levels II and III: 60 units
R Italian 1A6, 2D6, 2E6, 3R6, 4P3; 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 from Italian.

**HONOURS SPANISH**

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.

Students who take Spanish 1Z6 during their first level of university are strongly urged to take Spanish 1A6 during the following year in order to follow Alternative A of the Honours Spanish programme. Students who are unable to take 1A6 during the summer and who enter the programme with Spanish 1Z6 only must follow Alternative B.

**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.

**Area Courses:**
All Level II, III and IV Spanish courses, and History 2C6 and 3AA3.

Levels II, III and IV: 90 units
R Spanish 2A4, 2B3, 2C3, 2E6; History 2C6 or 3AA3; Spanish 3A4; 4A4 or 4X4; 30 units of Level IV Spanish Literature courses.

E Electives to make a total of 90 units, 12 of which may be from Spanish.

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.

**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.
HUMANITIES

Area Courses:
Spanish 1A6, all Level II, III and IV Spanish courses, and History 2C6 and 3AA3.

Levels II, III and IV: 90 units
R Spanish 1A6, 2A4, 2B3, 2C3, 2E6; History 2C6 or 3AA3; Spanish 3A4; 4A4 or 4X4; 21 units of Level IV Spanish Literature courses.
E Electives to make a total of 90 units, 12 of which may be from Spanish.

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:

Level II: Spanish 1A6, 2B3, 2C3c&6-3Hlxh3AA3.
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.

COMBINED HONOURS IN SPANISH AND ANOTHER SUBJECT

No student may register in any Level of this programme without the permission of the Department of Romance Languages and the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Students who take Spanish 1Z6 during their first level of study 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 1A6 during the summer and who enter the programme with Spanish 1Z6 only must follow Alternative B.

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.

Area Courses:
All Level II, III and IV Spanish courses.

Levels II, III and IV: 90 units minimum
R Spanish 2A4, 2E6; either 2B3 or 2C3; 3A4; 4A4 or 4X4; 18 units of Level IV Spanish Literature courses.
E To the approximate 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.

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.

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.

Area Courses:
Spanish 1A6, all Level II, III and IV Spanish courses.

Levels II, III and IV: 90 units minimum
R Spanish 1A6; 283 or 2C3; 2A4, 2B3, 2E6; Spanish 3A4; 4A4 or 4X4; 15 units of Level IV Spanish Literature courses.
E To the approximate 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.

Department of Russian

HONOURS RUSSIAN STUDIES

No student may register in any Level of this programme without the permission of 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; Russian 1B6, and History 3H6, 4O6; Political Science 2K6, 3P6, 4J6.

Levels II, III and IV: 93 units
R Russian 2C6, 3E3, 3C6, 4C6; either 2A6 or 3K6; History 3H6; Political Science 2K6; and additional Area courses to make a total of 57 units.
E 36 units, 18 of which may be from Russian Area courses.
COMBINED HONOURS IN RUSSIAN AND ANOTHER SUBJECT
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.

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 1Z6.

Area Courses:
All Level II, III and IV Russian courses.

Russian 2A6 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units minimum
R Russian 2C6, 2E3; either 2A6 or 3K6; two of 4A3, 4D3, 4B3, 4F3; 4C6 and 6 additional units of Russian.

E To the approximate 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 RUSSIAN AND POLITICAL SCIENCE
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.

Admission:
Completion of Humanities I or Social Sciences I with a weighted average of at least 7.0 in Russian 1Z6 and 6 units acceptable to the Department of Political Science, including a grade of at least B— in Russian 1Z6. A Level I course in Political Science is recommended.

Area Courses:
All Level II, III and IV Russian and Political Science courses.

Russian 2A6 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units
R Political Science 2K6, 3M6, 4J6 and 6 additional units of Level II and III, and 3 to 6 additional units of Russian to make a total of 39 units of Russian.

E 15 units.

B.A. IN RUSSIAN
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.

Admission:
Completion of any Level I programme with a grade of at least C— in Russian 1Z6.

Area Courses:
All Level II, III and IV Russian courses and Russian 1B6.

Levels II and III: 60 units
R Russian 2C6, 2E3; either 2A6 or 3K6; one of 4A3, 4B3, 4D3, 4F3; 3C6 and 6 additional units of Russian Area courses; 6 units from the Faculty of Humanities.

E 24 units, 12 of which may be from Russian.

Students in the B.A. programme in Russian who achieve a weighted average of at least 7.0 in Russian 2C6, 2E3, and either 2A6 or 3K6 may be allowed to transfer to Honours Russian Studies.

HONOURS SLAVIC STUDIES
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.

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 one of Russian 1Z6, Ukrainian 1Z6, Serbo-Croatian 1Z6.

Area Courses:
All Russian, Ukrainian, Serbo-Croatian and Slavic courses.

Slavic 2F6 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units
R Slavic 2F6, 3A6; Russian 1Z6 (if not previously taken), 2C6, 3C6; 12 units from Ukrainian 1Z6, 2A6, 3A6; Serbo-Croatian 1Z6 (if not previously taken); and additional Area courses to make a total of 54 units. (Must include at least 30 units of Level III and IV Area courses, including at least one Level IV Area course.)

E 36 units, 18 of which may be from Area courses.

B.A. IN SLAVIC STUDIES
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.

Admission:
Completion of any Level I programme with a grade of at least C— in any one of Russian 1Z6, Ukrainian 1Z6, Serbo-Croatian 1Z6.

Area Courses:
All Russian, Ukrainian, Serbo-Croatian and Slavic courses.

Levels II and III: 60 units
R Slavic 2F6, 3A6; Russian 1Z6 (if not previously taken), 2C6; and 12 units from Ukrainian 1Z6, 2A6, 3A6, Serbo-Croatian 1Z6 to make a total of 30 units; 6 units from the Faculty of Humanities.

E 24 units, 12 of which may be from Area courses.

Students in the B.A. programme in Slavic Studies who achieve a weighted average of at least 7.0 in the first 15 units of Area work attempted may be allowed to transfer to Honours Slavic Studies.
Faculty of Science

D.W.L. Sprung/B.A., Ph.D., D.Sc., FRCS., Dean of Science
D.E.N. Jensen/M.A., Ph.D., Assistant Dean of Science (Studies)
A.J. Yarwood/B.Sc., Ph.D., Assistant Dean of Science (Studies)
E. Calligan/Student Advisor
J. Schwindt/Student Advisor
J. Budd/B.A., Programmes Assistant

The Faculty of Science provides studies through the following Departments:

*Biochemistry
*Biology
Chemistry
Geography
*Mathematics
*Physics

All Departments offer four-level Honours B.Sc. programmes which prepare students for graduate studies, and Ontario Teacher's Certificate and industry. 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 Metallurgy. Some Departments offer "Major" programmes as well (which are indicated in the list above by an asterisk). "Major" programmes require four levels and offer in-depth studies suitable for students who will be 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 Changes

All programme 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. First-term courses cancelled by the October deadline may not be replaced by second-term courses. 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 II, 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 a Dean of 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 the Cumulative Area Average nor the number of units required for graduation.

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 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. RE-ADMISSION 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 and the selection will be based on the grades in the combination of subjects required for admission to that programme. In 1982-83, enrolment in the second level of programmes leading to degrees in Geology and Computer Science may be limited. Students should consult with the Departments concerned if there are any questions about entry to limited enrolment programmes."

Level I Programme

NATURAL SCIENCES I: 29 to 35 units
Select FIVE full-year courses as follows:
ONE of Mathematics 1A6 or 1F6
TWO, THREE or FOUR of a, b, c or d:
a) Physics 1A7 or 1B7 or 1C8
b) Chemistry 1A7 or 1C8
c) Biology 1A6 or 1B7
d) Geology 1A6
up to TWO of e, f, g or h:
e) Mathematics 1B4 or 1G6
f) Psychology 1A6
g) Geography 1A6
h) 6 units of Level I Humanities or Social Sciences or Science (Computer Science 1B3, 1C3 and Materials 1A3, 1A6, 1B3 may be chosen.)

Two three-unit courses are considered to be one selection; the three-unit courses should be taken in different terms. 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 requirements of a specific Level II programme in mind. A suitable choice of Level I options will allow successful students to enter any one of several Level II programmes.

Students who do not intend to enter Computer Science programmes are encouraged to postpone taking Computer Science until after Level I.

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 to take that programme after consultation with a Dean of Students 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.
**Admission:**
Completion of **Natural Sciences I**, including Mathematics 1A6 with a weighted average of at least 7.0 in one of Chemistry 1A7, 1C8 and either Mathematics 1A6 or one of Physics 1A7, 1B7, 1C8. Biology 1A6 or 1B7 must be taken before entry into Level III; its election in Level I is recommended. The election of one of Physics 1A7, 1B7, 1C8 in Level I or II is recommended.

**Area Courses:**
Biochemistry 2AA3, 3BB3, 3CC3, 3L4, 4E3, 4M3, 4Q3, 4B6, 4L6; Biology 2B3, 2C3, 303, 3P3, 4B4, 413, 4Q3, 456; Biochemistry 24N, 2Q5, 2S8, 2T4, 3C4, 3D6, 3E4, 3Y3, 4A3, 4D3.

**Level II:** 34-35 units
R Biochemistry 2AA3; Chemistry 2N4, 2S8, one of Chemistry 2Q5, 2T4; Biology 2C3 or either Biology 1A6 or 1B6 if not taken in Level I; 6 units from any Science discipline, excluding Biochemistry. Computer Science 1B3, Chemistry 2U3 may be of interest. Election of both Biology 2B3 and 2C3 in Level II is recommended because they are prerequisites to Biology courses in Levels III and IV. Chemistry 2T4 requires that Mathematics 203 be elected. Chemistry 2U3 requires that both Mathematics 2G3 and 203 be elected.

E 6 units, excluding Biochemistry.

**Level III:** 32-35 units
R Biochemistry 3BB3, 3CC3, 3G6, 3L4; Chemistry 3D6; 10 to 13 units from Biology 2C3 (if not previously taken), Biology 303, 3P3, 4B4, 413, 4Q3, 456, 4V3, Chemistry 3E4.

E 6 units, excluding Biochemistry.

**Level IV:** 30-34 units
R One of Biochemistry 4B6, 4K4, 4L6; two of Biochemistry 4E3, 4M3, 4Q3; Level III and IV Area courses to make a total of 20 to 22 units. 4 to 6 units from any Level III or IV course from the Faculty of Science.

E 6 units.

**HONOURS BIOCHEMISTRY AND CHEMISTRY**
This programme fulfills the academic requirements for professional membership in the Chemical Institute of Canada.

**Admission:**
Completion of **Natural Sciences I**, including Chemistry 1A7 or 1C8, Mathematics 1A6, 1G6, and one of Biology 1A6, 1B7, Physics 1A7, 1B7, 1C8, with an average of at least 7.0 in Mathematics 1A6 and either Chemistry 1A7 or 1C8. Election of both Biology and Physics is highly recommended.

**Area Courses:**
Chemistry 2A4, 2S8, 2T4, 2U3, 3A4, 3D6, 3E4, 3C4, 3Y3, 4A3, 4D3, 4G7, 4U5; Biochemistry 2AA3, 3BB3, 3CC3, 3L2, 3L4, 4E3, 4M3, 4Q3, 4U5, 4B6.

Chemistry 2U3 will be included in calculating the Graduation Average if taken in Level II.

**Level II:** 34-35 units
R Biochemistry 2AA3; Chemistry 2A4, 2S8, 2T4; Mathematics 2G3, 203; Biology 1A6, 1B7, Physics 1A7, 1B7, 1C8 if not completed in Level I; courses in a Science discipline to make a total of 31 to 32 units. Students considering Level III Honours Chemistry should elect Chemistry 2U3. Students considering Level III Honours Biochemistry should elect Biology 2C3.

E 6 units, excluding Biochemistry and Chemistry.

**Level III:** 33-35 units
R Biochemistry 3BB3, 3CC3 (or 3G6), 3L4 or 3L2; Chemistry 2U3, 3D6, 3A4 or 3E6, or both 3C4 and 3Y3.

E Electives to make a total of 33 to 35 units.

**Level IV:** 32-35 units
R Two of Biochemistry 4E3, 4M3, 4Q3; one of Biochemistry 4U5 (Chemistry 4U5), 4B6, Chemistry 4G7; Chemistry 3A4 or 3E6, or both 3C4 and 3Y3; 3 to 4 units of Level III or IV Biochemistry; 5 units of Level III or IV Chemistry.

E Electives to make a total of 32 to 35 units.
E Electives, at least 3 units of which may not be from Biology or Biochemistry, to make a total of 30 to 33 units. (Students are strongly advised to take Chemistry 2Q6.)

Level IV: 31-32 units
R 25 to 26 units Levels III and IV Area courses including Biology 4F4 or 4C8.
E Electives to make a total of 31 to 32 units.

HONOURS BIOLOGY AND GEOLOGY
Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, Physics 1B7 or 1C8, and Mathematics 1A6 with at least B— in Biology 1A6 or 1B7 and at least a B— in Geology 1A6.

Biochemistry 2B3, 2C3 and 2D3 will be included in calculating the Graduation Average.

Area Courses:
Biology 2B3, 2C3, 2D3, 2E3, 2F3, 3A6, 3D3, 3E3, 3F6, 3J3, 3M6, 3S6, 3Y6, 4D6, 4F4, 4C8, 4Q3, 4Z3; Geology 2B6, 2C6, 3C6, 3D6, 4D6, 4K6, 4M6, 4S6.

Level II: 35-36 units
R Biology 2E3, 2F3; Geology 2B6, 2C6; Mathematics 1G6 or Computer Science 1B3 and Biology 2H3; Chemistry 2Q5 or Chemistry 2P4 and 2R2.
E Electives, 3 units of which may not be Biology or Geology, to make a total of 35 to 36 units.

Level III: 34-37 units
R Geology 3D6; Biology 2C3; either Biology 2B3 or 2D3; Chemistry 2D4 and Biochemistry 2E3; 12 units from Geology 3C6; Biology 3F6; 3M6, 3S6, 3Y6.
E Electives to make a total of 34 to 37 units. (Students are advised to take both Biology 2B3 and 2D3.)

Level IV: 31-34 units
R Geology 3E2; Biology 3J3, 4Q3; 18 to 20 units from Biology 3A6, 3D3, 3E3, 3F6, 3M6, 3S6, 3Y6, 4D6, 4F4, 4C8, 4Z3 and Geology 3C6, 4M6, 4D6, 4K6, 4S6 (at least 6 units from Biology and at least 6 units from Geology). (Only one of Biology 4F4, 4C8 and Geology 4D6 may be taken.)
E Electives to make a total of 31 to 34 units (Geology 2D5 is recommended).

HONOURS BIOLOGY AND PHILOSOPHY
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.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, with at least B— in Biology 1A6 or 1B7 and at least a B— in Philosophy 1B6 or 1D6.

Biochemistry 2AA3 will be included in calculating the Graduation Average. Philosophy 2A6, 2C6, 2L3 will be included in calculating the Graduation Average, if they are taken in Level III.

Area Courses:
Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H6, 3I3, 3J3, 3N6, 3O3, 3Q3, 4E3, 4F4, 4M3, 4Q3; Biochemistry 2AA3, 3BB3; all Levels II, III and IV Philosophy courses.

Level II: 34-35 units
R Biology 2B3, 2C3, 2E3, 2F3; Philosophy 2B3; 2D3 or 2G3; 2A6 or 2C6; 2L3 or 3W3; either Chemistry 208 or both Chemistry 2D4 and Biochemistry 2E3.

Level III: 32-33 units
R 12 units from Biology 3F6, 3H6, 3I3, 3J3, 3N6, 3O3, 3Q3 and Biochemistry 2AA3; Philosophy 2A6 or 2C6; 3L3 or 3O3; 2L3 or 3W3; 3 additional units from Philosophy.

E 5 to 6 units elective (Chemistry 2Q5 is recommended).

Level IV: 33 units
R 12 units from Levels III and IV Biology Area courses and Biochemistry 3BB3; Philosophy 4W3; 12 units from Philosophy 3G3 or 3N6; 4S3 or 3L3 or 3O3.
E 6 units elective.

HONOURS BIOLOGY AND PSYCHOLOGY
Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, one of Physics 1A7, 1B7 or 1C8 with at least B— in Biology 1A6 or 1B7 and at least a B— in Psychology 1A6.

Computer Science 1B3 will be considered a Level II course; Biology 2E3 will be included in calculating the Graduation Average.

Students must complete a minimum of one laboratory course in Psychology and one in Level III or IV Biology. A minimum of 18 units from Psychology and a minimum of 18 units of Biology must be included in the total required courses for Levels III and IV combined.

Area Courses:
Biology 2B3, 2C3, 2D3, 2E3, 2F3, 3F6, 3H6, 3I3, 3J3, 3K6, 3N6, 3O3, 3P3, 3Q3, 3Y6, 4E3, 4M3, 4P6, 4S6; Psychology 2H3, 2T3, 3B3, 3F6, 3K3, 3M6, 3N6, 3R3, 3S3, 3T3, 3U3, 3V3, 3X3, 4D6, 4E7, 4Q3; Computer Science 1B3; Statistics 2R6.

Level II: 32-35 units
R Biology 2B3 and 2C3; Psychology 2T3 and 2H3; either Statistics 2R6 or both Computer Science 1B3 and Biology 2H3; Chemistry 208 and Biochemistry 2AA3.
E 3 to 6 units elective, excluding Biology and Psychology, to make a total of 32 to 35 units (English 3A3 is recommended).

Level III: 32-33 units
R 12 units from Biology 2E3, 3H6, 3N6, 3O3, 3P3, 3Y6, 4E3; Psychology 3W6; 6 units from Psychology 3B3, 3F6, 3K3, 3M6, 3N6, 3R3, 3S3, 3T3, 3U3, 3V3, 3X3, 4D6, 4E7, 4Q3; Computer Science 1B3.
E 5 to 6 units elective, excluding Biology or Psychology, to make a total of 32 to 33 units. (Students are advised to take Chemistry 2Q5.)

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) 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 1, including Chemistry 1A7 or 1C8, with at least C— in Biology 1A6 or 1B7 and at least C— in 6 additional units acceptable to the Department. One of Physics 1B7, 1A7, 1C8 is strongly recommended in Level I.

Area Courses:
All Level II, III and IV Biology courses, except Biology 2H3, 3V6, 3Z6, 4C8; Biochemistry 3BB3.

Level II: 32 units
R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 208.
E Electives, at least 3 units of which may not be from Biology or Biochemistry, to make a total of 32 units.

Level III: 30-33 units
R 18 units of Area courses.
E Electives, at least 6 units of which may not be from Biology or Biochemistry, to make a total of 30 to 33 units.

Level IV: 30-33 units
R 18 units of Area courses.
Students in Levels III and IV of this programme should select Area Electives, at least 6 units of which may not be from Biology or courses in consultation with the Chairman of the Department of Biology.

B.Sc. IN BIOLOGY

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8 and at least a grade of C— in Biology 1A6 or 1B7. One of Physics 1A7, 1B7, 1C8 is strongly recommended in Level I.

Area Courses:
All Levels II and III Biology courses.

Level II: 31 units.
R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 2D4; Computer Science 1B3; either Biochemistry 2E3 or Biology 2H3.

E 6 units from the Faculties of Social Sciences or Humanities.

Level III (1982-83 only): 30-31 units
R Biology 3V6, 3Z6; 6 units of Level III Biology Area courses; either Chemistry 2D4 and Biochemistry 2E3 or Computer Science 1B3 and Biology 2H3 (if not completed in Level II).

E Electives, 6 units of which must be from the Faculties of Social Science or Humanities, to make a total of 30 to 31 units.

Level III (beginning in 1983-84): 30 units.
R Biology 3V6, 3Z6; 6 units of Level III Biology Area courses; either Biochemistry 2E3 or Biology 2H3 (whichever was not taken in Level II); 3 units of Science.

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 Mathematics 1A6, 1G6, and one of Chemistry 1A7, 1C8 with a grade of at least B— in Chemistry 1A7, 1C8, and in one of Mathematics 1A6, 1G6, Physics 1A7, 1B7, 1C8. One of Physics 1A7, 1B7, 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2A4, 2B4, 3A4, 3C4, 3E2, 4C3, 4H4, 4Q3, 4R3, 4S3; Chemical Engineering 2D4, 2F4, 3S6, 4K4, 4S3.

Level II: 33-36 units
R Chemistry 2A4, 2B4, 2D4, 2F4; Computer Science 1B3, Mathematics 2G3, 2H3.

E 3 to 6 units elective, excluding Chemistry, to make a total of 33 to 36 units.

Level III: 32 units
R Chemistry 3D6, 3E6, 3I3, 2U3; Chemical Engineering 3S6, or Chemistry 3A4, if Chemical Engineering 3S6 not offered).

E Electives, at least 6 units of which may not be Chemistry, to make a total of 32 units.

Level IV: 32-35 units
R Chemistry 4A3 or 4D3, 4C3 or 4R3 or 4S3, 4T4; either Chemistry 3C4 or 3Y3 or Chemical Engineering 4K4 and 4S3; either Chemistry 3A4 or Chemical Engineering 3S6, whichever is not taken in Level III.

E Electives to make a total of 32 to 35 units. The following are among courses which are relevant: Engineering 2D4, Materials 4D3, 4E3; Metallurgy 2C3, 3C3, 4C4, 4N3; Chemical Engineering 3D4, 4K4, 4N4, 4P3; Business 3W6, 3X3, 3Y3, 3Z3; Physics 2B6.

HONOURS CHEMISTRY

This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, and Mathematics 1G6, with a grade of at least B— in Chemistry 1A7 or 1C8, and a grade of at least B— in either Mathematics 1A6 or 1G6 or Physics 1A7 or 1B7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2A4, 2B4, 2G4, 2I3, 2J1, 3A4, 3C4, 3D6, 3E6, 3I3, 4A3, 4B3, 4C3, 4D3, 4E4, 4F3, 4G7, 4P3, 4Q3, 4R3, 4S3.

Level II: 32-35 units
R Chemistry 2A4, 2B4, 2G4, 2I3, 2J1; Mathematics 2G3, 2H3; Computer Science 1B3, if not completed in Level I.

E 3 to 9 units elective, excluding Chemistry, to make a total of 32 to 35 units.

Level III: 32-35 units
R Chemistry 3A4, 3C4, 3D6, 3E6, 3Y3.

E 9 to 12 units elective, 6 of which may not be Chemistry, to make a total of 32 to 35 units.

Level IV: 31-35 units
R 19 to 20 units selected as follows: Chemistry 4E4 or 4G7; at least one course from each of Chemistry 4A3 or 4D3, Chemistry 4B3 or 4Q3; Chemistry 4C3 or 4R3 or 4S3; and Level III or IV Area courses to make up the balance. An additional 6 to 9 units from Levels III and IV Natural Science or Engineering courses.

E Electives to make a total of 31 to 35 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 1A7 or 1C8, Geology 1A6, Mathematics 1A6 and 1G6, with an average of at least B— in Chemistry 1A7 or 1C8 and Geology 1A6. The election of Physics 1A7 is recommended.

Geology 2D5 and Chemistry 2U3 will be included in calculating the Graduation Average.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3G4, 4Q4, 4M6, 4B6; Chemistry 2A4, 2S8, 2T4, 2U3, 3E6, 3A4, 4C3, 4R3, 4S3, 4P3.

Level II: 34 units
R Chemistry 2A4, 2B4, 2D4, Geology 2B6, 2C6, Mathematics 2G3.

E 3 units elective, excluding Chemistry and Geology.

Level III: 35 units
R Chemistry 2U3, 3E6, Geology 2D5, 3C6, 3E2, Geology 3G4; Mathematics 2O3. Attention is drawn to Geology 3E2 which is scheduled outside of regular term.

E 6 units elective.

Level IV: 31-34 units
R 21 units selected as follows: Chemistry 3A4; 17 units of Levels III and IV Chemistry and Geology, with at least 6 units of each.

E Electives to make a total of 31 to 34 units.

HONOURS CHEMISTRY AND PHYSICS

This programme fulfills the academic requirements for membership in the Chemical Institute of Canada.
SCIENCE

Admission:
Completion of Natural Science 1, including Mathematics 1A6 and 1G6, Chemistry 1A7 or 1C8, and Physics 1A7 with a grade of at least B— in Chemistry 1A7 or 1C8, Physics 1A7, and one of Mathematics 1A6 or 1G6.

Chemistry 2A4 will be included in calculating the Graduation Average.

Area Courses:
Chemistry 2A4, 2S8, 2T4, 3E6, 3Y3, 3C4, 4E4, 4B3, 4Q3, 4C3, 4F3, 4G7; Physics 2B6, 2C5, 3M6, 3B6, 3N3, 3K4, 4J4, 4F3.

Level II: 32-33 units
R Chemistry 2F4, 208, 2T4, Physics 2B6, 2C5; Mathematics 2G3, 2O3.
E 3 to 4 units to make a total of 32 to 33 units.

Level III: 34 units
R Chemistry 2A4, 3E6; Physics 3M6; 6 to 9 units from Physics 2B6, 3N3, Chemistry 3Y3 or Physics 3K4; and Mathematics 3C6.
E Electives to make a total of 34 units.

Level IV: 31-34 units
R Chemistry 4E4 or Physics 4J4; Physics 4F3; Chemistry 3C4 if not taken in Level III; at least 14 units of Level III or IV Chemistry or Physics, which must include Chemistry 3Y3 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.

For students who enter this programme from September, 1982, the following will prevail.

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, Mathematics 1A6 and Mathematics 1G6 with a grade of at least C— in Chemistry 1A7 or 1C8, and a grade of at least C— in Mathematics 1A6 or 1G6 or Physics 1A7 or 1B7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2F4, 208, 2P4, 2R2, 3K6, 313, 3Q4, 3B4, 3C4, 3Y3, 3D6, 3F3, 4P3, 4C3, 4R3, 4S3, 4T4.

Level II: 30 units
R Chemistry 2F4, 208, 2P4, 2R2; Computer Science 1B3 if not completed in Level I.
E 9 to 12 units elective, excluding Chemistry, to make a total of 30 units.

Level III: 30-31 units
R Chemistry 3B4, 3F3, 3K6, 3Q4; Mathematics 2G3 and 2O3, if not taken previously.
E Electives to make a total of 30 to 31 units.

Level IV: 30-32 units
R Chemistry 3C4, 3Y3, 4A3 or 4D3, 4P3, 4C3 or 4R3 or 4S3, 4T4.
E Electives to make a total of 30 to 32 units.

For students who entered this programme before September 1982, the following will prevail.

Area Courses:
Chemistry 3A4, 3C4, 3D6, 3E6, 313, 3Y3, 4A3, 4B3, 4C3, 4D3, 4P3, 4Q3, 4R3, 4S3, 4T4.

Level III: 31 units
R Chemistry 3A4, 3D6, 3E6, 3Y3.
E 12 units elective, 6 of which may not be Chemistry.

Level IV: 30-32 units
R Chemistry 4T4, 3C4 if not previously taken; 9 units of Level IV Area courses; at least 3 units of Level III or IV Chemistry courses or other Level III or IV Science or Engineering courses.
E Electives to make a total of 30 to 32 units.

B.Sc. IN CHEMISTRY

Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G6, with a grade of at least C— in Chemistry 1A7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken before Level III; its election as part of Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2F4, 208, 2P4, 2R2, 3B4, 3F3, 3K6, 3Q4.

Level II: 30 units
R Chemistry 2F4, 208, 2P4, 2R2; Computer Science 1B3, if not completed in Level I.
E Electives, excluding Chemistry, to make a total of 30 units.

Level III: 30-32 units
R Chemistry 3B4, 3F3, 3K3, 3Q4; Mathematics 2G3, if not taken previously.
E Electives, at least 6 units of which may not be Chemistry, to make a total of 30 to 32 units.

Department of Geography

HONOURS GEOGRAPHY (B.Sc.)
(For B.A. programme in Honours Geography, see “Faculty of Social Sciences — Honours Geography”)

Admission:
Completion of Natural Sciences I, with at least a B— in Geography 1A6, and an average of at least 7.0 in that and 6 additional units of Mathematics, Geology, Chemistry, Physics or Biology. Students are advised to consult the “Handbook for Undergraduate Geographers”, which may be obtained from the Departmental office.

Area Courses:
Geography 2F3, 2K3, 2L6, 2M3, 2T3, 2W3, 3E3, 3F3, 3I3, 3K3, 3L3, 3M3, 3O3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4I3, 4K3, 4Q3, 4R3, 4V3, 4W3.

Level II: 30-32 units
R Geography 2F3, 2K3, 2L6, 2T3, 2W3, English 1A6 or 1B6.
E Electives to make a total of 30 to 32 units.

Level III: 30-32 units
R Geography 3E3, 3F3, 3K3, 3M3, 3O3, 3W3. A course in Computer Programming, if not taken in Levels I or II. E Electives to make a total of 30 to 32 units, 6 of which may not be in Geography. (The Computer Science course may be included as part of these 6 units.)

Level IV (1982-83): 30 units
R 18 units from Level IV Area courses.
E 12 units elective.

Level IV (beginning 1983-84): 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 in Geography.

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(For B.A. in Honours Geography and Geology, see “Faculty of Social Sciences — Honours Geography and Geology”)
Admission:
Completion of Natural Sciences I, including Geography 1A6, Geology 1A6 and Mathematics 1A6 with an average of at least 7.0 in Geography 1A6 and Geology 1A6. Chemistry 1A7 must be completed by the end of Level II. This programme is considered to have a unified area; the graduation average is calculated on at least 36 units of Levels III and IV.

Geology 2D5 will be included in calculating the Graduation Average.

Area Courses:
Geography 2L6, 2M3, 2T3, 2W3, 3E3, 3M3, 3O3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4V3, 4W3. Geology 2B6, 2C6, 2D5, 3C6, 3E6, 4M3, 4P2.

Level II: 33 units
R Geography 2L6, 2M3, 2T3, Geology 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: 35-37 units
R Geography 3E3, 3M3, 3O3, 3W3; Geology 2D5, 3C6, 3E2.

E 10 to 12 units electives, at least 4 of which may not be Geography or Geology.

Level IV: 30-33 units
R Six units of Level IV Geography Area courses; 5 to 6 units of Level IV Geology 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. Geology 3G4 is strongly recommended.

B.Sc. IN GEOGRAPHY
(For B.A. programme in Geography, see “Faculty of Social Sciences — B.A. in Geography”)

Admission:
Completion of Natural Sciences I, with a grade of at least C — in Geography 1A6.

Area Courses:
Geography 2F3, 2K3, 2L6, 2T3, 2W3, 3E3, 3F3, 3i3, 3K3, 3L3, 3M3, 3O3, 3V3, 3W3.

Level II: 30 units
R 15 units of Level II Area courses; English 1A6 or 1B6.

E 9 units.

Level III: 30 units
R 15 units of Level III Area courses.

E 15 units, 6 of which may not be in Geography.

Department of Geology
Because of resource limitations, enrolment in Geology and joint Geology programmes may be 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 Geology 1A6, Mathematics 1A6, Chemistry 1A7 or 1C8, and at least one of Biology 1A6 (1B7) and Physics 1A7 (1B7 or 1C8). A weighted average of 7.0 must be obtained in Geology 1A6 and one other of the courses listed previously.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6, 3G4, 3J3, 4B6, 4E6, 4M6.

Level II: 33-35 units
R Geology 2B6, 2C6, 2D5, Chemistry 2P4; whichever of Biology 1A6 (1B7), or Physics 1A7 (1B7 or 1C8) not already completed; Science and Engineering courses approved by the Department to make a total of 27 to 29 units.

E 6 units elective, excluding Geology.

Level III: 32-36 units
R Geology 3C6, 3D6, 3E2, 3G4, 3J3; Materials 3D3; 2 to 6 units Science and Engineering courses.

E 6 units elective, excluding Geology.

Level IV: 32 units
R Geology 4B6, 4E6, 4M6.

E Electives to make a total of 32 units.

HONOURS GEOLOGY AND PHYSICS
Admission:
Completion of Natural Sciences I, including Geology 1A6, Physics 1A7, Chemistry 1A7 or 1C8, Mathematics 1A6 and 1C6, with a weighted average of at least 7.0 in Geology 1A6 and Physics 1A7. Students will also be considered for admission if they have completed Physics 1B7 or 1C8 instead of Physics 1A7; however, Physics 1A7 is strongly recommended.

Area Courses:
Geology 2B6, 2C6, 2D5, 3A3, 3B3, 3C6, 3G4, 4B6, 4E6; 3 units in seismology; Physics 2B6, 2C5, 3M6, 4B4, 4K3, 4S3; Mathematics 3C6.

Geology 2D5 will be included in calculating the Graduation Average.

Level II: 35 units
R Geology 2B6, 2C6; Physics 2B6, 2C6; Mathematics 2G3, 2O3.

E 6 units excluding Physics and Geology. Computer Science 1B3 is strongly recommended.

Level III: 31-33 units
R Geology 2D5 or 3C6; Geology 3A3 or 3B3; Geology 3E2; Physics 2H3 or Chemistry 2P4 or Chemistry 2T4; Physics 3M6; Mathematics 3C6; Attention is drawn to Geology 3E2 which is scheduled outside of the regular term.

Level IV: 33-34 units
R Two of Geology 2D5, 3C6, 3A3, 3B3 (whichever not already completed); Physics 4B4, 4K3, 4S3; 3 units in seismology acceptable to the Department; 6 additional units of Level III or IV Geology or Physics.

E 6 units elective.

GEOLOGY MAJOR
Admission:
Completion of Natural Sciences I, including Chemistry 1A7 or 1C8, with a weighted average of at least 4.0 in Geology 1A6 and one of Biology 1A6 (1B7), Chemistry 1A7 (1C8), Mathematics 1A6, Physics 1A7 (1B7 or 1C8).

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6, 3G4, 4B6, 4E6, 4M6.

Geology 2D5 will be included in calculating the Graduation Average.
Level II: 30-32 units
R Geology 2B6, 2C6; Chemistry 2P4; Biology 1A6 (1B7), or, if completed, 6 units of Science and/or Engineering courses approved by the department.
E 8 to 10 units elective, 6 of which may not be Geology.

Level III: 30-32 units
R Geology 2D5, 3C6, 3E2, 3G4; Chemistry 2F3.
E 10 to 12 units elective, 5 of which may not be Geology.

Level IV: 29 units
R Geology 3D6, 4B6, 4E6, 4M6.
E Electives to make a total of 29 units.

GEOLOGY AND PHYSICS MAJOR
Admission:
Completion of Natural Sciences I, including Geology 1A6, Physics 1A7, Chemistry 1A7 or 1C8, Mathematics 1A6 and 1G6, with a weighted average of at least 4.0 in Geology 1A6 and Physics 1A7. Students will also be considered for admission if they have completed Physics 1B7 or 1C8 instead of Physics 1A7; however, Physics 1A7 is strongly recommended.

Area Courses:
Geology 2B6, 2C6, 2D5, 3A3, 3B3, 3C6, 4E6; 3 units in seismology; Physics 2B6, 2G3, and all Levels III and IV Physics courses.

Geology 2D5 will be included in calculating the Graduation Average.
Level II: 33 units
R Geology 2B6, 2C6; Physics 2B6, 3G3; Mathematics 2G3, 2O3.
E 6 units excluding Physics and Geology. Computer Science 1B3 is strongly recommended.

Level III: 30-32 units
R Geology 2D5 or 3C6; Geology 3A3 or 3B3; Physics 2H3 or Chemistry 2P4 or Chemistry 2T4; Physics 3P3; 6 to 8 units of Geology or Physics, which must include at least 3 units of Physics.
E Electives to make a total of 30 to 32 units.

Level IV: 29-31 units
R Geology 3A3 or 3B3, whichever not already completed; Geology 2D5 or 3C6, whichever not already completed, or if both already completed, 6 units of Level III or IV Geology; Physics 4S3; 6 to 7 units of Level III or IV Physics; 2 to 4 units of either Geology or Physics.
E Electives to make a total of 29 to 31 units.

B.Sc. IN GEOLOGY
Admission:
Completion of Natural Sciences I, including Geology 1A6, Chemistry 1A7 or 1C8, and Mathematics 1A6 or 1C6, with at least C− in Geology 1A6.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6.
Level II: 30 units
R Geology 2B6, 2C6; Biology 1A6 or 1B7, if not already completed, or 6 units of Science and/or Engineering courses approved by the department.
E 12 units elective, at least 6 of which may not be Geology (Chemistry 2P4 is strongly recommended).

Level III: 31 units
R Geology 2D5, 3C6, 3D6, 3E2.
E 12 units elective, 6 of which may not be Geology (Geology 3C4 is strongly recommended).

Department of Mathematical Sciences

HONOURS PHILOSOPHY AND MATHEMATICS
(See "Faculty of Humanities — Department of Philosophy")

HONOURS MATHEMATICAL SCIENCES
Admission:
Completion of any Level I programme, with a weighted average of at least 7.0 in Mathematics 1A6 and either 1G6 or 1B4, and 6 units acceptable to the Department of Mathematical Sciences.

For students intending to enter Honours Theoretical Physics and Applied Mathematics, Physics 1A7 is required in Level I.

This is a common Level II programme from which the student may enter Honours programmes in Applied Statistics and Computation; Computer Science; Computer Science and Mathematics; Mathematics; Statistics; and Theoretical Physics and Applied Mathematics.

The Cumulative Area Average for Levels III and IV includes applicable Level II Area Courses.

Area Courses:
Computer Science 1B3 or 1H3, 1C3, 2B3, 2L3; Mathematics 2A5, 2B4, 2C4, 2F4; Statistics 2D4, 3M3; Physics 2C5.

Level II: 32-34 units
R Mathematics 2A5, 2B4; Statistics 2D4; 8 to 14 units from Computer Science 1C3, 1B3 or 1H3, 2B3, 2L3; Mathematics 2C4, 2F4; Physics 2C5; Statistics 3M3.

Students intending to enter Honours Mathematics must take Mathematics 2C4 and should take Mathematics 2F4. In Honours Applied Statistics and Computation, Honours Computer Science and Mathematics, and Honours Statistics, Mathematics 2C4 must be completed by the end of Level III, if not taken in Level II.

Students intending to enter Applied Statistics and Computation must take Computer Science 1C3 (if not already completed), 1H3 or 1B3 (if not already completed), 2B3, 2L3 in Level II and Statistics 3M3 in Level II or III.

Students intending to enter Level III of Honours Computer Science, or Honours Computer Science and Mathematics must take Computer Science 1C3, 1B3 or 1H3 (if not already completed), 2B3, 2L3.

Students intending to enter Theoretical Physics and Applied Mathematics must take Physics 2B6 and 2C5.
E Electives to make a total of 32 to 34 units, at least 6 of which must not be from the Department of Mathematical Sciences.

The Department of Mathematical requires that all Honours students entering Level III or IV must have their programmes approved by the Chairman or designate.

HONOURS APPLIED STATISTICS AND COMPUTATION
Admission:
Completion of Level II of Honours Mathematical Sciences, including Computer Science 2B3, 2L3.

Area Courses:
Computer Science 3A3, 3G3, 4G6, 4W3; Mathematics 3Q4, 3T3; all Level III and IV Statistics Courses.

Level III: 32-34 units
R Computer Science 3A3; Mathematics 2C4 (if not completed), 3T3; Statistics 3D6, 3M3 (if not completed); 8 to 10 units from Area Courses.

Students intending to take Level IV Computer Science courses should elect Computer Science 3A3 in Level III.
E Electives to make a total of 32 to 34 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 32-34 units
R Computer Science 4G6; Statistics 4M3; 10 to 13 units from Area Courses, including (if not completed) Mathematics 3Q4, Statistics 4S3, 4T3, 4U3.
E Electives to make a total of 32 to 34 units.

HONOURS COMPUTER SCIENCE AND MATHEMATICS
Admission:
Completion of Level II Honours Mathematical Sciences, including Computer Science 2B3, 2L3.
Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4X3, 4V3; Mathematics 3A6, 3E4, 3F6, 3L4, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4C4, 4Q3, 4Q6, 4S4; Statistics 3D6, 3U3, 4G3, 4J3, 4M3, 4S3, 4T3, 4V3, 4X3, 4Y4.

Level III: 32-34 units
R Computer Science 3A3; Mathematics 2C4 (if not completed), 3A6; 9 to 13 units of Area Courses.

In Levels III and IV combined, in addition to the specified courses, the student must include at least 6 of Mathematics or Statistics Area Courses and at least 6 from Computer Science Area Courses.

E Electives to make a total of 32 to 34 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 32-34 units
R Computer Science 4G6; one of Mathematics 4A6, 4C4, 3T3 and 403 (or 403 if 3T3 completed), 4Q6, 4S4; 10 to 12 units chosen from Area Courses, including Computer Science 3D3 (if not completed).

In Levels III and IV combined, in addition to the specified courses, the student must include at least 6 of Mathematics or Statistics Area Courses and at least 6 from Computer Science Area Courses.

E Electives to make a total of 32 to 34 units.

HONOURS MATHEMATICS
Admission:
Completion of Level II Honours Mathematical Sciences, including Mathematics 2C4.

Area Courses:
Mathematics 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, 3F6, 3H4, 3P4, 3L4, 4B4, 4E6, 4K4.

Level III: 32-34 units
R Mathematics 2F4 (if not completed), 3A6, 3E4 (may be deferred to Level IV); 12 to 14 units from Area Courses.

E Electives to make a total of 32 to 34 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 32-34 units
R Mathematics 3E4 (if not completed); 3T3 and 403 (if not completed) or 4A6; 14 to 18 units from Area Courses.

E Electives to make a total of 32 to 34 units.

HONOURS STATISTICS
Admission:
Completion of Level II Honours Mathematical Sciences.

Area Courses:
Computer Science 2A3, 2B3, 2L3, 3A3; Mathematics 3A6, 3E4, 3F6, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4K4, 4Q6, 4O3; all Level III and IV Statistics courses.

Level III: 32-34 units
R Mathematics 2C4 (if not completed), one of 3A6, 306, Statistics 3D6, 3M3 (if not completed); at least 6 units from Area Courses.

E Electives to make a total of 32 to 34 units, at least 6 units of which must not be from the Department of Mathematical Sciences.

Level IV: 32-34 units
R Mathematics 3T3 (if not completed), or 4A6; Statistics 4M3; at least 12 units from Area Courses.

E Electives to make a total of 32 to 34 units.

MATHEMATICAL SCIENCES MAJOR
Admission:
Completion of any Level I programme, with an average of at least 4.0 in Mathematics 1A6, either 1B4 or 1G6 and 6 units acceptable to the Department of Mathematical Sciences.

This is a common Level II programme from which students may enter the major programme in Applied Statistics and Computation, Computer Science, Computer Science and Mathematics, and Mathematics.

The Cumulative Area Average for Levels III and IV includes applicable Level II Area Courses.

Area Courses:
Computer Science 1B3, 1H3, 1C3, 2A3, 2B3, 2K3, 2L3; Mathematics 2G3, 2J6, 2O3; Statistics 2D4, 3M3.

Level II: 30-32 units
R Mathematics 2G3, 2J6, 2O3; 4 to 10 units from Computer Science 1C3 (if not completed), 1B3 or 1H3 (if not completed), 2B3, 2L3; Statistics 2D4, 3M3 (if not completed).

Students taking Computer Science 2B3, must take Computer Science 1C3 (if not completed), and one of 1B3, 1H3.

Students intending to enter Applied Statistics and Computation must take Computer Science 1C3 (if not completed), 1B3 or 1H3 (if not completed), 2L3 and Statistics 2D4. Statistics 3M3 is strongly recommended as an elective.

Students intending to enter Level III Computer Science must take Computer Science 1C3 (if not completed), 1B3 or 1H3 (if not completed), and 2L3.

Students intending to enter Level III Mathematics must take Statistics 2D4.

E Electives to make a total of 30 to 32 units, at least 6 of which must not be from the Department of Mathematical Sciences.

The Department requires that all students entering Level III or IV Major Programmes have their programmes approved by the Chairman or designate.

APPLIED STATISTICS AND COMPUTATION MAJOR
Admission:
Completion of Level II Mathematical Sciences Major, including Computer Science 2B3, 2L3 and Statistics 2D4.

Area Courses:
Computer Science 3A3, 3G3, 4G6, 4W3; Mathematics 3Q4, 3R3, 3T3; all Level III and IV Statistics courses.

Level III: 29-31 units
R Computer Science 3A3; Mathematics 3T3; Statistics 3D6, 3M3 (if not completed); 8 to 10 units from Area Courses.

E Electives to make a total of 29 to 31 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 29-31 units
R Computer Science 4G6; 10 to 13 units from Area Courses, including (if not completed) Mathematics 3Q4, Statistics 4S3, 4T3, 4U3.

E Electives to make a total of 29 to 31 units.

COMPUTER SCIENCE AND MATHEMATICS MAJOR
Admission:
Completion of Level II Mathematical Sciences Major, including Computer Science 2B3, 2L3, Statistics 2D4.

Area Courses:
Computer Science 2A3, 3A3, 3B3, 3C3, 3D3, 3G3, 3L3, 3T3, 4E3, 4F3, 4G6, 4J3, 4W3, 4X3; Mathematics 3A6, 3E4, 3F6, 3L4, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4K4, 4Q6, 4O3; all Level III and IV Statistics courses.

Level III: 30-32 units
R Computer Science 3A3; Mathematics 306; 8 to 10 units from Area Courses.

In Levels III and IV combined, in addition to the specified courses, the students must include at least 6 units of Mathematics or Statistics Area Courses and at least 6 units of Computer Science Area Courses.

E Electives to make a total of 30 to 32 units, at least 6 units of which must not be from the Department of Mathematical Sciences.
Level IV: 30-32 units
R Computer Science 4G6; one of Mathematics 4C4, 3T3 and 4C3 (if not already completed), 4Q6, 4S4; 6 to 8 units from Area Courses, including Computer Sciences 3D3 (if not already completed).

In Levels III and IV combined, in addition to the specified courses, the students must include at least 6 units of Mathematics or Statistics Area Courses and at least 6 units of Computer Science Area Courses.

E Electives to make a total of 30 to 32 units.

**MATHEMATICS MAJOR**

**Admission:**
Completion of Level II Mathematical Sciences Major, including Statistics 2D4.

**Area Courses:**
All Levels III and IV Mathematics and Statistics courses.

Level III: 30-32 units
R Mathematics 306, 3T3; 6 to 9 additional units from Area Courses.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 30-32 units
R Mathematics 403 (if not already completed), 15 to 18 units from Area Courses.
E Electives to make a total of 30 to 32 units.

**B.Sc. IN MATHEMATICS**

**Admission:**
Completion of any Level I programme, with a weighted average of at least 4.0 in Mathematics 1A6 and one of Mathematics 1B4, 1G6.

**Area Courses:**
Mathematics 2K3, 2G3, 2J6, 2O3; Statistics 2D4; all Level III Mathematics and Statistics courses.

Level II: 30 units
R Mathematics 2G3, 2J6, 2O3.
E 18 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level III: 30-32 units
R Mathematics 306, 3T3; 4 to 6 units from Area Courses.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be from the Department of Mathematical Sciences.

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.

**HONOURS COMPUTER SCIENCE**

**Admission:**
Completion of Natural Sciences 1 and a weighted average of at least 7.0 in Mathematics 1A6, and one of Mathematics 1B4, 1G6, and 6 units acceptable to the Department.

Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G6, 1B4 and 6 units acceptable to the Department with a weighted average of at least 7.0 may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.

The election of Computer Science 1B3 as an extra Level I course may be approved by a Dean of Science (Studies).

**Area Courses:**
All Computer Science courses; Mathematics 2A5, 2B4, 2C4, 2F4, 3L4, 3Q4, 3R3, 4C4, 4F3, 4Q6, 4S4, 4W4; Statistics 2D4, 3M3, 3U3; Physics 2B6, 3B6, 4D6.

Level II: 32-34 units
R Computer Science 1B3, 1C3 (if not completed), 2B3, 2L3; Statistics 2D4; Mathematics 2F4; 4 to 5 units of Level II Mathematics Area Courses.

E Electives to make a total of 32 to 34 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level III: 33-35 units
R Computer Science 3A3, 3B3, 3C3, 3D3, 3T3; Statistics 3M3; 6 units of Mathematics or Statistics Area Courses beyond Level II.

E Electives to make a total of 33 to 35 units, 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 32-34 units
R Computer Science 4G6; 8 to 10 units from Level IV Computer Science courses and Mathematics, which may include Mathematics 2A5, 2G3, 4C4, 4S4, 4W4; 6 to 9 units from Area Courses.
E Electives to make a total of 32 to 34 units, which may include Mathematics 2A5, 2G3.

It is recommended that students choose a coherent set of electives; the following possibilities should be noted:

Numerical Analysis Option: Mathematics 2A5, 3Q4, 4Q6.
Computer Science Theory: Computer Science 4J3, 4X3; Mathematics 4C4, 4S4.

Hardware Option: Mathematics 2A5, 2C4; Physics 2B6, 3B6, 4D6.

**COMPUTER SCIENCE MAJOR**

**Admission:**
Completion of Natural Sciences 1, with a University Average of at least 2.5 and with a weighted average of at least 4.0 in Mathematics 1A6, and one of Mathematics 1B4, 1G6, and 6 units acceptable to the Department.

Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G6 or 1B4 and 6 units acceptable to the Department with a weighted average of at least 4.0 may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.

The election of Computer Science 1B3 as an extra Level I course may be approved by a Dean of Science (Studies).

Area Courses:
All Computer Science courses; Mathematics 2G3, 2J6, 2O3, 3L4, 3Q4, 3R3, 4C4, 4F3, 4Q6, 4S4; Statistics 2D4, 3M3, 3U3, Physics 2B6, 3B6, 4D6.

Level II: 30-32 units
R Computer Science 1B3, 1C3 (if not completed), 2B3, 2L3; Statistics 2D4; Mathematics 2F4; 6 units of Level II Mathematics courses.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level III: 30-32 units
R Computer Science 3A3, 3B3, 3C3, 3D3; Statistics 3M3; 6 to 8 units from Area Courses.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be from the Department of Mathematical Sciences.

Level IV: 30-32 units
R Computer Science 4T3, 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 to 32 units.

It is recommended that students choose a coherent set of electives; the following possibilities should be noted:

Computer Science Theory: Computer Science 4J3, 4X3; Mathematics 4C4, 4S4.

Hardware Option: Mathematics 2G3, 2O3; Physics 2B6, 3B6, 4D6.
Department of Metallurgy and Materials Science

HONOURS METALLURGY AND MATERIALS SCIENCE MAJOR

Admission:
Completion of Natural Sciences I, including Mathematics 1A6, 1G6, and Chemistry 1A7 or 1C8, 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 1G6; (ii) one of Physics 1B7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G6 are strongly recommended.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T4; Engineering 203, 3P3, 3Q3, and 4J3; Mathematics 2A5, 2C4, 2G3, and 203; Physics 4K3.

E Electives, if necessary, to make a total of at least 30 units.

Level II: 30-33 units
R Chemistry 2T4; Computer Science 1B3; Mathematics 2G3, 203; Engineering 203 (unless Materials 1A7 completed); Engineering 2P4; Materials 2F3 or 2R4; Metallurgy 2C3; Physics 1A7, or if completed, Physics 2B6.

E Electives, if necessary, to make a total of at least 30 units.

Level III: 32 units
R Chemistry 2A4; Materials 3B4, 3D6, 3E6; Mathematics 3V6; Physics 286, or if completed, 6 units electives which may not be selected from courses in Ceramics, Chemistry, Mathematical Sciences, Materials, Metallurgy or Physics.

Attention is drawn to Metallurgy 4A1, which requires an essay based on employment in the summer between Levels III and IV.

Level IV: 30 units
R Engineering 3P3; Materials 4E3; Metallurgy 4A1, 4L4, 9 units of Level III or IV Area Courses.

E Electives to make a total of 30 units, at least 6 units of which are not to be selected from courses in Ceramics, Chemistry, Mathematical Sciences, Materials, Metallurgy or Physics.
SCIENCE

Level III: 32-35 units
R Physics 3H4, 3M6, 3N3, Mathematics 3C6; 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: 32-35 units
R Physics 4A2, 4B4, 4F3, 4J4; two of Physics 3A3, 3X2, 3Y3, 4C4, 4D6, 4E3, 4K3; 6 units of Level III or IV courses from the Faculty of Science.

E Electives to make a total of 32 to 35 units.

HONOURS APPLIED PHYSICS
Admission:
Completion of Level II of Honours Physics, or Level II of Honours Mathematical Sciences including Physics 2B6, 2C5.

Area Courses:
Applicable Level II Area courses; Physics 3B6, 3H4, 3M6, 4A2, 4B4, 4D6, 4J4; Mathematics 3C6; Engineering Physics 4W1, 4X6; Level III: 34-36 units

R Physics 3B6, 3H4, 3M6, 2H3 (if not completed); Mathematics 3C6; additional units chosen from Physics 3K4, 3L3, 3T3, 3X3, 3Y3; Engineering Physics 3D3, 3X4, Mathematics 3Q4 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 THEORETICAL PHYSICS AND APPLIED MATHEMATICS
Admission:
Completion of Level II of Honours Physics, or Level II of Honours Mathematical Sciences including Physics 2B6, 2C5.

Area Courses:
Applicable Level II Area courses; Physics 3K4, 3M6, 4A2, 4B4, 4C4, 4F3; Mathematics 3A6, 3C6, 3O6, 3T3, 4A6, 4D4, 4O3.

Level III: 32-35 units
R Mathematics 3C6; one of Mathematics 3A6, 3O6; Physics 3K4, 3M6, 2H3 (if not completed); 9 to 7 units from Physics 3A3, 3N3, 3X3, 3Y3, Mathematics 3Q4.

E Electives to make a total of 32 to 35 units.

Level IV: 32-35 units
R Mathematics 4D4; Physics 4A2, 4B4, 4C4, 4F3; Mathematics 4A6 or both 3T3, 4O3; 5 to 12 units of Level III or IV Mathematical Sciences or Physics, including Mathematics 3Q4 if not completed.

E Electives to make a total of 32 to 35 units.

PHYSICS MAJOR (GENERAL OPTION)
Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G6, Physics 1A7, one of Chemistry 1A7, 1C8, with a weighted average of at least 4.0 in the Mathematics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G6; (ii) one of Physics 1B7, 1C8 instead of 1A7; however, Physics 1A7 and Mathematics 1G6 are strongly recommended.

Area Courses:
Physics 2B6, 2C5, 2G3, 2H3, and all Levels III and IV Physics courses; Mathematics 2G3, 2O3.

Level II: 30-32 units
R Physics 2B6, 2H3; one of 2G3, 2C5; Mathematics 2G3, 2O3; Computer Science 1B3.

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 Mathematics 3C6, Physics 3M6 and 3 to 4 units from Levels III and IV Physics, or Physics 3P3, 3T3 and 9 to 10 units from Levels III and IV Physics.

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; 18 units of Levels III and IV Physics, which must include one of Physics 3B6, 4D6 if neither has been completed.

E Electives to make a total of 30 to 32 units.

GEOLOGY AND PHYSICS MAJOR
(See ‘Department of Geology’)

PHYSICS MAJOR (HEALTH AND RADIATION PHYSICS OPTION)
Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G6, Physics 1A7, one of Biology 1A6, 1B7, one of Chemistry 1A7, 1C8, with a weighted average of at least 4.0 in Physics, one of the Mathematics courses, and any one other required course. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G6; (ii) one of Physics 1B7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G6 are strongly recommended.

Area Courses:
Physics 2B6, 2C5, 2G3, 2H3 and all Levels III and IV Physics courses; Mathematics 2G3, 2O3; Biology 3Q3; Engineering 4X3.

Level II: 29-31 units
R Physics 2B6, 2H3; one of 2C5, 2G3; Mathematics 2G3, 2O3; Computer Science 1B3.

E Electives to make a total of 29 to 31 units. (One of Chemistry 2D4, 2O8 is strongly recommended.)

Level III: 30-32 units
R Physics 3B6, 3H4, 3P3, 3T3; Biology 3Q3; Chemistry 2F4.

E Electives to make a total of 30 to 32 units.

Level IV: 30-32 units
R Physics 4D6, 4E3, 4Q4, 4R3; Engineering 4X3.

E Electives to make a total of 30 to 32 units.

B.Sc. IN PHYSICS
Admission:
Completion of Natural Sciences 1, including Physics 1A7, Mathematics 1A6, 1G6, one of Chemistry 1A7, 1C8, with at least C — in Physics. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G6; (ii) one of Physics 1B7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G6 are strongly recommended.

Area Courses:
Physics 2B6, 2G3, 2H3 and all Levels III and IV Physics courses; Mathematics 2G3; Chemistry 2P4, 2R2.

Level II: 29-31 units
R Physics 2B6, 2G3; either Physics 2H3 or Chemistry 2P4, 2R2; Mathematics 2G3, 2O3.

E Electives to make a total of 29 to 31 units, at least 6 of which must not be from Physics.

Level III: 29-31 units
R Physics 3H4, 3P3, 3T3; 3 to 6 units of Levels III and IV Physics.
Electives to make total of 29 to 31 units, at least 6 of which must not be from Physics or Engineering Physics.

Department of Psychology

HONOURS BIOLOGY AND PSYCHOLOGY
(See "Department of Biology")

HONOURS PSYCHOLOGY
(For B.A. Programme in Honours Psychology, see "Faculty of Social Science — Honours Psychology")

Admission:
Completion of Natural Sciences I, with a grade of at least B — in Psychology 1A6, and a grade of at least B — in 6 additional units of Biology, Chemistry, Physics or Mathematics.

At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2V3, 3C6, 3E3, 3Q3, 3S3, 3V3, 4E7, 4Q3.

Area Courses:
All Psychology courses; Statistics 2R6.

Level II: 33-35 units
R Statistics 2R6; Psychology 2T3, 2H3; 3 units of Level II Psychology; English 1A6, 1B6 or 3A3, 12 to 14 units chosen from Biochemistry, Biology, Chemistry, Physics or Mathematics.
E Electives to make a total of 33 to 35 units, only 3 of which may be from Psychology.

Level III: 32-34 units
R Psychology 3W6; 12 units of Level III Psychology; 6 to 8 units chosen from Levels III and IV Biochemistry, Biology, Chemistry, Mathematics, or Physics.
E Electives to make a total of 30 to 32 units, at least 3 of which must not be from Psychology.

Level IV: 30-33 units
R 18 units of Natural or Mathematical Science courses, including Chemistry 1A7 (or 1C8) if not completed, or Physics 1B7 (or 1A7 or 1C8) if not completed.
E 12 units.

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.

Level III: 30 units
R 18 units of Natural or Mathematical Science courses, at least 6 units of which must be from Levels III or IV.
E 12 units.
Faculty of Social Sciences

P.J. George/M.A., Ph.D., Dean of Social Sciences
A.E. Combs/B.A., M.Div., Ph.D., Associate Dean (Studies)
G.R. Raymond/M.A., Assistant to the Dean
E. Frank/M.A., Student Advisor
D. Jacobs/Student Advisor
J. Weston/Student Advisor

The social sciences are concerned with the systematic study of the whole gamut 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 scientific method have, in recent years, given great impetus to social studies and research.

The Faculty of Social Sciences includes the following departments or schools and programmes:


Not all disciplines that have a bearing on social science are represented by the departments within the Faculty; psychology, geography and history, are, in some of their aspects, identifiable as social sciences. Physical education and social work have a strong practical orientation, drawing largely, but not exclusively, on the social sciences for knowledge and insights that may be applied in professional practice.

The Faculty offers Bachelor of Arts, Honours Bachelor of Arts and Professional programmes. The Honours programmes provide a richer concentration in the particular field 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 the new concentration in Canadian Studies. A new B.A. programme in Labour Studies is now being offered.

The two schools, Social Work and Physical Education, offer programmes of study which lead to the combined B.A./B.S.W. degree in one case, and the single B.P.E. degree in the other. The School of Social Work, in addition, offers a second degree (B.S.W.) to those who already have attained 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 would allow them a number of options when they enter Level II.

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 can be taken by third- and fourth-level students as electives for undergraduate credit.

These courses are:

Physical Education 3J3
Physical Education 3P3
Physical Education 3Q3
Physical Education 4E3
Physical Education 4G3
Physical Education 4J3
Physical Education 4L3
Physical Education 4M3
Social Work 3C3
Social Work 3J3
Social Work 4J3
Social Work 4M3
Social Work 4Q3

Students in the Faculty of Social Sciences who are in the Social Work programme may take, as part of their B.A. programme, up to 6 units of Social Work courses which have been approved for B.A. credit. Students who are in the Bachelor of Physical Education programme may take as electives up to 6 units of Physical Education courses which have been approved for arts credit.

Level I Programmes

PHYSICAL EDUCATION I: 32 units
R Physical Education 1A6, 1B3, 1E3; Biology 1H6; Practicum: 2 units.
E 12 units (10 units if Mathematics 1A6 and 1B4 are chosen).

SOCIAL SCIENCES I: 30 units
R 12 units from: Anthropology 1A3, 1Z3 and/or 1B6; Economics 1A6; Geography 1A6, 1B6 and/or 1D6; Political Science 1A6; Psychology 1A6; Religious Studies 1B6, 1C6, 1E6, 1F6 or 1D6; Sociology 1A6.
Students may take more than 12 units of work in the Faculty of Social Sciences if they wish, subject to the conditions outlined in Electives, below.
E 18 units elective. Normally, a student will take only 6 units of work in any one discipline (excluding Mathematics). In special circumstances, a student may be permitted to take up to 12 units in one discipline. The student is also strongly advised to take at least 6 units of work outside the Faculty of Social Sciences. Students may take 16 units elective if Mathematics 1A6 and 1B4 are chosen.

COMBINED HONOURS PROGRAMME

Subject to possible timetable restrictions, and with the written approval of the appropriate Departments and Deans of Studies, a student may combine work in any two departments, and be graduated with a Combined Honours degree in the two subjects. These programmes will normally include units of work beyond Level I in each Department (normally 12 units of work per level in each, subject to a total during Levels II, III and IV of approximately 36 units.)

For special requirements in Honours programmes, and for taking extra units, either as extra work or as make-up work, see Academic Regulations.

PART-TIME STUDIES

Subject to limitations of course offerings, a student may pursue on a part-time basis any Honours programme in the Faculty of Social Sciences. Normally, students will arrange their programme of studies in consultation with the Undergraduate Advisor of the appropriate Department.

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 Academic Regulations.

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.

Department of Anthropology

Anthropology includes the major subfields of Cultural and Physical 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). Courses with content in each area include (the reading courses 2W3, 3W3, 4G3 may be taken in any area, as may the seminar course 4B3):

Cultural/Social Anthropology 2B3, 2C3, 2F3, 2G3, 2H3, 2I3, 2J3, 3P3, 3Q3, 3R3, 3S3, 3T3, 3U3, 3V3, 3X3, 3Y3, 4C3, 4I3, 4J3, 4L3, 4T3, 4U3, 4V3.

Physical/Biological Anthropology 2D3, 2E3, 2F3, 2G3, 2H3, 2I3, 3N3, 3P3, 3Q3, 3R3, 3S3, 3T3, 3U3, 3V3, 3X3, 3Y3, 4C3, 4I3, 4J3, 4L3, 4T3, 4U3, 4V3.

Archaeology Anthropology 2A3, 2N3, 3K3, 3L3, 4E3, 4M3 (relevant courses are also offered by Biology and Physical Education).

Linguistics: Anthropology 2M6, 2Q3, 3M6, (relevant courses in other departments include: English 3C3, French 3B3, 3G3, 3L4, 4K3; Russian 2F6; Psychology 3C3)

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 4.0 in Anthropology 1A3 and 1Z3 or an average of at least 4.0 in Anthropology 1B6 and 1A3 or 1Z3.

The Graduation Average is computed on all Level II, III and IV Anthropology courses taken.

Area Courses:
All Level II, III and IV Anthropology courses.

Levels II, III and IV: 30 units
R 18 units of Anthropology Area courses, including Anthropology 2F3, 356 and 413, and at least 9 additional 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 42 units of Anthropology beyond Level I, including Anthropology 2F3.
E Electives to make a total of 60 units.

Department of Economics

HONOURS ECONOMICS

Admission:
Completion of any Level I programme with a grade 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.

The Graduation Average is computed on all Level II, III and IV Economics courses.

Area Courses:
All Level II, III and IV Economics courses.

Mathematics Requirements

The Honours Economics programme and all Combined Honours programmes in Economics and another discipline (with the exception of Honours Economics and Mathematics, and Honours Economics and Computer Science) require the successful completion of one course from each of the following groups by the end of Level II.

1. Grade 13 Calculus or Mathematics 1K3.
2. Mathematics 1A6 or 1M3.
3. Mathematics 1L3 or 1G6, or both Mathematics 1B4 and Statistics 2D4.

Levels II, III and IV: 90 units
R 48 to 66 units of Economics, including Economics 2L6, 2M6, either 2F3 or 306; 3A3, 3AA3, one of 2K3, 313, 3M6, 3R3; one of Mathematics 1A6 or 1M3; one of Mathematics 1L3, 1C6, or both 1B4 and 2D4; 1G6, 1B4, 2D4; up to 6 units of Statistics offered by the other department may be substituted for Economics 253 or 306.
E Electives, if needed, to make a total of 90 units.

HONOURS ECONOMICS AND GEOGRAPHY

Admission:
Completion of any Level I programme with a grade of at least 7.0 in each of Economics 1A6 and Geography 1B6. English 1A6 or 1B6, and one of Mathematics 1A6, 1C6, or 1M3 and one of Mathematics 1L3 or 2D4 must be completed by the end of Level II. Their inclusion in the student's Level I programme is strongly recommended.

A single Cumulative Area Average and a single Graduation Average will be computed.

Area Courses:
Geography 2B3, 2L6, 2R3, 2Y3, 3G3, 3N3, 303, 3T3, 3X3, 4C6, 4F3, 4G3, 4J3, 4T3, 4X3, 4Y3; all Level II, III and IV Economics courses.

Level II: 30 units
R Geography 2B3, 2L6 or Economics 2B3; Geography 2B3, 2R3, 2Y3; Economics 2L6, 2M6; one of Economics 2K3, 313, 3M6, 3R3 (this requirement may be met in Level III); English 1A6 or 1B6; and one of Mathematics 1A6, 1C6, or 1M3 and one of Mathematics 1L3 or 2D4.
E Electives to make a total of 30 units.

Level III: 30 units
R Geography 3N3, 303 and at least 6 units of Geography 3G3, 3T3, 3X3; Economics 3A3, 3AA3, and 6 additional units of Economics. A course in computer programming, if not taken in Levels I or II.
E 6 units elective.

E 6 units elective.

HONOURS ECONOMICS AND MATHEMATICS

Admission:
Completion of any Level I programme, including a grade of at least 7.0 in Economics 1A6 and an average of at least 7.0 in Mathematics 1A6 and 1B4 (or 1G6).

The Graduation Average is computed on all Level II, III and IV Economics and Mathematics courses.
HONOURS ECONOMICS AND COMPUTER SCIENCE

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 Economics 1A6, Mathematics 1A6 and Mathematics 1G6 or 1B4.

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 2K3, 313, 3M6, 3R3; either Economics 306 or Statistics 3D6; Statistics 2D4; Mathematics 2A5, 2B4, 2F4; one of 2C4, 3A6, 306; 16 units from Mathematics 3E4, 3F6, 3P4, 3Q4, 3R3, 3S3, 3T3, 4A6, 4C4, 4K4, 4Q3, 4U4, Statistics 3D6, 3U3, 4G3, 4J3, 4M3, 4X3.
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.

Requirements
The mathematics requirements for the programme are described under Economics.

Area Courses:
All Economics and Political Science courses.

Level II: 30 units
R Economics 2L6 and 2M6; 12 units of Level II Political Science (Political Science 2F6 is recommended); Economics 2B3; Mathematics 1L3 and 1M3 or equivalent (if not completed in Level I). Students may also meet the statistics requirement by taking Economics 306 in Level III.
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 and 3AA3; 6 additional units of Economics or Economics 306 if Economics 2B3 not taken previously; 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, 313, 3M6, 3R3 (if not previously completed); 12 units of 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 and 1L3 (or acceptable substitute according to the Mathematics Requirements below), including a grade of at least C− in Economics 1A6. Students who have not taken Mathematics in Level I must complete the mathematics requirements during Level II.

Area Courses:
All Level II, III and IV Economics courses.

Mathematics Requirements
The B.A. degree programme in Economics requires the successful completion of one course from each of the following groups before the end of Level II.
1. Grade 13 Calculus or Mathematics 1K3 or 1A6.
2. Mathematics 1L3 or 1G6, or both Mathematics 1B4 and Statistics 2D4.

Levels II and III: 60 units
R 24 to 36 units of Economics, including one of Economics 2K3, 313, 3M6, 3R3; Economics 2G3 or 2L6; Economics 2H3 or 2M6; Economics 2B3 or 306; at least 24 units outside Economics, including either Mathematics 1K3 or 1A6; and one of Mathematics 1L3, 1G3, or both 1B4 and 2D4.
E Electives to make a total of 60 units.

Department of Geography

HONOURS GEOGRAPHY (B.A.)
(For B.Sc. programme in Honours Geography, see “Faculty of Science — Honours Geography”)

Admission:
Completion of any Level I programme with at least a B− in Geography 1A6 or 1B6, and an average of at least 7.0 in that and 6 additional units. English 1A6 or 1B6, and one of Mathematics 1A6 or 1M3 must be completed by the end of Level II. Their inclusion in the student’s Level I programme is strongly recommended. A course in computer programming must be completed by the end of Level II. Students are advised to 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 2L6, at least 9 units of 2B3, 2D3, 2F3, 2K3, 2R3, 2T3, 2W3, 2Y3, at least 3 additional units of Geography; English 1A6 or 1B6 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, unless a required English or Mathematics course is being taken.

Level III: 30 units
R Geography 303; at least 9 units of Level III Geography; at least 6 units of other Level III or IV Geography. A course in computer programming, if not taken in Levels I or II.
E Electives to make a total of 30 units, 6 of which must not be from Geography.

Level IV (1982-83): 30 units
R 18 units of Level IV Area courses.
E At least 12 units elective, 6 of which must not be from Geography.

Level IV (beginning 1983-84): 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.

HONOURS GEOGRAPHY AND GEOLOGY (B.A.)
(For B.Sc. programme in Honours Geography and Geology, see “Faculty of Science — Honours Geography and Geology”)

Admission:
Completion of any Level I programme with an average of at least 7.0 in Geography 1A6 and Geology 1A6 or 1B6. Six units of Mathematics (either 1A6 or 1K3 and one of 1L3 or 1M3) must be completed by the end of Level II. Its inclusion in the student’s Level I programme is strongly recommended. Chemistry 1A7 must be completed by the end of Level III.
This programme is considered to have a unified area; the Graduation Average is calculated on at least 36 units of Levels III and IV. Geology 2D3 will be included in calculating the Graduation Average. R

Area Courses:
Geography 2L6, 2M3, 2T3, 2W3, 3E3, 3I3, 3M3, 3O3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4V3, 4W3. Geology 2B6, 2C5, 2D5, 3C6, 4E6, 4M3, 4P2.

Level II: 31-33 units
R Geography 2L6, 2M3, 2T3, Geology 2B6, 2C6; 6 units of Mathematics (either 1A6 or 1K3 and one of 1L3 or 1M3) if not taken in Level I, or 3 to 7 units from the Faculties of Science or Engineering approved by the Departments. (Chemistry 1B7 is strongly recommended.)

E Electives, excluding Geography and Geology, to make a total of 31 to 33 units.

Level III: 29-32 units
R Geography 3E3, 3M3, 3O3, 3W3; Geology 2D5, 3C6, 3E2; Chemistry 1B7, if not previously completed.

E Electives to make a total of 29 to 32 units, at least 4 of which may not be Geography or Geology.

Level IV: 30 units
R 6 units of Level IV Geography Area courses; 5 to 6 units of Level IV Geology Area courses; 6 units of Level IV Geography Area courses or Geology Area courses.

E Electives to make a total of 30 units. Geology 3G4 is strongly recommended.

B.A. IN GEOGRAPHY
(For B.Sc. programme in Geography, see "Faculty of Science — B.Sc. in Geography")

Admission:
Completion of any Level I programme, including Geography 1A6 or 1B6 with a grade of at least C—. English 1A6 or 1B6 must be completed by the end of Level II.

Area Courses:
All Level II, III and IV Geography courses.

Level II: 30 units
R At least 6 units from Geography 2B3, 2D3, 2F3, 2K3, 2R3, 2T3, 2W3, 2Y3; at least 6 additional units of Level II Geography; English 1A6 or 1B6 if not completed in Level I.

E Electives to make a total of 30 units.

Level III: 30-32 units
R At least 6 units from Geography 3D3, 3F3, 3G3, 3K3, 3M3, 3N3, 3T3, 3W3, 3X3, 3Z3; at least 6 additional units of Level III Geography.

E Electives to make a total of 30 to 32 units, so that at least 18 units from outside Geography are taken in Levels II and III.

Labour Studies
B.A. IN LABOUR STUDIES
Admission:
Completion of any Level I programme with an average of at least 4.0 in Labour Studies 1A3 and 1B3, and 12 units from: Economics 1A6; History 1C6; Mathematics 1K3, 1L3; Psychology 1A6; Sociology 1A6.

Enrolment in the degree programme 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, Committee of Instruction, prior to April 15. The Selection Committee may wish to interview each applicant.

Area Courses:
Economics 3D3; Labour Studies 2A3, 3A3; Commerce 2BA3, 4BD3, 4BC3; 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 3BB3, Economics 2B3, 2G3, 2H3, History 2J6; Political Science 2F6, 2G6; Psychology 2C3, 3D3; Social Work 3H3, 3J3; Sociology 2D6, 2I3 and 2V6.

E Electives to make a total of 30 units.

Level III: 30 units
R Commerce 4BC3, 4BD3; Labour Studies 3A3; at least 9 units from Economics 3D3, Political Science 3X6 and Sociology 3Y3 and 6 to 9 units from Commerce 2AA3, Economics 3E3, 3V3, Political Science 3Z6, Social Work 3H3, 3J3, Sociology 3F6 and 3L3.

E 9 to 12 units elective to make a total of 30 units.

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 degree programmes 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 series of nine required "core" courses in which they are introduced to the various theoretical sub-disciplines of physical education and 6 units of required practicum courses. During Levels III and IV students are free to select from a variety of "core electives" and practicum courses. These courses may be grouped in various ways with certain goals in mind (e.g., coaching, sports administration, employ­ee fitness, etc.) and supplemented by the Arts and Science elective selected by the student.

Academic Regulations
Students enrolled in the B.P.E. programme, in addition to meeting the General Academic Regulations of the University, shall be subject to the following School Regulations:

PHYSICAL EDUCATION I
A student in Physical Education must:
1. obtain a University Average of at least 4.0
2. obtain an average of at least 4.0 on the required courses, and
3. obtain a grade of at least D- in each required course.

A student who fails to meet any of these requirements is ineligible to continue in Physical Education.

Area Courses:
All Level II, III and IV Physical Education courses.

Cumulative Physical Education Average
The Cumulative Average for the B.P.E. programme is termed the Cumulative Physical Education Average (CPEA) and is the weighted average of grades in all area courses attempted.

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 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 any more than the required number of units without the approval of the Undergraduate Chairperson.

Continuation in Programme Beyond Level I
A student must achieve a minimum grade of D— in each area course taken and a CPEA of at least 4.0 at each review in order to continue in the programme. A student who does not meet these requirements may be permitted by the Physical Education Committee to remain registered in Physical Education. However, the requirements for each Level must be completed satisfactorily before a student is allowed to take Physical Education courses at the next Level.
SOCIAL SCIENCES

Repeated Courses
Students who have failed (F grade) any area course, or who have not achieved a CPEA of 4.0 at each review and who receive permission to remain registered in Physical Education, must repeat any failed required courses or replace elective courses which are area courses up to 6 units per Level.

Re-admission
A student who is ineligible to continue in the B.P.E. programme may apply for re-admission to Physical Education after not less than one year. Application for re-admission must be made in writing to the Undergraduate Chairperson in March of the year in which re-admission is desired, and should include reasons as to why the student would expect to succeed in the programme if re-admitted. RE-ADMISSION IS NOT GUARANTEED.

Students who are re-admitted after having become ineligible to continue in Physical Education must repeat all the courses of the Level at which they became ineligible to continue unless specific course exemptions are granted. The computation of the CPEA begins anew at such re-admission.

Prerequisites for Physical Education Courses
Prerequisites for Physical Education courses are specified in the course listings.

Course Changes
It is the responsibility of the student to ensure that the programme of work undertaken meets the requirements for the degree. All course changes must be approved by the Undergraduate Chairperson and are subject to the deadline dates established by the University (see "Sessional Dates" section of this Calendar).

Graduation Standing — 1982-83
A Graduation Average (GA) of at least 4.0 computed on all grades in area courses taken for Levels III and IV of the programme is required. A student may be awarded First or Second Class standing on the basis of the GA.

Graduation Standing — from 1984
Beginning 1984, the minimum requirement for graduation in the B.P.E. programme is a CPEA of 4.0 in at least 60 units of area courses taken in Levels II, III and IV. A student may be awarded First and Second Class standing on the basis of the GA.

For 1982/83 only:

Level IV: 30 units
R 12 to 18 units from Level III or IV Physical Education, Physical Education 4U0.
E 12 to 18 units, excluding Physical Education (may include up to 6 units of Physical Education courses approved for B.A. credit).

Beginning in 1982-83:

Level I: 32 units
R Physical Education 1A6, 1B3, 1E3; Practicum: 2 units; Biology 1H6.
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.

Level III: 34 units
R 15 to 18 units from Level III or IV Physical Education; Practicum: 4 units.
E 12 to 15 units, excluding Physical Education (may include up to 6 units of Physical Education courses approved for B.A. credit).

Level IV: 34 units
R 15 to 18 units from Level III or IV Physical Education; Practicum: 4 units.
E 12 to 15 units, excluding Physical Education (may include up to 6 units of Physical Education courses approved for B.A. credit).

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.

Students are required to take 80 units of Physical Education courses. The core courses, Physical Education 1A6, 1B3, 1E3, Biology 1H6, Physical Education 2A3, 2B3, 2C6, 2D3, 2F3, and 14 units of Practicum, must be taken in sequence. The additional minimum 30 units of core elective Physical Education courses are taken from Level III and IV courses offered in the programme. The B.P.E. degree will be awarded if the student achieves a minimum grade of D — in each course and maintains a CPEA of at least 4.0.

Department of Political Science

HONOURS POLITICAL SCIENCE
Admission:
Completion of any Level I programme with a grade of B — in Political Science 1A6 and a grade of B — in 6 other units.

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.

Area Courses:
All Level II, III and IV Political Science courses. Political Science 2F6, 2O6 will be included in calculating the Graduation Average if taken in Level III.

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 Level IV courses.

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.

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.

HONOURS RUSSIAN AND POLITICAL SCIENCE
(See "Faculty of Humanities — Department of Russian")

COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT
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.

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.
Area Courses:
All Level II, III and IV Political Science and Canadian Studies courses.

Requirements
During Levels II, III and IV, students in the Combined Honours programme must complete no 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.

Students should take at least 6 units of Canadian Studies Area courses outside the Faculty of Social Sciences.

Language Requirements
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.

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 3C3, 3D3; 6 additional units of Canadian Studies; 6 units from Political Science 3I6, 3DD6, 3E63, 3FF3, 3GG3, 3HH3, 3II3, 3JJ3; 6 additional units of Level III Political Science.
E 6 units, excluding Political Science and Canadian Studies.

Level IV: 30 units
R Canadian Studies 4C3, 4D3; 6 additional units of Canadian Studies; 6 units from Political Science 4G6, 4S6, 4W6; 6 additional units of Level III or IV Political Science.
E 6 units elective, excluding Political Science and Canadian Studies.

HONOURS ECONOMICS AND POLITICAL SCIENCE
(See "Department of Economics")

B.A. IN POLITICAL SCIENCE
Admission:
Completion of any Level I programme, including a grade of at least C — in 6 units of work acceptable to the department. Political Science 1A6 is recommended.

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.

Area Courses:
All Level II, III and IV Political Science courses.

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.

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
(For B.Sc. programme in Honours Psychology, see "Faculty of Science — Honours Psychology")

Admission:
Completion of any Level I programme with a grade of at least B — in Psychology 1A6 and at least B — in six additional units, including completion of English 1A6 or 1B6 and one of Mathematics 1A6, 1F6, 1M3. Students who qualify for Honours but who did not complete the English and Mathematics requirements in Level I may proceed in Honours Psychology, provided that they complete these requirements in Level II. When Mathematics is delayed to Level II, then Statistics 2R6 must be deferred to Level III and another 6 units of Psychology must be taken to fulfill that Level II requirement.

At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2V3, 3C6, 3E3, 3Q3, 3S3, 3V3, 4E7, 4Q3.

Statistics 2R6 will be included in calculating the Graduation Average, if it is taken in Level III.

Area Courses:
All Psychology courses; Statistics 2R6.

Level II: 30 units
R Psychology 2H3, 2T3; 3 units of Level II Psychology; Statistics 2R6; 6 units of courses chosen from the Faculty of Science, excluding Psychology and the Mathematics course taken to meet the admission requirements.
E Elective 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 Statistics 2R6 (if not already completed previously). 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 and IV Psychology.
E Electives to make a total of 30 units.

B.A. IN PSYCHOLOGY
(For B.Sc. programme in Psychology, see "Faculty of Science — B.Sc. in Psychology")

Admission:
Completion of any Level I programme with a grade of at least C — in Psychology 1A6, including completion of English 1A6 or 1B6. Students who qualify for entrance to the B.A. Degree Programme but who did not complete the English requirement in Level I may proceed in this Psychology programme, provided that they complete the English requirement in Level II.

Area Courses:
All Psychology courses; Statistics 2R6.

Level II: 30 units
R Psychology 2G3 and either 2T3 and 2H3, or 2D6; 3 units of Level II Psychology; Mathematics 11L3; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology, English 1A6 and 1B6, Mathematics 11L3.
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

HONOURS RELIGIOUS STUDIES
All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.

Admission:
Completion of any Level I programme with an average of 7.0 in 12 units, preferably including one of the Level I Religious Studies courses.

The Graduation Average will be computed on the basis of all Religious Studies Area courses taken in Levels II, III and IV.

Students are required to complete at least 48 units of Religious Studies courses in Levels II, III and IV as specified under "R" below, and at least 18 units of electives outside Religious Studies.

Courses from other departments or Religious Studies Elective courses may, with the approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses specified under "R" below. A list of courses for which such approval is generally given appears in the Religious Studies Handbook, which is available in the Department office.

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:

Level II: 30 units
R At least 12 units, including Religious Studies 2NN3 and 2003 and 6 additional units of Level II Religious Studies Area courses.

E Electives to make a total of 30 units.

Level III: 30 units
R At least 18 units, including Religious Studies 3F3 and at least 9 additional units of Level III Religious Studies. (The remaining 6 units to be determined in consultation with a Departmental Undergraduate Advisor.)

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 Area 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
All Combined Honours students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.

Students in Combined Honours programmes must complete at least 36 units of Religious Studies in Levels II, III and IV, including Religious Studies 2NN3, 2003, 3F3, 4FF3, 4GG3; 6 units of Level II Religious Studies Area courses; 9 units of Level III Religious Studies Area courses; 6 units of Level IV Advanced Study.

B.A. IN RELIGIOUS STUDIES
All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.

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.

Students are required to complete at least 30 units of Religious Studies courses in Levels II and III as specified under "R" below, and at least 12 units of electives outside Religious Studies.

Courses from other departments or Religious Studies Elective courses may, with the approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses specified under "R" below. A list of courses for which such approval is generally given appears in the Religious Studies Handbook, which is available in the Department office.

Part-time students should be aware that required 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:

Level II: 30 units
R At least 12 units, including Religious Studies 2NN3 and 2003, and 6 additional units of Level II Religious Studies Area courses.

E Electives to make a total of 30 units.

Level III: 30 units
R At least 18 units, including Religious Studies 3F3, and at least 9 additional units of Level III Religious Studies. (The remaining 6 units to be determined in consultation with a Departmental Undergraduate Advisor.)

E Electives to make a total of 30 units.

School of Social Work

COMBINED B.A./B.S.W.
Students who intend to apply for the Combined B.A. and B.S.W. programme should consult the School of Social Work prior to application.

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 required Social Work courses: Social Work 2B6, 2C3, 2D3, 3D9 and 4D12; and a minimum average of 6.0 in all Social Work Area courses. Graduation from the three-year B.A. portion of the programme requires a Graduation Average of at least 4.0.

Admission:
Admission to the Combined B.A./B.S.W. programme is contingent upon completion of 30 units of work, normally with a University Average of at least 4.0, and personal suitability as evaluated by written statements and interviews.

Students have found courses in Sociology, Economics, Political Science and Psychology to be excellent preparation for Social Work studies. In choosing courses, care must be taken to include those that will be appropriate for their B.A. programme. Students should consult the relevant section of the Arts, Science and Engineering Calendar and/or the Associate Dean of Studies of the Faculty.

Enrollment in the Combined B.A./B.S.W. Programme is limited. Application for admission should be made to the School of Social Work prior to March 1st for the Fall term.

Area Courses:
All Social Work courses for the B.S.W. component and the courses designated for the appropriate B.A. programme.

REQUIREMENTS:
30 units for admission, plus 108 units (48 B.S.W.; 60 B.A.)
Social Work: 48 units

Students are required to complete Social Work 2B6, 2C3, 2D3, 3D9 and 4D12, with a minimum grade of C+ in each course. In planning their programme, students must complete 2B6, 2C3 and 2D3 prior to enrolling in 3D9. Completion of 3D9 is a prerequisite for 4D12. 15 units to be selected from the remaining Social Work courses, with an average of at least 6.0.

Students will be expected to assume the cost of travelling to and from their field practice agencies.

B.A.: 60 units

During the course of the B.A. programme, students must complete a total of 90 units (including the 30 unit prerequisite required for entrance into the Combined B.A./B.S.W. programme). Eligibility for graduation from individual B.A. programmes is determined by the appropriate Faculty, using a Graduation Average calculated on at least 24 units as specified for the appropriate B.A. programme. Students should consult the relevant section of the Undergraduate Calendar and/or the Associate Dean of Studies of the Faculty for governing regulations.

Students may designate a maximum of 6 units as B.A. courses from the following: Social Work 3C3, 3J3, 4J3, 4M3 or 4Q3.

completion of a Level requires 36 units.

B.S.W. AS A SECOND DEGREE

Students who intend to apply for the B.S.W. as a Second Degree programme should consult the School of Social Work prior to registration.

To qualify for the B.S.W. as a Second Degree, students must complete a total of 60 units of credit (of which normally 48 units must be in Social Work) at McMaster. 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 required Social Work courses: Social Work 2B6, 2C3, 2D3, and 3D9 and 4D12; and has a minimum average of 6.0 in all Social Work Area courses.

Admission:

Admission to the programme for the B.S.W. as a Second Degree is contingent upon the applicant's holding an undergraduate degree, normally with an average of at least 4.0, from a recognized university, and personal suitability as evaluated by written statements and interviews. Applicants must apply to the University through the Assistant Registrar (Admissions) AND directly to the School of Social Work.

Enrolment in the B.S.W. Second Degree programme is limited.

Application for admission should be made to the School of Social Work prior to March 1st for the Fall term. Area Courses: All Social Work courses.

Requirements:

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.

Students are required to complete Social Work 2B6, 2C3, 2D3, 3D9 and 4D12, with a minimum grade of C+ in each course. Social Work 2B6, 2C3, 2D3 and 3D9 may be taken concurrently; all are prerequisites for Social Work 4D12. 15 units to be selected from the remaining Social Work courses, requiring an average of at least 6.0.

E 12 units to be selected from either Social Work or B.A. courses.

Students are expected to assume the cost of travelling to and from their field practice agencies.

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—

Area Courses:
All Level II, III and IV Sociology courses.

Levels II, III and IV: 90 units

R 48 units of Sociology, including: 9 units from Sociology 2S6 and 3A3 or 3P3, 9 units from Sociology 3H6 and 3O3 or 3W3, 30 additional units of Levels III and IV Sociology (including at least 12 units of Level IV Sociology).

E 42 units.

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 4M4/4N3).

Students should check the Calendar and Departmental Handbook for prerequisites and course descriptions.

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 2S6 and at least one of Sociology 2Y3, 2Z3 or 3H6.

E 36 units.

Students should check the Calendar and Departmental Handbook for prerequisites and course descriptions.
Part-time Degree Studies

The University offers a broad range of education opportunities for students who wish to take degree studies on a part-time basis. In addition to the day-time offerings, the University offers a considerable selection of evening courses which is available in sessions beginning in September, January, and May.

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 interests. If your interests change, it is often possible to transfer to another department or Faculty.

A variety of programmes are available through a combination of evening and summer study. The section of this Calendar, Degrees and Programmes, lists all the programmes offered by the University, with those completely available through evening and summer study indicated with an asterisk (*).

Admission

Applicants who satisfy the normal admission requirements of the University (see Admissions Section of this Calendar) can register for either day-time or part-time study. Those who satisfy these requirements may be admissible as "Special Students" and given the opportunity to show that they can deal successfully with university work by taking Level I courses. Initially, "Special Students" may take up to 12 units of work per session with the approval of the Faculty Dean of Studies. Detailed regulations will be found in the Registration Section of this Calendar.

The University welcomes 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 as have just been mentioned. Such students may subsequently transfer to a degree programme. If the courses already completed were relevant to the programme, then 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, CAA/T) 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 or in the summer. We have, therefore, listed the evening and summer 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. We have also listed those B.A., B.Sc. and Honours degree programmes which departments at present plan to make available through a combination of evening and summer study.

The University offers a number of first and second level courses for those who wish to study during the January-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, Grimsby, Hagersville, Oakville, Stoney Creek and in the Mohawk-McMaster Education Information Centre of the new Hamilton Public Library. Announcements concerning these offerings will be made from time to time, and will be included as an insert in the local newspaper. Students registered in Summer School should note that they are restricted to taking no more than 12 units in the Summer Session of which no more than 6 may be taken in the Summer Day Session and no more than 3 units during each term of the Summer Day Session.

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 4324, Gilmour Hall Room 120, for counselling in regard to the above matters, and for discussion of 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 (extensions 4326, 4328)
- Science (extension 4385)
- Social Sciences (extension 4604)

You are urged to familiarize yourself with the structure of academic programmes, the description of courses and the academic regulations described in this Calendar. General information on courses, application procedures and admission regulations is provided by the Registrar's Office (525-9140, ext. 4796).

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 2 Main Street South, telephone 1-768-1010. The Centre in Hamilton is in the new Hamilton Central Library just off Jackson Square, telephone 529-8111, 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 Kenneth 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 morning. MAPS Executive Assistant, Ms. Maxine Hartley, 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.

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>Summer Evening, 1982</td>
<td>A</td>
</tr>
<tr>
<td>Summer Day, 1982</td>
<td>B</td>
</tr>
<tr>
<td>Winter Evening, 1982-83</td>
<td>C</td>
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<tr>
<td>January to June Evening, 1983</td>
<td>D</td>
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<tr>
<td>Summer Evening, 1983</td>
<td>E</td>
</tr>
<tr>
<td>Summer Day, 1983</td>
<td>F</td>
</tr>
<tr>
<td>Winter Evening, 1983-84</td>
<td>G</td>
</tr>
<tr>
<td>January to June Evening, 1984</td>
<td>H</td>
</tr>
<tr>
<td>Summer Evening, 1984</td>
<td>I</td>
</tr>
<tr>
<td>Summer Day, 1984</td>
<td>J</td>
</tr>
</tbody>
</table>

Specific dates and examination times, may be found by referring to the Sessional Dates section, at the front of this Calendar.

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.

### ANTHROPOLOGY

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1A3</td>
<td>Introduction to Anthropology — Culture and Society</td>
</tr>
<tr>
<td>123</td>
<td>Introduction to Anthropology — Human and Cultural Origins</td>
</tr>
<tr>
<td>2A3</td>
<td>World Prehistory — Paleolithic</td>
</tr>
<tr>
<td>2B3</td>
<td>Peoples of North America</td>
</tr>
<tr>
<td>2E3</td>
<td>Physical Anthropology</td>
</tr>
<tr>
<td>2F3</td>
<td>Social Anthropology</td>
</tr>
<tr>
<td>2G3</td>
<td>Folklore Anthropology</td>
</tr>
<tr>
<td>2H3</td>
<td>Ecological Anthropology</td>
</tr>
<tr>
<td>2I3</td>
<td>History of Anthropology</td>
</tr>
<tr>
<td>2J3</td>
<td>Human Growth &amp; Adaptation</td>
</tr>
<tr>
<td>2K3</td>
<td>Social Biology</td>
</tr>
<tr>
<td>2M6</td>
<td>Phonetics, Phonology, and Historical Linguistics</td>
</tr>
</tbody>
</table>

### BIOLOGY

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2B3</td>
<td>Cell Biology</td>
</tr>
<tr>
<td>2C3</td>
<td>Genetics</td>
</tr>
<tr>
<td>2D3</td>
<td>The Plant Kingdom</td>
</tr>
<tr>
<td>2E3</td>
<td>The Animal Kingdom</td>
</tr>
<tr>
<td>2F3</td>
<td>Fundamentals of Ecology</td>
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</table>

### BUSINESS

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3W6</td>
<td>Accounting</td>
</tr>
<tr>
<td>3X3</td>
<td>Business Finance</td>
</tr>
<tr>
<td>3Y3</td>
<td>Marketing</td>
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### CHEMISTRY

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<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1A6</td>
<td>General Chemistry</td>
</tr>
<tr>
<td>2F4</td>
<td>Inorganic Chemistry</td>
</tr>
<tr>
<td>206</td>
<td>Organic Chemistry</td>
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### CHINESE

<table>
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<tr>
<th>Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>126</td>
<td>Elementary Chinese</td>
</tr>
<tr>
<td>1226</td>
<td>Elementary Chinese for Dialect Speakers</td>
</tr>
<tr>
<td>226</td>
<td>Intermediate Chinese</td>
</tr>
<tr>
<td>2226</td>
<td>Intermediate Chinese for Dialect Speakers</td>
</tr>
</tbody>
</table>

### CLASSICAL CIVILIZATION

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>1A6</td>
<td>An Introduction to the Civilizations of Greece and Rome</td>
</tr>
<tr>
<td>2D3</td>
<td>Greek and Roman Mythology</td>
</tr>
<tr>
<td>2L3</td>
<td>The Greek City: An Archaeological Study</td>
</tr>
<tr>
<td>2U3</td>
<td>Social Life and Thought of the Greeks</td>
</tr>
</tbody>
</table>

### COMMERCE

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
</tr>
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<tbody>
<tr>
<td>2AA3</td>
<td>Financial Accounting I</td>
</tr>
<tr>
<td>2BA3</td>
<td>Organizational Behaviour</td>
</tr>
<tr>
<td>2FA3</td>
<td>Financial Instruments and Institutions</td>
</tr>
<tr>
<td>2QA3</td>
<td>Computer Augmented Statistical Analysis</td>
</tr>
<tr>
<td>2BD3</td>
<td>Computer-Aided Quantitative Analysis</td>
</tr>
<tr>
<td>3AA3</td>
<td>Cost and Mangerial Accounting I</td>
</tr>
<tr>
<td>3BB3</td>
<td>Business Data Processing</td>
</tr>
<tr>
<td>4AB3</td>
<td>Financial Accounting III</td>
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### DRAMATIC ARTS

<table>
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<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1A6</td>
<td>Introduction to Drama</td>
</tr>
<tr>
<td>2A6</td>
<td>An Introduction to the Actor’s Craft</td>
</tr>
<tr>
<td>2B6</td>
<td>The Development of English Drama</td>
</tr>
<tr>
<td>2X6</td>
<td>The Art of the Film</td>
</tr>
<tr>
<td>3A6</td>
<td>Styles of Acting</td>
</tr>
<tr>
<td>3G6</td>
<td>Introduction to Theatre History</td>
</tr>
<tr>
<td>3K6</td>
<td>Shakespeare</td>
</tr>
<tr>
<td>3N6</td>
<td>The American Cinema</td>
</tr>
<tr>
<td>4A6</td>
<td>Principles of Stage Directing</td>
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### ECONOMICS

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<tr>
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<th>Course Title</th>
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<tbody>
<tr>
<td>1A6</td>
<td>Introductory Economics</td>
</tr>
<tr>
<td>2B3</td>
<td>Analysis of Economic Data</td>
</tr>
<tr>
<td>2G3</td>
<td>Intermediate Price Theory</td>
</tr>
<tr>
<td>2H3</td>
<td>Intermediate Income and Employment Theory</td>
</tr>
<tr>
<td>2K3</td>
<td>Economic History of Canada</td>
</tr>
<tr>
<td>2L6</td>
<td>Intermediate Microeconomics</td>
</tr>
<tr>
<td>2M6</td>
<td>Intermediate Macroeconomics</td>
</tr>
<tr>
<td>3A3</td>
<td>Advanced Economic Theory I</td>
</tr>
<tr>
<td>3AA3</td>
<td>Advanced Economic Theory II</td>
</tr>
<tr>
<td>3H3</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>3NH3</td>
<td>International Trade</td>
</tr>
<tr>
<td>3J6</td>
<td>Economic Development</td>
</tr>
<tr>
<td>3K6</td>
<td>Monetary Economics &amp; Financial Organization: Theory &amp; Policy</td>
</tr>
<tr>
<td>3L3</td>
<td>Financial and Managerial Accounting</td>
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### ENGLISH

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1A6</td>
<td>Literature in English: Major Authors</td>
</tr>
<tr>
<td>1B6</td>
<td>Literature in English: Major Forms</td>
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<tr>
<td>2G6</td>
<td>Canadian Literature</td>
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<td>2H6</td>
<td>American Literature</td>
</tr>
<tr>
<td>2I6</td>
<td>Modern British Literature</td>
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<tr>
<td>2V6</td>
<td>The English Language</td>
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<tr>
<td>3D3</td>
<td>The Earliest English Literature</td>
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<tr>
<td>3DD3</td>
<td>Beowulf</td>
</tr>
<tr>
<td>3I6</td>
<td>Studies in 16th-Century Literature</td>
</tr>
<tr>
<td>3L6</td>
<td>Shakespeare</td>
</tr>
<tr>
<td>3M3</td>
<td>19th-Century British Literature</td>
</tr>
<tr>
<td>3T3</td>
<td>Spenser</td>
</tr>
<tr>
<td>3V6</td>
<td>Studies in 17th-Century Literature</td>
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### FRANCÉ

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<tr>
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<tbody>
<tr>
<td>1B6</td>
<td>Intermediate French</td>
</tr>
<tr>
<td>12A</td>
<td>Beginners’ Intensive French</td>
</tr>
<tr>
<td>2A5</td>
<td>French Language Practice</td>
</tr>
<tr>
<td>2C5</td>
<td>French Oral Practice</td>
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### GENERAL

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## PART-TIME DEGREE STUDIES

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>1A6</td>
<td>Introduction to Greek Studies</td>
<td>G3</td>
</tr>
<tr>
<td>1B6</td>
<td>General Geology</td>
<td>G3</td>
</tr>
<tr>
<td>1Z6</td>
<td>Beginners' intensive German</td>
<td>A3, C3, E3, G3, I3</td>
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<tr>
<td>2B3</td>
<td>Urban Geography</td>
<td>Ax</td>
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<tr>
<td>2B3</td>
<td>The Geography of Medieval Europe</td>
<td>Cx</td>
</tr>
<tr>
<td>2E3</td>
<td>Italy</td>
<td>Gx, Ix</td>
</tr>
<tr>
<td>2F3</td>
<td>Iranians and Persians</td>
<td>Cx</td>
</tr>
<tr>
<td>2G3</td>
<td>Italian History of the Middle Ages</td>
<td>Cx</td>
</tr>
<tr>
<td>2H3</td>
<td>Central Italy and the Papacy</td>
<td>Cx</td>
</tr>
<tr>
<td>2I6</td>
<td>Modern Italy and the Risorgimento</td>
<td>Cx</td>
</tr>
<tr>
<td>2J6</td>
<td>Modern Italy and the Risorgimento</td>
<td>Cx</td>
</tr>
<tr>
<td>2K6</td>
<td>Italian Renaissance</td>
<td>Cx</td>
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<tr>
<td>2L6</td>
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<td>Cx</td>
</tr>
<tr>
<td>2M6</td>
<td>Italy</td>
<td>Cx</td>
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<td>2N6</td>
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<td>Cx</td>
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<tr>
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<td>Cx</td>
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<td>2X6</td>
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<tr>
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## LABOUR STUDIES

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<tbody>
<tr>
<td>1A3</td>
<td>The Canadian Labour Movement</td>
<td>C1, G1</td>
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<tr>
<td>1B3</td>
<td>The Theoretical Foundations of the Labour Movement</td>
<td>C2, G2</td>
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## LATIN

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<tbody>
<tr>
<td>1A6</td>
<td>Introduction to Latin Studies</td>
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## MATHEMATICS

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<tr>
<td>1A6</td>
<td>Calculus I</td>
<td>A3, C3, D3, F3, G3, H3, J3</td>
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<tr>
<td>1B4</td>
<td>Linear Algebra I</td>
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<td>1G6</td>
<td>Applied Analysis</td>
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<td>1K3</td>
<td>Introductory Calculus for Business and the Social Sciences</td>
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## MUSIC

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<tbody>
<tr>
<td>1A6</td>
<td>Introductory Music</td>
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<td>2A6</td>
<td>History of Music</td>
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<td>3A6</td>
<td>Music Education</td>
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<td>3M4</td>
<td>Instrumental Course Methods: Strings</td>
<td>C3, G3, H3</td>
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<td>3L3</td>
<td>Instrumental Course Methods: Woodwind</td>
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<td>Instrumental Course Methods: Strings</td>
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## PHILOSOPHY

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<tbody>
<tr>
<td>1B6</td>
<td>Philosophy &amp; Society</td>
<td>C3, F3</td>
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<tr>
<td>1D6</td>
<td>Problems in Philosophy</td>
<td>B3, G3, I3</td>
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<td>2A6</td>
<td>Ancient Greek Philosophy</td>
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<td>2B3</td>
<td>Introductory Logic</td>
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<td>2C6</td>
<td>Philosophy During the Scientific Revolution</td>
<td>J3</td>
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<td>2D3</td>
<td>Moral Issues</td>
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<td>2F6</td>
<td>Philosophical Psychology</td>
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<td>2G3</td>
<td>Social &amp; Political Issues</td>
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<td>2H3</td>
<td>Aesthetics</td>
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<td>Introduction to Philosophy of Biology</td>
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<td>Types of Ethical Theory</td>
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<td>Bertrand Russell</td>
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<td>Theory of Value</td>
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<td>Contemporary Existent and Phenomenological Philosophy</td>
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<td>Metaphysics</td>
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## PHYSICAL EDUCATION

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<td>3J3</td>
<td>Aesthetics of Sport &amp; Dance</td>
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<td>3P3</td>
<td>Sport &amp; Social Processes</td>
<td>B2</td>
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<td>3Q3</td>
<td>Sport &amp; Small Group Dynamics</td>
<td>C2</td>
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<td>4E3</td>
<td>Motor Control</td>
<td>C2, E2</td>
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<td>4G3</td>
<td>Perspectives in Dance — A Cultural Survey</td>
<td>J1</td>
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<td>4L3</td>
<td>Comparative Physical Education &amp; Sport (Selected topics)</td>
<td>I2</td>
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<tr>
<td>4M3</td>
<td>Psycho-Social Aspects of Skill</td>
<td>G1</td>
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## PHYSICS

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<tr>
<td>1B7</td>
<td>General Physics I</td>
<td>G3</td>
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<tr>
<td>2E6</td>
<td>Introduction to Astronomy and Astrophysics</td>
<td>C3, G3</td>
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## POLITICAL SCIENCE

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<td>An Introduction to the Study of Politics</td>
<td>A3, C3, E3, G3, I3</td>
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<td>2B6</td>
<td>Politics in the U.S.A.</td>
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<tr>
<td>2C6</td>
<td>Culture and Politics of Southern Asia and North Africa</td>
<td>G3</td>
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2E6 International Politics B3
2F6 The Systematic Study of Politics C3
2G6 Politics in Canada B3, E3, J3
2H6 Introduction to Far Eastern Political Traditions A3, C3, F3, G3, J3
2I6 Introduction to Political Theory G3
2J6 Politics in Western Europe F3
3A6 History of Political Ideas E3
3B6 Canadian Political Ideas A3
3C6 Comparative Politics: Theory and Method C3
3D6 Politics in Japan C3
3E6 Public Policy Analysis G3
3F6 Public Administration C3
3G6 International Organization G1
3H6 Approaches to the Study of International Politics G2
3I6 Political Parties, Movements and Elites in Canada I3
3J6 The Foreign Policy Process in Canada C1
3K6 Issues in Canadian Foreign Policy C2
3L6 The Politics of Modern and Contemporary China I3
3M6 Public Law C3, G3
3N6 Canadian Public Policy G3
3O6 Canadian Politics Theory C3
3P6 Quebec Politics A3

PSYCHOLOGY

1A6 General Psychology B2, C2, E1, H1, J1
1B3 Theories of Human Development A1, C1, H1, I1
1C6 Personality B1, C2, F1, G1, H2
1D6 Sensation & Perception C3, F3, G3
1E3 Psychological Statistics B1, E1, J1, J2
1F3 Human Learning & Cognition C2, E2, H2
1G3 Principles of Conditioning B1, C1, E1, H1
1H6 Neuropsychology: Brain and Behaviour H3
1I3 Developmental Psychopathology C2
1J3 Social Psychology Laboratory H3
1K3 Selected Topics in Social Psychology B2, F2, G2, H2
1L3 Sensory Processes & Perception Laboratory C2
1M3 Psychological Measurement C1, I2
1N6 Intellectual Development B3, J3
1O6 Abnormal Psychology C3, F3, G3, H3
1P3 Psychological Thinking H1
1Q3 Animal Behaviour C1, J1
1R3 Animal Behaviour Laboratory C2
1S3 Sociobiology C2
1T3 Psychophysiology H3
1U3 Selected Topics in Behaviour Modification H1
1V3 Selected Topics in Behaviour Theory C2
1W3 History of Psychology C2
1X6 Psychology Thesis H3

RELIGIOUS STUDIES

1B6 World Religions C3, G3
1C6 Texts, Traditions, and Thought B3, C3, G3
1D6 Ideas of Love D3
1E6 The Possibility of Religion in the Modern World H3
1F6 Death and Dying in Human Experience C3, G3
1G6 Introduction to the Wisdom Philosophies of Asia C1
1H6 Images of the Divine Feminine B2, C1, G1
1I6 Specialists in the Sacred C2, G2, J2
1J6 The Five Books of Moses D2
1K6 The Beginning of Christianity H3
1L6 The Prophets I1
1M6 History of Ancient Judaism C3, F3
1N6 Christian Thought in the Patriotic Period, 100-800 C1
1O6 Christian Thought in the Middle Ages, 800-1500 C2
1P6 Christian Thought in the 16th Century G1, I1
1Q6 The Question of Good in the Technological Age A3
1R6 Christian Thought After 1600 G2, I2
1S6 The Social Dimension of Religion F1
1T6 The Social-Psychological Dimension of Religion C2, F2
1U6 Religious Traditions of the West C1, G1, J2
1V6 Introduction to the Religious Traditions of Asia B3
1W6 Religious Traditions of the East C5, G2
1X6 Eros and Salvation C2
1Y6 Atheism, Scepticism, and Religious Belief C3
1Z6 Cults in North America C1
2A3 Divine Justice I2
2B3 Native & Ethnic Religions in Canada C1
2C6 Major Denominations in Canada G2
2D3 Aspects of the Study of Religion C1, G1
2E3 Introduction to Hellenistic Judaism G2
2F3 Israeli Poetry and Wisdom C1
303 The Fourth Gospel E2
3P6 Religion and Modern Society J3
3U3 The Idea of "Religion" C1
3W3 Taoist Philosophy G2
3W3 Yoga: Theory & Practice A1
3X3 The Letters of Paul C2
3YY3 Biblical Interpretation: Traditional & Modern B1
4F3 Approaches to the Study of Religion Cx, Gx
4GG3 Honours Seminar Cx, Gx

RUSSIAN

1B6 Aspects of Modern Russian Culture C3
1C6 Beginners' Intensive Russian C3
2C6 Intermediate Language Study G1
2D6 Advanced Language Study C3
3E3 Studies in the Russian Novel: Dostoeyvski C1
3T3 Studies in the Russian Novel: Tolstoy G1

SCIENCE

2J3 Physics and the Energy Problem C2

SERBO-CROATIAN

126 Introduction to Serbo-Croatian C3, G3

SLAVIC

2F6 Introduction to Slavic Linguistics G3

SOCIAL WORK

2C3 Theory for Social Work Practice Cx, Gx
2D3 Interpersonal Communication and Interviewing Cx
2E3 Social Aspects of Health & Disease C1, G1, Lx
3D9 The Practice of General Social Work I BMay 3-July 9, F and J (10 weeks beginning after April exams)

SOCIOLGY

1A6 An Introduction to Sociology All terms, 3
1B6 Deviant Behaviour C3, G3
1C6 The Human Group C3, G3
1D6 Racial and Ethnic Group Relations C3, G3
1H6 A Sociological Analysis of Canadian Society B3, G3
1I6 The Sociology of Organizations E1
1J6 Industrialization and Development F3
1K6 Social Stratification F3, J3
1L6 The Sociology of Education C3, J3
1M6 Sociology of Women B3, E3, G3, I3
1N6 Introduction to Sociology Theory C6
1O6 Sociology of the Family C3, G3
1P6 Introduction to Quantitative Studies E1, J1
1Q6 Introduction to Sociological Research E1, J1
1R3 European Sociological Theory A3, E3
1S6 Selected Topics in the Sociology of Education A1, E1
1T6 Political Sociology C3
1U6 Sociology of Health Care G1
1V6 Research Techniques and Data Analysis A3, E3
1W6 Special Topics in Sociological Analysis C1
1X6 Special Topics in Sociological Analysis II G2
1Y6 The Sociology of Knowledge E1
1Z6 Advanced Sociological Research E1
2A6 North American Sociological Theory G1
2B6 The Sociology of Urban Areas I2
2C6 Ethnic Relations A1, I1
2D6 Critiques of Sociological Theory C2
2E6 Selected Topics in Sociology C2
2F6 Individual & Society I F1
4G3 Special Topics in Canadian Society I G1

SPANISH

1A6 Intermediate Spanish C3, G3
1B6 Beginners' Intensive Spanish C3, G3
1C6 Language Practice C3
1D6 Introduction to the Culture of Spain Cx
1E6 Introduction to the Culture of Spanish America Gx
1F6 Critical Approaches to Literature in Spanish C3
1G6 Syntax C3
1H6 Spanish Drama Gx

STATISTICS

2D4 Probability Theory I E3
2R6 Statistics for Psychology and Life Sciences B3, E3
3D6 Mathematical Statistics I G3
3M3 Statistical Methods A1, J1

UKRAINIAN

1A6 Introduction to Ukrainian C3, G3
1B6 Advanced Ukrainian C3

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ANTHROPOLOGY

Courses by Departments

Anthropology

Faculty as of January 15, 1982
M.O. Cooper/ Acting Chairman

Professors Emeriti
Ruth B.S. Landes/M.S.W. (New York), Ph.D. (Columbia)
Richard Slobodin/BA., M.S. (City College of New York), Ph.D. (Columbia)

Professors
David J. Damas/Ab. (Toledo), A.M., Ph.D. (Chicago)
Edward V. Glanville/BA., Ph.D. (Dublin)
Christopher Hallpike/B. Litt. (Oxford), D.Phil. (Oxford)
William C. Noble/BA. (Toronto), Ph.D. (Calgary)
Richard J. Preston/M.A., Ph.D. (North Carolina)
Edward S. Rogers/BA. (Middlebury College), M.A., Ph.D. (New Mexico)

Associate Professors
Matthew Cooper/BA. (Brooklyn College), M.Phil., Ph.D. (Yale)
David R. Counts/BA. (Texas), Ph.D. (Southern Illinois)
Harvey Feit/BA. (Queens), M.A., Ph.D. (McGill)
Klaus Jaeklekin/Ph.D. (Tuebingen) /part-time
Peter G. Ramsden/BA. (Toronto), M.A. (Calgary), Ph.D. (Toronto)
William L. Rodman/BA. (Sydney), M.A., Ph.D. (Chicago)
Charles E. Storttroen/BA. (Luther), M.A. (Minnesota)
Emoke J.E. Szathmary/BA., Ph.D. (Toronto)

Assistant Professors
Shelley Saunders/BA., M.A., Ph.D. (Toronto)

Lecturer
Patricia Sutherland/BA. (Toronto)

Associate Member
Ralph Matthews/(Sociology), B.A. (Memorial), M.A., Ph.D. (Minnesota)

CURRICULUM 1982-84
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. There are no co-requisite requirements for part-time students. The University reserves the right to limit enrolment in any course. The Department offers two Level I Anthropology courses: 1A3 and 123, which taken together, are designed to provide an introduction to the study of Anthropology.

ANTHROP1A3 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, 1C3, 1D3, 1E3, or 1H3.

ANTHRO1B6 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.

ANTHROP123 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 receiving credit for Anthropology 1A6, 1F3, or 1G3.

ANTHROP2A3 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 receiving credit for Anthropology 2A6.

ANTHROP2B3 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: Anthropology 1A3. Not open to students receiving credit for Anthropology 3C6.

ANTHROP2C3 COMMunal SOCIETIES
Comparative study of communal societies emphasizing conditions giving rise to them and practices and beliefs which sustain them.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology.

ANTHROP2D3 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. Not open to students receiving credit for Biology 1C3.

ANTHROP2E3 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.)

ANTHROP2F3 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.

ANTHROP2G3 FOLKLORE STUDIES
The systematic study of oral traditions, folktales, folksons, 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.

ANTHROP2H3 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.

ANTHROP2I3 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.

ANTHROP2J3 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.
Offered in alternate years.

ANTHROP2K3 SOCIAL BIOLOGY
Bio-social anthropology. The biological and evolutionary background of human social behaviour.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F3; or permission of the instructor.
Offered in alternate years.

ANTHROP2M6 PHONETICS, PHONOLOGY, AND HISTORICAL LINGUISTICS
A rigorous introduction to the concepts and techniques used in phonetics, phonology and historical linguistics.
3 hrs.(lects. and discussion); two terms
Prerequisite: Open.
May be repeated by those who have taken 2M6 prior to 1982-83.
Same as Linguistics 2M6.
ANTHROP2P3 WORLD PREHISTORY: NEOLITHIC CULTURES
A survey of the development of settled, food-producing human cultures from earliest villages to urban life.
3 hrs.(lect. and discussion); one term
Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

ANTHROP2P3 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: Open.

ANTHROP2P3 LINGUISTICS AND THE STUDY OF CULTURE
A study of the major areas in which linguistics and linguistic methods are used to explore anthropological problems e.g. evolution, world view, socio-linguistics, etc.
3 hrs.(lects. and discussion); one term
Prerequisite: Open, except to students receiving credit for Anthropology 3M3.

ANTHROP2P3 RELIGION, MAGIC, AND WITCHCRAFT
A survey of beliefs and practices related to the supernatural in non-Western societies. Emphasis will be placed on the relationship between ideology and social structure.
3 hrs.(lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology, or permission of the instructor.

ANTHROP2P3 HUMAN BIOLOGY AND SOCIAL CONTROVERSY
Biological models of Man and reaction to them by society. Selected controversies, current and historical, will be considered: biological vs. cultural determinism; dualism vs. monism; biological vs. cultural evolution; human variation and racism.
3 lects.(lects. and discussion); one term
Prerequisite: Open.

ANTHROP2P3 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 for 2G6 in 1974/75. This course may be repeated in Level II, if on a different topic, to a total of six units.

ANTHROP2P3 WARFARE AND AGGRESSION
The aim of the course is to assess the extent to which violence is both controlled by 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.

ANTHROP2P3 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.
Same as Sociology 2Z3.
Enrolment is limited.

ANTHROP3A3 ETHNOLOGY: THE CANADIAN NORTH
A comparative ethnological analysis of selected societies in the Canadian North.
3 hrs.(lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology, or permission of the instructor.

ANTHROP3B3 ETHNOLOGY: EUROPE
A comparative ethnological survey of selected societies in Europe.
3 hrs.(lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology, or permission of the instructor.

ANTHROP3C3 ETHNOLOGY: NORTH AMERICA
A comparative ethnological survey of selected societies in North America.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F3, or permission of the instructor.

ANTHROP3D3 ETHNOLOGY: PACIFIC ISLANDS
Analysis of selected issues in Pacific anthropology.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F3, or permission of the instructor.

ANTHROP3E3 CONTEMPORARY NORTHERN PEOPLES
An examination of native-white interaction in northern Canada from earliest contact times to the present day.
3 hrs.(lects. and discussion); one term
Prerequisite: One course beyond Level I, or permission of the instructor.

ANTHROP3G3 COMPARATIVE MYTHOLOGY
An examination of some of the major anthropological attempts to explain the existence and meaning of myth.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2G3, or Anthropology 2M6; or permission of the instructor.

ANTHROP3H3 ETHNOLOGY: SOUTHEAST ASIA
A comparative ethnological 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.

ANTHROP3J6 PRIMITIVE RELIGION
Same as Religious Studies 3JJ6.

ANTHROP3K3 ARCHAEOLOGICAL METHODS
Technique and methodology in the investigation of archaeological material.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2A6; or 2A3 and 2N3; or permission of the instructor.
Enrolment is limited.

ANTHROP3L3 PRIMITIVE SYSTEMS OF THOUGHT
Selected studies in religion, magic, and systems of knowledge in the cultures of non-literate peoples, and their expression in myth and ritual.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F3, or permission of the instructor.

ANTHROP3M6 SYNTAX, SEMANTICS AND MORPHOLOGY
A rigorous introduction to the concepts and techniques used in syntax, semantics and the study of morphology and word-formation.
3 hrs.(lects. and discussion); two terms
Prerequisite: Open.
Same as Linguistics 3M6.

ANTHROP3N6 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.

ANTHROP3O6 HUMAN ANTHROPOLOGY
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); one term
Prerequisite: Anthropology 2D3 or 2E3; or permission of the instructor.
Offered in alternate years.

ANTHROP3P6 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.

ANTHROP3Q3 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.

ANTHROP3U3 NORTH AMERICAN PREHISTORY
A study of the development of North American cultures from the original peopling of the New World until the arrival of Europeans.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2A6; or 2A3 and 2N3; or permission of the instructor.

ANTHROP3V3 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.

ANTHROP3W3 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.

ANTHROP3X3 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.
Offered in alternate years.

ANTHROP3Z3 MEDICAL ANTHROPOLOGY
Health and illness in non-Western societies and an examination of social practices and beliefs which influence them.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F3; or permission of the instructor.
Offered in alternate years.

ANTHROP343 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 office for topics prior to registration.
ART AND ART HISTORY

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.

ANTHROP4C3 COMMUNICATION AND CULTURE
Discussion centers on the roles which communication systems such as ritual, myth, sign language, and music play in the maintenance and Evolution of culture.
3 hrs. (seminar); one term.
Prerequisite: Registration in Level IV Honours Anthropology; or permission of the instructor.
Offered in alternate years.

ANTHROP4E3 ADVANCED REGIONAL ARCHAEOLOGICAL I
A study of the field data, methods, and theoretical problems, in the prehistory of selected areas.
3 hrs. (seminar); one term.
Prerequisite: Anthropology 3K6; or 3K3 and 3U3; or permission of the instructor.

ANTHROP4E3 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.

ANTHROP4I3 CONTEMPORARY ANTHROPOLOGY THEORY
Selected topics.
3 hrs. (seminar); one term.
Prerequisite: Registration in Level IV Honours Anthropology. Not open to students receiving credit for Anthropology 3P6. This course is required of all students registered in Honours Anthropology.

ANTHROP4J3 RESEARCH DESIGN
Intensive examination of conceptual and practical problems in social science research design, research methods, and data analysis. Introduction to computer applications.
2 hrs. (seminar) and 2 hrs. (lab.); two terms.
Prerequisite: Registration in Level IV Honours in any Social Sciences programme and permission of the instructor.

ANTHROP4L3 CULTURE AND THE INDIVIDUAL
Deals with the relationship between individual persons and their lives in the context of various concepts of culture. A case history approach is used employing autobiographical material from both "natives" and anthropologists.
3 hrs. (seminar); one term.
Prerequisite: Registration in Level IV Anthropology; or permission of the instructor.
Offered in alternate years.

ANTHROP4M3 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: Anthropology 3K6; or 3K3 and 3U3; or permission of the instructor.

ANTHROP4N3 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.

ANTHROP4O3 HUMAN GENETICS
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 1C6; or permission of the instructor.

ANTHROP4P3 PRIMATE BEHAVIOUR
Ecology, demography, social organization, and development of social behaviour among Old and New World monkeys and apes.
3 hrs. (lects. and discussion); one term.
Prerequisite: One of Anthropology 2E3, 2F3, 2K3; or permission of the instructor.

ANTHROP4Q3 DEVELOPING SOCIETIES
Topics will include the meaning of development, innovation and technological change, urbanization, and protest movements.
3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 3P6, 3S6; or permission of the instructor.

Students may be interested in the following courses, offered by other Departments, which have linguistic content: English 3C3; French 3B3, 3G3, 3L4, 4K3; Linguistics 1A6; Russian 2F6.

Art and Art History

Faculty as of January 15, 1982

G.B. Wallace / Chairman

Professors

George B. Wallace/M.A. (Trinity College, Dublin), R.C.A.

Associate Professors

Anne Kahane
Hayden B.J. Maginnis/B.A. (Western), M.F.A., Ph.D. (Princeton)

Assistant Professors

Donald F. Carr/B.A. (Guelph), M.F.A. (Chicago)
Hugh G. Galloway/Dipl.Art (Edinburgh)
Warren D. Tresidder/B.A. (New South Wales), M.A. (British Columbia), Ph.D. (Michigan)

Lecturer

Lorne J. Toews/B.F.A. (Manitoba), M.F.A. (Indiana)

Art Gallery Curator

David G. Taylor/B.A. (Windsor), M.Museol. (Toronto)

Associate Members

Katherine M.D. Dunbabin/(Classics), B.A., D.Phil. (Oxford)

Art History

CURRICULUM 1982-84

ART HIST1A6 INTRODUCTION TO THE STUDY OF VISUAL ART
An examination of methods employed in the interpretation, criticism, and history of art; with emphasis on major monuments of art and architecture in the western tradition.
3 lects.; two terms.
Prerequisite: Open.

ART HIST2B3 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 HIST2C3 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 HIST2K3 EARLY MEDIAEVAL ART AND ARCHITECTURE IN WESTERN EUROPE
A study of art and architecture in Europe from 600-1200.
3 lects.; one term.
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2D6.

ART HIST2L3 THE GOTHIC IMAGE
A study of European art and architecture in the later Middle Ages.
3 lects.; one term.
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2D6.

ART HIST2M3 THE ART AND ARCHITECTURE OF THE EUROPEAN RENAISSANCE 1400-1580
3 lects.; one term.
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2E6.

ART HIST2N3 SEVENTEENTH AND EIGHTEENTH CENTURY EUROPEAN ART AND ARCHITECTURE
An examination of the major trends in European art and architecture from 1580-1780.
3 lects.; one term.
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2E6.
ART HIST203 MODERN ART AND ARCHITECTURE 1780-1880
A study of the origin and development of modern styles from Neo-Classicism through Impressionism.
3 lects.; one term
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2F6.

ART HIST203 MODERN ART AND ARCHITECTURE 1880 TO THE PRESENT
Topics examined will include Post-Impressionism, Fauvism, Cubism, Surrealism, and related developments.
3 lects.; one term
Prerequisite: Open to students in Level II and above except to students receiving credit for Art History 2F6.

ART HIST333 THE IMAGERY AND SYMBOLISM OF CHRISTIAN ART
A study of the representation of selected subjects in Christian Art.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST333 CANADIAN ART AND ARCHITECTURE
A survey of the visual arts in Canada from the earliest explorations and settlements to the present.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST333 NORTHERN EUROPEAN PAINTING 1380-1600
The development of painting in the Lowlands, France, and Germany, and the influences of regional schools.
3 lects.; one term
Prerequisite: Art History 2E6 or 2M3.
Offered in alternate years.

ART HIST333 ITALIAN BAROQUE ART
A discussion of the formation and character of the Baroque style in Italy in the 17th century. The works of principal artists will be Examined, and special attention will be given to the cultural structure of Rome.
3 lects.; one term
Prerequisite: Art History 2E6 or 2N3.
Offered in alternate years.

ART HIST333 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: Art History 2C3 or 2D6 or 2K3 or Classical Civilization 2C3; or permission of the Department.
Same as Classical Civilization 3C3.
Alternates with Art History 4L3.

ART HIST333 APPROACHES TO ART HISTORY
A study of the various approaches which art historians of the last one hundred years have taken in investigating the art of the past.
Seminar(2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Art or Art History and permission of the Department.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST333 THE CAROLINGIAN RENAISSANCE
The architecture, painting, and sculpture of the Carolingian Renaissance is examined against the background of the political, Theological, and literary achievements of the period.
Seminar(2 hrs); one term
Prerequisite: Art History 2D6 or 2K3 and registration in Level III or IV of a programme in Art or Art History and permission of the Department.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST333 STUDIES IN LATE MEDIAEVAL ART
An investigation of aspects of the art of the late Middle Ages.
Seminar(2 hrs.); one term
Prerequisite: Art History 2D6 or 2L3 and registration in Level III or IV of a programme in Art or Art History and permission of the Department.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST333 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 Tintan.
Seminar(2 hrs.); one term
Prerequisite: Art History 2E6 or 2M3 and registration in Level III or IV of a programme in Art or Art History and permission of the Department.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST333 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 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST333 ROMANESQUE PAINTING AND SCULPTURE
A study of the style and iconography of eleventh and twelfth century painting and sculpture in Western Europe, with emphasis on developments in France.
3 lects.; one term
Prerequisite: Art History 2D6 or 2K3.
Offered in alternate years.

ART HIST333 MYTH AND ALLEGORY IN ITALIAN RENAISSANCE ART
An examination of interpretations by Italian Renaissance artists of selected classical myths and the use of the allegorical mode of artistic expression.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST333 AN INTRODUCTION TO THE HISTORY OF PRINT MAKING
A study of woodcut, engraving, lithography, and other methods of print making, from the 15th century to the present.
3 lects.; one term
Prerequisite: Open to students in Level III or IV, except students receiving credit for Art History 2J3.
Offered in alternate years.

ART HIST433 ART OF BYZANTIUM
The art and architecture of the Greek East from the founding of Constantinople to 1453.
3 lects.; one term
Prerequisite: Art History 2D6 or 2K3.
Offered in alternate years.

ART HIST433 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 lects.; one term
Prerequisite: Art History 2E6 or 2M3.
Offered in alternate years.

ART HIST433 EUROPEAN ARCHITECTURE
A course dealing with European Architecture during the 17th and 18th centuries.
3 lects.; one term
Prerequisite: Art History 2E6 or 2N3.
Offered in alternate years.

ART HIST433 ENGLISH PAINTING 1730 TO THE PRESENT
The development of English painting from Hogarth to Francis Bacon with some consideration of related trends in the graphic arts.
3 lects.; one term
Prerequisite: Six units of Art History, or permission of the Department.
Offered in alternate years.

ART HIST433 TOPICS IN NORTHERN EUROPEAN ART OF THE 17TH CENTURY
An examination of selected subjects in the history of Northern European art in the 17th century.
Seminar(2 hrs.); one term
Prerequisite: Art History 2E6 or 2N3 and registration in Level III or IV of a programme in Art or Art History.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST433 NATURALISM IN BAROQUE PAINTING
A stylistic and iconological study of works by major Baroque artists in the context of the literary and philosophical culture of the period.
Seminar(2 hrs.); one term
Prerequisite: Art History 2E6 or 2N3 and registration in Level III or IV of a programme in Art or Art History.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST433 TOPOGRAPHY IN 18TH AND 19TH CENTURY ART
Discussion of selected European painters, sculptors, and architects.
Seminar(2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Art or Art History.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST433 EXPRESSIONISM
Examination of one of the major tendencies in 20th century art in Europe and North America.
Seminar(2 hrs.); one term
Prerequisite: Art History 2F6 or 2P3 and registration in Level III or IV of a programme in Art or Art History.
Enrolment is limited; departmental permission slip required.
Offered in alternate years.

ART HIST433 SUPERVISED READING
Readings in a field of special interest to the student, under the guidance of a Faculty member.
Prerequisite: Registration in Level III or IV of a programme in Art History and permission of the Department, and a grade of at least B- in a previous course in the chosen field.
Students wishing to combine Art History 4K3 with Art History 4Q6 Must have a grade of at least A- in a previous course in the chosen field or fields.
ART HIST 1.3 TOPICS IN ANCIENT ART AND ARCHAEOLOGY 1982-84: The Art and Architecture of Magna Graecia
A study of the temples, sanctuaries, and sculpture of South Italy and Sicily from the Archaic to the Hellenistic period.
Seminar(3 hrs.); one term.
Prerequisite: Art History 2B3 and registration in Level III or IV of a programme in Art History or Classical Civilization and permission of the instructor. Not open to students who received credit for Art History 3F3 or Classical Civilization 3F3. Art History 4L3 may be repeated, if on a different topic, to a total of six units.
Enrolment is limited; departmental permission slip required from the instructor.
Alternates with Art History 3C3.

Same as Classical Civilization 4L3.

ART HIST 406 THESIS
Supervised study of a problem in the history of art of special interest to the student, through library research and the examination of photographs and original objects.
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.

Students wishing to combine Art History 4K3 with Art History 406 must have a grade of at least A- in a previous course in the chosen field or fields.

ART HIST 4P3 ITALIAN PAINTING, 1250-1480
A study of stylistic transition between the later Middle Ages and the early Renaissance.
2 studio practice(3 hrs. each); two terms
Prerequisite: Art History 2D6 or 2L3, or permission of the Department. Offered in alternate years.

Art CURRICULUM 1982-84

ART 1B6 INTRODUCTION TO STUDIO PRACTICE I
An introduction to the methods and materials used in drawing and painting.
2 studio practice(3 hrs. each); two terms
Prerequisite: Intention of entering a programme in Art and submission of an acceptable portfolio. Not open to students receiving credit for Art 1A6.

ART 1D6 INTRODUCTION TO STUDIO PRACTICE II
An introduction to the methods and materials used in sculpture and print making.
2 studio practice(3 hrs. each); two terms
Prerequisite: Intention of entering a programme in Art and submission of an acceptable portfolio. Students intending to take Art 1B6 and Art 1D6 must submit to the Chairman of the Department of Art and Art History in the spring a portfolio to show their interests and ability. We believe that drawings made without supervision or assistance are especially helpful in making this assessment and the portfolio could contain drawings from nature in several media; for example, a self portrait, a still life, or a landscape. It is recommended that applicants come to the Department for an interview, if possible. Late applicants will be considered if space is available in the class.

ART 2A6 PAINTING I
A sequential investigation of the elements of painting based upon the painter’s traditional points of reference.
2 studio practice(3 hrs. each); two terms
Prerequisite: Registration in a programme in Art.

ART 2B6 SCULPTURE
A study of basic three-dimensional principles leading to a comprehension of sculptural form. Emphasis on the human model.
2 studio practice(3 hrs. each); two terms
Prerequisite: Registration in a programme in Art.

ART 2C3 ADVANCED DRAWING
1 studio practice(3 hrs.); two terms
Prerequisite: Registration in a programme in Art.

ART 3E6 PRINT MAKING I
Studio class in the intaglio and relief methods of print making.
2 studio practice(3 hrs. each); two terms
Prerequisite: Registration in a programme in Art.

ART 4A6 PRINT MAKING II
Studio course in the techniques of lithography and silk screen printing.
2 studio practice(3 hrs. each); two terms
Prerequisite: Registration in a programme in Art.

ART 4B12 STUDIO PROJECT
A summation of investigations into aspects of technique begun in any of Art 3A6, 3B6, 3E6, or 4A6, to be done under supervision of a staff member.
Prerequisite: Registration in Level IV Honours Art and a grade of at least A- in the previous course in the chosen field.

ART 4C6 MINOR STUDIO PROJECT
An investigation of techniques begun in any of Art 3A6, 3B6, 3E6, 4A6, 2C3, or 3C3, supervised by a staff member.
Prerequisite: Registration in Honours Art and a grade of at least B- in the previous course in the chosen field. Not available to students taking or who have received credit for Art 4B12.

Students wishing to combine Art 4C6 with Art 4D3 must have a grade of at least A- in a previous course in the chosen field or fields or be given special permission by the Chairman of the Department.

ART 4D3 MEDIA RESEARCH
Investigation of studio techniques, under the guidance of a staff member.
Prerequisite: Registration in Honours Art and a grade of at least B- in the previous course in the chosen field.

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. Students wishing to combine Art 4D3 with Art 4C6 must have a grade of at least A- in a previous course in the chosen field or fields or be given special permission by the Chairman of the Department.

Arts and Science
Council of Instructors
S. Ahmad (Economics)
A. Berland (English)
M. Cooper (Anthropology)
J. Embury (Metallurgy and Materials Science)
D. Goodings (Physics)
B. Ferrier (Biochemistry)
L. Greenspan (Religious Studies)
H. Jenkins (Psychology)/Chairman
D. McCalla (Biochemistry), on leave 1982-83
A. Mendelson (Religious Studies), on leave 1982-83
M. Ross (English)
W. Wallace (Music)

CURRICULUM 1982-84

The prerequisite for all Level I, II and III courses is registration in the Arts and Science Programme or permission of the instructor.

All courses are 3 hrs. (lect., discussion groups, seminars), except Arts and Science 2D6 which includes occasional labs.

Enrolment is limited to forty students. Enrolment in Arts and Science courses is also limited to forty students.

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, Aristotle, Augustine, Galileo, and Darwin. 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 read selected classics, analyze various types of reasoning, and receive individual attention in writing essays.

ARTS & SCI 1C6 INQUIRY I
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. The topics for different Inquiry seminars are selected in order to give
students experience with a range of issues; some more heavily concerned with scientific, technological, and empirical matters, others more with cultural and personal values.

ARTS&SCI126 WESTERN THOUGHT II
Development of political, economic, sociological, and psychological thought in the writings of such major figures as Hobbes, Rousseau, Adam Smith, Marx, Weber, Keynes, Freud and Skinner. Special attention will be given to their treatment of basic topics which include, for example, the applicability of scientific method to social problems, the meaning of personal freedom, and the agents of change in society.

ARTS&SCI126 INQUIRY II
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. The topics for different Inquiry seminars are selected in order to give students experience with a range of issues; some more heavily concerned with scientific, technological, and empirical matters, others more with cultural and personal values.

ARTS&SCI126 PHYSICAL SCIENCE
Classical mechanics and special relativity highlighting the discoveries of Newton and Einstein. The chemical evidence for atoms; chemical reactions, valence and the 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&SCI126 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&SCI136 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&SCI136 INQUIRY III
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. The topics for different Inquiry seminars are selected in order to give students experience with a range of issues; some more heavily concerned with scientific, technological, and empirical matters, others more with cultural and personal values.

ARTS&SCI146 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 & Science Programme and then prepare an outline for approval after consultation with the faculty supervisor. Prerequisite: Registration in the Arts and Science Programme.

ARTS&SCI14412 INDIVIDUAL STUDY
Same as Arts and Science 4A6.

ARTS&SCI146 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 & Science Programme and then prepare an outline for approval after consultation with the faculty supervisor. Prerequisite: Registration in the Arts and Science Programme.

ARTS&SCI14C12 THESIS
Same as Arts and Science 4C6.

Asian Studies

While there is not 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. G. MacQueen (Religious Studies).

CURRICULUM 1982-1984

1. Courses Dealing Strictly with Asian Material

ANTHROPOLOGY
3H3 Ethnology: Southeast Asian
3X3 People of India

HISTORY
2B6 China: From the Opium War to the Present
2U6 The History of Modern Asia (Alternate with History 3G6)
3CC3 Ancient China
3DD3 Imperial China
3G6 The History of South Asia (Alternates with History 2U6)
4G6 The Revolutionary Movement in Modern China

POLITICAL SCIENCE
2M6 Introduction to Far Eastern Political Traditions
3C3 Comparative Politics: South Asian Systems
3D3 Comparative Politics: Southeast Asian Systems
3M6 The Politics of Modern and Contemporary China
3Q6 Politics in Japan

RELIGIOUS STUDIES
2B6 Introduction to the Wisdom Philosophers of Asia
2MM6 East Asian Religions
2OO3 Religious Traditions of the East
2PP3 Eros and Salvation
2T3 Yoga: Theory and Practice
2V3 Indian Art and Religion
3P6 Indian Philosophy
3Q6 The Buddhist Tradition
3W3 Taoist Philosophy
4AA6 Advanced Study in Hindu Religious History
4BB6 Advanced Study in Buddhist and East Asian Religious History
4E6 Advanced Study in Indian Philosophy

2. Courses with a Significant Amount of Asian Content

ECO NOMICS
3J6 Economic Development

POLITICAL SCIENCE
2C6 Culture and Politics of Southern Asia and North Africa
3P6 Foreign Policy of the U.S.S.R., China, and the West
4Q6 Developing Political Systems

RELIGIOUS STUDIES
1B6 World Religions
1C6 Texts, Traditions, and Thought
1F6 Religion and Contemporary Problems
1Z6 The Possibility of Religion in the Modern World
2A6 Death and Dying
2BB3 Images of the Divine Feminine
2CC3 Specialists in the Sacred
2QQ3 Cults in North America

3. Language Courses (Chinese 1Z6, 1ZZ6, 2Z6, 2ZZ6 are offered by the Russian Department; Sanskrit 3A6 and 4B6 are offered by the Department of Religious Studies)
Chinese 1Z6 Elementary Chinese
Chinese 1ZZ6 Elementary Chinese for Dialect Speakers
Chinese 2Z6 Intermediate Chinese
Chinese 2ZZ6 Intermediate Chinese for Dialect Speakers
Sanskrit 3A6 Introduction to Sanskrit Grammar
Sanskrit 4B6 Readings in Sanskrit Texts
Biochemistry

Faculty as of January 15, 1982

D.R. McCalla/ Chairman

Professors

Luis A. Branda/B.Sc., D.Sc. (Uruguay)
Richard M. Epand/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)
Harza P. Ghosh/M.Sc., D.Phil. (Calcutta)
Ross H. Hall/B.A. (British Columbia), M.A. (Toronto), Ph.D. (Cambridge)

Dennis R. McCalla/B.Sc. (Alberta), M.Sc. (Saskatchewan), Ph.D. (California Inst. of Technology), F.C.I.C.
Thomas Nelson/B.Sc., Ph.D. (Glasgow), F.C.I.C.
Evert Nieboer/M.Sc. (McMaster), Ph.D. (Waterloo)

Associate Professor

Radhey S. Gupta/M.Sc. (New Delhi), Ph.D. (Bombay)

Assistant Professor

Gerhard E. Gerber/B.Sc., Ph.D. (Toronto)

Associate Members

Richard J. Haslam/(Pathology) M.A., D.Phil. (Oxford)
George D. Sweeney/(Medicine) M.B., Ch.B., Ph.D. (Cape Town)

CURRICULUM 1982-84

BIOCHEM2A3 INTRODUCTORY BIOCHEMISTRY
A thematic treatment of biochemistry covering the principles of specificity, energy flow, and regulation. Primarily designed for students intending to proceed to Biochemistry 3BB3.
3 lects.; one term
Prerequisite: Credit or registration in Chemistry 208 or 258.
(Not open to students who have credit in Biochemistry 2E3.)

BIOCHEM2E3 INTRODUCTORY BIOCHEMISTRY
A treatment of the basic areas of biochemistry, including physiological chemistry. Designed for students who do not intend to take further biochemistry.
3 lects.; one term
Prerequisite: Credit or registration in one of Chemistry 2D4, 208, 258.

BIOCHEM3BB3 BIOCHEMICAL STRATEGY
Discussion of the experimental basis for biochemical concepts.
3 lects.; one term
Prerequisite: Biochemistry 2AA3.

BIOCHEM3CC3 APPROACH TO BIOCHEMICAL PROBLEMS
Experience will be gained in the solution of biochemical problems.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3BB3 and completion of, or registration in, Chemistry 2Q5 or 2T4.

BIOCHEM3G6 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
Prerequisite: One of Chemistry 258 or 208 or 3D6, and one of Chemistry 2P4 or 2Q5 or 2T4; or completion of Chemistry 208 with at least a grade of B.
Offered 1982-83 only.

BIOCHEM3L4 BIOCHEMISTRY LABORATORY
Illustration of fundamental principles as presented in Biochemistry 3G6 or 2AA3 and 3BB3.
2 labs.(3); two terms
Prerequisite: Registration in Biochemistry 3G6 or 3BB3.

BIOCHEM3L2 BIOCHEMISTRY LABORATORY
Identical to first part of Biochemistry 3L4.
1 labs.(3); two terms
Prerequisite: Registration in Biochemistry 3G6 or 3BB3.

BIOCHEM4B6 SENIOR THESIS
A thesis based on a project supervised by a Faculty member.
3 labs.(3); two terms
Prerequisite: In general only students registered in Level IV Biochemistry programmes who have a CAA of at least 10.0 in area courses will be admitted. Potential applicants should consult the Chairman before June 1st.
Enrolment is limited.

BIOCHEM4C4 BIOCHEMISTRY IN CONTEMPORARY SOCIETY
Areas of sociological importance are explored from a biochemist's viewpoint. Typical topics are nutrition, agriculture, the food and pharmaceutical industries, pollution, and infection.
2 lects.; two terms
Prerequisite: Biochemistry 3G6 or 3BB3; or permission of the Department.

BIOCHEM4E3 ADVANCED BIOCHEMISTRY
Biochemical approaches for studying the possible molecular components and regulatory mechanisms involved in complex biological phenomena, such as cell transformation, carcinogenesis, and differentiation.
3 lects.; one term
Prerequisite: Biochemistry 3G6 or 3BB3.

BIOCHEM4H3 CLINICAL CHEMISTRY
An outline of clinical chemistry; its relevance to health care, and its contribution to basic biological science. The anatomy, physiology, and chemical tests relevant to the major organ systems.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours or Major programme in Biochemistry, Chemistry, or Biology.

BIOCHEM4K4 ADVANCED BIOCHEMISTRY LABORATORY
A major project or a series of experiments together with a minor project. The projects and experiments are oriented towards environmental problems. Each student has an opportunity to develop an individual project.
2 labs.(3); two terms
Prerequisite: Biochemistry 3G6 or 3BB3.
Enrolment is limited.

BIOCHEM4L6 ADVANCED BIOCHEMISTRY LABORATORY
Fundamental principles of experimental biochemistry with emphasis on modern methods of current interest. In the second term each student carries out a separate project under faculty supervision.
3 labs.(3); two terms
Prerequisite: Biochemistry 3L2 or 3L4.

BIOCHEM4L3 ADVANCED BIOCHEMISTRY LABORATORY
The first part of Biochemistry 4L6.
3 labs.(3); one term
Prerequisite: Biochemistry 3L2 or 3L4.

BIOCHEM4M3 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 3G6 or 3BB3.

BIOCHEM4Q3 MOLECULAR 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 3G6 or 3BB3.

BIOCHEM4U5 ADVANCED EXPERIMENTATION
A course emphasizing fundamental principles in biochemistry and chemistry using a broad range of modern instrumental methods. This course is identical with Chemistry 4U5.
1 lab.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry.

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 1981-82 were as follows:

R. Bloch (Medicine)
J.L. Brash (Chemical Engineering)
I.A. Feuerstein (Chemical Engineering)
D. Ghista (Medicine)
L.D. Pengelly (Engineering Physics)
G.F. Round (Mechanical Engineering)

CURRICULUM 1982-84

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 1A6 Adaptation in the Biological World
BIOLOGY 1H6 Human Physiology
BIOLOGY 2F3 Fundamentals of Ecology
PSYCHOLOGY 1A6 General Psychology
SOCIOLOGY 1A6 An Introduction to Sociology
CHEMISTRY 2D4 Introductory Organic Chemistry
CHEMISTRY 208 Organic Chemistry
BIOCHEMISTRY 2E3 Introductory Biochemistry
ENGINEERING PHYSICS 3X4 Engineering Applications in Physiological Systems
CHEMICAL ENGINEERING 4T3 Transport Processes in Biomedical Engineering
ELECTRICAL ENGINEERING 4U4 Biomedical Electronics Instrumentation
ENGINEERING 4X3 Introduction to Biomedical Engineering
ENGINEERING PHYSICS 4Y3 Introduction to Biomedical Physics

Biology

Faculty as of January 15, 1982
S.F.H. Threlkeld/ Chairman

Professors
Stanley T. Bayley/B.Sc., Ph.D. (London)
Douglas Davidson/B.Sc. (Durham), D.Phil. (Oxford)
Douglas M. Davies/B.A., Ph.D. (Toronto), F.E.S.C.
Graham P. Harris/B.Sc., Ph.D. (London)
Kenneth A. Kershaw/B.Sc. (Manchester), Ph.D. (N. Wales), D.Sc. (Wales), F.R.S.C.
John N.A. Lott/ B.Sc. (British Columbia), M.S., Ph.D. (California, Davis)
Stanley Mak/M.Sc. (Saskatchewan), Ph.D. (Toronto)
Esther L. McCandless/B.S. (Bethany), M.S., Ph.D. (Cornell)
John J. Miller/B.A., Ph.D. (Toronto)
B. Ann Oaks/B.A. (Toronto), M.A., Ph.D. (Saskatchewan)
Ludvik Prevec/M.A., Ph.D. (Toronto)
George J. Sorger/B.Sc. (McGill), M.S., Ph.D. (Yale)
Iwao Takahashi/B.A. (Hakodate), M.S.A. (Kyushu), Ph.D. (Montreal)
Jean E.M. Westermann/B.Sc. (Western), M.A. (Mount Holyoke), Ph.D. (Toronto)

Associate Professors
Thomas T. Chen/B.Sc. (National Chung-Hsing University), M.A. (SUNY, Plattsburg), Ph.D. (Alberta)
Allan D. Dingle/B.Sc. (McMaster), M.Sc. (Illinois), Ph.D. (Brandeis)
Frank L. Graham/(Pathology), M.A., Ph.D. (Toronto)
Doris E.N. Jensen/M.A. (Toronto), Ph.D. (British Columbia)
Richard A. Morton/M.S., Ph.D. (Chicago)
Rama S. Singh/B.Sc. (Agra), M.Sc. (Kanpur), Ph.D. (California, Davis)
Ronald A. Sonstegard/(Pathology), B.S., M.S. (South Dakota), Ph.D. (Guelph)
Christopher M. Wood/B.Sc., M.Sc. (British Columbia), Ph.D. (East Anglia)

Assistant Professors
D. Gordon McDonald/B.A. (Western), M.A., Ph.D. (Calgary)
C. David Rollo/B.Sc., M.Sc. (Guelph), Ph.D. (British Columbia)

Lecturer
James S. Pringle/(Royal Botanical Gardens), A.B. (Dartmouth), M.S. (New Hampshire), Ph.D. (Tennessee) /part-time

Associate Member
Andrew J. Rainbow/(Radiology), B.Sc. (Manchester), M.Sc. (London), Ph.D. (McMaster)

Instructional Assistants
Herbert Pohl/B.Sc., M.Sc. (McMaster)
Raymond Procwat/B.Sc. (McMaster), B.Ed. (Toronto)
Margaret A. Service/ B.Sc. (Western)

CURRICULUM 1982-84

BIOLOGY2A16 ADAPTATION IN THE BIOLOGICAL WORLD
A course in introductory Biology which stresses the adaptation of form and function at the levels of molecules, cells, organisms and populations.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in Natural Sciences 1 including Chemistry 1A7, 1C8, and Grade 13 Biology and Grade 13 overall average of 75% or greater; or completion of Natural Sciences I or Engineering I. Not open to students with credit in any of Biology 1B6, 1C6, 1D3, 1D6, 1E3, 1E6, 1F3.

BIOLOGY2B17 INTRODUCTORY BIOLOGY
This course parallels Biology 1A6 but includes a tutorial.
2 lects., 1 tut., 1 lab.(3); two terms
Prerequisite: Registration in Natural Sciences 1 including Chemistry 1A7, 1C8. Not open to students with credit in any of Biology 1B6, 1C6, 1D3, 1D6, 1E3, 1E6, 1F3.

BIOLOGY2C16 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: Open except to students in Natural Sciences I and students who have credit in Physical Education 1C3. May be taken only as an elective by students registered in a Biology programme. Not open to students who are registered, or have credit, in Biology 3Y6 or 456.

BIOLOGY2D23 CELL BIOLOGY
The cell as the fundamental unit of life. The origin of life, evolution of prokarvov and euakarvov cells, development of multi-cellularity and cell specialization.
3 lects., or 2 lects., 1 lab.(3); two terms
Prerequisite: Completion of Biology 1A6 or 1B7 or a grade of at least B- in Biology 1G6. Not open to students with credit in Biology 1B6.

BIOLOGY2E23 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: Completion of Biology 1A6 or 1B7. Not open to students with credit in Biology 1G6.

BIOLOGY2F23 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 1B7 or a grade of at least B- in Biology 1G6. Not open to students with credit in Biology 1D6 or 1D3.

BIOLOGY2G23 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 1B7 or a grade of at least B- in Biology 1G6. Not open to students with credit in Biology 1E6 or 1E3.

BIOLOGY2H23 FUNDAMENTALS OF ECOLOGY
A broad overview of ecology at the organism, population and community level.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6 or 1B7 or a grade of at least B- in Biology 1G6. Not open to students with credit in Biology 1D6 or 1E6 or 1F3.

BIOLOGY2I23 BIOSTATISTICS AND COMPUTING TECHNIQUES
The basis of statistical techniques such as the t-test, contingency tables, regression and analysis of variance. Tutorials illustrate computer techniques in the analysis of data.
2 lects., 1 tut.; one term
Prerequisite: Computer Science 1B3.
BIOLOGY

BIOLOGY3A6 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 or 1B6 and one of Biology 2D3, 1D6, 1D3. Not open to students with credit in Biology 3A4.

BIOLOGY3C3 MICROBIOLOGY II
Basic, energy-yielding mechanisms; biochemical and genetic regulation of morphogenesis; microbial life under extreme conditions.
3 lects.; one term
Prerequisite: Biology 3E3.

BIOLOGY3D3 ANIMAL PARASITOLOGY
Parasites of animals, dealing with life histories, host-parasite relationships, and arthropod vectors.
2 lects., 1 lab.(3); one term
Prerequisite: One of Biology 2E3, 1E6, 1E3.

BIOLOGY3E3 MICROBIOLOGY III
2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 208 or 2D4.

BIOLOGY3F6 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 1E6; or permission of the instructor.

BIOLOGY3H6 CELL BIOLOGY
Structure and functions of various subcellular components; cell growth and proliferation; cell cycle analysis; behaviour of cells in tissue culture.
3 lects., or 2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 or 1B6; or permission of the instructor.

BIOLOGY3J3 CYTOGENETICS
3 lects.; one term
Prerequisite: Biology 2B3 or 1B6 and 2C3 or 1C6.

BIOLOGY3J3 THE GENETIC BASIS OF EVOLUTION
A survey of the conceptual foundations of evolutionary processes.
3 lects.; one term
Prerequisite: Biology 2C3 or 1C6.

BIOLOGY3K6 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 1E6 or a grade of at least B- in Biology 1G6; or permission of the instructor.

BIOLOGY3M6 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 or 1E6 or 1E3.

BIOLOGY3N6 DEVELOPMENTAL BIOLOGY
A comparative and analytical study of developmental phenomena. Particular emphasis will be given to processes of growth, cell differentiation, and morphogenesis during embryonic development.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 or 1B6 or a grade of at least B- in Biology 1G6. Not open to students with credit in Biology 3N4.

BIOLOGY3O3 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 or 1C6.

BIOLOGY3P3 CELL PHYSIOLOGY
Cell function with emphasis upon cell membranes and transport processes. A quantitative physicochemical interpretation of the electrical properties of cells.
2 lects., 1 tut.; one term
Prerequisite: Biology 2B3 or 1B6, and registration, or credit, in Biochemistry 3BB3 or 3G6.

BIOLOGY3Q3 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 1B7 or a grade of at least B- in Biology 1G6, and one of Physics 1A7, 1B7, 1C8; or permission of the instructor. Not open to students who have credit in Biology 2A3.

BIOLOGY3R6 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: Either Biology 2D3 and 2F3 or Biology 1D6 and registration, or credit, in Biology 2H3. Not open to students who have completed Biology 3X3 or 4Y3.

BIOLOGY3S6 CURRENT TOPICS IN BIOLOGY
Some significant recent advances in Biology will be examined and their sociological implications briefly discussed. Course content will vary from year to year.
3 lects., or 2 lects., 1 tut.; two terms
Prerequisite: Registration in Level III of the B.Sc. programme in Biology.

BIOLOGY3W6 COMPARATIVE PHYSIOLOGY
Water relations, nutrition, circulatory mechanisms, and integrative mechanisms in plant and animal systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 or 1B6 or registration in Level III or IV of a non-science programme and a grade of at least B in Biology 1G6.

BIOLOGY3Z6 LABORATORY TECHNIQUES
Projects involving techniques in the area of cell and molecular biology.
1 lect., 1 tut., 1 lab.(3); two terms
Prerequisite: Registration in Level III of the B.Sc. programme in Biology.

BIOLOGY4B6 PLANT PHYSIOLOGY
Principles of physiology and metabolism in plants.
2 lects., 1 tut. or 1 lab.(3); two terms
Prerequisite: Registration, or credit, in Biochemistry 3BB3 or 3G6; or permission of the instructor.

BIOLOGY4D6 PHYSIOLOGICAL ECOLOGY
The same as Biology 4B6, but without the laboratory or tutorial.
2 lects.; two terms
Prerequisite: Registration, or credit, in Biochemistry 3BB3 or 3G6; or permission of the instructor.

BIOLOGY4E6 ENVIRONMENTAL BIOLOGY
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 Cumulative Average 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 who are registered, or have credit, in Biology 4FF.

BIOLOGY4F6 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 lects., 1 lab.(3); two terms
Prerequisite: Biology 3G6. Not open to students with credit in Biology 3W3.

BIOLOGY4G6 POPULATION GENETICS
Experimental and theoretical aspects of the genetic basis of evolutionary changes in populations.
2 lects., 1 tut.; one term
Prerequisite: Biology 3G3 and either Biology 2C3 or 1C6; and one of Mathematics 1P6, 1A6, 1C6.

BIOLOGY4F4 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 who have obtained a Cumulative Average 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 who are registered, or have credit, in Biology 4F6.

BIOLOGY4H4 PLANT DEVELOPMENT
An experimental analysis of development in plants: cytological, genetic, and biochemical studies.
3 lects.; one term
Prerequisite: Biology 3A6.

BIOLOGY4I3 IMMUNOLOGY
An introduction to humoral and cellular immunity. The molecular and cellular basis of immunity, and an introduction to immunological techniques.
2 lects., 1 tut.(2); one term
Prerequisite: Registration, or credit, in Biochemistry 3BB3 or 3G6; or permission of the instructor.

BIOLOGY4J3 FIELD EXERCISES IN ECOLOGY
The practical application of sampling, statistical and physiological techniques in the field. Exercises will be chosen from local populations of animals and plants.
1 tut., 1 lab.(3); one term
Prerequisite: Registration, or credit, in Biology 4D6.

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BIOLOGY 4M3 PROBLEMS IN GENETICS
Current problems in cytogenetics, molecular, biochemical and behavioural genetics. The content will vary and will be partly determined by student interest. A laboratory and tutorial component may be included.
3 lects.; 2 lects., 1 tut., or 2 lects., 1 lab.; one term
Prerequisite: Biology 3G3 and 3J3.

BIOLOGY 4Q3 MOLECULAR BIOPHYSICS
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, electrophoresis, and X-ray diffraction, and application to proteins and nucleic acids.
3 lects.; one term
Prerequisite: Registration in Level III or IV Honours Biology or Level IV Major (with registration, or credit, in Biochemistry 3B83 or 3G6), or in Level IV Biochemistry; or permission of the instructor.

BIOLOGY 4P6 MOLECULAR GENETICS
The following topics will be discussed: recombination, DNA replication and gene expression in eukaryotes and prokaryotes.
2 lects., 1 tut. or 1 lab.; two terms
Prerequisite: Biology 3G3 and Biochemistry 3B83 or 3G6.

BIOLOGY 4Q3 RECENT AND FOSSIL EVIDENCE OF EVOLUTION
History of selected plant, invertebrate and vertebrate taxa illustrating the rates and modes of evolution resulting from the interactions of geo-biological processes.
3 lects.; 2 lects., 1 tut. or 1 dem.; one term
Prerequisite: Biology 3J3.

BIOLOGY 4R3 ENTOLOGY
Functional morphology and development of insects; adaptations for habitats and habits. A collection of 50 insects is required (see instructor 4 months before course begins).
2 lects., 1 lab.; one term
Prerequisite: Registration, or credit, in Biology 3M6. Offered in 1983-84 and alternate years.

BIOLOGY 4S6 VERTEBRATE PHYSIOLOGY
Comparative studies of functional activities of vertebrate animals.
2 lects., 1 lab.; two terms
Prerequisite: Biology 2B3 or 1B6 and registration, or credit, in Biochemistry 3B83 or 3G6. Biology 3P3 is recommended.

BIOLOGY 4U3 FRESHWATER INVERTEBRATES
Development and ecology of freshwater forms with emphasis on regional arthropods. A collection of 50 invertebrates is required (see instructor 4 months before course begins).
2 lects., 1 lab.; one term
Prerequisite: Registration, or credit, in Biology 3M6. Offered in 1982-83 and in alternate years.

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 lects., 1 tut.; one term
Prerequisite: Registration, or credit, in Biochemistry 3B83 or 3G6; or permission of the instructor.

BIOLOGY 4W3 MYCOLOGY
Structure and identification of fungi; physiology of their growth and reproduction; their environmental role.
2 lects., 1 lab.; one term
Prerequisite: Registration, or credit, in Biology 3E3.

BIOLOGY 4Z3 SYSTEMATIC BOTANY
Processes of speciation in higher plants, cytological, mathematical, and biochemical methods in plant classification.
2 lects., 1 lab.; one term
Prerequisite: Biology 2D3 and 2C3, or one of 1B6, 1C6 and registration, or credit, in one of Biology 2D3, 1D6, 1D3. Offered in 1982-83 and alternate years.

BUSINESS
The following courses are offered by the Faculty of Business as electives for students in other departments. Registration forms for all students selecting any of these limited enrolment courses must be received by the Office of the Registrar by June 30.

Business courses are open to students registered in Level III or Level IV of programmes other than Commerce, Engineering and Management, and Labour Studies.

BUSINESS 3W6 ACCOUNTING
An introduction to the basic principles and practices of accounting. Major topics to be considered include the economic valuation model, the fundamental concepts underlying the operation of the traditional double-entry accounting model, external financial reporting and the preparation and use of accounting information for management planning and control.
3 lects.; two terms
Prerequisite: Open. Not available to students receiving credit for Canadian Studies 2A6.

Prerequisite: Economics 1A6. Enrolment Limit: 90 (selection on basis of performance in first attempt in Economics 1A6). Not open to students who have received credit for Commerce 2AA3 or 2A3.

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 lects.; one term
Prerequisites: Business 3W6, or Commerce 2AA3 or 2A3; and Economics 2C3 or 2L6 (Business 3W6 may be taken concurrently with 3X3). Enrolment Limit: 45 (selection on basis of performance in first attempt in Economics 2C3 or 2L6). Not open to students who have received credit for Commerce 2FA3 or 3K3.

BUSINESS 3Y3 MARKETING
This course is designed to expose students to the role that marketing plays in our society and in the Canadian economy. The student will take a macro-marketing viewpoint which deals with theoretical and social aspects of both the economic and non-economic exchanges that take place between manufacturers and customers; between institutions and clients, and between organizations and their many publics.
3 lects.; one term
Prerequisite: Economics 1A6. Enrolment Limit: 90 (selection on basis of performance in first attempt in Economics 1A6). Not open to students who have received credit for Commerce 2AA3 or 3B3.

BUSINESS 3Z2 HUMAN RESOURCE MANAGEMENT
An introduction to basic concepts, theories and practices in human resource management. Students will be exposed to various problems which arise from the employer-employee relationships as well as the techniques designed to handle them.
3 lects.; one term
Prerequisite: Economics 1A6. Enrolment Limit: 45 (selection on basis of performance in first attempt in Economics 1A6). Not open to students who have received credit for Commerce 3B3, 3B3, 3F3 or 453.

Canadian Studies
Courses and programmes in Canadian Studies at McMaster University are supervised and co-ordinated by an interdisciplinary Committee of Instruction. Students who plan to register in a programme in Canadian Studies must obtain the approval of the Chairman of the Committee.

Committee of Instruction
M. Ahmed (Romance Languages)
C. Ballstadt (English)
G. Bayard (Romance Languages)
W. Coleman (Political Science)
L. Gentilcore (Geography)
P. George (Economics)
R. Henderson (Physical Education)
R. Hyman (English)/Chairman
J. Jones (Social Work)
L. King (Geography)
M. Kliman (Economics)
R. March (Political Science)
R. Matthews (Sociology)
R. Preston (Anthropology)
W. Roberts (Labour Studies)
M. Stein (Political Science)
H. Turner (History)
J. Weaver (History)

CURRICULUM 1982-84
CDN 51A6 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 receiving credit for Canadian Studies 2A6.

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CHEMICAL ENGINEERING

CDN ST2A3 TOPICS IN PROVINCIAL RELATIONS 1982-83 and 1983-84: Quebec in Canada
A study of how the people of Quebec have presented themselves and their position through literature and politics. This course will be "team-taught". Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students receiving credit for Canadian Studies 3A3.

CDN ST2B3 TOPICS IN REGIONAL RELATIONS 1982-83 and 1983-84: Native Peoples and Northern Settlements
A study of the history of northern native peoples and recent changes in their economic, political, social, and cultural relations with the rest of Canada. This course will be "team-taught". Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students receiving credit for Canadian Studies 3B3.

CDN ST3C3 TOPICS IN CANADIAN URBANIZATION I 1982-83 and 1983-84: Approaches to Canadian Urban Development
An assessment of theories about the evolution of the Canadian urban system as well as the composition of urban society and patterns of land use, past and present. Readings are derived from history, geography, and sociology. This course will be "team-taught". Seminar (2 hrs.); one term
Prerequisite: Canadian Studies 3C3; or permission of the Committee of Instruction. Not available to students receiving credit for Canadian Studies 4A3.

CDN ST3D3 TOPICS IN CANADIAN URBANIZATION II 1982-83 and 1983-84: The Hamilton Region Research Seminar
The objective is to have students produce an original contribution to the type of material examined in Canadian Studies 3A3, using local material. Seminar (2 hrs.); one term
Prerequisite: Canadian Studies 3C3; or permission of the Committee of Instruction. Not available to students receiving credit for Canadian Studies 4B3.

CDN ST4C3 TOPICS IN SOCIAL STRUCTURE I 1982-83 and 1983-84: Canadian Class Structure
A study of selected issues in the formation and structure of classes in Canada. This course will be "team-taught". Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction.

CDN ST4D3 TOPICS IN SOCIAL STRUCTURE II 1982-83 and 1983-84: Western Canada
A study of selected issues in the development of economic and political power in the Canadian West. This course will be "team-taught". Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme; or permission of the Committee of Instruction.

Canadian Area Courses

Humanities:
ART HISTORY 3B3 Canadian Art and Architecture
ENGLISH 2C3 Contemporay Canadian Fiction
ENGLISH 2G6 Canadian Literature
ENGLISH 323 Contemporary Canadian Poetry
FRENCH 2B3 An Introduction to the Civilization of French Canada
FRENCH 2F3 The Civilization of French Canada I
FRENCH 2FF3 The Civilization of French Canada II
HISTORY 2J6 The History of Canada
MUSIC 3T3 Studies in Canadian Music

Social Sciences:
ANTHROPOLOGY 3A3 Ethnology: The Canadian North
ANTHROPOLOGY 3F3 Contemporary Northern Peoples
ECONOMICS 2K6 Economic History of Canada
GEOGRAPHY 2E5 Canada
GEOGRAPHY 353 Historical Geography of Canada
POLITICAL SCIENCE 2G6 Politics in Canada
POLITICAL SCIENCE 3DD6 Political Parties, Movements and Elites in Canada
RELIGIOUS STUDIES 3B3 Native and Ethnic Religions in Canada
RELIGIOUS STUDIES 3BB3 Major Denominations in Canada
SOCIOLOGY 2H6 The Structure of Canadian Society

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 the Combined Honours 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).

Chemical Engineering

Faculty as of January 15, 1982
D.R. Woods/Chairman

Professor Emeritus
Robert B. Anderson/A.B. (Augustana College) M.S., Ph.D. (Iowa), F.C.I.C.

Professors
John L. Brash/B.Sc., Ph.D. (Glasgow)
Alvin E. Hamielec/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Kenneth D. Hester/B.A., B.A.Sc. (British Columbia), M.B.A. (McMaster)/part-time
Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), F.C.I.C., P.Eng.
John F. MacGregor/B.Eng. (McMaster), Ph.D. (Wisconsin)
Keith L. Murphy/B.A.Sc. (Toronto), M.Sc., Ph.D. (Wisconsin), P.Eng./part-time
John Vlachopoulos/Dipl. Ch. Eng. (Natural Tech. Univ. of Athens), M.S., D.Sc. (Washington)
Donald R. Woods/B.Sc. (Queen's), M.S., Ph.D. (Wisconsin), P.Eng.
Joseph D. Wright/B.Sc. (Alberta), Ph.D. (Cambridge), P.Eng./part-time

Associate Professors
Andrew Benedek/B.Eng. (McGill), Ph.D. (Washington)
Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)

Assistant Professors
Paul A. Taylor/B.Sc., Ph.D. (Univ. of Wales), P.Eng.
Marios Tsezos/Dipl. Mining Metallurgical Eng. (Nat. Tech. Univ. of Athens), M.Eng. (McMaster), Ph.D. (McGill)

CURRICULUM 1982-84
Enrolment in these courses by students in programmes other than Chemical Engineering, Chemical Engineering and Management or Honours Applied Chemistry may be limited.

CHEM ENG2C2 INFORMATION MANAGEMENT
How to obtain, interpret, store, retrieve, manipulate, and communicate information. T.V. tapping to improve verbal communication, searching the literature, organization, treatment of data.
1 lect., 1 lab (3), first term, 1 lab (3), two terms; alternate weeks
Prerequisite: Registration in Level II Chemical Engineering or Chemical Engineering and Management; or permission of the Department.
CHEM ENG2D4 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 tut.(3); one term
Prerequisite: Registration in Level II Chemical Engineering, Chemical Engineering and Management or Applied Chemistry; or permission of the Department.

CHEM ENG2F4 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 tut.(3); one term
Prerequisite: Chemical Engineering 2D4.

CHEM ENG2GC 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 lect., 2 tut.(3); one term
Prerequisite: Engineering 1D3.
Corequisite: Chemical Engineering 2D4, 2F4 or equivalent, and Chemical Engineering 2C2.

CHEM ENG2H4 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. Simultaneity, unsteady flow, measuring devices and fluid machinery.
3 lects., 1 tut. or lab.(3); one term
Prerequisite: Mathematics 2M6, or 2F4 and 2Q4, which may be taken concurrently.

CHEM ENG3A4 FLUID FLOW AND HEAT TRANSFER
The application of fluid mechanics to flow through packed beds, filtration, fluidization, etc. Heat transfer in chemical engineering systems. Steady and unsteady state condution, natural and forced convection, radiant heat transfer, condensation of vapours and boiling.
4 lects.; one term
Prerequisite: Chemical Engineering 304; Chemical Engineering 2F4.
Co-requisite: Chemical Engineering 3B3.

CHEM ENG3B3 LABORATORY AND DESIGN
Problems, experiments and projects in statistics, fluid mechanics, heat transfer and thermodynamics.
1 lab.(3), 1 calculation lab.(3); one term
Co-requisite: Chemical Engineering 3A4.

CHEM ENG3D4 CHEMICAL ENGINEERING THERMODYNAMICS
Review of the total energy balance and mechanical energy balance. Theoretical and practical cycles, including throttling and refrigeration. Chemical reaction and phase equilibria of multicomponent systems and deviations from ideality in the gas and liquid phase.
2 lects.; two terms
Prerequisite: Chemical Engineering 2F4.

CHEM ENG3E3 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 lects.; one term
Prerequisite: Chemical Engineering 2F4.

CHEM ENG3AS TRANSPORT PHENOMENA — THEORY AND APPLICATIONS
Simultaneous heat and mass transfer in binary and multicomponent systems. Boundary layer theory for various geometries. Basic design techniques for distillation, solvent extraction, gas absorption, humidification and drying.
3 lects., first term, 2 lects.; second term
Prerequisite: Chemical Engineering 3A4.

CHEM ENG4B5 POLYMER REACTION ENGINEERING
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering, Level V Chemical Engineering and Management; or permission of the Department.

CHEM ENG4C3 STATISTICS FOR ENGINEERS
Linear regression analysis in matrix form, non-linear regression, multiresponse estimation, design of experiments including factorial and optimal designs. Special emphasis on methods appropriate to engineering problems.
3 lects.; one term
Prerequisite: Statistics 3M3 or equivalent and permission of the Department.

CHEM ENG4K4 REACTION KINETICS AND REACTOR DESIGN
Chemical kinetics, reaction mechanisms and derivation of rate equations from experimental data. Ideal chemical reactors (batch/plug-flow and back-mix) with various reaction mechanisms. Non-ideal reactors: residence-time distributions, segregated flow, maximum mixedness. Thermal stability and reactor optimization.
2 lects.; two terms
Prerequisite: Chemical Engineering 2D4, 2F4.

CHEM ENG4M4 COST ESTIMATION AND PROCESS DEVELOPMENT
Design and development of chemical processes; creation and development of new processes using case studies. Ethical, design methodology, decision-making, reliability theory, project planning, cost estimation, time value of money, functional analysis and a survey of optimization techniques.
2 lects.; two terms
Prerequisite: Registration in, or completion of, Chemical Engineering 4A5, 4K4, 4P3, 4R4 and 4W4 or 4Y4.

CHEM ENG4P3 PROCESS CONTROL
3 lects.; one term
Prerequisite: Chemical Engineering 3A4 or Registration in Level IV Chemical Engineering; or permission of the Department.

CHEM ENG4R4 CHEMICAL ENGINEERING LABORATORY
Calculations and projects in transport phenomena, reaction kinetics and reactor design.
2 labs.(3); two terms
Prerequisite: Registration in, or completion of, Chemical Engineering 4A5, 4K4, 4N4, 4P3 and 4W4 or 4Y4.

CHEM ENG4S3 HETEROGENEOUS CATALYSIS
Preparation and characterization of catalysts; physical adsorption and chemisorption; kinetics and mechanism of catalytic reactions and commercial processes.
3 lects.; one term
Co-requisite: Chemical Engineering 4K4; or permission of the Department.

CHEM ENG4T3 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 204 or 304; or permission of the Department.

CHEM ENG4V3 AIR POLLUTION CONTROL
The source and chemistry of air pollutants; measurement survey techniques and legal constraints; dispersion in the atmosphere; stack height calculations; design of processes for removal of gaseous and particulate pollutants.
2 lects.; 1 tut.(2); one term
Prerequisite: Registration in Level III or IV of a Chemical Engineering Programme; or permission of the Department.

CHEM ENG4W4 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.
1 project lab.(3), first term; 3 project labs.(3); second term.
Prerequisite: Registration in, or completion of, Chemical Engineering 4A5, 4K4, 4N4, 4P3, 4R4, 4W4; or 4Y4; or permission of the Department.

CHEM ENG4Y4 UNDERGRADUATE RESEARCH PROJECT
Research projects with students working on their own under the direction of a Faculty member.
1 lab.(3), first term; 3 labs.(3); second term.
Prerequisite: Registration in, or completion of, Chemical Engineering 4A5, 4K4, 4N4, 4P3, 4R4; or permission of the Department.

CHEM ENG4Z3 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: Chemical Engineering 204 or 304 or 356; or permission of the Department.

ENGINEER4U3 WATER AND WASTEWATER TREATMENT DESIGN
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.

See also the Calendar of the School of Graduate Studies.
CHEMISTRY

Chemistry

Faculty as of January 15, 1982
G. W. King/Chairman

Professors Emeriti
Ronald P. Graham/M.A. (Queen's), A.M., Ph.D. (Columbia), F.C.I.C.

Professors
Richard F.W. Bader/M.Sc. (McMaster), Ph.D. (M.I.T.), F.C.I.C., F.R.S.
Russell A. Bell/M.Sc. (Wellington), M.S. (Wisconsin), Ph.D. (Stanford)
Thomas Birchall/M.Sc., Ph.D. (McMaster)
Ronald F. Childs/B.Sc. (Bath University of Technology), Ph.D. (Nottingham)
Alfo Corsini/B.Sc., Ph.D. (McMaster), F.C.I.C.
Donald R. Eaton/M.A., D.Phil. (Oxford)
Orville E. Hileman, Jr./B.S.Ed. (Bowling Green State), Ph.D. (Case Institute of Technology)
Michael L. Klein/B.Sc., Ph.D. (Bristol) /part-time
David B. MacLean/B.Sc. (Acadia), Ph.D. (McGill), F.C.I.C.
Jack J. McCullough/B.Sc., Ph.D. (Queen's, Belfast)
David P. Santry/B.Sc., Ph.D. (London)
Richard H. Tomlinson/B.Sc. (Bishop's), Ph.D. (McGill), F.C.I.C.
John Warkeinstein/M.Sc. (Manitoba), Ph.D. (Iowa State), F.C.I.C.
Nick H. Werstius/B.Sc. (Alberta), M.A., Ph.D. (Johns Hopkins)

Associate Professors
Peter T. Dawson/B.Sc. (Birmingham), Ph.D. (Cambridge)
John E. Greedan/B.A. (Bucknell), Ph.D. (Tufts)
David A. Humphreys/M.Sc. (London), Ph.D. (McMaster)
Joseph D. Laposa/B.Sc. (St. Louis), M.S. (Chicago), Ph.D. (Loyola)
Michael J. McGlinchey/B.Sc., Ph.D. (Manchester)
A. John Yarwood/B.Sc., Ph.D. (Birmingham)

Assistant Professors
Donald D. Burgess/B.Sc. (Waterloo), M.Sc., Ph.D. (McMaster)
Adam P. Hitchcock/B.Sc (McMaster), M.Sc., Ph.D. (British Columbia)
Kennis E. Lushington/B.Sc., M.Sc. (Victoria), Ph.D. (McMaster)
Brian E. McCarr/B.Sc. (British Columbia), Ph.D. (Stamford)
Michael A. Quilliam/B.Sc., Ph.D. (Manitoba)
Gary J. Schrobilgen/B.Sc. (Deubque, Iowa), M.Sc. (Brock), Ph.D. (McMaster)

Associate Members
Robert B. Anderson/Chemical Engineering A.B. (Augustana College), M.S., Ph.D. (Iowa), F.C.I.C.
I. David Brown/Physics B.Sc., Ph.D. (London)
Thomas Neilson/Biochemistry B.Sc., Ph.D. (Glasgow), F.C.I.C.
Evert Nieboer/Biochemistry B.Sc., M.Sc. (McMaster), Ph.D. (Waterloo)

CURRICULUM 1982-84
* Course not necessarily offered every session.

CHEM1A6 GENERAL CHEMISTRY
An introduction to the principles of chemistry. This course parallels Chemistry 1A7, but it involves less laboratory work and gives students a greater opportunity for individual study.
4 hrs. (2 lects., 2 tuts, or lab.); two terms
Prerequisite: Grade 13 Chemistry; or permission of instructor.
Open only to students in a part-time programme.

CHEM1B7 GENERAL CHEMISTRY
An introduction to the principles of chemistry. A course designed for students who are registered in Faculties other than Science or Engineering.
2 lects., 1 lab.; two terms
Prerequisite: Grade 13 Chemistry, or Level 4 Chemistry with an overall, Grade 13 average of at least 75%; or permission of the instructor. Not open to students in Natural Sciences.

CHEM1C8 GENERAL CHEMISTRY
An introduction to the principles of chemistry. A course, designed for students who do not have Level 5 (Grade 13) Chemistry, consisting of Chemistry 1A7 with an additional tutorial.
3 lects., 1 lab (3) every other week; two terms
Prerequisite: Grade 12 Chemistry and registration in Natural Sciences I or Engineering 1; or permission of the Chairman of the Department. Not open to students who have Grade 13 Chemistry.

CHEM2A4 ANALYTICAL CHEMISTRY I
An introduction to the basic principles of analytical chemistry, with particular emphasis on solution equilibria. Applications to classical methods of analysis.
2 lects., 2 labs. (3); one term
Prerequisite: Chemistry 2T4, or registration in a programme in which Chemistry 2A4 is required.

CHEM2D4 INTRODUCTORY ORGANIC CHEMISTRY
3 lects., 1 lab. (3); one term
Prerequisite: Chemistry 1A7 or 1B7 or 1C8.

CHEM2F3 INORGANIC CHEMISTRY
3 lects., 1 lab. (3); first term; 2 lects., 1 lab. (3); second term
Prerequisite: Chemical Engineering 2F4, either of which may be taken concurrently. Not open to students registered in Biochemistry or who have credit in Chemistry 2X1 or 3K6.

CHEM2G5 ANALYTICAL CHEMISTRY
An introduction to classical and modern analytical techniques with emphasis on applications in Medicine.
1 lect., 1 lab. (3); first term; 2 lects., 1 lab. (3); second term
Prerequisite: Chemical Engineering 2D4, 2F4, either of which may be taken concurrently. Not open to students registered in Biochemistry or who have credit in Chemistry 2X1 or 3K6.

CHEM2H6 ORGANIC CHEMISTRY
A systematic treatment of the chemistry of aliphatic, aromatic compounds.
Lect. and lab.
Prerequisite: Chemistry 1A6.
Open only to students in a part-time programme.

CHEM2I8 ORGANIC CHEMISTRY
A systematic treatment of aliphatic, aromatic and heterocyclic chemistry.
Lects., 1 lab. (3); two terms
Prerequisite: Chemistry 2P4 or 205 or 2T4, any of which may be taken concurrently. Not open to students registered in Engineering or who have credit in Chemistry 2X1 or 3K6.

CHEM2J4 ANALYTICAL CHEMISTRY
An introduction to classical and modern analytical techniques with emphasis on applications in Life Sciences.
1 lect., 1 lab. (3); two terms
Prerequisite: Chemistry 2P4 or 205 or 2T4, any of which may be taken concurrently. Not open to students registered in Engineering or who have credit in Chemistry 2X1 or 3K6.

CHEM2K6 ORGANIC CHEMISTRY
A systematic treatment of the chemistry of aliphatic, aromatic and heterocyclic chemistry.
Lects., 1 lab. (3); two terms
Prerequisite: Chemistry 1A7 or 1C8. Not open to students registered in Chemistry 2B8.

CHEM2L4 PHYSICAL CHEMISTRY
The states of matter; elementary principles of thermodynamics; chemical and physical equilibria; electro-chemistry; rates of chemical reactions.
2 lects.; two terms
Prerequisite: Chemistry 1A7 or 1C8, and Mathematics 1A6.

CHEM2M4 PHYSICAL CHEMISTRY
Basics 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 1A7 or 1C8, and Mathematics 1A6 or 1C6 of 1F6. Not open to students who are registered in, or have credit in, Chemistry 2P4 or 2T4.

CHEM2R2 LABORATORY COURSE IN PHYSICAL CHEMISTRY
A series of experiments to illustrate the basic principles of physical chemistry.
1 lab. (3); two terms
Prerequisite: Chemistry 1A7 or 1C8; Chemistry 2P4, which may be taken concurrently.
CHEM2S8 STRUCTURE AND REACTIONS OF THE MAIN GROUP ELEMENTS
Structure, stereochemistry, and reactions of organic and inorganic covalent compounds; structures of ionic solids; methods of structure determination.
3 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 2S8 is required.

CHEM2T4 THERMODYNAMICS
An introduction to the basic principles of thermodynamics, with applications to physical and chemical equilibria in ideal and real systems.
3 lects., 1 lab.(3); one term
Prerequisite: Chemistry 1A7 or 1C8; Mathematics 2G3, which may be taken concurrently.

CHEM2U3 QUANTUM CHEMISTRY
An introduction to the principles of quantum mechanics and their application in chemistry.
3 lects.; one term
Prerequisite: Chemistry 1A7 or 1C8; Mathematics 2G3, 2C3, which may be taken concurrently.

CHEM2X1 QUALITATIVE INORGANIC ANALYSIS
A laboratory course on the identification of cations and anions in inorganic mixtures.
1 lab.(3); one term
Prerequisite: Co-registration in Chemistry 2A4.

CHEM3A4 ANALYTICAL CHEMISTRY II
An introduction to separation techniques and modern instrumental methods of analysis.
3 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2A4.

CHEM3B4 MODERN PHYSICAL CHEMISTRY
Quantum mechanics and spectroscopy and their application to chemical problems.
2 lects.; two terms
Prerequisite: Chemistry 2P4, Mathematics 2G3, which may be taken concurrently. Not open to students in an Honours Chemistry programme.

CHEM3C4 CHEMICAL KINETICS
The rates of chemical reactions in gaseous, condensed, and interfacial systems, and the molecular processes by which reactions occur.
3 lects.; 1 lab.(3); one term
Prerequisite: Chemistry 3Y3.

CHEM3D6 ORGANIC CHEMISTRY
A mechanistically oriented discussion of the chemistry of monofunctional organic compounds.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 3D6 is required.

CHEM3E4 INORGANIC CHEMISTRY
The properties, structures, and reactions of inorganic compounds, with emphasis on transition element chemistry.
2 lects.; two terms
Prerequisite: Chemistry 2S8 and registration in Honours Biochemistry or Biochemistry Major.

CHEM3E6 INORGANIC CHEMISTRY
The properties, structures, and reactions of inorganic compounds, with emphasis on transition element chemistry.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 3E6 is required.

CHEM3F3 ORGANIC CHEMISTRY
Special topics in Organic Chemistry; a sequel to Chemistry 208. The laboratory will emphasize synthesis and identification of organic compounds.
2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 208.

CHEM3I3 INDUSTRIAL CHEMISTRY
A survey of the chemical industry. Products obtained from petroleum, natural gas, and coal ash. Petrochemicals, synthetic and natural polymers.
3 lects.; one term
Prerequisite: Chemistry 2S8; or 208 and 2F4.

CHEM3K3 ANALYTICAL CHEMISTRY
An introduction to modern analytical techniques.
1 lect., 2 labs.(3); one term
Prerequisite: Chemistry 2P4 or 2Q5 or 2T4, any of which may be taken concurrently, and Chemistry 2A4 or 2M4 or 2N4. Not open to students who are registered in, or have credit in, Chemistry 3A4 or 3K6.

CHEM3K6 ANALYTICAL CHEMISTRY
An introduction to classical and modern analytical techniques.
1 lect., 2 labs.(3); two terms
Prerequisite: Chemistry 2P4 or 2Q5 or 2T4, any of which may be taken concurrently. Not open to students who are registered in, or have credit in, Chemistry 2A4 or 3A4 or 3K3 or 2M4 or 2N4.

CHEM3Q4 INORGANIC CHEMISTRY
A sequel to Chemistry 2F3 or 2F4. Transition metal complexes; application of physical techniques to inorganic problems.
3 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2F3 or 2F4 or registration in Honours Metallurgy and Materials Science or Metallurgy and Materials Science Major or Metallurgical Engineering.

CHEM3Q3 INORGANIC CHEMISTRY
Chemistry 3Q4 without the associated laboratory. Not open to students in a programme in Chemistry.
3 lects.; one term
Prerequisite: Chemistry 2F3 or 2F4.

CHEM3Y3 STATISTICAL THERMODYNAMICS
An introduction to the principles of statistical thermodynamics and their applications in chemistry.
3 lects.; one term
Prerequisite: Chemistry 2T4 and either Chemistry 2U3 or Physics 3M6. Physics 3M6 may be taken concurrently. Not open to students who are registered in, or have credit in, Physics 3K3.

CHEM4A3 ADVANCED ORGANIC CHEMISTRY
A discussion of some modern advances in organic chemistry including such topics as aromaticity, molecular rearrangements, and organic photochemistry.
3 lects.; one term
Prerequisite: Chemistry 3D6, or 208 and 3F3.

CHEM4B3 CHEMICAL APPLICATIONS OF SPECTROSCOPY
The applications of elementary group theory and spectroscopy to the solution of chemical problems, quantum states and spectra; theory of microwave, infrared, Raman, electronic, and magnetic resonance spectra; gas and tunable lasers.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours or Major programme in Chemistry.

CHEM4C9 SOLID STATE CHEMISTRY
The structure and properties of solids, particularly crystalline solids; principles of structure, including nonstoichiometric and defect structures; associated chemical and physical properties. The growth and preparation of single crystals. Properties peculiar to solids; anisotropy, cooperative effects.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours or Major programme in Chemistry.

CHEM4DS THE CHEMISTRY OF NATURAL PRODUCTS
The structural elucidation and synthesis of selected naturally occurring organic compounds.
3 lects.; one term
Prerequisite: Chemistry 3D6, or 208 and 3F3.

CHEM4E4 ADVANCED EXPERIMENTATION
A laboratory course emphasizing fundamental principles in chemistry using modern instrumental methods.
2 labs.(4); one term
Prerequisite: Registration in Level IV of an Honours programme in Chemistry.

CHEM4F3 THE PHYSICAL CHEMISTRY OF SURFACES
The principles and applications of surface chemistry, including all interface types, capillarity, thermodynamics of surfaces, stability of colloids, adsorption, and catalysis.
3 lects.; one term
Prerequisite: Chemistry 2T4 or 2P4 or 2QS or Chemical Engineering 2D4, 2F4.

CHEM4G7 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.

CHEM4P3 ADVANCED ANALYTICAL CHEMISTRY
A course dealing with modern topics of analytical chemistry.
3 lects.; one term
Prerequisite: Chemistry 3A4 or 3K6.

CHEM4PQ ADVANCED QUANTUM MECHANICS
3 lects.; one term
Prerequisite: Registration in an Honours programme in Chemistry or in Chemistry Major.

CHEM4R3 ADVANCED TRANSITION METAL CHEMISTRY
3 lects.; one term
Prerequisite: Chemistry 3E6 or 3Q4.

CHEM4S3 ADVANCED MAIN GROUP CHEMISTRY
Radio-chemistry.
3 lects.; one term
Prerequisite: Chemistry 3E6 or 3Q4.

CHEM4T4 INSTRUMENTAL ANALYSIS
Advanced experiments in instrumental methods of analysis.
1 lect., 1 lab.(4); two terms
Prerequisite: Registration in Level IV Honours Applied Chemistry or Chemistry Major.

CHEM4U5 ADVANCED EXPERIMENTATION
A course emphasizing fundamental principles in biochemistry and chemistry using a broad range of modern instrumental methods. This course is identical with Biochemistry 4U5.
1 lab.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry.

For Graduate Courses see Calendar of School of Graduate Studies.
CIVIL ENGINEERING AND ENGINEERING MECHANICS

Chinese
(See "Russian — Chinese")

Civil Engineering and Engineering Mechanics

Faculty as of January 15, 1982

R.G. Drysdale/ Chairman

Professors

Robert G. Drysdale/B.Sc. (Manitoba), M.A.Sc., Ph.D. (Toronto), P.Eng.
Keith L. Murphy/B.A.Sc. (Toronto), M.Sc., Ph.D. (Wisconsin) /part-time
C. Raj Murthy /B.E. (Waterloo) /part-time

Associate Professors

James Wai K. Andrew Benedek/B.Eng.

Associate Professors

Ezzat A. Hanafi/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Robert G. Horvath/B.Eng. (Windsor), M.Eng. (Western Ont.), Ph.D. (Toronto)
Emad H. Imam/B.Sc. (Cairo), M.A.Sc. (Windsor), Ph.D. (Windsor), P.Eng.
Farrooque A. Mitra/B.Sc. (Karachi), B.Eng. (McGill), M.Eng., Ph.D. (British Columbia)
William J. Snodgrass/B.A.Sc. (Waterloo), M.S.E.E., Ph.D. (N. Carolina) /part-time

Assistant Professors

David C. Lam/B.Sc. (Hong Kong), M.A.Sc. (Waterloo), Ph.D. (Waterloo) /part-time

Professor

Hugh Robinson/B.Sc., Ph.D. (Durham), P.Eng.

Lecturer

James MacLeod/B.A.Sc. (Toronto)

Associate Member

Andrew Benedek/B.Eng. (McGill), Ph.D. (Washington)

CURRICULUM 1982-84

CIV ENG2A2 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 ENG2B2 INTRODUCTION TO CIVIL ENGINEERING
Design methodology, construction methods, earthwork quantities. Geotechnical aspects and concrete mix design.
2 lects.; one term
Prerequisite: Physics 1D3; registration in or completion of Engineering 2P4 and registration in Civil Engineering and Management.

CIV ENG2BB1 CIVIL ENGINEERING LABORATORY
The laboratory and field trip portion of Civil Engineering 2B3.
1 lab.(1) every other week; two terms
Prerequisite: Physics 1D3; registration in or completion of Engineering 2P4 and registration in Civil Engineering and Management.

CIV ENG2BB2 INTRODUCTION TO CIVIL ENGINEERING
Design methodology, construction methods, earthwork quantities, geotechnical aspects and concrete mix design. A professional liaison programme

with visits to engineering firms. Oral and written communication.
2 lects., first term, 1 lab.(3) every other week; two terms
Prerequisite: Physics 1D3; registration in or completion of Engineering 2P4, and registration in Civil Engineering and Management.

CIV ENG2C4 STRUCTURAL MECHANICS
Determine systems, stress resultants and deflection; Castigliano's theorems, shear flow, combined bending, unsymmetrical bending, equivalent stresses; column buckling, beam columns, impact loading, structural proportioning.
3 lects., 1 lab.(3); one term
Prerequisite: Engineering 2P4.

CIV ENG2D3 GEOLOGY FOR ENGINEERS
Composition of the earth, minerals and rocks; weathering; erosion, transportation and deposition; engineering properties of rock; geologic structure; ground water; earth movements; subsurface exploration; map usage and airphoto interpretation; site selection for engineering works; field trips.
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 ENG2O3 FLUID MECHANICS
Hydrostatics; kinematics of fluids; continuity equations. Hydrodynamics; conservation of energy and momentum, Bernoulli equation; turbulence and boundary layers; similarity; measuring devices and applications.
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 ENG3A3 GEOTECHNICAL ENGINEERING I
Composition and characteristics of soils; soil classification systems; site investigation; soil compaction; hydraulic characteristics of soils; flow nets; ground water; total and effective stresses; stresses and displacements, consolidation theory and settlement analysis.
2 lects., 1 lab.(3) or 1 tut.(2), every other week; one term
Prerequisite: Civil Engineering 2O3 or Geology 1A6 or 1B6.

CIV ENG3B3 GEOTECHNICAL ENGINEERING II
Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field tests; earth pressure theory; lateral earth pressure on retaining walls; bearing capacity; Shallow and deep foundations; slope stability and embankment design.
2 lects., 1 lab.(3) or 1 tut.(2), every other week; one term
Prerequisite: Civil Engineering 3A3.

CIV ENG3G4 STRUCTURAL ANALYSIS
Analysis of indeterminate structures; virtual work for trusses, beams, frames and girders by moment area, virtual work, slope deflection and moment distribution methods; approximate methods and influence lines. Examples in steel design.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 2C4.

CIV ENG3J4 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 ENG3K3 INTRODUCTION TO TRANSPORTATION PLANNING
Methods of predicting and planning for future transportation demand; basic concepts of traffic operations and control; design of transportation facilities; transportation systems evaluation.
2 lects., 1 tut.(2); one term
Prerequisite: Engineering 1C4, ID3 or equivalent.

CIV ENG3M4 MUNICIPAL HYDRAULICS
Urban hydrology, stormwater systems, sanitary sewers, mass transport and effluent disposal, water distribution systems, introduction to wastewater treatment, hydraulic structures.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 2O3 and Mathematics 2M6, and registration in, or completion of, Civil Engineering 3O4 and Mathematics 3J4.

CIV ENG3O4 CIVIL ENGINEERING HYDRAULICS
Flow resistance equations; open channel flow; gradually varied flows; flow in conduits; hydraulic models; free and closed channel flow; flow in hydraulic structures; hydraulics of conveying systems; hydraulic systems.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 2O3, Mathematics 2M6.

CIV ENG4A4 WATER RESOURCES ENGINEERING
Analysis of storms, snowmelt runoff, infiltration, hydrology of low-flows, storage-draft-frequency analysis, catchment models for floods, flood routing, spillway design, non-uniform flow, floodplain design, and hydroeconomics. Interactive computer simulations of, and field trips to, the local water resources system.
3 lects., 1 lab.(2); one term
Prerequisite: Civil Engineering 3M4; or permission of the Department.

CIV ENG4B3 ENGINEERING SYSTEMS
Mathematical models and systems; project comparison; optimization; linear,
non-linear and dynamic programming; simulation and computer-aided design.
2 lects., 1 tut.(2) or 1 lab.(3); one term
Prerequisite: Knowledge of Fortran programming and permission of the Department.

**CIV ENG4C3 ENVIRONMENTAL PROTECTION**
Environmental impact statement and procedures, economic-ecological tradeoff methods, cost-benefit analysis. Energy/ hydrological and great elements of the broad scale. Engineering aspects involving water control, solid waste treatment and disposal, recycling and resource management, building systems. Group research projects with Faculty guidance.
2 lects., 1 tut.(2); one term
Prerequisite: Engineering 2W4; or permission of the Department.

**CIV ENG4D4 GEOMETRIC HIGHWAY DESIGN**
Location and design of various types and classes of streets and highways. Theory and practice in design of intersections, interchanges, arterial highwys and freeways, in urban and rural areas, with consideration of alignments, cross-sections, safety, traffic demand, right-of-way utilization and environmental impact.
3 lects., 1 lab.(2); one term
Prerequisite: Civil Engineering 3K3.

**CIV ENG4F5 TRAFFIC ENGINEERING**
Selected elements of operation and control of streets and highways. Analysis of traffic stream and vehicular characteristics affecting traffic flow. Intersection signalization and timing plans including strategies for area traffic control, highway/freeway control and surveillance. Measurement and analysis of traffic data.
3 lects.; one term
Prerequisite: Civil Engineering 3K3.

**CIV ENG4G3 PAVEMENT MATERIALS DESIGN**
Components of highway pavements; ground water and drainage for highway facilities; soil compaction and stabilization; flexible culvert design; aggregates; bituminous materials, concrete mixes, flexible pavement design; concrete pavement design.
2 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3A3 and 3B3.

**CIV ENG4H3 LAND USE AND TRANSPORTATION**
An analysis of models of urban land use and urban growth with particular reference to the interrelations between transportation systems and land use change.
3 lects.; one term
Prerequisite: Civil Engineering 3K3.

**CIV ENG4I4 DESIGN OF WATER RESOURCES SYSTEMS**
Investigation, planning and design, of elements in a hypothetical development of a real river system. Flood control, water supply, hydro-power, navigation, drainage, irrigation, recreation and municipal and biological aspects of watershed management. Role of conservation authorities and public bodies. Site visits and design sessions using a library of computer programs.
2 lects., 1 tut., 1 lab.(2); one term
Prerequisite: Civil Engineering 3M4.

**CIV ENG4J3 ENGINEERING: ITS HISTORY, PHILOSOPHY AND INFLUENCE ON CIVILIZATION**
2 lects., 1 tut.(2); one term
Prerequisite: Registration in a Civil Engineering programme; or permission of the Department.

**CIV ENG4K3 MODERN METHODS OF STRUCTURAL ANALYSIS**
2 lects., 1 tut.(2); one term
Prerequisite: Civil Engineering 3G4 and Mathematics 3J4.

**CIV ENG4M3 MUNICIPAL HYDRAULICS**
Design of water supply and sewerage systems. Hydraulics of varied flow and transients; surge systems; water hammer. Surface water drainage. Economic analysis of water resources systems, population projections.
2 lects., 1 tut.(2); one term
Prerequisite: Civil Engineering 3M4 and 3D4.
*Not offered after 1982-83.*

**CIV ENG4N4 DESIGN OF STEEL STRUCTURES**
Elastic and plastic analysis and design of steel members and structures. Relationship of design specifications to the basic behaviour of structures. Use of design specifications as an aid to the solution of practical design problems. Concept of limit states design and plastic collapse.
2 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3O4.

**CIV ENG4P3 MECHANICS OF MATERIALS**
A course in stress analysis (as opposed to structural analysis). Elements of the theory of elasticity, advanced topics from among areas of energy principles, beam theory and torsion, an introduction to theory of plates and shells.
3 lects.; one term
Prerequisite: Civil Engineering 3G4.

**CIV ENG4R4 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, 3J4.

**CIV ENG4S4 FOUNDATION ENGINEERING**
Principles of foundation design; bearing capacity, settlement and location; footings, retaining structures; pile foundations; slope stability; embankment design and construction; groundwater control; grouting; geotechnical techniques and case histories.
3 lects., 1 tut.(2); one term
Prerequisite: Civil Engineering 3B3.

**CIV ENG4Y ADVANCED REINFORCED AND PRESTRESSED CONCRETE DESIGN**
Behaviour and design of reinforced and prestressed concrete structures, frames, slabs.
3 lects., 1 lab. and/or tut.(2); one term
Prerequisite: Civil Engineering 3J4.

**ENGINEER 4U3 WATER AND WASTEWATER TREATMENT AND DESIGN**
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.
See also Calendar of the School of Graduate Studies.

**Classics**
Faculty as of January 15, 1982

**H. Jones/ Chairman**

**Professors**

Katherine M. D. Dunbabin/B.A. , D. Phil. (Oxford)
Thomas M. Hoy/B.A. (Montreal), M.A. (Toronto), Ph.D. (Harvard), S.T.L., Ph.L. (Immaculate Conception Seminary, Montreal)
George M. Paul/M.A. (London), Ph.D. (Chicago)
Donald M. Shepherd/M.A. (Queen's), Ph.D. (Chicago)
William J. Slater/M.A., Ph.D. (St. Andrews)

**Associate Professors**

Howard Jones/B.A. (London), M.A., Ph.D. (Indiana)
Peter Kingston/B.A., Ph.D. (London)

**Assistant Professor**


**Associate Member**

Bryan D. Mangrum (Art and Art History), B.A. (Swarthmore), M.A. (Princeton)

**Curtin’s 1982-84**

**Classical Civilization**

No language other than English is required for courses listed under Classical Civilization.

**CLAS CIV1A6 AN INTRODUCTION TO THE CIVILIZATIONS OF GREECE AND ROME**

A survey of Greek and Roman culture from the Mycenaean Age to the Late Roman Empire, based on readings from Greek and Roman authors in translation and on the archaeological evidence.

2 lects., 1 tut.; two terms
Prerequisite: Open.

**CLAS CIV2B3 GREEK ART**
The architecture, sculpture, and painting of the Greek and Hellenistic world.

3 lects.; one term
Prerequisite: Open to students in Level II and above.

Same as Art History 2B3.

**CLAS CIV2C3 ROMAN ART**
The architecture, sculpture, and painting of the Roman world.

3 lects.; one term
CLAS CIV2D3 GREEK AND ROMAN MYTHOLOGY
A study of the Greek and Roman myths, and the intellectual and spiritual climate in which they were fostered and developed, from the Mycenaean Age to early Christian times.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

Alternates with Classical Civilization 2E3.

CLAS CIV2E3 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.

Alternates with Classical Civilization 3C3.

CLAS CIV2L3 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: Open to students in Level II and above.

Alternates with Classical Civilization 2M3.

CLAS CIV2M3 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: Open to students in Level II and above.

Alternates with Classical Civilization 2V3.

CLAS CIV2V3 SOCIAL LIFE AND THOUGHT OF THE GREEKS
A description and analysis of selected aspects of the social life of Greece. The topics surveyed include work and leisure, slavery, marriage and family life, the roles of women, religion, law, social structure, and social mobility.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for Classical Civilization 2K3.

Alternates with Classical Civilization 2V3.

CLAS CIV2K3 SOCIAL LIFE AND THOUGHT OF THE ROMANS
A description and analysis of selected aspects of the social life of Rome. The topics surveyed include work and leisure, slavery, marriage and family life, the roles of women, religion, law, social structure, and social mobility.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for Classical Civilization 2K3.

Alternates with Classical Civilization 2K3.

CLAS CIV2X3 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 lects.; one term
Prerequisite: Open to students in Level II and above.

Alternates with Classical Civilization 2X3.

CLAS CIV2Z3 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.

Same as Religious Studies 2Z3.

CLAS CIV3A3 TOPICS IN GREEK LITERATURE IN TRANSLATION
1983-1984: The Greek Historians and Their Theories of History
Reading in Herodotus, Thucydides, Xenophon, and Polybius. Lectures about the development of historiography, its relationship to philosophy, politics, literature, and science, and the problem of fact and interpretation.
3 lects.; one term
Prerequisite: Six units of Classical Civilization or History 1L6 or 2L6; or permission of the Department.

Classical Civilization 3A3 may be repeated, if on a different topic, to a total of six units.

Alternates with Classical Civilization 403.

CLAS CIV3C3 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 2E3.

CLAS CIV3G3 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 or 2K3; or permission of the Department.

Alternates with Classical Civilization 4L3.

CLAS CIV3M3 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 2K3 and 2V3, 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 2K3 or 2V3 and three additional Units from either Classical Civilization or Ancient History; or permission of the Department.

Alternates with Classical Civilization 4N3.

CLAS CIV4A3 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from mediaeval to modern times, and conducted jointly by the Departments of Classics and English.
1 lect., 1 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in English, Classics, Classical Civilization, Latin, or Greek; or permission of the Departments. Offered in alternate years. Same as English 4A3.

CLAS CIV4F3 SUPERVISED STUDY
Under the supervision of members of the Department of Classics, students will investigate in detail some area(s) of Classical Civilization with a view to bringing together aspects of the work of previous levels.
Prerequisite: Registration in Level IV of Honours Classical Civilization or Combined Honours in Classical Civilization and another subject; or permission of the Department.

CLAS CIV4L3 TOPICS IN ANCIENT ART AND ARCHAEOLOGY
A study of the temples, sanctuaries, and sculpture of South Italy and Sicily from the Archaic to the Hellenistic period.
Seminar (3 hrs.); one term
Prerequisite: Classical Civilization 2B3 and registration in South Italy and Sicily, 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 2K3 or 2V3 and three additional units from either Classical Civilization or Ancient History; or permission of the Department. Not available to students receiving credit for Classical Civilization 3N3.

Alternates with Classical Civilization 3M3.

CLAS CIV4N3 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 A.D., based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2K3 or 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 2K3 or 2V3 and three additional units from either Classical Civilization or Ancient History; or permission of the Department. Not available to students receiving credit for Classical Civilization 3N3.

Alternates with Classical Civilization 3N3.

CLAS CIV403 TOPICS IN ROMAN LITERATURE IN TRANSLATION
1982-1983: Roman Satire
A study of Roman satire and its Greek precursors; the literary, social, political, and philosophical milieu in which satire originated and developed. Selected readings from Horace, Persius, Juvenal, Petronius, and others.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.

Classical Civilization 403 may be repeated, if on a different topic, to a total of six units.

Alternates with Classical Civilization 3A3.

The following courses in the field of Classical Civilization are offered by the Department of History:
HISTORY 1L6 Ancient History
HISTORY 2L6 Greece and Rome
HISTORY 3D6 Roman History 264 B.C.-A.D. 117
HISTORY 3G3 Pre-Historic and Proto-Historic Greece
HISTORY 3L6 Classical Greece
HISTORY 4D6 Special Topics in Greek History
HISTORY 416 Special Topics in Roman History

The following courses in the field of Classical Civilization are offered by the Department of Philosophy:

PHILOSOPHY 2A6 Ancient Greek Philosophy
PHILOSOPHY 3E3 Plato
PHILOSOPHY 3J3 Aristotle

The following courses in the field of Classical Civilization are offered by the Department of Religious Studies:

RELIGIOUS STUDIES 2E6 The Beginnings of Christianity
RELIGIOUS STUDIES 2F3 The Triumph of Christianity
RELIGIOUS STUDIES 2I3 Christian Thought in the Patriotic Period (100-800)
RELIGIOUS STUDIES 2R3 Divine Justice
RELIGIOUS STUDIES 3K3 Introduction to Hellenistic Judaism
RELIGIOUS STUDIES 3T3 The Fourth Gospel
RELIGIOUS STUDIES 3X3 The Letters of Paul

Greekl BEGINNERS’ LANGUAGE COURSE
GREEK126 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. Students with Grade 13 Greek should consult the Department.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES
GREEK2E3 HERODOTUS
Selected readings from the Histories.
3 lects.; one term
Prerequisite: Greek 1A6 or 2Q3; or permission of the Department.

GREEK2FS EURIPIDES
Selected readings from the tragedies.
3 lects.; one term
Prerequisite: Greek 1A6 or 2Q3; or permission of the Department.

GREEK2Q3 GREEK READING PRACTICE
A study of selected passages from Greek authors designed to develop a student’s proficiency in reading Greek.
3 lects.; first term
Prerequisite: Greek 126; or permission of the Department.

GREEK2R3 GREEK LANGUAGE
A study of Greek grammar and style based chiefly upon reading selected passages and translation from English to Greek.
3 lects.; one term
Prerequisite: Greek 126 with a grade of at least B, or Greek 126 and 2Q3; or permission of the Department.

GREEK3L3 GREEK EPIC POETRY
Selected readings from Homer’s Odyssey and other epic poetry.
3 lects.; one term
Prerequisite: Nine units of Level II Greek, including Greek 2Q3; or permission of the Department.
Alternates with Greek 4L3.

GREEK3M3 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. Not available to students receiving credit for Greek 4F3.
Alternates with Greek 4M3.

GREEK3N3 GREEK PHILOSOPHICAL WRITERS
Selected readings from the Presocratics, Plato, Aristotle and Epicurus.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3, and registration in Level III or IV of Honours Classics or Combined Honours in Greek and another subject; or permission of the Department.
Alternates with Greek 4N3.

GREEK3Q3 GREEK ORATORS, AND LANGUAGE STUDY
Selected speeches; advanced language study.
3 lects., 1 tut.; one term
Prerequisite: Nine units of Level II Greek including Greek 2R3, and registration in Level III or IV of Honours Classics or Combined Honours in Greek and another subject; or permission of the Department.
Alternates with Greek 4Q3.

GREEK4K3 GUIDED READING
Intensive reading of selections from Greek authors under the supervision of members of the Department of Classics.
Tuts.; one term
Prerequisite: Registration in Level III or IV of Honours Classics or Combined Honours in Greek and another subject, and permission of the Department. Greek 4K3 may be repeated, if on a different author, to a total of six units.

GREEK4L3 HOMER
Selected readings from the Iliad.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 3L3.

GREEK4M3 GREEK TRAGEDY
Selected readings from the tragedies of Aeschylus, Sophocles, and Euripides.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 3M3.

GREEK4N3 GREEK LYRIC AND ELEGIAIC POETRY
Selected readings from both early and late lyric and elegiac poets.
3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3, and registration in Level III or IV of Combined Honours in Greek and another subject; or permission of the Department.
Alternates with Greek 3N3.

GREEK4Q3 THUCYDIDES AND LANGUAGE STUDY
Selected readings from the Peloponnesian War; advanced language study.
3 lects., 1 tut.; one term
Prerequisite: Nine units of Level II Greek including Greek 2R3, and registration in Level III or IV of Honours Classics or Combined Honours in Greek and another subject; or permission of the Department. Not available to students receiving credit for Greek 3C3.
Alternates with Greek 3Q3.

NEW TESTAMENT AND KOINE GREEK

GREEK1D6 INTRODUCTION TO NEW TESTAMENT GREEK
An introduction to the grammar of New Testament Greek. Selected passages from the New Testament are read in the second term.
4 lects.; two terms
Prerequisite: Open.
Same as New Testament 1B6 (see Divinity College Calendar).

Latin

BEGINNERS’ LANGUAGE COURSE
LATIN126 BEGINNERS’ INTENSIVE LATIN
A rapid introduction to Latin, normally intended for students with no Latin or students who have not completed Grade 13 Latin. The study of grammar is followed by the reading of simple prose passages and selections from the speeches of Cicero.
5 hrs. (lects. and tuts.); two terms
Prerequisite: Open.

LATINIA6 INTRODUCTION TO LATIN STUDIES
Selected readings from the poems of Catullus and the Odes of Horace.
3 lects., 1 tut.; two terms
Prerequisite: Grade 13 Latin or Latin 126; or permission of the Department.

LATINA2V OVID
Selected readings from the Metamorphoses and other works.
3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.
Alternates with Latin 2G3.

LATIN2E3 Livy
Selected readings from the Ab Urbe Condita.
3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.

LATIN2G3 Vergil
Selected readings from the Aeneid.
3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.
Alternates with Latin 2A3.

LATIN2L3 MEDIAEVAL LATIN: PROSE AUTHORS
Selected readings from prose works of representative Latin authors of the Middle Ages.
3 lects.; one term
Prerequisite: Latin 1A6, or Latin 126 with a grade of at least B, or Latin 126 and 2Q3; or permission of the Department.
Alternates with Latin 2M3.

LATIN2M3 MEDIAEVAL LATIN: POETRY AND DRAMA
Selected readings from the works of representative Latin poets and...
playwrights of the Middle Ages.
3 lects.; one term
Prerequisite: Latin 1A6, or Latin 126 with a grade of at least B, or Latin 126 and 2Q3; or permission of the Department.
Alternates with Latin 2L3.

LATIN2Q3 LATIN READING PRACTICE
A study of selected passages from Latin authors designed to develop a student's proficiency in reading Latin.
3 lects.; one term
Prerequisite: Latin 1A6 or 126; or permission of the Department.

LATIN2R3 LATIN LANGUAGE
A study of Latin grammar and style based chiefly upon reading selected passages and translation from English to Latin.
3 lects.; one term
Prerequisite: Latin 1A6, or Latin 126 with a grade of at least B, or Latin 126 and 2Q3; or permission of the Department.

LATIN3D3 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.

LATIN3L3 ROMAN PHILOSOPHICAL WRITERS
Selected readings from Lucrètius and 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.
Alternates with Latin 4G3.

LATIN3M3 REPUBLICAN HISTORIANS
Selected readings from Sallust and other authors.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3, and registration in Level III or IV of Combined Honours in Latin and another subject; or permission of the Department.
Alternates with Latin 4M3.

LATIN3Q3 CICERO, AND LANGUAGE STUDY
Selected readings from the speeches; advanced language study.
3 lects., 1 tut.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3, and registration in Level III or IV of Combined Honours Classics or Combined Honours in Latin and another subject; or permission of the Department. Not available to students receiving credit for Latin 4Q3.
Alternates with Latin 4Q3.

LATIN4A3 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.

LATIN4G3 THE LITERATURE OF THE AGE OF NERO
Selected readings from the Pharsalia of Lucan and the Satyricon of Petronius.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 3L3.

LATIN4K3 GUIDED READING
Intensive reading of selections from Roman authors under the supervision of members of the Department of Classics.
Tuts.; one term
Prerequisite: Registration in Level III or IV of Honours Classics or Combined Honours Classics or Combined Honours in Latin and another subject, and permission of the Department. Latin 4K3 may be repeated, if on a different author, to a total of six units.

LATIN4M3 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, and registration in Level III or IV of Combined Honours in Latin and another subject; or permission of the Department. Not available to students receiving credit for Latin 3M3.
Alternates with Latin 3M3.

LATIN4Q3 TACITUS, AND LANGUAGE STUDY
Selected reading from the Annales; advanced language study.
3 lects., 1 tut.; one term
Prerequisite: Nine units of Level II Latin including Latin 2R3, and registration in Level III of the B.A. programme in Latin or Level III or IV of Honours Classics or Combined Honours in Latin and another subject; or permission of the Department.
Alternates with Latin 3Q3.

For Graduate Courses see Calendar of School of Graduate Studies.
Assistant Professors

M.S. Basadur/B.A.Sc. (Toronto), M.B.A. (Xavier), Ph.D. (Cincinnati), P.Eng. — Organizational Behaviour
B.E.C. Boothman/B.A. (Brock), M.B.A. (York) — Business Policy and International Business
M.W.I. Chan/B.Sc. (Prince Edward Island), M.A., Ph.D. (McMaster) — Finance and Business Economics
C.S. Cheung/B.S. (Louisiana State), M.S. (Illinois) — Finance and Business Economics
P.V. Dunmore/B.Sc. (Victoria University, Wellington), Ph.D., M.B.A. (McMaster) — Accounting
K.S. Ho/B.A. (Hong Kong), B.Comm. (Windsor), M.B.A. (Toronto) — Finance
H.K. Klein/Diplom-Kaufmann, Dr. oe. publ. (Munich) — Management Science/half-time
C.Y. Kwan/Dipl. in Math and Science (Hong Kong Baptist College), Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto) — Finance
B.E. Lynn/B.A. (Carlow College), M.A. (Pittsburgh), Ph.D., M.B.A. (McMaster), R.I.A. — Accounting
J.C. Macintosh/B.Sc. (Natal), M.Comm. (Cape Town), C.A. — Accounting
G. Steiner/M.Sc. (University of Budapest) — Production and Management Science

Lecturers

G.L. Bateman/B.Sc. (Manitoba), M.B.A. (McMaster) — Taxation/half-time
E.A. Csordas/B.Sc. (Windsor), M.B.A. (McMaster) — Accounting
M.L. Erickson/B.A., M.B.A. (McMaster), R.I.A. — Accounting
P.M. Stillman/B.Sc. (McMaster), LL.B. (Osgoode Hall) — Business Law/half-time
T.R. Whiteley/B.Com., Dipil. in Retailing (Sir George Williams), M.B.A. (McMaster) — Marketing

Visiting

J.L. Mille/A.B. (San Diego State College), M.S., Ph.D. (Oregon) /Visiting Associate Professor of Business Economics
T.H. Stone/B.A. (Michigan), M.A., Ph.D. (Minnesota) /Visiting Associate Professor of Organizational Behaviour

CURRICULUM 1982-84

Commerce courses are open only to students registered in Commerce or the Engineering and Management programme, and to students registered in the degree programme in Labour Studies when such courses are a specific part of that programme.

Normally, Level II and Level III Commerce courses are scheduled for 3 lects.; one term, while Level IV Commerce courses are 2 lects.; one term. Courses offered in evenings are 1 lect.; one term.

COMMERCE2A3 FINANCIAL ACCOUNTING I
An introduction to the basic principles and practices of financial accounting. Examination of income measurement and asset and liability valuation to provide an understanding of financial accounting information.
Prerequisite: Economics 1A6.

COMMERCE2B3 ORGANIZATIONAL BEHAVIOUR
Introduction to the analysis of behaviour in the administration of organized enterprises. The consequences of the organization's goals, technology, structure, environment and managerial styles are examined. Applications are made of studies of perception, problem solving, communication and group processes to the leadership, design and development of organizations.

COMMERCE2A3 FINANCIAL INSTRUMENTS AND INSTITUTIONS
This introductory course will cover both micro and macro aspects of Finance. At the micro level, some of the basic concepts and elementary theories in Finance will be explored in order to provide an understanding of investment and financing decisions. At the macro level, various financial instruments and functions of financial institutions in Canada will be described.
Prerequisite: Economics IA6 and Commerce 2A3.

COMMERCE2MA3 INTRODUCTION TO MARKETING
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 IA6.

COMMERCE2QA3 COMPUTER-AUGMENTED STATISTICAL ANALYSIS
This course has as its goal the application of statistical analysis to 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 I Mathematics and Computer Science IA3; or equivalent course in the Engineering and Management programme.

COMMERCE3A3 COST AND MANAGERIAL ACCOUNTING I
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 2A3.

COMMERCE3A3 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 2A3.

COMMERCE3A3 INDUSTRIAL RELATIONS
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 2B3.

COMMERCE3B3 PERSONNEL
An introduction to the administrative and research aspects of the selection, placement, remuneration, training, and promotion of people in organizations.
Prerequisite: Commerce 2B3.

COMMERCE3A3 INTRODUCTION TO MANAGERIAL FINANCE
An introduction to the nature and administration of the finance function. The emphasis is on the development of basic concepts pertaining to the investment problem in asset management, and the financing problem in short and long-range sources of funds, capital structure, and dividend policy. Analytical and theoretical constructs are discussed in, and applied to, actual case situations.
Prerequisite: Commerce 2F3.

COMMERCE3B3 SECURITIES ANALYSIS
The emphasis is on the analysis of marketable securities, especially equities. Topics include: the mechanics of the secondary markets, the investment characteristics of 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 2F3.

COMMERCE3MA3 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 2M3 and 2Q3.

COMMERCE3MB3 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 2M3.

COMMERCE3QA3 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.
COMMERCE4QB3 BUSINESS DATA PROCESSING
An introduction to commercial data processing technology — 1/0 devices, storage, processors, software, its deployment in transaction/file processing and reporting systems, and the analysis and design of such systems.
Prerequisite: Computer Science 1A5; or equivalent course(s) in the Engineer- ing and Management programme.

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.

COMMERCE4A3 COST AND MANAGERIAL ACCOUNTING II
A consideration of more complex topics in management planning and control including cost allocation, performance evaluation, analysis and investigation of variances, cost behaviour determination, and income measurement for management.
Prerequisite: Commerce 3A3.

COMMERCE4A3 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 3A3B3.

COMMERCE4A3 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 4A3B3.

COMMERCE4A3 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. 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 3A3B3 and 3FA3.

COMMERCE4A3 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, including the activities of corporations.
Prerequisite: Commerce 4PB3.

COMMERCE4D3 COMMERCIAL LAW
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.

COMMERCE4A3 PRODUCTION/OPTIONS
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.

COMMERCE4A3 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 3A3B3 and 3FA3.

COMMERCE4A3 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.

COMMERCE4M3 MARKETING COMMUNICATION
A study of the marketing communication process designed to introduce the student to the basic concepts and methods of advertising, personal selling and sales promotion.
Prerequisite: Commerce 2M3A.

COMMERCE4M3 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.

COMMERCE4A3 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.

COMMERCE4A3 ACTION RESEARCH
A research course that provides students with the opportunity to pursue a topic of special interest in a field of their choice under the guidance of a faculty member.

COMMERCE4A3 SERVICE LEARNING
This course is designed to provide students with an opportunity to integrate academic learning and service to the community.

Comparative Literature

CURRICULUM 1982-84
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.

There is no B.A. programme in Comparative Literature. Courses are coordinated and supervised by members of a Committee of Instruction made up of members from individual departments. At present three courses are offered: a general introduction to major works and forms of the Western literary tradition, a course in literary forms, and an introduction to literary methodology. Classes are held in English and texts are studied in English translation. Regular lectures are supplemented by guest lectures by specialists in the languages of the original texts which the class is reading in translation.

For further information, consult the following:
COMP LIT1A6: Dr. T. Hoey or Dr. A. McKay (Classics)
COMP LIT3C6: Dr. T. Cain (English)
COMP LIT4B3: Dr. N. Kolesnikoff (Russian)
Dr. A. Whiteside (Romance Languages)
Dr. G. Chapple (German)

COMP LIT1A6 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.

Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)

COMP LIT3C6 TOPICS IN THE STUDY OF LITERARY FORMS
1982-83: The Renaissance Epic
1983-84: The Novel
In addition to the Aeneid, the epics of Ariosto, Spenser, Tasso, Cervantes and Milton will be studied. Non-English texts will be studied in translation.

COMP LIT4B3 TOPICS IN LITERARY METHODOLOGY
1982-83: Formalism
Aristotle, Russian formalism, American New Criticism, Czech structuralism, and semiotics will be covered. Texts will be studied in translation.

1983-84: Psycho-criticism
Aristotle, Longinus, Romantic psychology of creation, Anglo-American psychologism, Freud and Lacan will be covered. Texts will be studied in translation.

Prerequisite: Registration in Level III and above; or permission of the instructor. Comparative Literature 3C6 may be repeated, if on a different topic, to a total of 12 units.

Other courses relevant to Comparative Literature:
CLASSICAL CIVILIZATION 2D3 Greek and Roman Mythology
CLASSICAL CIVILIZATION 2E3 Greek and Roman Drama
CLASSICAL CIVILIZATION 2X3 Greek and Roman Background to Early Christianity

CLASSICAL CIVILIZATION 2Z3 Greek and Roman Religion

CLASSICAL CIVILIZATION 3A3 Topics in Greek Literature in Translation

CLASSICAL CIVILIZATION 3C3 Greek and Roman Epic

CLASSICAL CIVILIZATION 4A3 The Classics and English Literature (Same as English 4A3)

CLASSICAL CIVILIZATION 403 Topics in Roman Literature in Translation

DRAMATIC ARTS 1A6 Introduction to Drama

DRAMATIC ARTS 3C3 Modern European Drama in English Translation

ENGLISH 2C3 Contemporary Canadian Fiction
ENGLISH 2G6 Canadian Literature
ENGLISH 2X3 Topics in the English Literary Tradition
ENGLISH 313 Studies In 16th-Century Literature
ENGLISH 3K3 Topics in Critical Approaches
ENGLISH 3X3 Topics in 20th-Century Literature II: The Bloomsbury Group
ENGLISH 4A3 The Classics and English Literature (Same as Classical Civilization 4A3)

ENGLISH 4C3 The History and Theory of Criticism

FRENCH 323 African and Caribbean French Literature
FRENCH 4LL3 Topics in French African and Caribbean Literature

FRENCH 4X3 Linguistics and Modern French Literary Criticism (from Structuralism to Semiotics)

GERMAN 3E4 Introduction to Literary Criticism

HUMANITIES 1B6 Themes in Western Civilization

RELIGIOUS STUDIES 2DD3 The Five Books of Moses

RELIGIOUS STUDIES 2EE3 The Prophets

RELIGIOUS STUDIES 2E6 The Beginnings of Christianity

RELIGIOUS STUDIES 2H3 Christian Thought in the Patristic Period, 100-800

RELIGIOUS STUDIES 2JJ3 Christian Thought in the Middle Ages, 800-1500

RELIGIOUS STUDIES 2KK3 Christian Thought in the 16th Century

RELIGIOUS STUDIES 2LL3 Christian Thought after 1600

RELIGIOUS STUDIES 3YY3 Biblical Interpretation: Traditional and Contemporary

RUSSIAN 2A6 19th-Century Russian Literature in Translation

RUSSIAN 3D3 Russian Drama Since 1800

RUSSIAN 3EE3 Studies in the Russian Novel: Dostoevsky

RUSSIAN 3K6 20th-Century Russian Literature in Translation

RUSSIAN 3T3 Studies in the Russian Novel: Tolstoy

Computer Science
The Unit for Computer Science, attached to the Department of Mathematical Sciences, is responsible for the design and content of courses in Computer Science and offers a three-Level programme in Computer Science. Honours and Major Computer Science programmes are offered by the Department of Mathematical Sciences and the Computer Engineering programme is offered by the Department of Electrical and Computer Engineering.

The Unit was established on July 1st, 1979 to provide focus and leadership at McMaster for both teaching and research in computation and computer science.

Members in 1981/82 were as follows:

D. Wood/(Mathematical Sciences)/ Chairman, Unit for Computer Science
N.P. Archer/(Management Science)
J.W. Bandler/(Electrical & Computer Engineering)
W.H. Fleming/(Mathematical Sciences)
M.W. Green/(Mathematical Sciences)
G.L. Keech/(Mathematical Sciences)
D.J. Kenworthy/(Mathematical Sciences)
Y.S. Kwong/(Mathematical Sciences)
E. Nelson/(Mathematical Sciences)
K.S. Rajasethupathy/(Mathematical Sciences)
K. A. Redlich/(Mathematical Sciences)
N. Soltanoff/(Mathematical Sciences)
R.J. Welke/(Management Science)

CURRICULUM 1982-84
Course is not necessarily offered every session; consult the Chairman of the Unit for Computer Science or an Assistant Dean of Science (Studies).

COMP SCI1A3 INTRODUCTION TO COMPUTING FOR BUSINESS
Organizaion 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 Mathematics (at least one credit) or equivalent. Not open to students who are registered in, or have received credit in, one of Computer Science 1B3, 1H3, 1K3, 2H3, Mathematics 1H7.

COMP SCI1B3 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 12 Mathematics (two credits) or equivalent. Not open to students who are registered in or have received credit for any of Computer Science 1A3, 1H3, 1K3, 2H3, Mathematics 1H7.

COMP SCI2A3 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 1B3, 1H3, 1K3, 2H3, Mathematics 1H7, or permission of the instructor. Not open to students who are registered in, or have received credit for, Electrical Engineering 2H3, or Computer Science 2K3

COMP SCI2H3 INTRODUCTION TO COMPUTING FOR 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: Grade 12 Mathematics (two credits) or equivalent. Not open to students who are registered in, or have received credit for, any of Computer Science 1B3, 1K3, 2H3, Mathematics 1H7.

COMP SCI2A23 INTRODUCTION TO COBOL PROGRAMMING
Data representation; COBOL; structured programing application to report...
COMP SCI123 INTRODUCTION TO COMPUTER SCIENCE
Computing, programming, algorithms, data representation, computer organization. The programming language Pascal will be used.
3 lects.; one term
Prerequisite: Registration in a Computer Science, Computer Engineering or Computer Engineering and Management programme; or permission of the Department.

COMP SCI12L3 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: One of Computer Science 1B3, 1H3, 1K3 2H3, Commerce 3H13, Mathematics 1H7.

COMP SCI223 INTRODUCTION TO COMPUTER SCIENCE
2 lects., 1 lab. (2); one term
Prerequisite: Completion of Level III of Computer Science or Computer Engineering programmes.

COMP SCI4143 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.

COMP SCI446 PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Registration in a programme in which Computer Science 4G6 is specified. Not open to students who are registered in or have completed Computer Science 3R6.

COMP SCI413* 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 1982/83, alternating with Computer Science 4X3.

COMP SCI443 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 3A3 and one of 2A3, 2B3, or registration in Computer Engineering; or Computer Engineering and Management.

COMP SCI4W3 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. Simulation of various operations in computer systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L3, 2N3.

COMP SCI4X3 THE MATHEMATICAL ANALYSIS OF ALGORITHMS
How fast does this algorithm run? Is this the fastest algorithm? This course will deal with these and related questions as an introduction to the analysis of algorithms.
3 lects.; one term
Prerequisite: Computer Science 3A3, and Mathematics 2F4, 2J6. Offered in 1983/84, alternating with Computer Science 4J3.

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
M. Barton (Acting)
L. Braswell (English)
A. Brennan (English)
J. Coldwell (English)
F. Crisp (Dance)
C. Denton (Film)
D. Duncan (English) / Chairman
A. Hammond (English)
R. Hill (Dance)
T. Hoey (Classics)
R. Lippe (Film)
E. Nardocchio (French)
G. Petrie (Film)
P. Pocknell (French)
P. Purnell (English)
R. Van Dusen (German)
R. Vince (English)
DRAM ART2A6 INTRODUCTION TO DRAMA
A survey of dramatic genre and mode; principles and practice of dramatic analysis; a study of selected plays from the world’s repertory in historical perspective.
2 lects., 1 tut.; two terms
Prerequisite: Open.

DRAM ART2A6 AN INTRODUCTION TO THE ACTOR’S CRAFT
Workshops in body movement, dance, mime and mask; voice and speech; expositions in acting methods.
2 studio practices (2 hrs.); two terms
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the instructor after audition.

DRAM ART2B6 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the mediaeval 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 ART2E3 GREEK AND ROMAN DRAMA
Reading about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama upon later drama.
3 lects.; one term
Prerequisite: Open to students in Levels II and above.
Offered in alternate years.
Same as Classical Civilization 2E3.

DRAM ART2F3 OPERA
An analysis of selected operatic works in their historical context, with a view to determining the nature and limitations of opera as a theatrical 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 ART2FF3 STUDIES IN OPERA
1983-84: Opera on Record
An examination of the recorded legacy of operatic performances 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.

DRAM ART2K6 THE ART OF THE FILM
The film as a medium for artistic expression, as seen in the work of major European and American directors.
1 lect., 1 tut., plus one weekly evening film screening; two terms
Prerequisite: Open to students in Levels II and above.

DRAM ART3A6 STYLES OF ACTING
The study and practice of styles of acting in classic and period theatre, from the Greeks through the 19th century. Body movement, voice and speech are included, and participation in lunch hour productions is mandatory. Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 2A6 or 2A3; or permission of the instructor.

DRAM ART3B3S CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dupe and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3; or permission of the Department of Romance Languages.

Texts and instruction 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 ART3C3 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.

DRAM ART3E3 SHAKESPEARE: SELECTED PLAYS
Study of a representative selection of plays.
3 lects.; one term
Prerequisite: Dramatic Arts 1A6 or English 1A6 or 1B6. Not available to students receiving credit for Dramatic Arts/English 3K6.
Same as English 3E3.

DRAM ART3G6 INTRODUCTION TO THEATRE HISTORY
A survey of theatre history from the Greeks through the 19th century, with special attention to sources and basic reference material.
1 seminar (2 hrs.); two terms
Prerequisite: Dramatic Arts 1A6; or permission of the Instructor. Not available to students receiving credit for Dramatic Arts 2G6.

DRAM ART3K6 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 Department.
Same as English 3K6.

DRAM ART3M3 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 or 1B6.
Same as English 3M3.

DRAM ART3R6 THE AMERICAN CINEMA
A survey of some of the predominant features of the American cinema, approached from a thematic, rather than a chronological perspective.
1 lect., 1 tut., plus one weekly evening film screening; two terms
Prerequisite: Open to students in Level II and above.

DRAM ART3S3 FRENCH CINEMA
A survey of French film from 1895 to the present day, with particular emphasis upon such major figures as Renoir, Clair, Bresson, Godard, Truffaut, and Resnais.
1 lect., 1 tut., plus one weekly evening film screening; one term
Prerequisite: Open to students in Level II and above.
Same as French 3S3.

DRAM ART4A6 PRINCIPLES OF STAGE DIRECTING
A practical examination of, and experimentation in, various theories of staging and interpretation; the study of visual concepts of theatre; working with actors; rudiments of technical stagecraft. Directing a lunch hour production is mandatory. Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 3A6; or permission of the instructor.

DRAM ART4B3 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: Mediaeval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term
Prerequisite: Dramatic Arts 2G3 or 2G6 or 3G6; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART4BB3 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 4B3, must consult the Chairman of the Committee on Dramatic Arts prior to registration: Mediaeval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term
Prerequisite: Dramatic Arts 2G3 or 2G6 or 3G6; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART4D3 SPECIAL STUDIES IN DRAMATIC ARTS
1982-83: 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.
1 lect., 1 tut., plus one weekly film screening; one term

1983-84: The Mediaeval Theatre of England and France
A study of representative plays together with a consideration of mediaeval techniques of staging.
1 lect., 1 tut. (2 hrs.); one term
Prerequisite: Open to students in Level II and above. Dramatic Arts 4D3 may be repeated, if on a different topic, to a total of six units.

DRAM ART4G3 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 4G3.
Same as Physical Education 4G3.

DRAM ART4J3 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 4J3.
Same as Physical Education 4J3.
ECONOMICS

Economics
Faculty as of January 15, 1982
J. A. Johnson / Chairman
B. G. Spencer / Associate Chairman

Professors Emeriti
James A. Johnson/M.A., Ph.D. (Minnesota)
Atif A. Kubursi/B.A., (American University, Beirut), M.A., Ph.D. (Purdue)
Ernest H. Oksanen/A.M. (Michigan), B.A., Ph.D. (Queen’s)

Syed Ahmad/M.A., LL.B. (Aligarh), M.Sc. (Econ.), D.Sc. (Econ.) (London)
Frank T. Denton/M.A. (Toronto)
Peter J. George/B.A., M.A., Ph.D. (Toronto)
James R. Williams/M.A., Ph.D. (Minnesota)
Martin D. Dooley/B.A.

Robert W. Thompson/B.A. (Toronto), M.A. (Queen’s), Ph.D. (London)
James R. Williams/M.A., Ph.D. (Minnesota)

Associate Professors
Robert A. Ankli/A.B., A.M. (Michigan), Ph.D. (Illinois) /part-time
John B. Burbridge/B.A., Ph.D. (McGill)
Kenneth S. Chan/B.Sc. (Toronto), M.A., Ph.D. (Brown)
Donald A. Dawson/A.M. (Chicago), Ph.D. (Western), N.D.C.

Melvin L. Klinman/B.A. (Manitoba), M.A. (Queen’s), Ph.D. (Minnesota)
Stuart Mestelman/B.A. (Pittsburgh), M.S., Ph.D. (Purdue)
R. Andrew Muller/B.A. (McGill), M.A., Ph.D. (Toronto)
A. Leslie Robb /M.A. (British Columbia), Ph.D. (Essex)

Peter J. Reynolds/B.A. (Sheffield), M.Sc. (Econ.) (London), Ph.D. (Sheffield)
William M. Sear/ch/B.A. (Queen’s), M.A. (Essex), Ph.D. (Toronto)

Assistant Professors
David W. Butterfield/B.S., M.S. Eng. (Calif. Inst. of Tech.), A.B., M.A., Ph.D. (Berkeley)
Martin D. Dooley/B.A. (Indiana), M.S., Ph.D. (Wisconsin-Madison)
Brian Ferguson/B.A. (Mount Allison), M.A. (Guelph)
Alan J. Harrison/B.A., M.A., Ph.D. (Essex)

William Kirkman/B.A. (McGill), M.A. (Cornell)
Wayne Lewchuk/M.A. (Toronto)
Peter J. McCabe/A.B. (Boston College), Ph.D. (Northwestern)
Jon D. Welland/B.A. (McMaster), M.A., Ph.D. (Minnesota)

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)

George J. Papageorgiou/(Geography) Dipl. 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 1982-84

Students are advised to consult the Department for more detailed information on current offerings.

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 should consult the instructor of the relevant course.

ECONOMICS

ECON1A6 INTRODUCTORY ECONOMICS
An introduction to the method and theory of economics, and their application to the analysis of contemporary economic problems.

Prerequisite: Open.

ECON2B3 ANALYSIS OF ECONOMIC DATA
Application of statistical concepts to the analysis of economic data, with attention to Canadian sources. Topics include index numbers and an introduction to regression analysis.

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 for Economics 306.

ECON2G3 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 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.

ECON2H3 INTERMEDIATE INCOME AND EMPLOYMENT THEORY
Elements of national accounting; basic models of income determination.

3 hrs.; one term

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.

ECON2K3 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.

ECON2L6 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.

ECON2M6 INTERMEDIATE MACROECONOMICS
National income accounting and related problems; income determination with money and labour markets; monetary and fiscal policy and economic fluctuations, emphasizing Canadian economic problems.

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.

ECON3A3 ADVANCED ECONOMIC THEORY I
Static optimization and comparative statics in the context of the theory of the firm and consumer.

3 hrs.; one term

Prerequisite: Mathematics 1M3 and an average of at least 7.0 in Economics 2L6 and 2M6. Mathematics 2L3 or equivalent is recommended.

ECON3A4 ADVANCED ECONOMIC THEORY II
Comparative static and dynamic analysis of macroeconomic models.

3 hrs.; one term

Prerequisite: At least C- in Economics 3A3.

ECON3B3 PUBLIC FINANCE
The economics of the public sector. Topics covered include: the role of government; taxation of income, expenditure and wealth; intergovernmental fiscal relations; government budgeting.

3 lects.; one term

Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3C6.

ECON3C6 PUBLIC FINANCE
Theory 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.

ECON3D3 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.

ECON3E3 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 2D3 and Economics 2B3 or 306.

ECON3F3 TOPICS IN CANADIAN ECONOMIC HISTORY
An examination of important issues in Canadian economic development; particular emphasis will be placed on the application of economic theory and quantitative methods to selected topics in Canadian economic and social history.

3 hrs.; 1 term
Prerequisite: Economics 2G3 or 2L6, Economics 2H3 or 2M6, Economics 2K3 or 2K6, Economics 2P3 or 306; or permission of the instructor.

ECON3H3 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.; one term
Prerequisite: Economics 2H3 or 2M6. Not open to students receiving credit for Economics 486.

ECON3H3 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 486.

ECON3I3 ECONOMIC HISTORY OF THE UNITED STATES
The development of the U.S. economy from colonial time to the present; the role of exports; growth and structural change; the emergence of the national market; the rise of manufacturing and the corporation; technological change.
3 lec.; one term
Prerequisite: At least C- in Economics 1A6.

ECON3J6 ECONOMIC DEVELOPMENT
Analysis of economic backwardness within countries as viewed mainly, but not exclusively, from an economic perspective; contemporary theory and policy concerning promotion of economic and social development.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6. Not open to students receiving credit for Economics 486.

ECON3K6 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 3K3 may receive only 3 additional units of credit for Economics 3K6.

ECON3L3 MARXIAN ECONOMICS
An examination of the foundations of Marxist economic thought; Marxism as a theory of the capitalist system; the place of Marxian doctrine in contemporary economic analysis.
3 lec.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON3LL 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 for Economics 4C6.

ECON3M6 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); two terms
Prerequisite: At least C- in Economics 1A6.

ECON3N6 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 3N6 may receive only 3 additional units of credit for Economics 3N6.

ECON3O6 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 lec.; two terms
Prerequisite: Registration in a programme in Economics. Economics 2B3, Mathematics 2D4 or a similar course in probability or statistics is recommended.

ECON3P3 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.

ECON3S3 INDUSTRIAL ORGANIZATION
A study of the structure conduct and performance of industrial markets, with emphasis upon the problems and methods of maintaining effective competition.
3 lec.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3N3.

ECON3T3 TRANSPORT ECONOMICS
With emphasis on the Canadian transport sector, economic theory applied to such questions as demand for each mode of transport, cost analysis, pricing, and government regulation.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON3V3 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.

ECON3W3 NATURAL RESOURCES
An examination of the economics of natural resources.
3 hrs.; (lects. and seminars); one term
Prerequisite: Economics 2G3 or 2L6; or permission of the instructor.

ECON3X3 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.

ECON3Y3 SELECTED TOPICS II
As for Economics 3X3.
3 hrs.; one term
Prerequisite: Permission of the Department.

ECON3Z3 TOPICS IN MICROECONOMICS
Applications of advanced microeconomic theory.
3 hrs.; one term
Prerequisite: At least C- in Economics 3AA3.

ECON3Z6 TOPICS IN MACROECONOMICS
Applications of advanced macroeconomic theory.
3 hrs.; one term
Prerequisite: At least C- in Economics 3AA3.

ECON406 INTRODUCTION TO ECONOMETRICS
Estimation and analysis of single-equation models of demand, cost and production. Formulation and estimation of simultaneous equation systems in economics. Problems of economic forecasting.
3 lec.; two terms
Prerequisite: At least C- in each of Mathematics 1L3, 1M3 (or equivalent Mathematics), Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

ECON446 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.

ECON446 DIRECTED RESEARCH II
As for Economics 446.
Prerequisite: Permission of the Department.

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.

ART HISTORY 2N3 17th & 18th Century European Art and Architecture
ART HISTORY 4D3 European Architecture
ENGLISH 2R3 Topics in Restoration and 18th-Century Literature
ENGLISH 4B6 English Literature 1660-1800
ENGLISH 4L3 Romantic Poetry
FRENCH 2P3 Eighteenth-Century French Literature in Translation
FRENCH 3K3 Eighteenth-Century French Literature I
FRENCH 3KK3 Eighteenth-Century French Literature II
FRENCH 3MM3 The Eighteenth-Century French Novel
FRENCH 4F3 Topics in Eighteenth-Century French Literature
GERMAN 3A4 Eighteenth-Century Drama
HISTORY 2M6 European Society from Absolutism to Democracy
HISTORY 2N6 British History 1700 to the Present
HISTORY 3M6 Revolution and Reaction, 1789-1848
HISTORY 3S6 England in the Georgian Period 1714-1830
HISTORY 4A6 Special Topics in British History (1688-1830)
HISTORY 4F6 Special Topics in the Age of the Enlightenment
ITALIAN 3Q3 Italian Theatre from the 16th to the 18th Centuries
PHILOSOPHY 3A6 History of Modern Philosophy
PHILOSOPHY 4R3 Hume
PHILOSOPHY 4T3 Kant
SPANISH 4H3 Topics in Spanish Literature Before 1898
ELECTRICAL AND COMPUTER ENGINEERING

Electrical and Computer Engineering

Faculty as of January 15, 1982

D.P. Taylor/Chairman

Professors

Rudi deBuda/Dipl.Eng., Ph.D. (Vienna) / part-time
Arthur S. Gladwin/B.Sc., D.Sc. (Glasgow), Ph.D. (London)
Simon Haykin/B.Sc., Ph.D., D.Sc. (Birmingham)
Reuven Kita/M.Sc., D.Sc. (Witswatersrand)
Sushil K. Sarna/B.Sc. (Delhi), M.Sc., Ph.D. (Alberta) / part-time
Naresh K. Sinha/B.Sc. (Banaras), Ph.D. (Manchester)

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)
Raymond D. Findlay/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Chandra M. Kudia/B.Sc. (Delhi), B.E. (Bangalore), M.Eng. (McMaster), Ph.D. (Concordia), P.Eng. / part-time
Barbara 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.

Assistant Professor

Mohamed A. El-Kady/M.Sc. (Eng.) (Cairo), Ph.D. (McMaster), P.Eng. / part-time
Mohamed R.M. Rizk/B.Sc. (Alexandria), M.Eng., Ph.D. (McMaster)

Associate Member

Hugh deBruin/M.Eng., Ph.D. (McMaster), P.Eng.

CURRICULUM 1982-84

Enrollment in an Electrical Engineering course may be limited to those students for whom the course is a required course.

ELEC ENG2B3 ELECTRICAL SCIENCE

Quantitative problems in electrostatics; electric field strength and potential; DC circuits; electromagnetic fields; mechanical forces; induced emf; inductance; magnetic circuits; conducting, insulating and magnetic materials.
3 lects., 1 lab. or tut.; one term
Prerequisite: Mathematics 1H7 and Physics 1E4.

ELEC ENG2D3 CIRCUITS AND SYSTEMS I

Dynamical behaviour of simple linear electrical, electronic, mechanical and electromechanical systems; network theorems; response of simple systems to arbitrary excitation; impedance, admittance and transfer functions.
5 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B3, Mathematics 2P4, 2Q4.

ELEC ENG2H3 DIGITAL SYSTEMS I

Number systems, Boolean algebra, switches and logic gates, simplification of Boolean functions, combinational logic, flip-flops, analysis and design of clocked sequential circuits.
2 lects., 1 lab. or tut.; one term
Prerequisite: Engineering 1D3

ELEC ENG2K3 ELECTRICAL SCIENCE AND CIRCUITS LABORATORY

Tutorial and laboratory experiments connected with material covered in Electrical Engineering 2B3 and Electrical Engineering 2D3.
1 lab., 1 tut., alternate weeks; two terms
Prerequisite: Electrical Engineering 2B3, 2D3.

ELEC ENGS4B CIRCUITS AND SYSTEMS II

3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3.
Co-requisite: Mathematics 3K5.

ELEC ENG3C4 ELECTROMAGNETIC FIELDS AND WAVES

Scalar and vector potential theory, Maxwell's equations, boundary conditions, special theory of relativity, electromagnetic energy and Poynting's theorem, transmission lines, field plotting and TEM waves.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B3.
Co-requisite: Mathematics 3K5.

ELEC ENG3F4 ELECTRONICS I

Semiconductor device models, single and multi-stage amplifiers, negative feedback, noise, nonlinear distortion, differential and operational amplifiers.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B3 or Engineering 2A5.

ELEC ENG3G4 ELECTRONICS II

Operational amplifier circuits, active filters, D/A and A/D conversion, oscillators, waveform generation, audio power amplifiers, field-effect transistors, analog multiplexing, bipolar and field-effect transistor logic gate circuits.
3 lects., 1 lab. or tut.; second term
Prerequisite: Electrical Engineering 3F4.

ELEC ENG3H3 DIGITAL SYSTEMS II

Memory, programmable logic arrays, small computer system organization, register transfer logic, hardware and software techniques for logic design, central processor operation, organization and control.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2H3 or Engineering 3N3.

ELEC ENG3I4 ELECTRONICS III

Analysis and design of energy conversion systems for industrial applications.
Electric power generation, rotary industrial drives, transportation systems using linear electric machines, controllable dc drives.
2 lects., 1 lab. or tut.; second term
Prerequisite: Electrical Engineering 3N3; or Engineering 3M3 with permission of the Department.

ELEC ENG4A4 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, 3C4.

ELEC ENG4B4 TRANSMITTING AND RADIATING SYSTEMS

Principles of transmission line, waveguides and antennas, matching, Smith-chart applications, dipole and Yagi antennas, ground wave and sky wave propagation.
3 lects., 1 lab.(3); one term
Prerequisite: Electrical Engineering 3C4.

ELEC ENG4C4 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, nonlinear systems.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3B4, Mathematics 3K5.

ELEC ENG4E3 DIGITAL SYSTEMS IV

Structures of small operating systems. File manipulation, I/O data processing, languages for real time applications, hardware/software tradeoffs.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3H3.

ELEC ENG4F3 POWER ELECTRONICS

2 lects., 1 lab.(2); one term
Prerequisite: Electrical Engineering 3A4 and Mathematics 3K5.

ELEC ENG4G3 INFORMATION PROCESSING

2 lects., 1 tut(2); one term
Prerequisite: Electrical Engineering 4A4 and Mathematics 3K5.
ELEC ENGH3 DIGITAL SYSTEMS III
Computer addressing; isolated and memory mapped I/O. Polling and
2 lects., 1 lab. or tut.; one term
Prerequisite: Electronic Engineering 3H3.

ELEC ENG4J3 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 a programme in Electrical Engineering and first
class standing.

ELEC ENG4K4 COMPUTATIONAL METHODS AND DESIGN
Least pth and minmax approximations to frequency and time-domain
specifications. Time-domain sensitivity Filter design. Design centering,
tolerancing and tuning; statistical and worst-case design.
3 lects., 1 lab.; one term
Prerequisite: Electrical Engineering 3K4.

ELEC ENG4L3 FILTER THEORY AND DESIGN
Network functions. Butterworth, Chebyshev and Elliptic filters. Frequency
transformations for low pass, bandpass and band reject passive filter
synthesis. RC active filters. Digital filters.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electronic Engineering 3B4.

ELEC ENG4M3 NONLINEAR NETWORK THEORY
Networks with nonlinear elements and devices. Transient behaviour. Piece-
wise linear approximations. Passivity and local reciprocity. State variables.
Oscillators, limit cycles. Parametric amplifiers and frequency changers.
2 lects., 1 tut.; one term
Prerequisite: Electrical Engineering 3B4.

ELEC ENG4N3 POWER SYSTEMS
An introduction to modern power system analysis and control, energy flow
concepts, component representation, load flow techniques, generation
scheduling, megawatt-frequency and megavolt-voltage control; stability.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3N3.

ELEC ENG4U4 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 3F4 or Engineering 3N3 or equivalent.

Engineering (General)

CURRULUM 1982-84
Enrolment in these courses by students in programmes other than
Engineering or Engineering and Management may be limited.

ENGINEER1A0 CAREERS IN ENGINEERING
A non-credit course providing guidance and engineering career information.
1 lect.; two terms
Prerequisite: Registration in Engineering I.

ENGINEER1C4 ENGINEERING DESIGN
Graphical communication and problem solving techniques. Introduction to
engineering design. Projects on conceptual design in the different engineer-
ing disciplines.
1 lect., 1 lab.; two terms
Prerequisite: Registration in Engineering I.

ENGINEER1D3 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.

ENGINEER2A5 ELECTRICAL SCIENCE 'A'
An introduction to electricity and magnetism covering electrostatics, electric
currents, magnetism and electromagnetism; with applications in circuits and
linear systems theory. 3-phase power.
2 lects. each week, 1 lab.(3) alternate weeks; two terms
Prerequisite: Physics 1E4 and registration in Mathematics 2M6, or 2P4
and 2Q4.

ENGINEER2C3 ELECTRICAL CIRCUITS AND MEASUREMENTS
Electrical quantities and circuit elements, Kirchhoff'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.

ENGINEER2M6 ELECTRICAL SCIENCE 'B'
An introduction to electricity and magnetism covering electrostatics, electric
currents, magnetism and electromagnetism, with applications in circuits and
linear systems theory.
3 lects., 1 lab. or tut.; one term
Prerequisite: Physics 1E4 and registration in Mathematics 2M6, or 2P4
and 2Q4.

ENGINEER2Q4 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 2A3.

ENGINEER2P4 ENGINEERING MECHANICS 'A'
Principles of statics as applied to deformable solid bodies. Stress and strain;
elastic and inelastic behaviour of simple members under axial force, bending
Buckling of columns and stability.
3 lects., plus one unit to comprise tutorials or lectures, devoted to
applications, at the discretion of the instructor; one term
Prerequisite: Mathematics 1H5; Physics 1D3.

ENGINEER2Q4 ENGINEERING MECHANICS 'B'
Kinematics 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 to comprise tutorials or lectures, devoted to
applications, at the discretion of the instructor; one term
Prerequisite: Engineering 2P4.

ENGINEER2R4 BASIC ENGINEERING MECHANICS
Statics of deformable bodies, stress and strain. Deflection of elastic
members. Dynamics of particles and planar motion of rigid bodies. Principles
of work, energy and momentum.
2 lects.; two terms
Prerequisite: Mathematics 1H5; Physics 1D3.

ENGINEER2W4 ENGINEERING THERMODYNAMICS
An introduction to the principles of thermodynamics and their application to
engineering.
3 lects., 1 tut.; one term
Prerequisite: Chemistry 1A7; Mathematics 2M6, or 2P4 and 2Q4, which
may be taken concurrently.

ENGINEER3M3 ELECTRICAL CIRCUITS AND POWER
Fundamentals of electromechanical energy conversion. Motors and genera-
tors, transformers, single and polyphase power circuits, synchronous and
induction machines, power measurements.
2 lects. and 1 lab. or tut.; one term
Prerequisite: Engineering 2A5 or 2M4.

ENGINEER3N3 ELECTRONICS AND INSTRUMENTATION
Semiconductor devices; diodes, transistors and silicon-controlled rectifiers.
Transistor characteristic and load lines. Amplifier circuits with and without
feedback. Rectifier and filter circuits. Positive and negative feedback, with
application to oscillators and amplifiers. Operational amplifiers. Analogue
computers. Digital circuits and digital logic. Digital counter and timer
circuits.
2 lects., 1 tut.(2) or 1 lab.(3); one term
Prerequisite: Engineering 2A5 or 2M4.

ENGINEER3P3 MECHANICAL BEHAVIOUR OF MATERIALS
The macroscopic basis of mechanical behaviour of engineering materials.
The effect of structure in determining mechanical response in metals, alloys,
polymers, concrete, etc. Elastic, plastic, anelastic and viscoelastic behaviour.
Selection of engineering materials in design.
3 lects.; one term
Prerequisite: Mathematics 2M6 or equivalent, Engineering 2P4 or 2R4, or
Physics 2C5.

ENGINEER3Q3 ELECTRONIC PROPERTIES OF SOLIDS
The dielectric, electric and magnetic properties and applications of insula-
tors, semiconductors, metals and junctions, with emphasis upon both a
quantitative and a conceptual explanation of their behaviour.
3 lects.; one term
Prerequisite: Engineering 2A5 or 2M4 or equivalent.

ENGINEER3R3 PHYSICAL METALLURGY
Properties of engineering alloys are related to production and fabrication
methods and resultant microstructures. Processing by solidification, deforma-
tion, heat treatment, surface treatment and joining.
3 lects.; one term
Prerequisite: Engineering 203 or 204. Not open to students registered in a
programme administered by the Department of Metallurgy and Materials
Science.
Offered in alternate years.
ENGINEERING PHYSICS

ENGINEER4A1 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 co-ordinator; grades of "Complete" given for satisfactory reports.
Prerequisite: Registration in Level IV of an Engineering and Management programme.

ENGINEER4J3 METAL FORMING
Offered jointly by the Departments of Mechanical Engineering and Metallurgy and Materials Science. 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; Mechanical Engineering 3A3 or Engineering 3F3.

ENGINEER4U3 WATER AND WASTEWATER TREATMENT 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 bio-oxidation, clarification, coagulation, sludge dewaterings and disinfection. The design by the class of a complete water quality control plant.
2 lects., 1 tut.; (2) one term
Prerequisite: Chemical Engineering 304 or Civil Engineering 304 or Mechanical Engineering 304.

ENGINEER4X3 INTRODUCTION TO 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.

ENGINEER5A1 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 co-ordinator; grades of "Complete" given for satisfactory reports.
Prerequisite: Registration in Level V of an Engineering and Management Programme; or permission of the Programme co-ordinator.

Assistant Professors
Philip C. Lichtenberger/B.Sc., M.Sc. (Guelph) , Ph.D. (Waterloo) /part-time
W.F. Skipper Poehlman/B.S. (Niagara), B.Sc. (Brock), M.Sc., Ph.D. (McMaster) /part-time

CURRICULUM 1982-84

ENG PHYS4A3 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 PHYS4E4 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 PHYS5D3 PRINCIPLES OF NUCLEAR ENGINEERING
An introduction to nuclear energy encompassing the principles of fission and fusion energy systems. The energetics of nuclear reactions, interactions of radiation with matter, radio-activity, the fission and fusion reactors.
2 lects., 1 lab. and term project; one term
Prerequisite: Mathematics 2M6 or Mathematics 2P4 and 2Q4; Engineering 2A5 or equivalent. Not open to students who have registered in or completed Engineering Physics 403.

ENG PHYS5E5 FUNDAMENTALS OF OPTO-ELECTRONICS
Coherence, interference and diffraction phenomena, holography; reflection and refraction, optical constants of media, elements of lasers; metals, semiconductor and insulators; charge carriers in semiconductors; conductivity and mobility; recombination process and diffusion and optical absorption; solar cells, light emitting diodes, photodiode detectors and p-n junction lasers.
2 lects., 1 tut./lab., every other week; two terms
Prerequisite: Engineering 2A5 or Engineering Physics 2A7 or 2A3, 2E4 or equivalent.

ENG PHYS5A4 ENGINEERING APPLICATIONS IN PHYSIOLOGICAL SYSTEMS
Engineering science principles, coupled with elements of anatomy, biology, and physiology, applied to the study of physiological systems. Description and analysis of the technology involved in measuring instruments and prosthetic devices.
2 lects.; two terms
Prerequisite: Mathematics 2M6 or 2P4 and 2Q4, or equivalent.

ENG PHYS5A4 THESIS OR DESIGN PROJECT
Supervised design or research project to be arranged in consultation with faculty advisor. 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 PHYS5B3 PHYSICS OF SOLID STATE DEVICES
Review of energy bands, density of states and carrier statistics, carrier transport, Hall effect, excess carriers, diffusion and recombination. Diodes, thyristors, transistors and junction devices, field effect devices, optoelectronic devices, applications to microelectronics and integrated circuits.
2 lects., 1 tut.; one term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Engineering or Physics programme; Physics 3B6 or equivalent.

ENG PHYS5C2 SPECIAL TOPICS IN ENGINEERING PHYSICS
Selected topics in engineering physics. Visiting lecturers from industry, research laboratories, and institutions.
1 lect.; two terms
Prerequisite: Completion of 60 units beyond Level I in any Engineering programme.

ENG PHYS5D3 NUCLEAR REACTOR SYSTEMS ANALYSIS
Release and utilization of energy from nuclear process; steady state and dynamics of chain reactions; neutron distributions and nuclear fuel cycle analysis; systems analysis of alternative nuclear energy concepts (hybrids, spallation breeders, etc.); the McMaster University Nuclear Reactor will be used as a demonstration facility.
3 lects.; one term
Prerequisite: Physics 3M6 and Mathematics 3C6 and 3Q4 or equivalent.

ENG PHYS5G3 OPTICAL INSTRUMENTATION
Design of optical equipment (including reflective and refractive optical systems, interferometers and spectrometers). Optical sources and power measurements. Detectors (photographic, photovoltaic, 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 3E5.

ENG PHYS5H6 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 electing to work with a professor carrying out literature surveys, experiments, theoretical investigations, etc. A written report is required.

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Engineering Physics

Faculty as of January 15, 1982

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.
Sanjoy Banerjee/B.Tech. (Indian Institute of Tech.), Ph.D. (Waterloo), P.Eng./part-time
H. Douglas Barber/B.Sc., M.Sc. (Saskatchewan), Ph.D. (London), P.Eng./part-time
John A. Davies/B.A., M.A., Ph.D. (Toronto)/part-time
David P. Jackson/B.Sc., M.A., M.Sc., Ph.D. (Toronto)/part-time
Terence J. Kennett/B.Sc., M.Sc., Ph.D. (McMaster)
John P. Marton/B.Sc. (Budapest), Ph.D. (Western), P.Eng./part-time
Daniel A. Maneley/B.E. (Saskatchewan), D.I.C., Ph.D. (London), P.Eng./part-time
David A. Thompson/B.Sc., Ph.D. (Reading)
Olah A. Trojan/B.A.Sc., M.A., Ph.D. (Toronto), P.Eng./part-time

Associate Professors

Alexander A. Berezn/B.Sc., M.Sc., Ph.D. (Leningrad State University)
John Reid/B.A. (Oxford), M.Sc., Ph.D. (McMaster)

A. Trojan/B.A.Sc., M.A., Ph.D.


P.Eng.

P.Eng.

P.Eng.

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P.Eng.

P.Eng.

P.Eng.

P.Eng.
2 tuts., 1 lab.(3); two terms
Prerequisite: Permission of the Department.

eng phys4k3 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 phys4l3 nuclear reactor thermalhydraulics I
Introduction to two phase flow and nuclear thermalhydraulics systems. Condensation and boiling phenomena and its 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 304 or equivalent.

Eng phys4m3 nuclear reactor thermalhydraulics II
2 lects., 1 lab.; one term
Prerequisite: Engineering Physics 414.

Eng phys4n3 fusion and plasma energy conversion
3 lects.; one term
Prerequisite: Engineering Physics 4D3.

Eng phys4o3 nuclear energy conversion
Introduction to modern aspects of power generation from nuclear sources, principles of nuclear fission, nuclear energy conversion, radiation and shielding, reactor operation and control, nuclear fuel management, station design and operation. Field trip to a nuclear power plant.
3 lects.; one term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Engineering Physics or Engineering Physics and Management. Not open to students who have registered in, or completed, Engineering Physics 303.

Eng phys4p4 lasers and electro-optics
2 lects., two terms
Prerequisite: Physics 3N3 or Engineering Physics 3E5.

Eng phys4q4 modern and applied physics laboratory
Selected senior experiments in the atomic, nuclear, quantum optics, and solid state areas. Laboratory makes use of advanced solid-state electronics and optical facilities, lasers, nuclear detection instrumentation, and the McMaster Nuclear Reactor.
2 labs.(3); two terms
Prerequisite: Physics 3B6 and completion of, or registration in, three of Engineering Physics 4D3, 4B3, 4X3, 4S4.

Eng phys4w3 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 permission of the Department.

Eng phys4x3 physiology and biophysics
A physiology course for engineering and physical science students. Muscle and nerve physiology, along with examination of systems such as auditory, visual, renal, and digestive. Provides a connection between physiology and biophysics with macrosystem bioengineering.
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., 1 lab.(3), alternate weeks; two terms
Prerequisite: Engineering Physics 2A7, or 2A3 and 2E4, or Physics 2B6.

Physics 4D6 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 lects., 1 lab.(3); two terms
Prerequisite: Physics 2B6.

See also the Calendar of the School of Graduate Studies.
ENGLISH 2R3 Topics in Restoration and 18th-Century Literature
ENGLISH 2S3 English as Communication: Introductory Linguistics
ENGLISH 2T3 The Development of the English Language
ENGLISH 2X3 Topics in the English Literary Tradition
ENGLISH 3A3 Techniques of Expository Writing
ENGLISH 3E3 Shakespeare: Selected Plays
ENGLISH 3EE5 Aspects of Mutuality in 20th-Century Literature
ENGLISH 3FP5 Techniques of Creative Writing
ENGLISH 3G3 Topics in 19th-Century Literature
ENGLISH 3H3 Topics in Poetry
ENGLISH 3I3 Topics in Fiction I
ENGLISH 3J3 Topics in Fiction II
ENGLISH 3K3 Topics in Critical Approaches
ENGLISH 3P3 Modern Drama in English
ENGLISH 3P3 Topics in World Literature in English
ENGLISH 3X3 Topics in 20th-Century Literature I
ENGLISH 3X3 Topics in 20th-Century Literature II
ENGLISH 3Z3 Contemporary Canadian Poetry
ENGLISH 4A3 The Classics and English Literature
ENGLISH 4C3 The History and Theory of Criticism

ENGLISH 1A6 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 lects.; 1 tut.; two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students receiving credit for 1B6.

ENGLISH 1B6 LITERATURE IN ENGLISH: MAJOR FORMS
A study of literature according to genres (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 lects.; 1 tut.; two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students receiving credit for 1A6.

ENGLISH 2B6 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the mediaeval period to the close of the 18th century (excluding Shakespeare).
3 lects.; 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 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

ENGLISH 2E6 ENGLISH LITERATURE
An introduction to the English literary tradition and modern forms of communication, including the film.
3 lects.; two terms
Prerequisite: Registration in Level II Engineering.

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 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

ENGLISH 2G6 CANADIAN LITERATURE
Major aspects of the development of Canadian literature from the late 18th century to the mid-20th century. French-Canadian work in translation will be used for comparative purposes.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2H6 AMERICAN LITERATURE
A survey of significant American writers from the 17th century to the present, which emphasizes the interrelationship between the literature and its philosophical and historical background.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2I6 MODERN BRITISH LITERATURE
A study of representative literature by British writers of the 20th century. Through criticism of poems, plays and fiction, an attempt is made to relate modern British literature to its social, intellectual and cultural context.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2M3 PRACTICAL CRITICISM
The course gives the student the opportunity to write a piece of criticism once a week. This work is evaluated by members of the course and the instructor.
2 lects.; first term; 1 lect.; second term
Prerequisite: Permission of the Department.
Enrollment is limited; departmental permission slip required.

ENGLISH 2Q3 TOPICS IN RENAISSANCE LITERATURE
Christopher Marlowe
A study of Marlowe's drama, from both a literary and a theatrical point of view, and of selected poetry.
3 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6. Not available to students receiving credit for or registration in English 2B3 or 2B6. English 2Q3 may be repeated, if on a different topic, to a total of six units.

ENGLISH 2R3 TOPICS IN RESTORATION AND 18TH-CENTURY LITERATURE
Jane Austen
A close critical reading of the six completed novels: Sense and Sensibility, Pride and Prejudice, Northanger Abbey, Mansfield Park, Emma and Persuasion.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the instructor. English 2R3 may be repeated, if on a different topic, to a total of six units.

ENGLISH 2S3 ENGLISH AS COMMUNICATION: INTRODUCTORY LINGUISTICS
An introductory study of the English language in the light of its function as a system of communication. The course covers a variety of linguistic areas, such as phonetics, semantics, etymology and grammar.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to Students receiving credit for English 2V6.

ENGLISH 2T3 THE DEVELOPMENT OF THE ENGLISH LANGUAGE
A study of the history and development of the English language with critical consideration of stylistic qualities.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ENGLISH 2V6 THE ENGLISH LANGUAGE
An introduction to the study of English grammar, with particular reference to poetic and prose patterns. The following areas will be considered: English phonology, historical linguistics, morphology, transformational-generative grammar, vocabulary and word formation.
3 lects.; two terms
Prerequisite: Registration in an English programme; or permission of the Department.

ENGLISH 2X3 TOPICS IN THE ENGLISH LITERARY TRADITION
1982-83: The Bible
A literary-critical study of the Bible as a continuous narrative from the Creation to the Last Judgment, and as a major influence on other literature, especially English.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for English 2P3.

1983-84: Mediaeval Literature in Translation
A study of selected mediaeval themes and genres from texts read mainly in translation. While the course will be devoted primarily to English writers, including Chaucer, other vernacular literatures and related media, such as art and music, will be considered.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for English 2N3 or 4E6. English 2X3 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3A3 TECHNIQUES OF EXPOSITORY WRITING
A course designed to provide practical training in the writing of clear, coherent, persuasive prose. Although there will be some study of contemporary prose models, the main work of the course will consist of regular exercises and writing assignments embracing the main types of exposition.
2 hrs.(lect.), 1 hr.(tut.); one term
Prerequisite: Open to students in Level II and above, except to students registered in an English programme.
Enrollment is limited; departmental permission slip required.

ENGLISH 3D3 THE EARLIEST ENGLISH LITERATURE
An introduction to Old English alliterative poetry through close reading of representative modes, such as heroic, lyric, elegiac and gnomic, supplement-ed by related prose texts.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 3E3 BEOWULF
An exploration of the Old English epic Beowulf, supplemented by related poetic and prose texts.
3 lects.; one term
Prerequisite: English 3D3; or permission of the Department.
ENGLISH3E3 SHAKESPEARE: SELECTED PLAYS
A study of a representative selection of plays.
3 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6. Not open to students receiving credit for English/Dramatic Arts 3K6.
Same as Dramatic Arts 3E3.

ENGLISH3E3 ASPECTS OF MUTUALITY IN 20TH-CENTURY LITERATURE
An interdisciplinary course offered by the Departments of English, Psychiatry, and Religious Studies. It explores the nature of male and female relationships by utilizing literary, psychosocial and religious approaches to 20th-century literature, and deals with representative British and American works and genres.
1 lect., 2 tuts.; one term
Prerequisite: Open to students in Level II and above. Not open to students with credit in Religious Studies 3FF3.
Same as Religious Studies 293.

ENGLISH3F3 TECHNIQUES OF CREATIVE WRITING
This course will require the composition of verse and prose. Experiments in the writing of verse will be attempted.
2 lects.; one term
Prerequisite: At least a grade of B- in six units of English, and permission of the Department.
Enrolment is limited; departmental permission slip required.

ENGLISH3GG3 TOPICS IN 19TH-CENTURY LITERATURE
The Brontës
An introduction to the lives and literary achievement of the three Brontë sisters. The course will involve a critical reading of the seven novels of Anne, Emily and Charlotte Brontë.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3GG3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3HH3 TOPICS IN POETRY
Poetry of the First World War
A study of poetry by such major figures as Brooke, Sassoon, Owen, Rosenberg and David Jones, with some consideration of minor poets and prose memoirs.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3HH3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3J3 STUDIES IN 16TH-CENTURY LITERATURE
The major novels and short fiction of William Faulkner or Ernest Hemingway in the light of the recent critical re-evaluations of their work and influence.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3J3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3J3 TOPICS IN FICTION I
1982-83: James Joyce
An introduction to the literary achievement of James Joyce, with some consideration of his life, background and influence.
1983-84: William Faulkner or Ernest Hemingway
The major novels and short fiction of William Faulkner or Ernest Hemingway in the light of the recent critical re-evaluations of their work and influence.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3J3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3J3 TOPICS IN FICTION II
1982-83: Children's Fiction
An examination of the literary quality and the moral and social assumptions of some generally accepted children's classics.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
1983-84: Fantasy and Science Fiction
An investigation of some aspects of speculative literature from H.G. Wells to the present day. The course may include some films.
3 lects.; one term
Prerequisite: Open to students in Level II and above except to students receiving credit for English 2W3. English 3J3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3K6 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 English or Dramatic Arts; or permission of the English Department.
Same as Dramatic Arts 3K6.

ENGLISH3K3 TOPICS IN CRITICAL APPROACHES
1982-83: Creativity and Human Interaction
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 receiving credit for English 3U3.
Same as Social Science 3B3 and Sociology 3S3. See also Social Science 3C3.

1983-84: 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.
3 lects.; one term
Prerequisite: Registration in Level II and above. English 3K3K may be repeated, if on a different topic, to a total of six units.
Same as Sociology 293.

ENGLISH3P3 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 film in our age, as well as conventions and experiments in the contemporary theatre.
3 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.
Same as Dramatic Arts 3P3.

ENGLISH3PP3 TOPICS IN WORLD LITERATURE IN ENGLISH
The Literature of Australasia
A study of modern poetry and fiction in Australia and New Zealand, with particular emphasis on the poet A.D. Hope and the novelist Patrick White.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3PP3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3Q3 SPENSER
The main work of the course will be close study of The Faerie Queene, but The Shepheardes Calendar, Epithalamion and Prothalamion will also be read.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH3V6 STUDIES IN 17TH-CENTURY LITERATURE
A detailed examination of poems and prose-writers of the period, with emphasis on the poetry of Donne, the "metaphysical school", Jonson and Milton.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3V6 may be repeated, if on a different topic, to a total of six units.

ENGLISH3X3 TOPICS IN 20TH-CENTURY LITERATURE I
1982-83: Form in Fiction
A close study of selected modern novels of the period 1900-1960 noting particularly, the distinction between the "traditional" and "modern" forms of the novel.
3 lects.; one term
Prerequisite: English 1A6 or 1B6.
1983-84: Fiction of the Present
Critical evaluation of selected novels and short stories in English published since 1960.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for English 203. English 3X3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3XX3 TOPICS IN 20TH-CENTURY LITERATURE II
1982-83: 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 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.
1983-84: The Bloomsbury Group
The literary focus of the course will be upon the novels of E.M. Forster and Virginia Woolf; but such other aspects of Bloomsbury philosophy, art, politics and economics will also be considered.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3XX3 may be repeated, if on a different topic, to a total of six units.

ENGLISH3Z3 CONTEMPORARY CANADIAN POETRY
The development of Canadian poetry from the 1940's to the present. Parallel developments in French Canadian poetry (studied in translation) will also be considered.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

ENGLISH4A3 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from mediaeval to modern times, and conducted jointly by the Departments of Classics and English.
1 lect., 1 sem.(2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in English, Classics, Classical Civilization, Latin or Greek; or permission of the Department.
Offered in alternate years.
Same as Classical Civilization 4A3.
GEOGRAPHY

ENGLISH4B6 ENGLISH LITERATURE (1660-1800)
A study of English literature during the period 1660-1800, with special attention to works by Dryden, Swift, Pope and Johnson.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH4C3 THE HISTORY AND THEORY OF CRITICISM
A survey of literary criticism from Plato to the present, with emphasis upon the variety and interplay of mimetic and formal theories of literary art.
1 sem.(2hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in language or literature; or permission of the Department.

ENGLISH4E6 CHAUCER AND HIS CONTEMPORARIES
A critical, mainly literary, course in the poetry of late 14th-century England. It will study the writings of Chaucer in some depth, before taking up examples of medieval romance, allegory and drama.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH4L3 ROMANTIC POETRY
A study of selected poems and, where appropriate, of the literary theory of the major Romantic poets. Special attention will be given to Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH4M3 VICTORIAN POETRY
A study of selected poems and, where appropriate, of the literary theory of the major Victorian poets. Special attention will be given to Tennyson, Browning, Arnold, Hopkins.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH4N6 THE BRITISH NOVEL
This course, in assessing and analysing approximately 12 novels, Will trace the history of English fiction to the 20th century. The course focuses on the varieties of narrative forms, while also exploring the intellectual, cultural and psychological contexts of fiction.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH4X3 INDEPENDENT STUDY
In consultation with members of the English Department, students will prepare an essay designed to bring together aspects of their work over the previous years.
Prerequisite: Registration in Level IV of an Honours programme in English, and permission of the English 4X3 Committee.
Courses with linguistics content are listed under Linguistics.
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, 1982
M.J. Webber/ Chairman
J.A. Davies/ Associate Chairman

Professors
Brian T. Bunting/M.A. (Sheffield), Ph.D. (London)
Andrew F. Burghart/A.B. (Harvard), M.A., Ph.D. (Wisconsin)
John A. Davies/B.A. (Bristol), M.Sc. (McGill), Ph.D. (London)
Derek C. Ford/M.A., D.Phil. (Oxford)
R. Louis Gentilcore/B.A. (Toronto), Ph.D. (Maryland)
Leslie J. King/M.A. (New Zealand), Ph.D. (Iowa)
S. Brian McCann/B.Sc. (Wales), Ph.D. (Cambridge)
George J. Papageorgiou/Dipl. in Architecture (National Technical, Athens), M.C.P., Ph.D. (Ohio State)
Lloyd G. Reeds/M.A., Ph.D. (Toronto)
Wayne R. Rouse/B.Sc. (McMaster), M.Sc., Ph.D. (McGill)
Michael J. Webber/B.A. Dipl. Agric. Sci. (Cambridge), Ph.D. (Australian National)
Harold A. Wood/M.A. (McMaster), Ph.D. (Toronto)

Associate Professors
Michael J. Dear/B.A. (Birmingham), M.Phil. (London), M.A., Ph.D. (Pennsylvania)
John J. Drake/M.A. (Oxford), M.Sc., Ph.D. (McMaster)
Frederick L. Hall/A.B. (Amherst), M.Sc. (M.I.T.), Ph.D. (Chicago)
/Associate Professor of Civil Engineering and Engineering Mechanics
Philip J. Howarth/B.A. (Cambridge), Dipl. in Education (Oxford), Dipl. in Photogrammetry, Ph.D. (Glascow)
Kao-Lee Liaw/B.S. (National Taiwan), M.A. (Kansas State), Ph.D. (Clark)
S. Martin Taylor/B.A. (Bristol), M.A., Ph.D. (British Columbia)
Ming-ko Woo/M.A. (Hong Kong), Ph.D. (British Columbia)

Assistant Professors
Ruth Fincher/B.A. (Melbourne), M.A. (McMaster), Ph.D. (Clark)

CURRICULUM 1982-84
* Indicates a Science course. Students are advised that not all courses will be offered in every year.

GEOG1A6 INTRODUCTION TO PHYSICAL GEOGRAPHY
The principles and methods of climatology, hydrology and geomorphology.
2 lects., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open. This course, like Geography 1A6, is intended for students who are interested in a programme in Geography. Effective beginning 1983-84

GEOG1B6 INTRODUCTION TO URBAN GEOGRAPHY
The principles and methods of urban geography, including location theory, spatial interaction and urban development.
2 lects., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open. This course, like Geography 1A6, is intended for students who are interested in a programme in Geography. Effective beginning 1983-84

GEOG1D6 INTRODUCTION TO CULTURAL GEOGRAPHY
The relationships between man and his environment viewed through the emergence and growth of man-made landscapes and cultural regions.
3 lects.; two terms
Prerequisite: Open. This course is intended for students who do not expect to enrol in a programme in Geography. It does not serve as a prerequisite for other courses in Geography.

GEOG2B3 URBAN GEOGRAPHY
Concepts and methods of economic geographical analysis applied to problems at the inter- and intraurban levels. Topics include urbanization, systems of cities, internal city structure, and a discussion of such selected externalities as pollution, congestion and prejudice.
3 lects.; one term
Prerequisite: Geography 1B6; or permission of the instructor.

GEOG2D3 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.

GEOG2E3 CANADA
The physical and economic geography of Canada, emphasizing problems of regional development.
3 lects.; one term
Prerequisite: Not open to students who have received credit for Geography 2H3.

GEOG2F3 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.

GEOG2K3 INTRODUCTORY SOIL STUDIES
The composition, morphology, and description of soils; the classification and environmental relationships of soil groups; the interpretation of soil maps and survey data.
3 lects.; one term
Prerequisite: Geography 1A6 or Geology 1A6; or permission of the instructor.
The theory and practice of collecting, describing, and analysing geographic data; automated cartography.
2 lects., 1 lab.(2); two terms
Prerequisite: Registration in any programme in Geography; or permission of the instructor.

A regional study of selected physical landscapes in Canada, to illustrate the role of past and present processes in landform evolution.
3 lects.; one term
Prerequisite: Geography 1A6 or 1B6 or Geology 1A6 or 1B6.

GEOG3S3 LATIN AMERICA
An introductory survey of current development trends, problems, and potentials, at both national and subnational levels.
3 lects.; one term
Prerequisite: Open.

GEOG4P3 THE UNITED STATES OF AMERICA
The physical and economic geography of the United States.
3 lects.; one term
Prerequisite: Open.

GEOG4R3 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.

GEOG4T3 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: Both Geography 1A6 or Geology 1A6 and Mathematics 1A6 or 1F6 or 1M3; or permission of the instructor.

GEOG4US ENERGY, ENVIRONMENT AND SOCIETY
An introduction to the role of energy in contemporary society; a social, economic and geographical perspective on the availability and utilization of man-made and natural energy.
3 lects.; one term
Prerequisite: Open.

GEOG4W3 HYDROLOGY IN CANADA
A discussion of fresh water resources, including both surface and groundwater, and river sedimentation.
3 lects.; one term
Prerequisite: Geography 1A6.

GEOG4Y3 URBAN AND REGIONAL DEVELOPMENT
Theoretical perspectives on recent trends, emphasizing changes in the spatial structure of central cities and suburbs of North American metropolises, and the regional impacts of industrial change.
2 lects., 1 tut.(1); one term
Prerequisite: Geography 1B6.

GEOG4Z3 EUROPE
The physical, economic, social, and political geography of Europe, past and present.
3 lects.; one term
Prerequisite: Open.

GEOG4Z3 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: Geography 2D3 or 2E3 or 2H3; or permission of the instructor.

GEOG5E3 FIELD STUDY IN GEOGRAPHY
Introduction to field study design, field data collection methods and field data processing. Offered in the summer following Level II. Details for the various programmes are announced in March.
Prerequisite: Geography 2L6 and appropriate Level II courses.

GEOG5F3 PHYSICAL CLIMATOLOGY
The physical basis of large scale climate and mechanisms of climatic change.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6.

GEOG5G3 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.

GEOG5H3 AGRICULTURAL GEOGRAPHY
An introduction to the methodology of agricultural geography illustrated by case studies from Ontario; applied aspects, rural planning, and conservation of land resources.
3 lects.; one term
Prerequisite: Geography 1A6 or 1B6; or permission of the instructor.

GEOG5I3 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 Geology 1A6 or 1B6, and completion of at least 12 units of Level II (or higher) Science courses; or permission of the instructor.

Same as Geology 3I3.

GEOG5K3 GEOPHYSICS AND THE SOILS OF CANADA
Field and laboratory studies of soil formation in Canada, especially of podzols, luvisols, and gleysols. The application of soils studies to land use planning.
2 lects.; 1 lab.(2); one term
Prerequisite: Geography 2K3; or permission of the instructor.

GEOG5L3 MULTIVARIATE ANALYSIS IN GEOGRAPHY
Applications of multivariate techniques, such as principal component analysis, discriminant analysis and canonical correlation Analysis, to geographic problems.
4 hrs.(lects. and lab.); one term
Prerequisite: Geography 2L6 or equivalent; a course in linear algebra is recommended.

GEOG5M3 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.

GEOG5N3 SPATIAL INTERACTION
Patterns and processes in trade, migration, and communication, and related explanatory factors.
3 lects.; one term
Prerequisite: Geography 2L6 and 6 units of Mathematics.

GEOG5O3 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 2L6.

GEOG5T3 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, 2R3 or 2Y3; or permission of the instructor.

GEOG5V3 REMOTE SENSING I
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: Geography 1A6 or 1B6 or Geology 1A6; or permission of the instructor.

GEOG5W3 HYDROLOGY
Principles of hydrology and their applications in physical geography.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6, and 2L3 or 2L6; or permission of the instructor.

GEOG5X3 URBAN MODELS AND POLICY ANALYSIS I
A survey of modern literature on urban equilibrium. Topics include morphology, adjustments to change, and the nature of such crises as sudden growth and the decline of central cities.
3 lects.; one term
Prerequisite: Geography 2B3 or 2L6; or permission of the instructor.

GEOG5Z3 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 an Honours programme; or permission of the instructor.

GEOG4A3 KARST GEOMORPHOLOGY
A discussion of selected problems in karst research; including carbonate rock solution, limestone cavern genesis and speleothem chronology.
3 lects.; one term
Prerequisite: Geography 3M3; or permission of the instructor.

GEOG4C6 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 the following year.
1 seminari(2) alternate weeks; two terms
Prerequisite: Registration in Level IV of an Honours programme in Geography and approval of the course coordinator.

GEOG4D3 COASTAL GEOMORPHOLOGY
The dynamics and morphologies of the shore zone.
2 lects., 1 lab.; one term
Prerequisite: Geography 3M3; or permission of the instructor.

GEOG4E3 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.
GEOG423 ADVANCED CULTURAL GEOGRAPHY
The role of culture and politics in the geographical development of Canadian communities in the recent past. Student research projects are part of the course.
2 seminars(2); one term
Prerequisite: Completion of at least 90 units and registration in an Honours programme.

Geography
G.V. Middleton/ Chairman

Professors
Brian J. Burley/B.Sc. (London), M.Sc. (British Columbia), Ph.D. (McGill)
Paul M. Cliftford/B.Sc. (Southampton), Ph.D. (London)
James H. Crocket/B.Sc. (New Brunswick), Ph.D. (M.I.T.)
Robert H. Mcnutt/B.Sc. (New Brunswick), Ph.D. (M.I.T.)
Henry P. Schwarzc/B.A. (Chicago), M.S., Ph.D. (California Institute of Technology)
Denis M. Shaw/M.A. (Cambridge), Ph.D. (Chicago), F.G.S., F.R.S.C.
Gerd E.G. Westermann/B.Sc. (Braunschweig), Dip. Geol. Dr.rer.nat. (Tubingen)

Associate Professors
H. Douglas Grundy/B.Sc., Ph.D. (Manchester)
E. Rees/B.Sc. (Notts), Ph.D. (McMaster)
Michael J. Risk/B.Sc. (Toronto), M.Sc. (Western), Ph.D. (Southern California, L.A.)

Special Lecturer
Alan E. Beck/B.Sc. (London), Ph.D. (Australian National)

CURRICULUM 1982-84

GEOLOGY 1A6 GENERAL GEOLOGY
The physical and chemical processes which are operative within and upon the earth. Laboratory work includes the study of minerals, rocks, and geological maps.
2 lects., 1 lab.(2); two terms
Prerequisite: Registration in, or completion of, Natural Sciences I.

GEOLOGY1B6 GENERAL GEOLOGY
An introduction to physical and historical geography. Laboratory work includes the study of minerals, rocks, fossils, and geological maps.
2 lects., 1 lab.(2); two terms
Prerequisite: Open, except to students who are registered in, or have Completed, Natural Science I or Geology 1A6.

GEOLOGY282 MORPHOLOGICAL CRYSTALLOGRAPHY
The first part of Geoogy 2B6.
2 lects., 1 lab.(2); one term
Prerequisite: Open, except to students registered in a Geography programme.

GEOLOGY2B4 OPTICAL CRYSTALLOGRAPHY AND INTRODUCTORY PETROGRAPHY
Elementary optical theory with applications to the common rock-forming minerals. Descriptive study of igneous, sedimentary, and metamorphic rocks.
The latter part of Geoogy 2B6.
2 lects., 1 lab.(2); in parts of both terms
Prerequisite: Open only to students registered in Ceramic Engineering, or permission of instructor.

GEOLOGY2B6 OPTICAL CRYSTALLOGRAPHY AND INTRODUCTORY PETROGRAPHY
Elementary crystallography prerequisite to optical crystallography. Elementary optical theory with applications to the common rock-forming minerals. Descriptive study of igneous, sedimentary, and metamorphic rocks.
2 lects., 1 lab.(2); two terms
Prerequisite: Registration in a Geography programme; or permission of the Department.

GEOLOGY2C6 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.(2); two terms
Prerequisite: Geology 1A6 or 1B6; or permission of the instructor.

GEOLOGY2D5 STRUCTURAL GEOLOGY I
A study of inherent and imposed structures in rocks, their modes of formations, inter-relationships, and geological environments.
2 lects., 1 lab.(3), every other week; two terms.
Prerequisite: Geology 1A6 or 1B6.

**GEOLOGY2H1 COMPUTING LABORATORY**
Application of computing techniques to problems in geology.
1 lab.(2); one term
Prerequisite: Concurrent registration in Computer Science 1H3 or 2H3, and a programme in Geology.

**GEOLOGY3A3 APPLIED GEOPHYSICS A**
Principles and uses of electrical, magnetic, electromagnetic and radioactivity-based techniques in exploration geophysics. Borehole logging methods.
3 hrs.(lects.); one term
Prerequisite: First Level courses in calculus and physics, and any two science courses beyond Level I; or permission of the instructor.
Alternates with Geology 3A3.
Offered in 1983-84 and in alternate years.

**GEOLOGY3B3 APPLIED GEOPHYSICS B**
Gravitational and seismic principles and methods and their use in exploration geophysics.
3 hrs.(lects.); one term
Prerequisite: First Level courses in calculus and physics, and any two science courses beyond Level I; or permission of the instructor.
Alternates with Geology 3A3.

**GEOLOGY3C6 PETROGRAPHY**
A sequel to Geology 2B6. An introductory course in the petrology of igneous, sedimentary, and metamorphic rocks. Laboratory studies on rock sites.
2 lects., 1 lab.(2); two terms
Prerequisite: Geology 2B6.

**GEOLOGY3D6 PALAEOANTOLOGY I**
An introductory course in the principles of palaeontology, and in the organization and evolution of life in the past, with emphasis on invertebrate fossils.
2 lects., 1 lab.(3); two terms
Prerequisite: Geology 1A6 or 1B6 and Biology 1A6 or 1B7 (or equivalent); or permission of the instructor.

**GEOLOGY3E2 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.

**GEOLOGY3G4 CRYSTALLOGRAPHY AND MINERALOGY**
Topics in X-ray crystallography; an introduction to crystal chemistry and mineralogy; laboratory studies in symmetry and physical and chemical properties of minerals.
3 lects., 1 lab.(3); one term
Prerequisite: Geology 2B6.

**GEOLOGY3J3 PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY**
The geology and surface morphology of planets and moons of the Solar System with particular reference of the rocky bodies. Comparative studies are emphasized.
3 lects.; one term
Prerequisite: Geography 1A6 or Geology 1A6 and completion of at least 12 units of Level II (or higher) Science courses.
Same as Geography 333.

**GEOLOGY3J3 PHYSICAL PROCESSES IN GEOLOGY**
An elementary treatment of physics of continuous media. Stress and strain analysis, dimensional analysis, behavioural models for materials and laws of fluid motion, applied to geologic problems.
3 lects.; one term
Prerequisite: Mathematics 1A6, Physics 1B7 (or 1A7 or 1C8), and completion of, or registration in, Geology 2D5.

**GEOLOGY4B6 IGNEOUS AND METAMORPHIC PETROLOGY**
Advanced theory and practice on igneous and metamorphic rocks. Laboratory studies on metamorphic rock suites.
3 lects., first term; 2 lects., 1 lab.(3); second term
Prerequisite: Geology 3C6, Chemistry 2P4.

**GEOLOGY4D3 PALAEOANTOLOGY I**
The first term of Geology 4D6, devoted mainly to marine biology and ecology.
2 lects., 1 seminar; one term
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

**GEOLOGY4D6 PALAEOANTOLOGY**
An introduction to palaeoecology. Surveys of selected living and fossil marine communities, marine habitats, functional interpretation of fossil skeletons, and quantitative techniques.
2 lects., 1 seminar; two terms
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

**GEOLOGY4G6 METALLIC MINERAL DEPOSITS**
Geochemistry and mineralogy of ore deposits; theories of ore genesis, mineralogy.
2 lects., 1 lab.(2); two terms
Prerequisite: Registration in Level IV of a Geology programme; or permission of the instructor.

**GEOLOGY4F3 PALAEOANTOLOGY II**
The second term of Geology 4D6 consists of: Functional morphology (eutechnics) of selected fossil invertebrates.
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

**GEOLOGY4G6 GEOLOGY THESIS**
Prerequisite: Open to students in Level IV of a Geology programme subject to the approval of the Department.

**GEOLOGY4M6 SEDIMENTOLOGY—PHYSICAL PROCESSES**
The second term (physical processes) of Geology 4M6.
Prerequisite: Completion of, or registration in, Geology 3C6.

**GEOLOGY4N4 STRUCTURAL GEOLOGY II**
Emphasis is placed on advanced principles of rock deformation as inferred from theory and experiment. These principles are applied to the study of actual geological structures on all scales.
2 lects.; two terms
Prerequisite: Geology 2D5 and registration in, or completion of, Geology 3C6.

**GEOLOGY4P2 PRECAMBRIAN GEOLoGY**
General features of Precambrian rocks throughout the world. Structural, lithological, and chronological divisions of the Canadian Shield. Evolution of the early crust of the earth. Special problems in Precambrian geology.
2 lects.; one term
Prerequisite: Registration in Level III or IV of a Geology programme.

**GEOLOGY4Q4 GEOCHEMISTRY**
Review of thermodynamics and crystal chemistry; consideration of sedimentary, igneous, metamorphic, and economic geochemical cycles; special topics including origin of crust, oceans.
2 lects.; two terms
Prerequisite: Chemistry 2P4, Geology 3C6 or 3G4.

**GEOLOGY4S6 INTRODUCTORY OCEANOGRAPHY**
Biological, physical, and chemical properties of sea water; geological and geophysical properties of ocean basins; mineral resources.
2 lects., 1 lab.(2); two terms
Prerequisite: Completion of at least 18 units of Level III Science; or permission of the instructor.

For Graduate Courses see Calendar of School of Graduate Studies.
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. Laboratory practice, slides and films will be an integral part of the instruction.

4 hrs. (including lab. practice); two terms
Prerequisite: Open, except to graduates of Grade 12 or Grade 13 German. This course, with a grade of at least B, will permit students to proceed to German 226; with a grade of A, however, the course is also accepted as a prerequisite for admission to an Intensive Honours Programme (Alternative B).

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

GERMAN1A6 INTRODUCTION TO GERMAN STUDIES
An approach based upon a balanced division between the written and spoken language, and between the historical and text-oriented aspects of literary study. The two tutorials include one concentrating on the close reading and discussion of texts, and one involving grammatical study and practice in the spoken language. The lectures present an outline of the development of German literature as it appears against the background of German history, art and music. Laboratory practice in pronunciation, listening comprehension and oral expression. Lectures and tutorials in German; written reports in German and English. A required course for those intending to enter B.A. or Honours programmes in German.

5 hrs. (2 lects., 2 tuts., lab. practice); two terms
Prerequisite: Grade 13 German, or German 126 (with a grade of A); or permission of the Department.

GERMAN2A3 MODERN GERMAN LITERATURE I
Discussion of selected readings from major writers; emphasis on 20th-century prose.

2 lects., 1 tut.; one term
Prerequisite: German 1A6; or permission of the Department.

GERMAN2D3 THE GERMAN NOVELLE
Analysis and discussion of short prose works, primarily from the 19th century.

2 lects., 1 tut.; one term
Prerequisite: German 1A6; or permission of the Department.

GERMAN2E3 GERMAN GRAMMAR
A systematic review, including oral practice.

3 hrs. (including lab. practice); one term
Prerequisite: German 1A6; or permission of the Department.

GERMAN2F3 GERMAN DRAMA OF THE 20TH CENTURY FROM HAUPTMANN TO DÜRRENMAAT
The plays will be studied both as individual works and in the context of their historical and intellectual background.

3 lects.; one term
Prerequisite: German 1A6; or permission of the Department.

GERMAN2G3 GERMAN LANGUAGE PRACTICE
A course designed for non-native speakers to develop language skills, with principal emphasis on vocabulary building. Laboratory practice in oral expression. Lectures and tutorials in German; written reports in German and English. A required course for those intending to enter B.A. or Honours programmes in German.

3 hrs. (including lab. practice); one term
Prerequisite: German 1A6; or permission of the Department. Concurrent registration in German 2E3 is recommended.

GERMAN2K3 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 126.) The sequel to German 2K3 is German 2L3.

3 lects.; one term
Prerequisite: Open, except to students with Grade 13 German.

GERMAN2L3 GERMAN FOR ARTS AND SCIENCE STUDENTS
A reading course for students in Humanities, Social and Natural Science 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 2K3.

3 lects.; one term
Prerequisite: Grade 13 German, German 126 or 2K3; or permission of the Department.

GERMAN2N6 INTERMEDIATE INTENSIVE GERMAN
The approach of German 126, which makes extensive use of the language lab, films and slides, will be continued. At the same time the student will be introduced to selected works of modern German authors. Films and texts will be the basis for class discussions in German.

4 hrs.; two terms
Prerequisite: Grade 12 German or German 126 (with a grade of at least B); or permission of the Department.

GERMAN3A4 EIGHTEENTH-CENTURY DRAMA
The major dramas of Lessing and Schiller will be dealt with, primarily in the context of 18th-century thought.

2 lects.; two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN3B4 THE AGE OF GOETHE
1 lect. (2 hrs.); two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN3C4 ADVANCED ORAL AND WRITTEN LANGUAGE PRACTICE
A variety of themes will be selected for discussion in class; these will be further treated in essays outside of class. The main emphasis is placed upon the practical use of German as a means of oral and written communication.

2 hrs.; two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN3E4 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 lect.; two terms
Prerequisite: German 1A6 and permission of the Department. In order to make it accessible to students principally interested in Comparative Literature, this course will be taught in English.

GERMAN3H4 HISTORY OF THE GERMAN LANGUAGE:
INTRODUCTION TO MIDDLE HIGH GERMAN
4 lects.; one term
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4A4 GERMAN LYRIC POETRY
This course examines lyric poetry as it reflects the changing styles and the main trends of literary experience in Germany from the 17th to the 20th century.

2 lects.; two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4B4 NINETEENTH-CENTURY DRAMA
A study of selected dramas by Kleist, Büchner, Grillparzer and Hebbel.

2 lects.; two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4C4 ADVANCED GRAMMAR AND STYLISTICS
Intensive practice in oral expression; composition, translation. The weekly translation exercises introduce the student to the art and techniques of translating and provide the basis for a wide range of grammatical, stylistic and lexicographical commentaries.

2 hrs. (including lab. practice); two terms
Prerequisite: German 3C4.

GERMAN4F4 MODERN GERMAN LITERATURE II
Close reading of selected novellas, dramas, poetry and prose by Mann, Kafka, Benn, Celan, Brecht, et al. Where appropriate the course will treat the relationship of literary works to the other arts, including painting, film and opera.

Seminar (2 hrs.); two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4G4 THE ROMANTIC MOVEMENT
A survey of writings from Tieck to Heine concentrating on the novel, novella and lyric poetry.

Seminar (2 hrs.); two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4H4 MEDIEVAL GERMAN LITERATURE: READINGS IN MIDDLE HIGH GERMAN AND OLD HIGH GERMAN
4 lects.; one term
Prerequisite: German 3H4.

GERMAN4J4 THE GERMAN NOVEL
A study of the development of the novel form from the late 19th century to the present, based on novels by Fontane, Thomas Mann, Kafka, Böll et al.

1 lect. (2 hrs.); two terms
Prerequisite: 18 units of German; or permission of the Department.

GERMAN4M4 GOTHIC
An introduction to the Gothic language through close reading of selected texts.

4 lects.; one term
Prerequisite: German-3H4.

GERMAN4Z6 SPECIAL TOPICS IN LANGUAGE STUDIES
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 by teaching small tutorial groups of German 126.

1 lect., practice teaching (4 hrs.); two terms
Prerequisite: Registration in Level IV of any Honours programme in German and permission of the Department.

Enrollment is limited; departmental permission slip required. Students interested in German and Austrian History are advised to take History 3J6.

For Graduate Courses see Calendar of School of Graduate Studies.

Greek
(See “Classics — Greek”)

Health Sciences
CURRICULUM 1982-84

HTH SCI1A6 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 starvation are used as examples to illustrate the metabolism of energy production. Vitamins and minerals related to glucose and fat metabolism are also covered. Term II covers electrolyte balance, body pH, proteins, enzymes, protein malnourishment 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 lec.; 3 lec.; 1 tut.; two terms
Prerequisite: Admission to the Programme.

HTH SCI1B7 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 development at origins; the organization of the body; and the structure and function of the musculoskeletal system.

Term II examines homeostasis. Structural 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 lec.; 1 lab.; 1 tut.; 4 hrs.(tut.); two terms

HTH SCI2B8 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 lec.; 2 tut.; alternating with 2 lec.; 1 lab., 2 tut.; 4 hrs.(tut.); two terms
Prerequisite: Normally Health Sciences I or equivalent.

HTH SCI3A4 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 permission of instructor.

HTH SCI3B4 SCIENCE, HEALTH AND SOCIETY
Study of the factors that influence human health and the nature of health care. Economic and political factors, the impact of professional bodies, and attitudes on health and health care, types of evidence used in decision making and moral and ethical issues are considered.

3 hrs.(lect./problem-based tut.) and 2 hrs.(guided self-study) per week; two terms
Prerequisite: Registration in Level III Nursing or permission of instructor.

HTH SCI4A3 THEORETICAL BASIS OF PRACTICE
OCCUPATIONAL THERAPY OR PHYSIOTHERAPY
The scientific and humanistic theories which form the bases for therapeutic practice are examined and applied to occupational therapy and physiotherapy. Emphasis is placed on a multidisciplinary approach and on the ability to conceptualize 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 Programme.

HTH SCI4B3 HEALTH, HEALTH CARE AND PUBLIC POLICY
The course describes the socio-ecological, political and economical factors which influence human health and the nature of health care delivery systems. Emphasis is placed on the examination of the types of evidence that are used in decision making and their impact on health, health care systems and health care policy.

3 hrs.(lects., tuts.); one term
Prerequisite: Registration in the Programme, or permission of the Programme.

HTH SCI4C3 ADVANCED CLINICAL STUDY I
The course focuses on an examination of selected scientific concepts utilized in one specific area of clinical practice. Emphasis will be placed on the integration of concepts drawn from the biological, psychological, sociological, and measurement sciences for the analysis of health care problems.

3 hrs.(tut.); one term
Prerequisite: Registration in the B.H.Sc. Programme; or permission of the Programme.

Same as Social Work 4C3.

HTH SCI4D3 ADVANCED CLINICAL STUDY II
The student will have the opportunity to design and complete an individualized study programme in conjunction with a course supervisor. The study programme must focus on a specific topic or area related to the clinical study area chosen in Health Sciences 4C3.

6 hrs.(independent study); one term
Prerequisite: Health Sciences 4C3.

HTH SCI4L4 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 topic. Students participate in an ongoing research study where resources permit.

2 hrs.(lect./problem-based tut.) and 4 hrs.(guided self-study) per week; first or second term
Prerequisite: Health Sciences 3A3 or equivalent.

Hebrew
(See "Religious Studies — Hebrew")

History
Faculty as of January 15, 1982
J. Campbell/ Chairman
Professor Emeritus

E. Togo Salmon/B.A. (Sydney and Cambridge), M.A., Ph.D.

Professors
Alexander R. Allen/B.A. (Toronto), M.A. (Saskatchewan), Ph.D. (Duke)
Ezio Cappadocia/M.A. (Toronto), Ph.D. (Chicago)
Alan Cassels/M.A. (Oxford), Ph.D. (Michigan)
James W. Daly/M.A., Ph.D. (Toronto)
David P. Gagan/M.A. (Western), Ph.D. (Duke)
Daniel J. Geagan/A.B. (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)
John H. Trueeman/M.A. (Toronto), Ph.D. (Cornell)

Associate Professors
Edmond M. Beame/B.A. (Cornell), Ph.D. (Illinois)
John P. Campbell/M.A. (Glasgow), M.A., Ph.D. (Yale)
Paul S. Fritz/B.A. (Queen's), M.A. (Wisconsin), Ph.D. (Cambridge)
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)
Harry E. Turner/B.A. (McMaster), M.A. (Toronto)
John C. Weaver/B.A. (Queen's), M.A., Ph.D. (Duke)
Thomas E. Willey/B.A. (Butler), M.A., Ph.D. (Yale)

Assistant Professors
David P. Barrett/B.A., M.A., M. Phil. (Toronto), Ph.D. (London)
Nancy G. Cassels/B.A. (Wellesley), M.A.
Michigan, Ph.D. (Toronto) /part-time
Bernice M. Kaczynski/B.A. (Pittsburgh), M.Phil., Ph.D. (Yale)

Associate Members
Peter J. George/Economics), M.A., Ph.D. (Toronto)
George Paul/Classics), M.A. (Oxford), Ph.D. (London)
Charles G. Roland/Family Medicine), B.Sc. (Med.), M.D. (Manitoba)

CURRICULUM 1982-84
The Department of History offers four 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 civilization. Students will be admitted to B.A. or Honours programmes in History from any one of the four courses. Students may take only one of these courses. Students in B.A. History may take a maximum of 12 units in any one field of Ancient, Asian, Canadian, British, and United States History, and 18 units of European History, including Level I, but exclusive of electives. Students in any Honours programme in History may take a maximum of 24 units in any one field of studies.
HISTORY

Ancient, Asian, Canadian, British, and United States History, and 30 units of European History, including Level I, but exclusive of electives.

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 United States.

Students interested in Ancient History are advised to examine the offerings of the Department of Classics on Classical Civilization.

LEVEL I COURSES

HISTORY1AG MEDIAEVAL EUROPE
A study of the principal features and the development of mediaeval Europe. 3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open, except to students receiving credit for History 2G6. Students may take only one Level I History course.

HISTORY1BG MODERN EUROPEAN HISTORY: THE EMERGENCE OF THE LIBERAL STATE
A study of the problem of freedom versus authority in European society and politics in the period 1500 to 1914.
3 hrs. (lects. and discussion groups); one term
Prerequisite: History 1AG; or permission of the Department. Not open to students receiving credit for History 2G6.

HISTORY1CG THE MODERN WORLD: THE ERA OF EUROPEAN PRIMACY
A study of the background and development, from the French Revolution 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.

HISTORY1AL ANCIENT HISTORY
A survey of the major civilizations of Ancient times, including the Ancient Near East, Egypt, Greece, and Rome. Special attention will be given to their cultural and intellectual contributions to Western Civilization.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open, except to students receiving credit for History 2G6. Students may take only one Level I History course.

LEVEL II COURSES

HISTORY2AG EARLY MODERN EUROPE 1400-1715
A study of the transition from late mediaeval 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.

HISTORY2BG 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 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 3Q6. Students may take only one Level II History course.

HISTORY2AL LATIN AMERICA
A survey of Latin American History from the pre-Columbian civilizations to the present.
3 lects.; two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 3I6.

HISTORY2AL 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, except to students receiving credit for History 1K6.

HISTORY2AL CONTINENTAL 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); two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 1A6.

HISTORY2ML 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.

HISTORY2ML THE HISTORY OF SCIENCE
An introductory study of the evolution of scientific ideas and their relationship to the social and intellectual history of Europe.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY2L6 GREECE AND ROME
A study of the history of Greece and Rome from the Bronze Age to the 4th century A.D. Attention will be drawn to the political and social developments, as well as to the uses of archaeology in reconstructing historical events.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 1L6.

HISTORY2ML 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.

HISTORY2MI 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: Registration in any programme in History; or permission of the Department. Not open to students receiving credit for History 1M6.

HISTORY2L6 THE HISTORY OF MODERN ASIA
A survey of the history of East and South Asia with emphasis on the interaction between Asian and European civilization.
3 lects.; two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 3U6.

Alternates with History 3G6.

LEVEL III COURSES

HISTORY3A3 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.

HISTORY3AA3 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: One of History 1B6, 2A6, 2N6, 3N6; or permission of the Department.

HISTORY3BB3 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: History 1K6 or 2H6; or permission of the Department.

HISTORY3C3 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: History 2C6; or permission of the Department.

HISTORY3CC3 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 receiving credit for History 206.

HISTORY3D6 ROMAN HISTORY, 264 B.C.-A.D.117
A study of Rome and the Roman Empire during its greatest days, with special emphasis upon politics and the expansion of Rome's power. (Knowledge of Greek or Latin not required.)
3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 1L6 or 2L6 or Classical Civilization 1A6 or registration in any programme in Classical Civilization or Classics; or permission of the Department.

HISTORY3D3 IMPERIAL CHINA: SELECTED TOPICS IN THE HISTORY OF CHINA FROM 221 B.C. TO THE 18TH CENTURY
Government, social structure 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 receiving credit for History 206.

HISTORY3E6 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.

HISTORY3E3 HISTORY OF MEDICAL SERVICES 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: History 2E6; or permission of the Department.

HISTORY5FF 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: One of History 1B6, 1C6, 2M6, or permission of the Department. (Credit in History 3H6 or 3J6, or concurrent registration therein, is recommended.) Offered in alternate years.

HISTORY5GG PRE-HISTORIC AND PROTO-HISTORIC GREECE
A survey of the Neolithic and Bronze Age cultures and civilizations of Greece with special emphasis on the problems of documentation, the major historical questions and the position of Greece within the wider Mediterranean world.

3 hrs. (lects. and discussion groups); one term
Prerequisite: History 1L6 or 2L6 or Classical Civilization 1A6; or permission of the Department. Alternates with History 3H3.

HISTORY3G6 HISTORY OF SOUTH ASIA
The history of South Asia with a focus on the traditions of the Indian sub-continent, the British Raj and the emergence of independent India and Pakistan.

3 lects.; two terms
Prerequisite: Open to students in Level II and above. Alternates with History 2G6.

HISTORY3H6 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.

HISTORY3H3 THE EARLY CELTIC WORLD
The development of the Celtic peoples from Iron Age origins in central Europe through the period of expansion and contact with the Mediterranean world, especially the Roman Empire.

3 lects.; one term
Prerequisite: Satisfactory completion of 60 units of work. Alternates with History 3G3.

HISTORY3I6 THE HISTORY OF WARFARE, 1865-1945
A survey of the development of military, naval, and air doctrine and technology before the start of the nuclear age, with particular emphasis on the relationship between prewar theory and wartime experience during the two World Wars.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 1B6 or 1C6 or 2M6 and registration in any programme in History; or permission of the Department.

HISTORY3J6 GERMANY AND AUSTRIA FROM THE HABSBURGS TO HITLER
An analysis of major political, social, and cultural developments in the German states and Austria from the Reformation to 1955.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Registration in any programme in History or in any programme in German or Honours German; or permission of the Department.

HISTORY3K3 THE LIBERAL TRADITION IN THE 19TH CENTURY
The Utilitarian and the Natural Right Schools of Liberalism. Classical Liberalism and Nationalism. The traditionalist and Marxist Critique. The Catholic Church and Liberalism.

3 lects.; one term
Prerequisite: One of History 1B6, 1C6, 2M6; or permission of the Department.

HISTORY3L6 CLASSICAL GREECE
Greek History from the end of the Bronze Age to the coming of the Romans, including the emergence of the city-states and the development of their characteristic political and social forms, Athens in the 5th and 4th centuries. Alexander the Great and the Hellenistic world. (Knowledge of Greek or Latin not required.)

3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 1L6 or 2L6 or Classical Civilization 1A6 or registration in any programme in Classics or Classical Civilization; or permission of the Department.

HISTORY3M6 REVOLUTION AND REACTION, 1789-1848
A study of the liberal, radical, and conservative tradition in France and in Europe. The relationship of liberalism and nationalism.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: At least one previous course in European History; or permission of the Department.

HISTORY3N6 THE ENGLISH REFORMATION AND REVOLUTION, 1530-1700
A study of the relation between these crises, the forces which operated in them, and their historical interpretation.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 1N6 or 2N6, and registration in any programme in History, or permission of the Department.

HISTORY3O6 THE CITY IN NORTH ATLANTIC DEVELOPMENT
Internal developments and the external economic relations of cities, particularly in North America from the colonial era to the present. Supporting references are made to European cities.

3 lects.; two terms
Prerequisite: Open to students in Level II and above.

HISTORY3P3 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: One of History 1B6, 2A6, 3N6, or Religion 3N6; or permission of the Department.

HISTORY3Q6 ENGLAND IN THE GEORGIAN PERIOD, 1714-1830
An examination of selected problems in the political, social, economic and cultural history of the period.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 2N6 and registration in any programme in History; or permission of the Department.

HISTORY3R6 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., seminars and discussion groups); two terms
Prerequisite: History 2J6; or permission of the Department.

HISTORY3S6 CANADIAN INTELLECTUAL HISTORY
Major ideas and themes of debate from the Conquest to the mid-twentieth century will be surveyed under the broad theme of the transition from the idea of providence to that of progress.

3 hrs. (lects. and discussion); two terms
Prerequisite: History 2J6; or permission of the Department. Not open to students receiving credit for History 3W3.

HISTORY3T3 CONSERVATISM IN THE MODERN WORLD
A study of the development of conservatism from its 18th-century origins to its contemporary problems. Treatment combines intellectual history with political and social history.

3 hrs. (lects. and discussions); second term
Prerequisite: One of History 1B6, 1C6, 2M6, 3M6, or concurrent registration in History 2M6 or 3M6. Not open to students receiving credit for History 4K6.

HISTORY3U6 BRITISH HISTORY 1815-1945
An examination of the social and political evolution of Modern Britain, with particular emphasis on the democratisation of politics, the problem of class, the growth of government, and the impact of war.

3 lects.; two terms
Prerequisite: History 2N6; or permission of the Department.

HISTORY3V6 STUDIES IN CANADIAN HISTORY: FRENCH CANADA
An examination of the history of French Canada, particularly Quebec, from the 18th to the 20th century.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 2J6; or permission of the Department.

LEVEL IV COURSES
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.

HISTORY4A6 SPECIAL TOPICS IN BRITISH HISTORY (1668-1830)
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.

HISTORY4AA SPECIAL STUDIES IN THE HISTORY OF STUART ENGLAND
Studies in the political, religious, intellectual and social life of Stuart England, with political and religious aspects predominating.

Seminar (2 hrs.); two terms
ENROLMENT LIMITS

HISTORY 216 SPecIAL TOPICS IN BRITISH IMPERIAL HISTORY
The major emphasis of this course will be on the Victorian Empire.
Seminar(2 hrs.); two terms. Prerequisite: History 2N6 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 4C6 SPECIAL TOPICS IN BRITISH IMPERIAL HISTORY
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: History 1A6 or 216 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4G6 SPECIAL TOPICS IN THE HISTORY OF MEDIAEVAL EUROPE AND BYZANTIUM
Selected themes in the history of Mediaeval Europe and Byzantium. 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 4F6 SPECIAL TOPICS IN THE AGE OF THE ENLIGHTENMENT
A detailed study of the intellectual revolution of the 17th and 18th centuries. Seminar(2 hrs.); two terms. Prerequisite: Six units of European History, registration in Level III or IV of any Honours programme in History, a programme requiring History 4G6; or permission of the Department. Enrolment is limited.

HISTORY 4G6 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: A course on China or on Marxism and registration in Level III or IV of any Honours programme in History, or permission of the Department. Enrolment is limited.

HISTORY 416 SPECIAL TOPICS IN ROMAN HISTORY
The central theme will be the process and results of Roman expansion within Italy and beyond. Seminar(2 hrs.); two terms. Prerequisite: History 2L6 or 3L6, and registration in Level IV of any Honours programme in History with a History average of at least 9.0 or a programme requiring History 4G6; or permission of the Department. Enrolment is limited.

HISTORY 4J6 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES IN THE 20TH CENTURY
An intensive study of the social and economic development of the United States from 1914 to the present day. 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 4K6 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 4M6 SPECIAL TOPICS IN THE HISTORY OF THE RENAISSANCE AND THE REFORMATION
Seminar(2 hrs.); two terms. Prerequisite: One of History 1A6, 1B6, 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 4Z6. Enrolment is limited.

HISTORY 4O6 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 4P6 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 4Q6 SPECIAL TOPICS IN THE HISTORY OF THE AGE OF THE ENLIGHTENMENT
A detailed study of the intellectual revolution of the 17th and 18th centuries. Seminar(2 hrs.); two terms. Prerequisite: Six units of European History, registration in Level III or IV of any Honours programme in History, a programme requiring History 4G6; or permission of the Department. Enrolment is limited.

HISTORY 4R6 ENGLISH MEDIAEVAL HISTORY
Selected themes in the history of Mediaeval England. Seminar(2 hrs.); two terms. Prerequisite: History 1A6 or 216 and registration in Level III or IV of any Honours programme in History; or permission of the Department. Enrolment is limited.

HISTORY 4S6 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 9.0 and permission of the Department. Qualified students interested in doing field work in Ancient Archaeology as part of this course should see Dr. E. Wightman or the Chairman of the Department.

HISTORY 4T6 THE REFORM TRADITION IN CANADA
The history of reform in Canada, 1880-1939, under the influence of new thought, the new industrial-urban order, immigration, war, and depression. 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 4Z6. 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 4Z6. Enrolment is limited.

HISTORY 4V6 SPECIAL TOPICS IN THE HISTORY OF MODERN SCIENCE
A study of the scientific revolution and of its impact on western culture in the 19th and 20th centuries. 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 4Z6. Enrolment is limited.

HISTORY 4W6 SPECIAL TOPICS IN THE HISTORY OF MODERN CHEMISTRY
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
First term: comparative approaches to the history of society drawing on Canada, French, British and American models. Second term: individual research and reporting on aspects of the social history of Victorian Ontario. Seminar(2 hrs.); two terms. Prerequisite: 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 4Z6. Enrolment is limited.

For Graduate Courses see Calendar of School of Graduate Studies.

ITALIAN

(See "Romance Languages — Italian")
Humanities

CURRICULUM 1982-84

HUMAN1B6 THEMES IN WESTERN CIVILIZATION
A course in the methods and materials of the Humanities, drawing on selected literature, philosophy, history and art of Western culture. It concentrates on four figures crucial in shaping Western civilization, and their relationships to the cultures of their times: Socrates in the context of Greek philosophy and drama; St. Paul and the Judeo-Christian tradition; Shakespeare and Renaissance ethics; Wagner and Romantic decadence. The approach of the course will be to examine the ways in which perennial problems of conduct are treated in the four contrasted settings.
2 lects., 1 tut.; two terms
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
Further information regarding this course may be obtained from Dr. G. Roeckbeuck (English) and Prof. S. Aperstat (Philosophy).

HUMAN2A6 CRITICAL THINKING
Practice in following and evaluating arguments in humanistic subjects, through the study of representative texts. Emphasis will be placed on the nature of the language used to express a line of thought, on the different types of arguments employed, and on the implicit assumptions of the writers who employ them.
3 lects.; two terms
Prerequisite: Registration in Level II and above of a Humanities programme.

Labour Studies

Courses and the B.A. Programme in Labour Studies at McMaster University are supervised and co-ordinated by an interdisciplinary Committee of Instruction.

Committee of Instruction
R. Adams (Business)
M. Basadur (Business)
M. Dooley (Economics)
P. George (ex officio)
F. Jones (Sociology)/ Chairman
J. Jones (Social Work)
W. Roberts (Labour Studies)

CURRICULUM 1982-84

LABR ST1A3 THE CANADIAN LABOUR MOVEMENT
The impact of economic, social and cultural factors on the development, growth, structures and functions of the Canadian labour movement, and the problems of union self-government.
Lectures and discussions; one term
Prerequisite: Open.

LABR ST1B3 THEORETICAL FOUNDATIONS OF THE LABOUR MOVEMENT
An examination of the leading classical and contemporary theories of the labour movement.
Lectures and discussions; one term
Prerequisite: Open.

LABR ST2A3 TRADE UNIONISM: ORGANIZATION, PROCEDURES AND PRACTICES
An analysis of the operations and procedures of unions in Canada and the consequences of these procedures for union administration, membership participation, and other union concerns.
Lectures and discussions; one term
Prerequisite: Registration in the B.A. Programme in Labour Studies.

LABR ST3A3 CURRENT LABOUR ISSUES
Analysis of current issues from the standpoints of such special interest groups as labour, management and consumers, and in relation to developments in science and technology.
Lectures and discussion; one term
Prerequisite: Registration in the B.A. Programme in Labour Studies.

Latin
(See "Classics — Latin")

Linguistics

CURRICULUM 1982-84

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.

Courses in linguistics are supervised and co-ordinated by a Committee of Instruction in Linguistics. Advice on the selection of courses may be obtained from the chairman of the committee J. Colarusso (Anthropology) or its secretary G. Thomas (Russian).

There is no B.A. Programme in Linguistics, but students may enrol in courses with linguistic content offered by the various departments.

The following courses in Linguistics are available:

LINGUIST1A6 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 lects., 1 tut.; two terms
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
Same as Anthropology 1B6.

LINGUIST2A6 PHONETICS, PHONOLOGY, AND HISTORICAL LINGUISTICS
A rigorous introduction to the concepts and techniques used in phonetics, phonology and historical linguistics.
3 hrs.(lects. and discussion); two terms
Prerequisite: Open. May be taken by those who have completed 2M6 prior to 1982-83.
Same as Anthropology 2M6.

LINGUIST3A6 SYNTAX, SEMANTICS, AND MORPHOLOGY
A rigorous introduction to the concepts and techniques used in syntax, semantics and the study of morphology and word-formation.
3 hrs.(lects. and discussion); two terms
Prerequisite: Open.
Same as Anthropology 3M6.

LINGUIST3Y3 COMPARATIVE AND 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 2M6; or permission of the instructor.
Offered in alternate years.
Same as Anthropology 3Y3.

Other courses in Linguistics:

ANTHROPOLOGY 2Q3 Linguistics and the Study of Culture
ENGLISH 2S3 English as Communication
ENGLISH 2T3 Development of English
ENGLISH 2V6 The English Language
FRENCH 3A3 Stylistic Studies in the Language of French Poets
FRENCH 3B3 Semantics
FRENCH 3E3 Applied Linguistics and Second-Language Learning
FRENCH 3G3 General and Comparative Phonetics
FRENCH 3H3 Sociolinguistics
FRENCH 3L3 French Morphology and Syntax
FRENCH 423 Development of the Romance Languages
ITALIAN 4L4 Introduction to Italian Linguistics
PSYCHOLOGY 3M6 Language Development
RUSSIAN 4D3 Topics in Russian Language
SLAVIC 2F6 Introduction to Slavic Linguistics (Linguistics 1A6 is prerequisite)

For course descriptions and prerequisites of the above courses see the listings under each department. Other courses related to linguistics include Philosophy 4D3, and courses in the history of specific languages.

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
GREEK 1A6 Introduction to Greek Studies
LATIN 126 Beginners’ Intensive Latin
LATIN 1A6 Introduction to Latin Studies
SANSKRIT 4A6 Introduction to Sanskrit Grammar
RELIGIOUS STUDIES 718 Readings in Sanskrit Texts (permission needed)
Mathematical Sciences

Faculty as of January 15, 1982

T. Husain/ Chairman
I.Z. Chorneyko/ Associate Chairman

Professor Emeritus

Ernest A. Behrens/D.Phil.nat (Hamburg)

Professors

Bernhard Banaschewski/Dipl. Math., Dr.rer.nat. (Hamburg), F.R.S.C., McKay Professor of Mathematics
Claude E. Billigheimer/B.A., B.Sc., M.A. (Melbourne), Ph.D. (Toronto)
Gunter W.A. Bruns/Dr.rer.nat. (Berlin)
Tae Ho Choe/B.S., B.Sc., M.A. (Kyungpook), 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. (Toronto)

Assistant Professors

Mark W. Green/B.Sc. (McMaster), M.Sc. (Toronto)

CURRICULUM 1982-84

* Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

MATH1A6 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.

MATH1B4 LINEAR ALGEBRA I
Vectors, matrices, determinants, vector valued functions and space curves, complex numbers.
2 lects., 1 tut.; two terms
Prerequisite: Registration in, or completion of, Mathematics 1A6. Not open to students who are registered in, or have credit in, Mathematics 1G6.

MATH1F6 CALCULUS AND STATISTICS
The rudiments of differential and integral calculus. An introduction to probability and statistics including the binomial, Poisson, and normal distributions, linear regression, and simple hypothesis testing.
3 lects., 1 tut.; two terms
Prerequisite: Registration in Natural Science I; not open to students who are registered in, or have credit in, Mathematics 1B4 or 1G6.

MATH1G6 APPLIED ANALYSIS
Mathematics used in science. Topics include application of the calculus and introductions to algebra, vectors, statistics and numerical methods.
3 lects.; two terms
Prerequisite: Registration in, or credit in, Mathematics 1A6. Not open to students who are registered in, or have credit in, Mathematics 1B4.

MATH1H5 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.

MATH1K3 INTRODUCTORY CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to 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, IF6, IN6. Normally not open to students who have completed Grade 13 Calculus.

MATH1L3 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, Mathematics 1B4 or 1F6 or 1G6.

MATH1M3 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, 1N6.

MATH1N6 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 12 Mathematics, three credits including calculus.

MATH1Q6 REMEDIAL MATHEMATICS
The number system, notion of variable and function, basic operations involving variables, simplification of algebraic expressions, solutions of quadratic equations, introduction to trigonometric functions, and logarithms.
3 lects., 1 tut.; one term
Prerequisite: Open.

MATH2A5 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' and Stokes' Theorems.
2 lects., 1 tut.; first term, 2 lects.; second term
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2G3.

MATH2B4 LINEAR ALGEBRA II
Vector spaces, linear transformations, polynomials, determinants, canonical forms, Jordan forms, innerproduct spaces, bilinear forms.
2 lects.; two terms
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2G3.

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Lecturer

ERIC T. SAWYER/B.Sc. (McGill)
MATH2C4 DIFFERENTIAL EQUATIONS
2 lects.; two terms
Prerequisite: Registration in, or completion of, Mathematics 2A5. Not open to students who are registered in, or have credit in, Mathematics 2C3 or 3G3.

MATH2F4 SETS AND NUMBERS
Elementary operations on sets, relations, functions, ordinal and cardinal arithmetic. Axiom of Choice and some of its equivalents, the number system, topological concepts in n-space.
2 lects.; two terms
Prerequisite: Registration in an Honours programme in Mathematical Sciences or permission of the instructor. Not open to students who are registered in, or have credit in, Mathematics 2J6.

MATH2G3 INTERMEDIATE CALCULUS
Differential calculus of several variables, multiple integrals, line and surface integrals.
3 lects.; one term
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2A5.

MATH2H6 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.; two terms
Prerequisite: Registration in Level II, III, or IV of a non-Science programme.

MATH2J6 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 1B4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2B4 or 2F4.

MATH2K3 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: Mathematics 1A6 or 1F6 or 1M3; or permission of the instructor.

MATH2L3 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, 1M3, and one of Mathematics 1L3, 1B4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2A5 or 2G3.

MATH2M6 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 Mathematics 1H5 or 1H7.

MATH203 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: Registration in, or credit in, Mathematics 2G3. Not open to students who are registered in, or have credit in, Mathematics 2C4.

MATH2P4 DIFFERENTIAL EQUATIONS FOR ENGINEERS
4 lects. or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N6, and Mathematics 1H5 or 1H7.

MATH2Q4 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 Mathematics 1H5 or 1H7.

MATH2R5 REAL ANALYSIS
Development of the real number system, infinite series, differentiable functions of several variables. Stieltjes integral, uniform convergence, improper integrals and their applications.
3 lects.; two terms
Prerequisite: Mathematics 2A5 and 2B4, or registration in a programme in which Mathematics 3A6 is specified.
MATHEMATICAL SCIENCES

MATH333 OPTIMIZATION
Non-linear programming methods, integer programming, quadratic programming, stochastic programming, and dynamic programming.
3 lects.; one term
Prerequisite: Mathematics 2A5 or 2G3, and Mathematics 3R3.

MATH33 T COMPLEX ANALYSIS I
Analytic functions, power series, elementary conformal mappings, Cauchy's theorem, residue calculus.
3 lects.; one term
Prerequisite: Mathematics 2A5 or 2G3.

MATH36 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.

MATH393 DIRECTED READING
Directed reading in areas of mathematics of interest to the student and instructor.
Prerequisite: Permission of the Chairman of the Department.

MATH393 LIFE CONTINGENCIES I
Single life functions and probabilities, force of mortality, commutation functions, life annuities, insurance benefits, premium reserves.
3 lects.; one term
Prerequisite: Statistics 2D4, Mathematics 2K3, or permission of the instructor.

MATH393 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.

MATH394 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.
2 lects.; two terms
Prerequisite: At least two second-level mathematics or statistics courses other than Mathematics 2G3, 2H6, 2K3, 2L3.

MATH46 FUNCTIONS OF A COMPLEX VARIABLE
Study of analytic functions, their various representations, and their properties.
3 lects.; two terms
Prerequisite: Mathematics 3A6.

MATH494 DIFFERENTIABLE MANIFOLDS
Introduction to differentiable manifolds, differentiable forms.
2 lects.; two terms
Prerequisite: Mathematics 3P4.

MATH494 COMBINATORICS AND GRAPH THEORY
Inversion formulae, systems of distinct representatives, block designs and other configurations, trees, bipartite graphs, connectivity, graph colouring, matrix representations, applications.
3 lects.; two terms
Prerequisite: Mathematics 2A5 or 2G3, and Mathematics 2B4 or 2J6; or permission of the instructor.

MATH494 MATHEMATICAL PHYSICS II
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.
2 lects.; two terms
Prerequisite: Mathematics 3C6 and registration in an Honours or Engineering program.

MATH495 ALGEBRA II
Semi-simple modules and rings, group theory, polynomial and group rings, ideal theory, Galois theory.
3 lects.; two terms
Prerequisite: Mathematics 3F4.

MATH495 OPERATIONS RESEARCH
Network models and algorithms, dynamic models, quality control, stochastic models, queuing models, simulation and other topics.
3 lects.; one term
Prerequisite: Mathematics 3R3 and Statistics 2D4.

MATH495 MEASURE THEORY
Introduction to the theory of measure and integration with applications.
2 lects.; two terms
Prerequisite: Mathematics 3A6 or 306.

MATH495 TOPICS IN ADVANCED MATHEMATICAL ANALYSIS
Orthogonal functions; Fourier series and integrals; summability theorems; linear differential equations; integral equations; eigenfunction expansions; non-linear differential equations; calculus of variations.
2 lects.; two terms
Prerequisite: Mathematics 3A6 or 306.

MATH493 COMPLEX ANALYSIS II
Consequences of Cauchy's theorem; entire functions; analytic continuation; theory of conformal mapping; and other selected topics.
3 lects.; one term
Prerequisite: Mathematics 3T3.

MATH494 NUMERICAL ANALYSIS II
A detailed study including underlying hypotheses, convergence and stability methods available for the solution of ordinary and quasi-linear partial differential equations.
3 lects.; one term
Prerequisite: Mathematics 3Q4.

MATH494 SPECIAL FUNCTIONS
Gamma functions of a complex variable; asymptotic expansions; Watson's lemmas; Sturm-Liouville theory; eigenfunction expansions; generating functions and recurrence relations; orthogonal polynomials, other selected topics.
2 lects.; two terms
Prerequisite: Mathematics 2A5 and 2C4; or Mathematics 2G3 and 203.

MATH494 FINITE AUTOMATA
Computer arithmetic. Boolean algebra and its application to the logical design of computer circuits. Programming and different types of languages. Semigroups, automata, Turing machines.
2 lects.; two terms
Prerequisite: Registration in Level IV of a Mathematical Sciences programme.

MATH494 GENERALIZED FUNCTIONS
Some concepts of the Lebesgue integrals, functions represented by series and integrals, theory of distributions, Fourier and Laplace transforms of distributions and applications.
2 lects.; two terms
Prerequisite: Mathematics 3P4 and 364; or permission of the instructor.

MATH495 DIRECTED READINGS
Directed reading in areas of mathematics of interest to the student and the instructor.
Prerequisite: Registration in Level IV of an Honours Mathematical Sciences Programme and permission of the Chairman of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.

Statistics
- Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

STATS2D4 PROBABILITY THEORY I
Elementary theory of probability; random variables; discrete and continuous distributions including binomial, Poisson, hypergeometric, uniform, normal, \( \chi^2 \); moment-generating functions, limiting distributions, central limit theorems, applications.
2 lects.; two terms
Prerequisite: One of Mathematics 1A6, 1M3, and one of Mathematics 2B4, 1L3, 1G6.

STATS2R6 STATISTICS FOR PSYCHOLOGY AND LIFE SCIENCES
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: One of Mathematics 1A6, 1F6, 1M3, or 1N6. Not open to students who have completed Statistics 2D4 or 3M3, or Psychology 2R6 or 2R3, or equivalent.

STATS3D6 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 2D4; one of Mathematics 2A5, 2G3, 2L3.

STATS3R6 STATISTICAL METHODS
Introduction to statistical methods and applications data analysis and statistical methods.
3 lects.; one term
Prerequisite: Mathematics 1A6 or 1F6 or 1M3 or a grade of at least B in Mathematics 1K3 and 1L3. Not open to students who are registered in, or have credit in, Psychology 2R6, or Statistics 2R6.
STATSSUS STOCHASTIC PROCESSES I
Random walk, Markov chains, discrete and continuous parameter Markov processes, branching processes, birth and death processes, queueing processes.
3 lects.; one term
Prerequisite: Statistics 2D4; one of Mathematics 2A5, 2G3.

STATSSUS ENGINEERING MATHEMATICS IV
Further topics of interest for electrical engineering, emphasizing probability theory.
3 lects.; one term
Prerequisite: Mathematics 2F4, 2G4.

STATS4G3 THEORY OF GAMES
Two person zero-sum game, minimax theorem, n-person and continuous games, decision functions and applications.
3 lects.; one term
Prerequisite: Statistics 2D4, Mathematics 3A6 or 306.

STATS4J3 RELIABILITY THEORY
Reliability function, failure distributions, renewal theory, stochastic models, serial and redundant reliability systems, coherent structures and other selected topics.
3 lects.; one term
Prerequisite: Statistics 3D6.

STATS4M3 MATHEMATICAL STATISTICS II
A sequel to Mathematics 3D6, including multivariate distributions: Normal, Wishart, T2 and others; regression, correlation, factor analysis, general linear hypothesis.
3 lects.; one term
Prerequisite: Statistics 3D6; Mathematics 2B4 or 2J6.

STATS4S3 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 2D4 and Statistics 3M3; or permission of the instructor.

STATS4T3 DESIGN OF EXPERIMENTS
Analysis of variance and covariance; liner models; randomised block designs; Latin squares; factorial experiments. Emphasis on applications.
3 lects.; one term
Prerequisite: Statistics 3D6, or Statistics 2D4 and 3M3; or permission of the instructor.

STATS4U3 NONPARAMETRIC AND SEQUENTIAL METHODS IN STATISTICS
Rank tests and non-parametric methods; rank correlation; comparisons with parametric methods. The sequential probability ratio test; sequential estimation.
3 lects.; one term
Prerequisite: Statistics 2D4 or 3D6 and 3M3; or permission of the instructor.

STATS4V3 TECHNOMETRICS
Linear and non-linear models; response surface analysis; evolutionary operation; tests based on residuals; probability-plotted methods; statistical methods in instrument calibration.
3 lects.; one term
Prerequisite: Statistics 4T3.

STATS4X3 STOCHASTIC PROCESSES II
An introduction to the general theory of stochastic processes, stationary and weakly stationary processes, non-Markovian processes, covariance and harmonic analysis, point processes.
3 lects.; one term
Prerequisite: Statistics 3D6.

STATS4Y4 PROBABILITY THEORY II
Axioms of probability, random variables and their distributions, independence, characteristic functions, limit.
2 lects.; one term
Prerequisite: Statistics 2D4, Mathematics 3A6 or 306.

For Graduate Courses see Calendar of School of Graduate Studies.

Mechanical Engineering
Faculty as of January 15, 1982

J.H.T. Wade/ Chairman

Professors
Mohammed A. Dokainish/B.Sc. (Cairo), M.A.Sc., Ph.D. (Toronto)
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.
David S. Weaver/M.A.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.

Assistant Professor
Hoda A. ElMaraghy/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.

Lecturers
Robert W. Hamilton/B.Sc. (Los Angeles College of Art) / part-time
Robert C. Hudspith/B.Eng., M.Eng. (McMaster)

Associate Members
Dhanjoo N. Ghista/Ph.D. (Stanford)
Andrew Z. Szendrovisz/M.A., Ph.D. (Kolozsvar)

CURRICULUM 1982-84
Enrolment in Mechanical Engineering courses by students in programmes other than those administered by the Department may be limited.

Manufacturing Engineering
MANUFACT2C3 ENGINEERING DESIGN II
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 1C4, 1D3 and 2P4.

MANUFACT3M3 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, measurements and solid mechanics.
2 labs.(4,5); two terms
Prerequisite: Registration in Manufacturing Engineering.

MANUFACT4A3 COMPUTER AIDED MANUFACTURING
3 lects.; one term
Prerequisite: Mechanical Engineering 3C3.

MANUFACT4M4 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 I.

MANUFACT4P2 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, solid mechanics and controls.
1 lab.(3); two terms
Prerequisite: Manufacturing Engineering 3M3.

Mechanical Engineering
MECH ENG2A3 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 ENG2B3 MECHANICAL ENGINEERING MEASUREMENTS
Introduction to the theory and practice of engineering 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 ENG3C3 MANUFACTURING 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 2P4.

MECH ENG4C3 MANUFACTURING ENGINEERING
Thermodynamics
Singularity functions, generalized Hooke’s law; shear stress, shear flow in beams; shear centre. 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 3D3, 3D4 and 2P4.

MECH ENG3E3 MANUFACTURING MECHANICS
Prerequisite: Mechanical Engineering 3C3.

MECH ENG4E3 ENGINEERING ACOUSTICS
Propagation of sound: “near” and “far” fields, the diffuse field, reverberation time and transmission loss. Generation of noise by fluid flow, vehicular traffic and industrial machinery. Muffler and barrier design. Measurement techniques and noise analysis. Laboratory demonstrations.
3 lects.; one term
Prerequisite: Mechanical Engineering 3D3, 3D4 and 304.
Offered in alternate years.

MECH ENG4G3 THEORY OF DESIGN
The theory and methods of modern analytical design theory, including value theory, optimization, probabilistic design and reliability. Short design projects to illustrate the principles of design theory. Emphasis is placed on computer-aided design techniques.
2 lects., 1 lab.(3); one term
Prerequisite: Mathematics 2V6.

MECH ENG4L3 INDUSTRIAL DESIGN
Introduction for engineering students to the techniques of industrial design, case studies and introduction to illustration techniques.
3 lects.; one term
Prerequisite: Mechanical Engineering 2C2 or 2C3, and 3E4.

MECH ENG4M4 PROJECT
A major project related to any option or branch of 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 Mechanical Engineering beyond Level I, or of 100 units of Mechanical Engineering and Management beyond Level I.

MECH ENG4P2 COMPOSITE LABORATORY
Laboratory exercises in vibrations, transients, machine structures, controls, heat transfer, gas dynamics, fluid mechanics and thermodynamics.
1 lab.(3); two terms
Prerequisite: Mechanical Engineering 3M2 or 3M3; registration in Mechanical Engineering or Mechanical Engineering and Management.

MECH ENG4Q3 MECHANICAL VIBRATIONS
2 lects., 1 lect./tut.; one term
Prerequisite: Mathematics 2M6, 3V6, Engineering 3Q4, Mechanical Engineering 3A3 or equivalent.

MECH ENG4R3 CONTROL SYSTEMS
Control systems in a design context with emphasis on digital computer control techniques. Continuous linear systems with analog control, discrete time systems, digital control and the use of microcomputers.
3 lects.; one term
Prerequisite: Mathematics 3V6, Engineering 3N3.

MECH ENG4S3 FLUID MECHANICS
A sequel to Mechanical Engineering 304. Laminar and turbulent flows, boundary layers, unsteady flows, turbomachinery.
2 lects., 1 lect./tut.; one term
Prerequisite: Mechanical Engineering 304 or equivalent.

MECH ENG4T3 FINITE ELEMENT APPLICATIONS
The finite element method and its application to mechanical systems including static and dynamic analysis.
3 lects.; one term
Prerequisite: Mechanical Engineering 4Q3.

MECH ENG4U3 ADVANCED THERMODYNAMICS
An advanced approach to material covered in Mechanical Engineering 3D3, with emphasis on practical aspects of energy conversion and conservation, optimization of thermodynamic systems and the thermodynamics of working fluids. Direct energy conversion and energy collection systems.
3 lects.; one term
Prerequisite: Mechanical Engineering 3D3.

MECH ENG4V3 THERMO-FLUIDS SYSTEMS DESIGN AND ANALYSIS
The analysis and synthesis of realistic thermo-fluid devices and systems, including choice of failure modes and engineering modeling of performance. Emphasis is on applications.
3 lects.; one term
Prerequisite: Mechanical Engineering 3R3, 3D3 and 4S3.

MECH ENG4W3 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 3Q4.

MECH ENG4X3 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.
MECH ENG4Z3 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 ENG4Z3 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; Mechanical Engineering 2C2 or Manufacturing Engineering 2C2.

ENGINEER4J3 METAL FORMING
Offered jointly by the Departments of Mechanical Engineering and Metallurgy and Materials Science. See Engineering (General) for course description. See also the Calendar of the School of Graduate Studies.

Metallurgy and Materials Science

Faculty as of January 15, 1982

J.D. Embury/ Chairman

Professors
Dante Cosma/B.Eng., Ph.D. (Bucharest) / part-time
J. David Embury/B.Sc. (Manchester), Ph.D. (Cambridge), P.Eng.
M. Brian Ives/B.Sc., Ph.D. (Bristol), F.A.S.M., P.Eng.
D. Alan Ray/B.Sc., Ph.D. (Glasgow)
Wei-Kuo Li/B.Sc. (Chen-Kung), Ph.D. (Minnesota) /Steel Company of Canada Chair of Metallurgy
Frank Pearce/B.Sc. (Concordia) / part-time
G. Robert Piercy/M.A.Sc. (British Columbia), Ph.D. (Birmingham), P.Eng.

Assistant Professors
Gordon A. Irons/B.A.Sc. (Toronto), Ph.D. (McGill)
David S. Wilkinson/B.A.Sc. (Toronto), Ph.D. (Cambridge)

CURRICULUM 1982-84

Cermics

CERAMICS4A1 SUMMER ESSAY
Students are required to work in the ceramic industry the summer before entering Level IV Ceramic Engineering and write a report about their activities which will be defended orally. The Chairman must be consulted in the spring before commencing the summer experience.

CERAMICS4A2 CERAMIC PROJECTS
Each student will be given either an individual experimental project or an industrial design problem: The results are to be presented in the form of a thesis at the end of the academic session.
2 labs.(3); two terms
Prerequisite: Completion of a minimum of 60 units beyond Level I of a programme in Ceramic Engineering, Metallurgical Engineering, Honours Metallurgy and Materials Science; or permission of the department.

CERAMICS4A4 GENERAL CERAMIC LABORATORY
A series of laboratories relevant to glass and ceramics technology. Industrial seminars and design problems in the second term.
2 labs.(3); two terms
Prerequisite: Completion of either Ceramics 404 or 4P4, and Materials 3B4, 3D6.

CERAMICS4A4 CERAMICS AND GLAZES
The production of ceramics, raw materials survey, green-ware production and firing processes for traditional and space-age ceramics, glasses, enamels and glazes, special techniques for production of ceramic materials of specific properties.
2 lects.; two terms
Prerequisite: Chemistry 2F3 or 2S8; or permission of the Department.
Offered in alternate years.

CERAMICS4A4 GLASSES AND REFRACTORIES
Structure and physical properties of glasses. Raw materials used in glass and glass-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 2S8; or permission of the Department.
Offered in alternate years.

CERAMICS4A3 CASE STUDIES
The analysis of selected industrial problems, involving background science, cost analysis and process design.
2 lects., 1 tut.; one term
Prerequisite: Materials 3B4, 3D6, 3E6.

Materials

MATLS1A6 THE SCIENCE OF MATERIALS
An introductory course for non-specialists. The structure of materials, its control and effect on properties. The basic concepts and elementary scientific models are used to explain the behaviour of both natural and man-made materials.
2 lects., 1 tut. and independent study; two terms
Prerequisite: Registration in or completion of Natural Sciences I. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 203 or 204.

MATLS1A3 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. The first term of Materials 1A6.
2 lects., 1 tut.; one term
Prerequisite: Registration in or completion of Natural Sciences I.

MATLS2F3 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 and computation solution of problems in materials science.
1 lab.(3), first term, 2 labs.(3); second term
Prerequisite: Computer Science 1H3 or Engineering 1D3; Chemistry 1A7 and registration in a programme administered by the Department of Metallurgy and Materials Science.

MATLS3B4 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.

MATLS3D6 THERMODYNAMICS OF MATERIALS
Fundamentals of thermodynamics for classical, statistical, quantum mechanical and quasichemical points of view.
3 lects.; two terms
Prerequisite: Chemistry 2P4 or 2T4 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2P4.

MATLS3D3 THERMODYNAMICS OF MATERIALS I
The first half of Materials 3D6, with emphasis on "classical" topics such as equilibrium, solid solutions and phase diagrams.
3 lects.; one term
Prerequisite: Chemistry 2P4 or 2T4 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2F4.

MATLS3E6 TRANSPORT PROCESSES
Diffusion mechanisms in solids and their application to phase transformations. Heat transfer by conduction, convection and radiation, with application 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 2G3 and 203 or equivalent.

MATLS3H3 THERMODYNAMICS OF MATERIALS II
The second half of Materials 3D6, with emphasis on "atomic" topics such as statistical mechanics, ordering, interfaces and defects.
3 lects.; one term
Prerequisite: Chemistry 2P4 or 2T4 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2F4.

MATLS4D3 CORROSION
The oxidation of metals and alloys; electrochemical principles and methods applied to aqueous corrosion and its control.
3 lects.; one term
MUSIC

Prerequisite: Chemistry 2P4 or 2T4 or Chemical Engineering 2F4; or permission of the Department.

METALL43 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 3D6; or permission of the Department.

METALL43 DISLOCATION THEORY

3 lects.; one term
Prerequisite: Engineering 2P4 and Materials 3B4.

Metallurgy
METALL2C3 INTRODUCTION TO CHEMICAL METALLURGY
The application of chemical principles to metallurgy. Thermodynamics of oxides, sulphides and halides, general classification of extraction processes, electrochemistry, reaction kinetics and their application to heterogeneous reactions, interfacial phenomena, corrosion.

3 lects.; one term
Prerequisite: Registration in, or completion of, Chemistry 2T4.

METALL3C3 CHEMICAL METALLURGY I
Mineral dressing, slags and mattes, the iron and zinc blast furnaces, extraction from sulphide ores, electro-winning of aluminum and magnesium, halide metallurgy for production of beryllium, titanium, uranium and zirconium.

2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2P4 or 2T4 or Engineering 2W4.

METALL4A1 SUMMER ESSAY
An essay based on summer work experience is required of each student entering Level IV of Honours Metallurgy and Materials Science or Metallurgical Engineering. The essay will be defended orally. The Chairman must be consulted in the spring before commencing the summer experience.

METALL4C4 CHEMICAL METALLURGY II
A sequel to Metallurgy 3C3. Refractories and their application; physical chemistry of steelmaking processes; extraction and refining by aqueous reactions; modern analytical techniques.

3 lects., 1 lab.(3); one term
Prerequisite: Metallurgy 3C3 or completion of at least 60 units of the Ceramic Engineering programme beyond Level I.

METALL4K4 THESIS
Each student will have an individual problem which will be mainly experimental in nature. A preliminary report is required before the end of the first term. The results of the investigation must be presented in thesis form at the end of the academic session.

1 lab.(3), first term; 3 labs.(3), second term
Prerequisite: Completion of at least 60 units beyond Level I of a programme in Honours Metallurgy and Materials Science or Metallurgical Engineering or Engineering Physics or permission of the Department.

METALL4L4 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), first term, seminar, 1 lab.(3); second term
Prerequisite: Materials 3B4 and 3D6.

METALL4N3 KINETICS AND REACTOR ANALYSIS IN METALLURGICAL SYSTEMS

3 lects.; one term
Prerequisite: Materials 3E6, which may be taken concurrently; or permission of the instructor.

METALL4Q3 CASE STUDIES
The analysis of current industrial problems involving background science, cost analysis and process design.

2 lects., 1 tut.; one term
Prerequisite: Materials 3B4, 3D6, 3E6.

Engineering
ENGINEER203 STRUCTURE AND PROPERTIES OF ENGINEERING MATERIALS
See Engineering (General) for course description.

ENGINEER393 MECHANICAL BEHAVIOUR OF MATERIALS
See Engineering (General) for course description.

ENGINEER3Q3 ELECTRONIC PROPERTIES OF SOLIDS
See Engineering (General) for course description.

ENGINEER3P3 PHYSICAL METALLURGY
See Engineering (General) for course description.

ENGINEER4J3 METAL FORMING
Offered jointly by the Departments of Metallurgy and Materials Science and Mechanical Engineering. See Engineering General for course description.

See also the Calendar of the School of Graduate Studies.

Music

Faculty as of January 15, 1982

F.A. Hall/ Chairman

Professors

Marta Hidy/Mus.Mas. (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 Professors

Hugh Hartwell/Assoc.Dip., B.Mus. (McGill), A.M., Ph.D. (Pennsylvania)
Zdenek Konicek/Dipl. in Music, M.A. (Prague)
Denise Narcisse-Mair/B.Mus., A.R.C.M., L.R.A.M., G.R.S.M. (Visiting Associate Professor)

Assistant Professors

Frederick Hall/Assoc.Dip., B.Mus. (McGill), M.A., Ph.D. (Toronto)
Sharyn Hall/A.Mus., B.A., M.A., Ph.D. (Toronto) (part-time)
Paul Rapoport/A.B. (Michigan), M.Mus., Ph.D. (Illinois)

Lecturers (part-time)

Roger Flock
Steven Pettes/B.A
Siegfried Tepper/A.R.C.T., B.Mus., M.Mus.
Brenda Uchimaru
Sasha Weinstangel/B.A., B.Mus., M.Mus.

Instructors (part-time)

Reginald Bedford/piano
Richard Birney-Smith/harpischord
Alla Brat/piano
Scott Cameron/classical guitar
Mark Childs/Diploma (Curtis) /viola
John Courtney/B.Mus., M.M./bassoon
Dennis Driscoll/A.R.C.C.O. Dipl.,/organ
Paula Elliott/B.Mus., M.M./flute
Roger Flock/percussion
Robert Grim/Mus.Bac., A.M./trumpet
Myrtle Guerrero/piano
Robert Hansen/Mus.Bac./horn
Jim Howard/jazz band
Gregory B. Irvine/Mus.Bac./tuba
Gary Kidd/Mus.Bac./clarinet
Jon Peterson/Diploma (Curtis) /oboe
Steven Pettes/brass methods
John Price/B.Mus./saxophone
Joel Quarrington/Art.Dip./double bass
Kevin Read/trombone
Suzanne Shulman/flute
Wayne Strongman/Mus.Bac., M.A./voice
Valerie Tryon/piano
Brenda Uchimaru/Mus.Bac., B. Ed./woodwinds methods
Sasha Weinstangel/violin
Arlene Wright/A.R.C.T., L.Mus./keyboard skills

Artists-in-residence

Mark Childs (viola)
Valerie Tryon (piano)
Sasha Weinstangel (violin)
MUSICIA6 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. Not available to students registered in Honours Music.
No previous musical knowledge required.

MUSICIB HISTORY OF MUSIC (CA. 500-1750)
A survey of mediaeval, renaissance, and baroque music. Includes considera-
tion of performance practices, and influences of the other arts and of
soo-political developments.
3 lects.; two terms
Prerequisite: Registration in a Music programme. Not available to students
receiving credit for Music 1B4 or 1BB4.

MUSICIC2 COUNTERPOINT
An introduction to modal counterpoint in the style of the late renaissance.
1 lect.; two terms
Prerequisite: Registration in a Music programme. Not available to students
receiving credit for Music 1C6.

MUSICID2 AURAL TRAINING AND GENERAL MUSICIANSHIP
Sight-singing with instruction in Tonic Sol Fa. Elementary melodic, harmonic,
and rhythmic dictation.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSICID2 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. Not available to students
receiving credit for Music 1C6.

MUSICIE4 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.

MUSICIO2 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.

MUSICIA6 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.

MUSICIB3 HISTORY OF MUSIC (CA. 1750-1880)
A survey of classical and romantic music.
3 lects.; one term
Prerequisite: One of Music 1B6, 1BB4, 2B4; and registration in a Music
programme. Not available to students receiving credit for Music 2BB4.

MUSICIB3 HISTORY OF MUSIC (CA. 1880 TO THE PRESENT)
A survey of post-romantic and 20th-century music.
3 lects.; one term
Prerequisite: Music 2B3 or 2BB4; and registration in a Music programme.
Not available to students receiving credit for Music 3B4B.

MUSICIC2 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
Lasso.
1 lect.; two terms
Prerequisite: Music 1C2 or 1CC6; and registration in a Music programme.
Not available to students receiving credit for Music 2C4.

MUSICIC2 HARMONY
A continuation of Music 1CC2. Chromatic harmony and the completed
major-minor system.
1 lect.; two terms
Prerequisite: Music 1C6 or 1CC2; and registration in a Music programme.
Not available to students receiving credit for Music 2C4.

MUSICID2 AURAL TRAINING AND GENERAL MUSICIANSHIP
A continuation of Music 1D2. Imitative counterpoint in the style of the late
renaissance. Includes study of music by composers such as Palestrina and
Lasso.
1 lect.; two terms
Prerequisite: Music 1D2 and registration in a Music programme.

MUSICID2 KEYBOARD SKILLS
A continuation of Music 1D2D. Includes transposing at sight and score
reading.
1 lect.; two terms
Prerequisite: Music 1C6 or 1D2D; and registration in a Music programme.

MUSICIE4 PRACTICAL STUDY
A continuation of Music 1E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 1E4 and registration in a Music programme.

MUSICIG2 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.

MUSICIH2 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 1C6 or 1CC2; and registration in a Music programme.

MUSICIA6 MUSIC EDUCATION
A survey of the Kodaly and Orff methods of music education, of the
classroom repertoire, and of the rudiments of music.
3 lects.; two terms
Prerequisite: Music 1A6 or 2A6; or permission of the Department. Not
available to students registered in Honours Music.

MUSICIB3 TOPICS IN MUSIC HISTORY: EARLY MUSIC
(MEDIAEVAL TO BAROQUE) 1982-83: The Choral Music Of Bach and Handel
Seminar (2 hrs.); one term
Prerequisite: One of Music 2B3, 2B4, 2BB4; and registration in a Music
programme. Music 3BB3 may be repeated, if on a different topic, to a total of
6 units.
Alternates with Music 3BB3.

MUSICIB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE
ROMANTIC ERA 1983-84: 19th-Century Piano Music
Seminar (2 hrs.); one term
Prerequisite: One of Music 2B3 or 2BB4; and registration in a Music
programme. Music 3BB3 may be repeated, if on a different topic, to a total of
6 units.
Alternates with Music 3BB3.

MUSICIC4 HARMONY AND COUNTERPOINT
Advanced studies in baroque music. Invention and fugue.
2 lects.; two terms
Prerequisite: Either Music 2C4 or 2C2 and 2CC2; and registration in a Music
programme.

MUSICIC4 PRACTICAL STUDY
A continuation of Music 2E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 2E4 and registration in a Music programme.

MUSICIC2 G2 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.

MUSICIC4 ORCHESTRA
A study of the instruments of the orchestra. The scoring of music for
symphony orchestra and for concert band.
2 lects.; two terms
Prerequisite: Either Music 1C6 or 1C2 and 1CC2; and registration in a Music
programme.

MUSICIC3 BRASS METHODS
A study of the basic techniques of playing brass instruments. Brass literature
for various educational levels. No previous study of brass required. Each
student will concentrate on one instrument and gain a working knowledge of
the others.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSICIC3 WOODWIND METHODS
A study of the basic techniques of playing woodwind instruments. Woodwind
literature for various educational levels. No previous study of woodwinds
required. Each student will concentrate on one instrument and gain a
working knowledge of the others.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSICIC4 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.
NURSING

2 lects.; two terms
Prerequisite: Registration in a Music programme.

MUSIC3N3 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.

MUSIC303 CONDUCTING
Fundamental conducting techniques applied to works selected from the standard repertoire.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSIC3R3 RESEARCH METHODS AND BIBLIOGRAPHY
An examination of the major reference and bibliographic sources. Historical, analytical, and critical methods of research.
2 lects.; one term
Prerequisite: Music 2B3 or 2BB4; and registration in a Music programme.

MUSIC3T3 CANADIAN MUSIC
An historical survey of music in Canada, in the context of social and political developments, from ca. 1600 to the present.
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.

MUSIC3U3 JAZZ
A study of selected performers and arrangers in the history of jazz, focusing on the evolution of melodic improvisation.
2 lects.; one term
Prerequisite: Music 1A6 or completion of 18 units of Music including either Music 1C2 or 1C6; or permission of the Department.
Offered in alternate years.

MUSIC4A4 COMPOSITION
The composition of various instrumental or vocal works. Times to be arranged between the student and instructor.
Prerequisite: Registration in a Music programme and permission of the instructor.

MUSIC4B3 TOPICS IN MUSIC HISTORY: MUSIC OF THE CLASSICAL ERA
1982-83: Opera
Seminar 2 hrs.; one term
Prerequisite: Music 2B3 or 2BB4; and registration in a Music programme.
Music 4B3 may be repeated, if on a different topic, to a total of 6 units.
Alternates with Music 4BB3.

MUSIC4BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE 20TH CENTURY
1983-84: The Evolution of the Avant-Garde
Seminar 2 hrs.; one term
Prerequisite: Music 2BB3 or 2BB4; and registration in a Music programme.
Music 4BB3 may be repeated, if on a different topic, to a total of 6 units.
Alternates with Music 4B3.

MUSIC4C4 HARMONY AND COUNTERPOINT
Advanced studies in classical and romantic music. Variations, sonata, and character pieces.
2 lects.; two terms
Prerequisite: Music 3C4 and registration in a Music programme.

MUSIC4E4 PRACTICAL STUDY
A continuation of Music 3E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 3E4 and registration in a Music programme.

MUSIC4G2 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.

MUSIC4H3 ANALYSIS
Advanced studies in analysis.
Seminar 2 hrs.; one term
Prerequisite: For 1983-84: Music 2C4, 2H4 and registration in a Music programme.
For 1982-83: Music 2BB3, 2H4 and either 2C4 or 2CC2; and registration in a Music programme. Not available to students receiving credit for Music 4H4.
Offered in alternate years.

MUSIC4I3 AESTHETICS AND CRITICISM
Philosophies of music. A discussion of major theories from the ancient Greeks to the present.
Seminar 2 hrs.; one term
Prerequisite: Music 2A6 or 2BB3; and registration in a Music programme.
Not available to students receiving credit for Music 4I4.
Offered in alternate years.

MUSIC4K3 BRASS METHODS
A continuation of Music 3K3.
1 lect.; two terms
Prerequisite: Music 3K3 and registration in a Music programme.

MUSIC4L3 WOODWIND METHODS
A continuation of Music 3L3.
1 lect.; two terms
Prerequisite: Music 3L3 and registration in a Music programme.

MUSIC4M4 STRING METHODS
A continuation of Music 3M4.
2 lects.; two terms
Prerequisite: Music 3M4 and registration in a Music programme.

MUSIC4O3 CONDUCTING
A continuation of Music 3O3.
1 lect.; two terms
Prerequisite: Music 3O3 and registration in a Music programme.

MUSIC4P3 PERCUSSION METHODS
A study of the basic techniques of playing percussion instruments. Percussion literature for various educational levels. No previous study of percussion required.
2 lects.; one term
Prerequisite: Registration in a Music programme. Not available to students receiving credit for Music 4P2.

MUSIC4SA SPECIAL STUDIES
Advanced supervised study in any area offered and approved by the Department.
Times to be arranged between the student and instructor.
Prerequisite: A Level III or IV course in the student's proposed area of study, permission of the Department, and registration in an Honours Music programme.

Nursing

CURRICULUM 1982-84

NURSING1F7 INTRODUCTION TO NURSING
Concepts of health within the individual and family in health are studied within the framework of the process of nursing, with emphasis on beginning assessment, communication and interviewing skills. Clinical laboratory experiences are offered in institutional and community settings for beginning nursing practice.
3 hrs. (clinical lab.); 3 hrs. (lect./problem-based tut.); two terms

NURSING2H4 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. (clinical lab., including tut.); per week for 4 wks; third term
Prerequisite: Nursing 2L6, 2M5, or equivalent.

NURSING2L6 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. The nursing process is utilized to promote adaptation. 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. (clinical lab.); 2 terms
Prerequisite: Nursing 1F7, or equivalent.

NURSING2M5 NURSING CONCEPTS IN HEALTH AND ILLNESS I
Integration of biological, psychological and social sciences and nursing theory are developed through work in problem-based tutorials, in which students apply concepts related to nursing, teaching-learning and communication processes to a variety of patient situations. Through independent study, students apply theoretical knowledge to a chosen clinical topic.
2 1/2 hrs. (lect./problem-based tut.); two terms
Prerequisite: Nursing 1F7, or equivalent. Normally to be taken concurrently with Nursing 2L6.

NURSING3S8 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
Prerequisite: Normally taken concurrently with Nursing 3K7, 3Y7.

NURSING3X7 GUIDED NURSING PRACTICE III
Planned and guided practice experiences are provided in a variety of settings (e.g. psychiatric, 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 tuts.); 13 weeks

NURSING3Y7 GUIDED NURSING PRACTICE IV
A continuation of N3X7.

21 hrs. (clin. lab. including tuts.); 13 weeks

NURSING4A2 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 lects. every other week; two terms

NURSING466 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

Prerequisite: Normally to be taken concurrently with Nursing 4J7 or 4K7.

NURSING4J7 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

NURSING4K7 GUIDED NURSING PRACTICE VI
A continuation of Nursing 4J7.

Philosophy

Faculty as of January 15, 1982

J.H. Noxon / Chairman

Professors Emeriti

Horace A. Dulmage/B.A., B.D. (McMaster), Ph.D. (Chicago)
Frederick W. Waters/B.A., B.D. (McMaster), Ph.D. (Yale)

Professors

G. Brent Madison/B.A. (Rensselaer), M.A. (Marquette), Ph.D. (Paris)
James H. Noxon/M.A. (Queen's), Ph.D. (Edinburgh)
Evan Simpson/A.B. (Amherst), Ph.D. (Duke)
Neil L. Wilson/B.A. (British Columbia), M.A. (Toronto), Ph.D. (Yale)

Associate Professors

Constantine Georgiadis/M.A. (Warsaw), Ph.D. (London)
David L. Hitchcock/B.A. (McMaster), Ph.D. (Claremont)
Samim M. Najmi/A.A. (Beirut), B.A. (Wesleyan), M.A., Ph.D. (Yale)
Michael Radner/B.A. (Carleton College, Minn.), M.A., Ph.D. (Minn.)

Assistant Professors

Samuel Ajzenstat/M.A. (Toronto)
Catherine Beattie/B.A. (McMaster), M.A. (Guelph), Ph.D. (London)
John R.M. Bristol/M.A., Ph.D. (Toronto)/part-time
Nicholas J. Griffin/B.A. (Leicester), Ph.D. (Australia)
Spiro Panagiou/B.Sc., M.A. (Guelph), Ph.D. (St. Andrews)

CURRICULUM 1982-84
The Department of Philosophy offers two Level I courses, each of which is designed to introduce the student to the study of philosophy. No student may take more than one of these courses.

The Department of Philosophy offers courses in five major areas 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.

PHILOS16 PHILOSOPHY AND SOCIETY
An introduction to philosophy, through the social-political thought of Plato, Hobbes, and either Mill or Marx. The emphasis is on theories of human nature.

2 lects., 1 tut.; two terms

Prerequisite: Open, except to students who have credit in, or are registered in, Philosophy 1D6.

PHILOS1D6 PROBLEMS IN PHILOSOPHY
A critical investigation of man's understanding of God, himself, political society, morality, art, and nature.

2 lects., 1 tut.; two terms

Prerequisite: Open, except to students who have credit in, or are registered in, Philosophy 1B6.

PHILOS2A6 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.

3 lects.; two terms

Prerequisite: Open to students in Level II and above.

PHILOS2B3 INTRODUCTORY LOGIC
Sentential and quantification logics are introduced and applied to arguments in English.

3 lects.; one term

Prerequisite: Open to students in Level II and above.

PHILOS2C6 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.

2 lects., 1 tut.; one term

Prerequisite: Open to students in Level II and above.

PHILOS2F6 PHILOSOPHICAL PSYCHOLOGY
An introduction to the body/mind problem as formulated by some philosophers and by some medical writers. Among the former: Plato, Aristotle, Aquinas, Descartes .... Among the latter: Hippocrates, Fernel, Willis, Whytt ....

1 lect. (2 hrs.), 1 tut.; two terms

Prerequisite: Open to students in Level II and above.

PHILOS2G3 SOCIAL AND POLITICAL ISSUES
A critical scrutiny of some contemporary social and political issues, such as the distribution of wealth, coping with ecological problems and the enforcement of morals.

2 lects., 1 tut.; one term

Prerequisite: Open to students in Level II and above.

PHILOS2H3 AESTHETICS
An introduction to some main theories of the nature of art, criticism, and the place of art in life and society.

3 lects.; one term

Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS2J3 CRITICAL THINKING
A skill-oriented course designed to improve students' ability to assess critically what they hear and read. The course uses real-life examples and avoids symbolism.

2 lects., 1 tut.; one term

Prerequisite: Open to students in Level II and above.

PHILOS2K3 UNDERSTANDING SCIENTIFIC REASONING
A skill-oriented course designed to improve students' ability to analyze, evaluate and use the scientific information that we encounter every day.

2 lects., 1 tut.; one term

Prerequisite: Open to students in Levels II and above. No particular mathematical or scientific background is required. Philosophy 2B3 or 2J3 is helpful but not essential.

PHILOS2L3 INTRODUCTION TO PHILOSOPHY OF BIOLOGY
Introduction to philosophical problems arising from Biology: the nature of biological laws and explanations, the presuppositions of taxonomy, the status of socio-biology and evolutionary theory.

2 lects., 1 tut.; one term

Prerequisite: One course in Biology or Philosophy 2B3; or permission of the instructor.

PHILOS3A6 FROM ROUSSEAU TO HEGEL
Kant, Hegel, and a number of their immediate predecessors are studied in the context of Romanticism and the French Revolution.

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.

PHILOS3B3 PHILOSOPHIES OF EXISTENCE
An examination of the 19th-century forerunners of contemporary existential philosophy, concentrating principally on the thought of Kierkegaard and Nietzsche.
PHILOSOPHY

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.

PHILOS3D PRAGMATISM
A study of the main American contribution to philosophy, with emphasis on the writings of Charles Peirce and William James.
1 lect.(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.

PHILOS3E 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.

PHILOS3F SYMBOLIC LOGIC
The method of semantic tableaux will be used to prove the completeness and soundness of the classical sentential and functional calculi, Church's Theorem, and Goedel's Theorem. A continuation of Philosophy 2B3.
3 lects.; one term
Prerequisite: Philosophy 2B3; or permission of the Department.
Offered in alternate years.

PHILOS3G 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.

PHILOS3H 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.

PHILOS3I 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.

PHILOS3J PHILOSOPHY OF EDUCATION
An introduction to the philosophy of education and its role in dealing with contemporary educational issues, e.g., a compulsory core curriculum and equality of educational opportunity.
2 lects., 1 tut.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS3K INDUCTIVE LOGIC
A relatively non-technical introduction to the calculus of probability, the various "theories" of probability, and an examination of the bearing of probability estimates on decision making.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department.
Offered in alternate years.

PHILOS3L POLITICAL PHILOSOPHY
A study of the main political theories — 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.

PHILOS3M INTRODUCTION TO THEORY OF KNOWLEDGE
A systematic examination of key concepts and problems of knowledge, including such concepts as perception, experience, belief, inference, verification, and truth.
1 lect.(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.

PHILOS3N RUSSELL
A survey of Russell's philosophical thought, including his theory of knowledge and metaphysics and his political and social ideas.
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.

PHILOS3O 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.

PHILOS3P DESCARTES
A study of Cartesianism as a response to 16th Century mechanism. Texts: Descartes' Principles of Philosophy, The Passions of the Soul, and the Meditations. Students should already have read the Discourse on Method.
1 seminar(2 hrs.); one term
Prerequisite: Philosophy 2C6 or 2F6 and registration in Level III or IV of any programme; or permission of the Department.
Offered in alternate years.

PHILOS3Q 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.

PHILOS3R EPISTEMOLOGY
A critical discussion of selected topics in contemporary contributions to the theory of knowledge.
1 seminar(2 hrs.); one term
Prerequisite: Philosophy 3O3; or permission of the Department. Offered in alternate years.

PHILOS3S PHILOSOPHY AND LANGUAGE
A study of relationships among language, thought and reality.
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.

PHILOS3T CONTEMPORARY EXISTENTIAL AND PHENOMENOLOGICAL PHILOSOPHY
A study of selected texts of major existential and phenomenological philosophers in the 20th century.
Seminar(2 1/2 hrs.); one term
Prerequisite: Philosophy 3B3; or permission of the Department.

PHILOS3U METAPHYSICS
An investigation of metaphysical concepts, such as substance, individuation, identity, essence, quality, process, mind, time and causality. Some contemporary critiques of metaphysics will be discussed.
Seminar(2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department.

PHILOS3V MEDIAEVAL 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.

PHILOS3W HUME
A study of Hume's epistemology and metaphysics based upon Book I of A Treatise of Human Nature and An Enquiry Concerning Human Understanding.
1 seminar(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.

PHILOS3X PHILOSOPHY AND SCIENCE
Philosophy of science is considered as a branch of the theory of knowledge and developed from the period of Descartes and Kant to the present.
3 lects.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS3Y KANT
A study of the Critique of Pure Reason, with reference to the metaphysical and epistemological problems raised by Hume.
1 seminar(3 hrs.); one term
Prerequisite: Philosophy 3A6; or permission of the Department.
Offered in alternate years.

PHILOS4A 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. Not available to students in Philosophy 4W3.

PHILOS4B 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 8.5 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

Physical Education

Faculty as of January 15, 1982

J.L. Starkes/ Chairman

Professors
Frank J. Hayden/B.A. (Western) , M.A., Ph.D. (Illinois)
Allan J. Smith/B.S.A., M.Ed. (Toronto), D.Ed. (SUNY, Buffalo)

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)
Rose M. Hill/B.P.H.E. (Toronto), M.A. (State University of Iowa)
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)

Fredrick A. Moyes/Dip. P.E. (Jordahill), M.Ed. (Liecester)
Neil B. Oldridge/B.A. (Rhodes), M.A. (Florida), Ph.D. (Wisconsin)
Digby G. Sale/B.P.H.E. (Toronto), M.A. (Western) , Ph.D. (McMaster)

Assistant Professors
Peter Donnelly/Dip.Ed. (City of Birmingham College), B.A., (Hunter College, N.Y.), M.S., Ph.D. (Massachusetts)
William J. Mahoney/B.A. (Carleton) , B.P.E. (McMaster) , M.Ed. (SUNY, Buffalo)
Janet L. Starkes/B.A. (Western), M.Sc., Ph.D. (Waterloo)

Lecturers
Judy A. Alaszkiewicz/B.A., M.A. (Western)
John Birch/B.Sc., M.Sc. (Waterloo)
Michael Cain/B.A. (York)
Robert J. Henderson/B.P.E. (McMaster) , M.A. (Alberta)
Susan E. Inglis/B.P.E., M.A. (Alberta)
Joanne M. Kennedy/B.A., M.A. (Western)
Andrea M. Mann/B.A., B.P.E. (McMaster) , M.Sc. (Dalhousie)
Cindy Riach/B.A., B.P.H.E., B.Ed., M.A. (Queen's)
Sue Summers/B.P.E. (McMaster) , M.A. (Western)
G. Ross Tripp/B.P.E. (McMaster) , M.A. (Western)

CURRICULUM 1982-84

The following courses are open only to students registered in the four level Bachelor of Physical Education programme, except where otherwise designated.

Required courses are as follows: 1A6, 1B3, 1E3, 2A3, 2B3, 2C6, 2D3, 2F3, 3A6, 3E3. Elective offerings include: 3B3, 3C3, 3D3, 3F3, 3G3, 3H3, 3J3, 3K3, 3L3, 3M6, 3P3, 3Q3, 4A6, 4B3, 4C6, 4E3, 4F3, 4G3, 4J3, 4L3, 4M3, 4O3, 4P3, 4R3, 4S3.

PHYS ED1A6 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

PHYS ED1B3 SOCIOLOGY OF SPORT
Critical examination of contemporary issues and problems of sport in Canadian society.
3 hrs. (lects. and discussion); one term

PHYS ED1E3 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

PHYS ED2A3 KINESIOLOGY
Motor skills analyzed in terms of elementary mechanical principles.
1 lect., 2 labs.; one term

PHYS ED2B3 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

PHYS ED2C6 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

PHYS ED2D3 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

PHYS ED2F3 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

PHYS ED3A3 ADAPTED PHYSICAL ACTIVITY AND MOVEMENT
Usual activity and movement designed to meet the needs, interests, and abilities of individuals referable to special physical activity programmes.
3 lects.; one term

PHYS ED3M6 MEASUREMENT AND EVALUATION 1
Analysis of test results; concepts of correlation, reliability, and validity.
3 hrs. (lects., lab.); one term

PHYS ED3M6 MEASUREMENT AND EVALUATION II
Implication of testing in the motor domain; test construction and measurement of individual motor performance and physical activity programmes.
3 hrs. (lects., lab.); one term

PHYS ED3F3 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.
3 hrs. (lects., seminars); one term
Prerequisite: Permission of instructor.

PHYS ED3G3 INDIVIDUAL ASPECTS OF PLAY AND GAME INVOLVEMENT
Traditional and contemporary concepts related to participation in work, play, and athletic pursuits, are examined and discussed.
2 lects., 1 seminar; one term

PHYS ED3H3 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 ED3J3 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
Prerequisite: With permission of the instructor this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Offered Summer 1983.

PHYS ED3K3 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 ED3L3 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
3F3 is not a prerequisite.

PHYS ED3M6 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.
Enrollment is limited.

PHYS ED3P3 SPORT AND SOCIAL PROCESSES
Macro-analysis of sport in society; investigation of the relationship between sport and other social institutions.
(2 lects., 1 seminar); one term
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

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PHYS ED3Q3 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
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED4Q3 BIOMECHANICS OF HUMAN MOVEMENT
The mechanics (statics and dynamics) of human movement applied to specific position and movement problems. Interaction of selected neuro-physiological mechanisms which may be operable.
3 hrs. (lects., labs., discussion); one term
Prerequisite: Permission of instructor. Above average performance in Physical Education 3A6 and credit in Physics 2M3.
Offered 1982-83.

PHYS ED4Q4 BIOMECHANICS OF HUMAN MOVEMENT
Mechanical and neurophysiological principles, and their interaction, applied to specific static and dynamic human movement problems.
3 hrs. (lects., labs.); two terms
Prerequisite: Permission of instructor. Above average performance in Physical Education 2A3 and credit in Physics 2M3.
Offered 1982-83.

PHYS ED4Q5 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: Satisfactory completion of Physical Education 3B3.

PHYS ED4Q6 PRINCIPLES OF TRAINING AND CONDITIONING
Factors affecting human performance, and their application to athletic training and conditioning.
2 lects., 1 lab (2); one term
Prerequisite: Permission of instructor; open to Level IV B.P.E. students.
Offered 1982-83.

PHYS ED4Q7 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.
Offered 1983-84.

PHYS ED4Q8 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
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED4Q9 SELECTED TOPICS IN PROGRAMME PLANNING AND DESIGN
Attention given to programme planning and design of human movement programmes in physical education, sport and recreation.
3 hrs. (lects., seminars); one term

PHYS ED4Q10 PERSPECTIVES IN DANCE — A CULTURAL SURVEY
Dance in selected cultures, its role in ritual, in art and in theatre.
3 hrs. (lects., seminars); one term
Prerequisite: 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 4C3.
Offered in 1982-83; not offered in 1983-84.

PHYS ED4Q11 PERSPECTIVES IN DANCE — DANCE IN CONTEMPORARY SOCIETY
Dance forms in the 20th century. Students view films, dance performances and participate in dance work shops.
3 hrs. (lects., seminars); one term
Prerequisite: 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 4J3.
Offered 1983-84; not offered 1982-83.

PHYS ED4Q12 COMPARATIVE PHYSICAL EDUCATION AND SPORT (SELECTED TOPICS)
Contemporary physical education in selected countries, with special attention given to international sports competition.
2 lects., 1 seminar; one term
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED4Q13 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
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

PHYS ED4Q14 HEALTH SCIENCE: PHYSICAL AND ENVIRONMENTAL
Selected transactions between the individual, the environment and disease agents, are explored as these transactions influence human diseases.
3 hrs. (lects., seminars); one term
Prerequisite: Permission of the instructor.

PHYS ED4Q15 HEALTH SCIENCE: BEHAVIOURAL
Development of an understanding of those health topics primarily on the behavioural sciences. Specifically included are mental health, psychoactive drugs, and human sexuality.
3 hrs. (lects., seminars); one term
Prerequisite: Permission of the instructor.

PHYS ED4Q16 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 ED4Q17 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: Satisfactory completion of Physical Education 3B3; or permission of the instructor. Enrolment is limited.

PROCEDURE FOR SELECTION OF PRACTICUM CLASSES
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.

1. Any student wishing to take more than 2 units of Practicum (Placement) 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.
2. A student wishing to take a Field Work practicum must obtain the permission of the instructor responsible.
3. Any student wishing to take more than 2 units of Field Work practicum must 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 to do so from the Chairman of the Department.
5. Physical Education students are expected to satisfy the requirements of each activity course selected and pursued.

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. A student wishing to take a Field Work practicum must obtain the permission of the instructor responsible.
4. Any student wishing to take more than 2 units of Field Work practicum must do so in addition to the minimum of 14 units.
5. A student wishing to take more than four courses per level, or more than one course per session, must obtain permission to do so from the Chairman of the Department.
6. Physical Education students are expected to satisfy the requirements of each activity course selected and pursued.

OUTDOOR ACTIVITY COURSES
Courses in outdoor activities, e.g., canoeing, orienteering, sailing, etc., will be offered in a camp situation prior to the commencement of the academic year. Courses in skiing will be offered during the winter, but outside the regular time-tabled programme. 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, that is: one unit credit for each 24-hour course completed with at least a D— grade.
PHYSICS

Faculty as of January 15, 1982
M.R. Collins/Chairman
D.W. Taylor/AssociateChairman
Professor Emeritus
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/B.Sc. (Queen's), Ph.D. (McMaster)
Bertram N. Brockhouse/B.A. (British Columbia), M.A., Ph.D. (Toronto), D.Sc. (Waterloo), F.R.S.C., F.R.S.
I. David Brown/B.Sc., Ph.D. (London)
Dennis G. Burke/B.E., M.Sc. (Saskatchewan), Ph.D. (McMaster)
John A. Cameron/B.A. (Toronto), Ph.D. (McMaster)
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. Garside/B.A., D.Phil. (Oxford)
David A. Goodings/B.A. (Toronto), Ph.D. (Cambridge)
Archie A. Henn/B.Sc. (British Columbia), M.S.E., Ph.D. (Washington), P.Eng.
Terence J. Kennett/M.Sc., Ph.D. (McMaster)
John A. Kuehnert/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., B.Sc. (Kyoto)
William V. Prestwich/B.Sc., Ph.D. (McMaster)
Donald W.L. 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)
David W. Taylor/B.A., B.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)

Associate Professors
William E. Harris/B.Sc. (Alberta), M.Sc., Ph.D. (Toronto)
Aadu A. Pilt/B.Sc. (Toronto), M.A. (Alberta), Ph.D. (McMaster)
Peter G. Sutherland/B.Sc. (McGill), M.S., Ph.D. (Illinois)

Assistant Professors
Anton M. Jopko/M.Sc., Ph.D. (McMaster) /part-time
Eugene Krenciglowa/B.Sc. (McMaster), Ph.D. (Stony Brook)

Associate Member
David A. Thompson/(Engineering Physics), B.Sc., Ph.D. (Reading)

Senior Demonstrator
J. Everett Cairns/B.Eng., M.Sc. (McMaster)

CURRICULUM 1982-84

PHYSICS117 MECHANICS, WAVE MOTION, OPTICS, AND ELECTRICITY
A course, organized in sections of 60-80 students, consisting of lectures, demonstrations, and laboratory work in general physics with stress on mechanics, wave motion, optics, electricity, and magnetism. 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 or 1B6.

PHYSICS118 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 117. 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 or 1B6.

PHYSICS1C8 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 or 1F6.

PHYSICS1D3 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.

PHYSICS1E4 ELECTRICAL SCIENCE
A course for Engineering students. Topics include: oscillations and waves; interference and diffraction; charges; electrical fields, potential; capacitance, current and circuits.
3 lects.; one term; 1 lab.(3) every other week; two terms
Prerequisite: Registration in Level I Engineering.

PHYSICS2A3 GENERAL PHYSICS II
A sequel to Physics 1B7. Electricity and magnetism. Intended primarily for students proceeding in the life sciences.
3 lects.; on alternate years.
Prerequisite: Physics 1A7 or 1B7 or 1C8 and Mathematics 1A6 or 1F6. Not open to students in Honours Chemistry and Physics, Honours Physics, Honours Applied Physics, Physics Major, or B.Sc. in Physics.

PHYSICS2B6 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: Physics 1A7 or 1B7 or 1C8, and concurrent registration in Mathematics 2C8 and 2D8, or Equivalent.

PHYSICS2C5 MECHANICS
First term; vectorial treatment of the dynamics of a particle, central field problem. Second term: many-particle systems, introduction to the mechanics of rigid bodies, Lagrange's equations, introduction to the special theory of relativity.
2 lects., 1 tut.; two terms
Prerequisite: Registration in a programme in which Physics 2C5 is required or is a specified option. Not open to students who are registered in, or have received credit for, Physics 2G3.

PHYSICS2D6 INTRODUCTION TO ASTRONOMY AND ASTROPHYSICS
A survey of general astronomy, including the solar system, stars and stellar evolution, star clusters and galaxies. Modern astrophysics, including radio and x-ray astronomy; pulsars and quasars will also be discussed.
3 lects.; two terms
Prerequisite: Physics 1A7 or 1B7 or 1C6, and Mathematics 1A6 or 1F6.

PHYSICS2G3 MECHANICS OF A PARTICLE
Vectorial treatment of the mechanics of a particle in three dimensions.
2 lects., 1 tut.; one term
Prerequisite: Physics 1A7 or 1B7 or 1C6, and registration in Mathematics 2G3, or Equivalent. Not open to students who are registered in, or have received credit for, Physics 2C5.

PHYSICS2H3 THERMAL PHYSICS
Introduction to heat and the theory of gases.
3 lects., 1 lab.(3); one term
Prerequisite: Physics 1A7 or 1B7 or 1C6, and Mathematics 1A6.

PHYSICS2J3 PHYSICS OF MUSICAL SOUND
Sound waves, production of sound by musical instruments; properties of the ear, musical scales and intervals; auditorium acoustics.
3 lects. with demonstrations; one term
Prerequisite: Registration in Level II, III or IV of a non-science programme. Knowledge of mathematics at the Grade 12 level would be helpful, but is not essential.

PHYSICS2L2 RIGID BODY MOTION AND SPECIAL RELATIVITY
The second term of Physics 2C5.
2 lects., 1 tut.; one term
Prerequisite: Physics 2G3 and permission of the instructor. Not open to students who are registered in, or have received credit for, Physics 2G5.

PHYSICS2M3 MECHANICS
An introduction to mechanics with applications primarily based in kinesthetics, kinematics; dynamics; rotational dynamics.
3 lects.; one term
Prerequisite: Registration in Level II, III or IV of a non-science programme.

PHYSICS3A3 RELATIVITY
An introduction to general relativity.
3 lects.; one term
Prerequisite: Physics 2C5 and registration in an Honours programme in Science, or in Engineering; or permission of the instructor.
Offered in 1982-83 and in alternate years.
PHYSICS 338 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.(3); two terms
Prerequisite: Engineering Physics 2A7 or Physics 2B6.

PHYSICS 334 INTERMEDIATE LABORATORY
Experiments in atomic and neutron physics, optics and spectroscopy, mechanics. 1 lab.(3); two terms
Prerequisite: Physics 2B6.

PHYSICS 334 THERMODYNAMICS AND STATISTICAL MECHANICS
The laws of thermodynamics, with emphasis on the mathematical structure of the theory; classical and quantum statistical mechanics. 2 lects.; two terms
Prerequisite: Physics 2H3, and Mathematics 2G3 and 203, or equivalent. Not open to students who have received credit for Chemistry 3Y3.

PHYSICS 336 QUANTUM MECHANICS AND ITS APPLICATIONS
An introductory course in quantum mechanics with applications to natural phenomena. 3 lects.; two terms
Prerequisite: Physics 2B6 or Engineering Physics 2A7, and concurrent registration in Mathematics 3C6.

PHYSICS 339 PHYSICAL OPTICS
Interference; Fraunhofer and Fresnel diffraction; Maxwell’s equations and the electromagnetic character of light; polarization and double refraction; interference of polarized light; selected topics in modern optics. 3 lects.; one term
Prerequisite: Physics 2B6 or Engineering Physics 2A7, and Mathematics 2G3 and 203, or equivalent.

PHYSICS 338 ATOMIC AND NUCLEAR PHYSICS
Topics in atomic structure, nuclear physics and special relativity. 3 lects.; one term

PHYSICS 333 INTERACTION OF RADIATION WITH MATTER
The interactions of nuclear radiations with matter: detectors, dosimetry, tracer methods, the production and use of X-rays, etc. For students interested in radiation biology, radiochemistry, and geology. 3 lects.; one term
Prerequisite: Physics 2A3 or 2B6.

PHYSICS 332 STARS AND STELLAR SYSTEMS
Observational properties of stars. Distance measurement in space. Galactic structure; properties of Galaxies, and cosmology. 3 lects. and occasional lab. periods; one term
Prerequisite: Physics 2B5 or Engineering Physics 2A7 and either Physics 2C6 or 2G3. 
Offered in 1983-84, alternating with Physics 3Y3.

PHYSICS 332 STELLAR STRUCTURE
The physics of stellar interiors. The main sequence and the life cycle of a star. Stellar evolution, including white dwarfs, neutron stars, and black holes. 3 lects.; one term
Prerequisite: Physics 2B6 or Engineering Physics 2A7, and either Physics 2C5 or 2G3. 
Offered in 1982-83, alternating with Physics 3X3.

PHYSICS 332 ENERGY SOURCES AND THE PHYSICS OF ENERGY CONVERSION
An application of physical principles to the utilization of fossil, geothermal, nuclear, and solar energy sources; the current energy problem. 3 lects.; one term
Prerequisite: Completion of Natural Sciences 1 including Physics 1A7 or 1B7 or 1C7. Some knowledge of electricity and thermodynamics beyond Level 1 will be assumed. This is an open elective which cannot be chosen to satisfy a Physics requirement. 
Offered in 1983-84, and in alternate years.

MATH 336/MATH 336 MATHEMATICAL PHYSICS I
Functions of a complex variable, partial differential equations, eigenvalue problems for differential equations, Legendre functions, Bessel functions, statistical methods, linear algebra. 3 lects.; two terms
Prerequisite: Mathematics 2A5 and 2C4, or 2G3 and 203; Physics 2C5 or 2G3; permission of the instructor.

PHYSICS 442 SPECIAL TOPICS
Independent study of the scientific literature, including the preparation of seminars on assigned topics. 1 lect. or seminar; two terms
Prerequisite: Registration in a programme in which Physics 4A2 is required or is a specified option.

PHYSICS 444 ELECTROMAGNETIC THEORY
Development of Maxwell’s equations; multipoles, series solutions, special relativity and radiation from dipoles. 2 lects.; two terms
Prerequisite: Physics 2B6 or Engineering Physics 2A7; Mathematics 3C6.

PHYSICS 444 PHYSICS OF CONTINUOUS MEDIA
Variational principles, Lagrange’s equations, Hamilton’s equation, Hamilton-Jacobi theory; elasticity theory; fluid mechanics, including flow at low and high Reynolds numbers; the theory of lift. 2 lects.; two terms
Prerequisite: Mathematics 3C6 and registration in an Honours or Engineering programme; or permission of the instructor.

PHYSICS 446 DIGITAL LOGIC AND COMPUTER SYSTEMS
The design and use of digital logic systems and their application to data acquisition and control techniques. The project-oriented laboratory involves both hardware and software. 2 lects., 1 lab.(3); two terms
Prerequisite: Physics 2B6 or Engineering Physics 2A7.

PHYSICS 443 INTRODUCTORY NUCLEAR PHYSICS
Nuclear masses and stability; radioactivity and nuclear reactions; elementary nuclear models. 3 lects.; one term
Prerequisite: Physics 3M6 or 3P3 and registration in an Honours programme or Level IV Physics Major.

PHYSICS 443 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.

PHYSICS 444 ADVANCED LABORATORY
Projects in atomic, nuclear and solid state physics. Three or four projects, one of which may be associated with a faculty research programme, are required. 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 443 INTRODUCTORY SOLID STATE PHYSICS
Crystal structure and binding; lattice vibrations; electron energy bands; metals and semiconductors; magnetism. 3 lects.; one term
Prerequisite: Physics 3M6 or 3P3, and registration in an Honours programme or Level IV Physics Major.

PHYSICS 443 FOUNDATIONS AND CONCEPTS
The aim and structure of physical theory and experiment; metaphysical foundations; causality and determinism in classical and quantum physics; physical concepts, e.g., time and space. 3 lects.; one term
Prerequisite: Physics 2B6; Mathematics 2G3 and 203, or equivalent; or permission of the instructor.

PHYSICS 444 RESEARCH PROJECT
An experimental or theoretical project to be arranged by mutual consent of a professor, the departmental chairman, and the student. It may be carried out in a professor’s research area or in health physics, radiology, or nuclear medicine. A report will be required. 
1 lect., 1 lab.(3) every other week; two terms
Prerequisite: Physics 2B6 or Engineering Physics 2A7 and permission of the instructor.
Enrolment is limited.

PHYSICS 444 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 2A7, Mathematics 2G3 and 203, or equivalent; or permission of the instructor.

MATH 444 MATHEMATICAL PHYSICS II
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. 2 lects.; two terms
Prerequisite: Mathematics 3C6 and registration in an Honours or Engineering programme.

The Department reserves the right to withdraw a Level III or IV course which is not specifically required in a Physics programme if the registration falls below four.

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.

For Graduate Courses see Calendar of School of Graduate Studies.
Political Science

Faculty as of January 15, 1982
M.B. Stein/ Chairman

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)
Derry Novak/B.A. (Toronto)
Peter J. Potchinsky/B.A. (Temple), M.A., Ph.D. (Columbia)
Michael B. Stein/B.A. (McGill), M.A., Ph.D. (Princeton)
Thomas C. Truman/B.A. (Melbourne), M.A. (Queensland)

Associate Professors
William M. Chandler/B.A. (Cornell), Ph.D. (North Carolina)
Henry J. Jacke/B.S.S. (Fairfield), M.A., Ph.D. (Georgetown)
Thomas J. Lewis/B.A. (Carleton), M.A., Ph.D. (SUNY, Buffalo)
Roman R. March/B.A. (Manitoba), M.A. (Carleton), Ph.D. (Indiana)
Klaus H. Pringsheim/B.A. (California, Los Angeles), M.A. (Columbia)

Assistant 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 D. Coleman/B.A. (Carleton), A.M., Ph.D. (Chicago)
Stefania S. Miller/M.A. (McMaster), Ph.D. (Toronto)
Kim Richard Nossal/B.A., M.A., Ph.D. (Toronto)
John W. Seaman/B.A. (Mount Allison), M.A. (Dalhousie), Ph.D. (Toronto)

Associate Member
H.M. Brotz/(Sociology), B.A., M.A. (Chicago), Ph.D. (London)

CURRICULUM 1982-84

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, 1982-83 and 1983-84. 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.

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.

Students wishing to enter courses without the necessary prerequisites must receive written permission from the instructor.

Recommended Courses: Political Science 2F6 and 206 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis.

POL SCI1A6 AN INTRODUCTION TO THE STUDY OF POLITICS
An introduction to various aspects of political science which students will 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 SCI1B6 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. and tuts.); two terms
Prerequisite: Open.

POL SCI2C6 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.
3 hrs (lects. and tuts.); two terms
Prerequisite: Open.

POL SCI2D6 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 SCI2F6 THE SYSTEMATIC STUDY OF POLITICS
An introduction to the study of concept and theory formation, and an overview of the scope, methods, and techniques of political science.
3 hrs. (lects. and tuts.); two terms
Prerequisite: Open.

POL SCI2G6 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, except to students receiving credit for Political Science 256.

POL SCI2K6 POLITICS IN THE U.S.S.R.
An analysis of the political ideology, institutions, and practices of the U.S.S.R.
3 hrs. (lects.); two terms
Prerequisite: Open.

POL SCI2M6 INTRODUCTION TO FAR EASTERN POLITICAL TRADITIONS
A 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 SCI2P6 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.

POL SCI3A6 HISTORY OF POLITICAL IDEAS
A study of the political ideas of some eminent thinkers from classical times to the 19th century.
3 hrs. (lects.); two terms
Prerequisite: Open.

POL SCI3A6 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 SCI3B3 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 SCI3C3 COMPARATIVE POLITICS: SOUTH ASIAN SYSTEMS
A comparative analysis of political processes in India, Pakistan, Bangladesh, and Sri Lanka in the post-colonial era.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science or Asian Studies.

POL SCI3C3 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 SCI3D3 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 SCI3D6 POLITICAL PARTIES, MOVEMENTS AND ELITES IN CANADA
An analysis of parties, movements and elites and their operation within the Canadian socio-economic and cultural setting.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6. Not open to students receiving credit for Political Science 256.
POL SC13EE3 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 SC13FF3 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 SC13GS 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 SC13GG3 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 SC13HH3 INTERGOVERNMENTAL RELATIONS IN CANADA
An analysis of selected policy areas focusing 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 SC13I6 CANADIAN POLITICAL IDEAS
The purpose of this course is to discover, understand, and analyze the major ideological trends in Canadian society.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6.

POL SC13II3 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 SC13J3 PROVINCIAL POLITICS IN CANADA
A study of the development, nature and functioning of the political systems of the Canadian provinces.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SC13K6 COMPARATIVE POLITICS: THEORY AND METHOD
A study of the foundations of the contemporary study of comparative political systems: critical evaluation of approaches and techniques through empirical case studies.
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SC13K4 MARXIST THOUGHT
A study of Marx through a reading of his writings from various stages in his development.
3 hrs. (lects. and seminars); two terms
Prerequisite: A course in Political Theory of Philosophy or Political Science 2K6. Not open to students receiving credit for Political Science 4G6.

POL SC13L6 THEORIES AND MASS SOCIETY
A study through Tocqueville of equality and liberty in the modern world and 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.
Same as Sociology 3J6.

POL SC13M6 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 SC13M6 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 SC13N6 PUBLIC LAW
A study of the nature and function of public law, with special reference to constitutional law and judicial behaviour.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6. Not open to students receiving credit for Political Science 2R6.

POL SC13O6 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 lects.; two terms
Prerequisite: A previous course in Social Science or Philosophy.

An examination of the foreign relations of the U.S.S.R. and China with the United States and the West, and with each other.
3 lects.; two terms
Prerequisite: Political Science 2E6, 2K3, 2M6, 3EE3, 3FF3 are recommended. Offered in alternate years.

POL SC13Q6 POLITICS IN JAPAN
An introductory survey of Japanese political institutions, ideas, and practices, from ancient to modern times.
3 lects.; two terms
Prerequisite: Permission of the instructor. Not open to students receiving credit for Political Science 2N6. Offered in alternate years.

POL SC13R6 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 SC13U6 RESEARCH TECHNIQUES
An examination of various research procedures, multi-variante techniques of analysis, and advanced explanation theory.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2F6.

POL SC13V6 COMPARATIVE POLITICS: POLITICAL CHANGE IN FRANCE AND GERMANY
A critical examination in a comparative context of the causes and consequences of regime instability.
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.
Alternates with Political Science 3W6.

POL SC13W6 POLITICS 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.
Alternates with Political Science 3V6.

POL SC13X6 PUBLIC POLICY ANALYSIS
A critical analysis of the process of public policy formation, the content of public policies, and their impact upon society.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2F6 is required. Political Science 2G6, and 2P6 are recommended.

POL SC13Y6 COMPARATIVE LEGISLATURES
An institutional and behavioural analysis of legislative bodies and executive-legislative relations in the United Kingdom, Western Europe, Canada, the United States, and developing areas.
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SC13Z6 PUBLIC ADMINISTRATION
Bureaucracy, administrative responsibility, policy process, delegated powers, administrative law, staffing and staff relations will be studied in a primarily Canadian context.
3 hrs. (lects. and seminars); two terms
Prerequisite: Two courses in Political Science (one of which might be taken concurrently.) Not open to students receiving credit for Political Science 2Z6.

POL SC14A6 PRESSURE GROUP POLICIES
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 SC14A6 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 1982-83 and alternate years.
POL SCI4BB6 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: Political Science 3A6; or permission of the instructor.

POL SCI4CC6 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 326 are recommended.

POL SCI4DE6 LIBERAL-DEMOCRATIC THEORY AND MARKET SOCIETY
This course seeks 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 SCI4DF6 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 theory inquiry in scholarly fashion. The subject matter is to be different from that covered in 426 if the student is enrolled in both courses.
2 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 SCI4DG6 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 1982-83 and alternate years.

POL SCI4DM6 COMPARATIVE FOREIGN POLICY
A theory-oriented analysis of selected elements of foreign policy and examination of problems in foreign policy decision-making.
2 hrs.(seminars); two terms
Prerequisite: Political Science 2E6, and a total of six units in international politics at the third-level. Open only to Level IV students.

POL SCI4EN6 THE POLITICS OF SELF-GOVERNMENT
This course will examine the institutions and philosophy of decentralized power in the past and present. Particular attention will be given to the workers councils' movement, and the commune.
3 hrs.(lects. and seminars); two terms
Prerequisite: A previous course in political theory and comparative government. Not open to students receiving credit for Political Science 3N6.

POL SCI4ER6 CANADIAN PUBLIC POLICY
An examination of the patterns of public policy in Canada and a critical evaluation of several types of explanation.
Seminar(3); two terms
Prerequisite: Political Science 2G6 and another course in Political Science beyond Level I. Open only to Level IV students. Not open to students receiving credit for Political Science 3J6.

POL SCI4FS6 POLITICAL PARTIES
A critical examination of the theoretical approaches to parties and party systems, and a selective application of these ideals to different societies.
3 hrs.(seminar); one term
Prerequisite: A previous course in Comparative or Canadian Politics. Not open to students receiving credit for Political Science 4P6.

POL SCI4GM6 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 SCI4HN6 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 SCI4HS6 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. Open only to Level IV students.

POL SCI4IR6 PROBLEMS OF POLITICAL PHILOSOPHY
A study in detail and in depth of writings by a limited number of political thinkers, focusing upon one of the central problems of political philosophy.
2 hrs.(seminars); two terms
Prerequisite: A previous course in Political Theory.

POL SCI4JV6 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 2E6.

POL SCI4JW6 QUEBEC POLITICS
The political ideology of Quebec-based parties and movements, the impact of industrialization upon Quebec culture, and the economic implications of separatism. The ability to read French would be highly desirable.
3 hrs.(seminar); two terms
Prerequisite: Political Science 2G6 and another course in Political Science beyond Level I.

POL SCI4KR6 COMPARATIVE POLITICS: FEDERAL SYSTEMS
An examination of federalism and its socio-economic and political determinants in a number of selected federal systems.
3 hrs.(lects. and seminars); two terms
Prerequisite: Two courses in Political Science; 2G6, 2K6, 3C6, 3K6, 3M6, 3QG3, and 3H13 are recommended.

POL SCI4LS6 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 426 if the student is enrolled in both courses.
2 Two terms
Prerequisite: Registration in Level IV Honours Political Science.

Psychology
Faculty as of January 15, 1982
P.L. Newbigging/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)
Bennett G. Galef/A.B. (Princeton), M.A., Ph.D. (Pennsylvania)
Bernard R.W. Heron/M.A., Ph.D. (McGill)
Larry L. Jacoby/B.A. (Washington), 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)
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
Martin Daly/B.A. (Toronto), M.A. (McGill), Ph.D. (Toronto)
Daphne M. Maurer/B.A. (Swarthmore), M.A. (Pennsylvania), Ph.D. (Minnesota)

Assistant Professors
Richard Y. Bourhis/B.Sc. (McGill), M.A., Ph.D. (Bristol)
Richard B. Day/B.A. (Massachusetts), M.A. (Iowa), Ph.D. (McMaster)
Denys deCatalanzaro/B.A., M.A. (Carleton), Ph.D. (British Columbia)
Harvey Weingarten/B.Sc. (McGill), M.S., M.Phil, Ph.D. (Yale)

Associate Members
Arthur Cott/Medicine, B.Sc. (McMaster), Ph.D. (Syracuse)
Marianne W. Kristofferson/Psychiatry, B.A., Ph.D. (Cincinnati)
Linda S. Siegel/Psychiatry, B.A. (Queens College, City University of New York), M.S., Ph.D. (Yale)
Sandra F. Witselon/Psychiatry, B.Sc., M.Sc., Ph.D. (McGill)
PSYCHOLOGY

CURRICULUM 1982-84

The University reserves the right to limit enrolment in any course. Where priorities have to be established, first consideration will be given to Honours and B.A. Psychology students.

PSYCH1A6 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.

PSYCH2A3 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 with credit in Psychology 2J3 or who have credit in or are registered in Psychology 3M6, or to students registered in an Honours Psychology programme beyond Level II.

PSYCH2B3 PERSONALITY
A survey of historical and current approaches to the study of personality. Topics include dependency, aggression, and sexuality. Psychodynamic, humanistic, and learning theories will be considered. 3 lects.; one term
Prerequisite: Psychology 1A6. Not open to students receiving credit for Psychology 2K3.

PSYCH2C3 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.

PSYCH2D6 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. 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.

PSYCH2G3 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 1L3 and registration in B.A. Psychology, or permission of the instructor. Not open to students who are registered in, or are receiving credit for, Mathematics 1F6, or Psychology 2R3, or 2R6, or Statistics 2R6, or equivalent. Not open for elective credit to Science students. Grade 13 Mathematics is recommended.

PSYCH2H3 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.

PSYCH2T3 PRINCIPLES OF CONDITIONING
An experimental survey of conditioning processes based on the study of animal behaviour. 3 lects.; one term
Prerequisite: Psychology 1A6. Not open to students receiving credit for Psychology 2T6.

PSYCH2U3 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 2T6 or 2T3. Not open to students receiving credit for Psychology 2V3.

PSYCH2W6 NEUROPSYCHOLOGY: BRAIN AND BEHAVIOUR
Neural organization and the relationship between human brain function and behaviour. 3 lects.; two terms
Prerequisite: Psychology 1A6. Not open to students receiving credit for Psychology 3F6, or to students registered in Honours Biology or Honours Biochemistry. Psychology students in the Faculty of Science should consider taking Psychology 3F6 in lieu of this course.

PSYCH3B3 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: Completion of, or concurrent registration in, Psychology 3N6; or permission of the instructor.

PSYCH3C6 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: Psychology 2C3 or 2C6; one of Psychology 2R6, 2R3, Statistics 2R6; and permission of the instructor.

PSYCH3D3 SELECTED TOPICS IN SOCIAL PSYCHOLOGY
Topics will include interpersonal and cross-cultural communication, equity and social exchange, inter-group relations. Topics can change year to year. 2 lects., 1 tut.; one term
Prerequisite: Psychology 2C3. Not open to students receiving credit for Psychology 2C6.

PSYCH3E3 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.(13); one term
Prerequisite: Psychology 2D6 or completion of or concurrent registration in Psychology 3W6; Psychology 2G3 or 2R6 or Statistics 2R6; Or permission of the instructor.

PSYCH3F6 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.

PSYCH3K3 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 2R3, or Statistics 2R6; or permission of the instructor.

PSYCH3M6 INTELLLECTUAL DEVELOPMENT
Research and theory relevant to intellectual and linguistic behaviour. Topics include the developmental aspects of perception, concept formation, problem solving, logical thought, memory, and language. 3 lects.; two terms
Prerequisite: Psychology 1A6 and registration in or credit in Psychology 2G3, or 2R6, or 2R3, or Statistics 2R6; or permission of the Instructor.

PSYCH3N6 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, 2T6, 2W6, or 3F6; or registration in Level III or IV of Nursing; or permission of the instructor.

PSYCH3P3 PSYCHOLOGICAL TOPICS IN THINKING
Areas to be covered include human inference, decision making, and creative problem solving. 3 lects.; one term
Prerequisite: Psychology 2H3. Not open to students with credit in Psychology 2P3.
Not offered in 1982-83.

PSYCH3Q3 INDIVIDUAL STUDY I
A laboratory or library 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 course co-ordinator.

PSYCH3R3 ANIMAL BEHAVIOUR I
Research and theory in the field of instinctive behaviour. Adaptive and evolutionary significance of behaviour and interaction between learned and innate behaviour are discussed. 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.

PSYCH3S3 ANIMAL BEHAVIOUR LABORATORY
Experiments involving a wide variety of animal species, both vertebrate and invertebrate. 1 lab.(3); two terms
Prerequisite: Psychology 3R3, and permission of the instructor.

PSYCH3T3 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 1C6, 2C3, 3J3, Psychology 3R3.
PSYCH3U3 HUMAN MEMORY
Empirical demonstrations of encoding, storage and retrieval are used to show the strengths and weaknesses of current theories of memory.
% lects.; one term
Prerequisite: Registration in Level III or IV of a Psychology Programme; or permission of the instructor.
Not offered 1983-84.

PSYCH3V3 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: Psychology 3U3 and registration, or credit, in Psychology 2G3, or 2R6, or Statistics 2R6.
Not offered 1983-84.

PSYCH3W6 PSYCHOPHYSICS AND PERCEPTION
Theories, methods, and data of psychological processes 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: Registration, or credit, in Psychology 2G3 or 2R6 or 2R3, or Statistics 2R6; or permission of the instructor. Not open to students receiving credit for Psychology 2D6.

PSYCH3X3 SELECTED TOPICS IN BEHAVIOUR MODIFICATION
Major issues and controversies in contemporary behaviour modification.
Consideration is given to rival theoretical accounts, and to experimental bases for such techniques as systematic desensitization, aversion therapy, and punishment.
3 lects.; one term
Prerequisite: Psychology 2T3 or 2T6 and registration in a Psychology Programme; or permission of the instructor.

PSYCH3Y3 SELECTED TOPICS IN BEHAVIOUR THEORY
Issues of contemporary interest to behaviour theory will be examined in depth.
3 lects.; one term
Prerequisite: Psychology 2T3 or 2T6, or its equivalent; registration in a Psychology Programme.

PSYCH4A3 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.

PSYCH4B3 HISTORY OF PSYCHOLOGY
A 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.

PSYCH4D6 PSYCHOLOGY THESIS
Students conduct research projects with individual faculty members. Group meetings are used to discuss research. Three copies of a completed thesis will be available prior to registration, for a list of the courses offered in the current year. There are no co-requisite requirements for part-time students.

PSYCH4E7 PHYSIOLOGICAL PSYCHOLOGY II
Advanced topics in the neurosciences. Topics include electrophysiology and pharmacology of excitable membranes, synaptic mechanisms, dendritic mechanisms and plasticity.
3 lects., 1 lab (2) alternate weeks; two terms
Prerequisite: Psychology 3E6. A biological or biochemical background is strongly recommended.

PSYCH4K3 MATHEMATICAL THEORIES OF PERCEPTION
An introduction to current quantitative theories of mental processes. Measurements of mental qualities and mechanisms of human information processing are illustrated using mathematical models.
3 lects.; one term
Prerequisite: Permission of the instructor.

PSYCH4Q3 INDIVIDUAL STUDY II
A laboratory or 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.

For Graduate Courses see Calendar of School of Graduate Studies.

Religious Studies

Faculty as of January 15, 1982

G. Vallee/ Chairman

Professors

John G. Arapura/B.A. (Serampore 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)

Yun-hua Jan/M.A., Ph.D. (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. Mol/B.D. (Union Theological Seminary), M.A., Ph.D. (Columbia)

John C. Robertson/B.A. (Texas Wesleyan College), B.D. (Southern Methodist), S.T.M., M.A., Ph.D. (Yale)

Ed. P. Sanders/B.A. (Texas Wesleyan College), B.D. (Southern Methodist), Th.D. (Union Theological Seminary)

Krishna Sivaraman/M.A. (Annamalai, Madras), Ph.D. (Banaras)


Associate Professors

Albert I. Baumgarten/A.B. (Columbia), B.H.L. (Jewish Theological Seminary), M.A., Ph.D. (Columbia)

Phyllis Granoff/B.A. (Radcliffe College), Ph.D. (Harvard)

Lois I. Greenspan/M.A. (Dalhousie), Ph.D. (Brandeis)

David R. Kinsley/B.A. (Drew), B.D. (Union Theological Seminary), M.A., Ph.D. (Chicago)

Gérard Vallée/B.A. (Laval), M.A. (Montreal), Ph.D. (Münster)

Assistant Professors

Alain M. Cooper/A.B. (Columbia), M.Phil., Ph.D. (Yale)


Alan Mendelson/A.B. (Kenyon College), M.A. (Brandeis), Ph.D. (Chicago)

Koichi Shinohara/B.L., M.L. (Tokyo), Ph.D. (Columbia)

Ian G. Weeks/M.A., Ph.D. (Melbourne)

Wayne K. Whillier/B.A. (Sir George Williams), Ph.D. (McMaster)

Curriculum 1982-84

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. There are no co-requisite requirements for part-time students.

Level 1 Courses

Religious Studies

An introduction to religion through an examination of Hinduism, Jainism, Buddhism, Confucianism, Taoism, Shinto, Judaism, Christianity and Islam.
2 lects., 1 tut.; two terms
Prerequisite: Open.

Religious Texts, Traditions, and Thought
The study of selected scriptural texts, their place in religious tradition, and their contribution to human thought and life.
2 lects., 1 tut.; two terms
Prerequisite: Open.

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.

Religion and Contemporary Problems
The themes of Truth, Freedom, Justice, and War are examined in an introduction to comparative religion through readings, lectures, and films.
2 lects., 1 tut.; two terms
Prerequisite: Open.

The Possibility of Religion in the Modern World
An analysis of the meaning of human existence as understood in the modern world and an exploration of the questions about religious life raised by that
understanding. Contemporary novels, films, as well as traditional materials will be used.
2 lects., 1 tut.; two terms
Prerequisite: Open.
Offered in 1983/84.

LEVEL II AREA COURSES

RELIG ST226 INTRODUCTION TO THE WISDOM PHILOSOPHIES OF ASIA
The traditional philosophies of the East, particularly those developed in India (Hindu, Buddhist, and Jaina), and the problems of life and meaning in those traditions.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST2DD3 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 2DD3, 2EE3, 3M3 are recommended.

RELIG ST2EE3 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 ST2EE6 THE BEGINNINGS OF CHRISTIANITY
An introduction to methodical interpretation and to the backgrounds of the New Testament, followed by an interpretation of selected Gospel and Pauline literature.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELIG ST2H3 CHRISTIAN THOUGHT IN THE PATRISTIC PERIOD (100-800)
The encounter of Christianity with Graeco-Roman culture as witnessed in major texts. Special attention will be given to the relationship between faith and reason and its bearing on the questions of God, Christ, church and cult.
2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies 2H6.
Offered in 1982/83.

RELIG ST2JJ3 CHRISTIAN THOUGHT IN THE MIDDLE AGES (800-1500)
The problem of reason and revelation as understood by major writers of the period. Special attention will be given to the structure of mediaval religion and its expression in theology and cult.
2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies 3K3.
Offered in 1982/83.

RELIG ST2KK3 CHRISTIAN THOUGHT IN THE 16TH CENTURY
The Protestant Reformation and the Catholic Reform, focusing on the problems of faith and human experience, the appropriation of salvation, the nature of the church.
2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies 3Q3.
Offered in 1982/83.

RELIG ST2L3 CHRISTIAN THOUGHT AFTER 1600
The development of Christian thought (Protestant and Catholic) between the 17th and 20th centuries, with special attention to the problem of faith and history.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1983/84.

RELIG ST2MM6 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
Prerequisite: Open. Not open to students with credit in Religious Studies 2O6.

RELIG ST2M3 THE SOCIAL DIMENSION OF RELIGION
Topics include the 'cementing' or legitimating function of religion for society, the problems of secularization, the identity provision of religion, and sectarian or 'new' religious movements.
2 lects., 1 tut.; one term
Prerequisite: Open.
Same as Sociology 2M3.

RELIG ST2N3 THE SOCIAL-Psychological DIMENSION OF RELIGION
Topics include the effect of religion on the human need for meaning, identity, order and self-realization and the different impact of eastern and western traditions on persons and society.
2 lects., 1 tut.; one term
Prerequisite: Open.
Same as Sociology 2N3.

RELIG ST2N3 RELIGIOUS TRADITIONS OF THE WEST
A broad survey of major themes and problems in the study of the religions of the West.
2 lects., 1 tut.; one term
Prerequisite: Open. A Level I Religious Studies course is recommended.

RELIG ST2O3 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.

LEVEL II ELECTIVE COURSES

RELIG ST2A6 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 ST2B3 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 ST2C3 MORAL ISSUES
An introduction to moral philosophy accenting 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.
Offered in 1983/84.

RELIG ST2C3 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 ST2F3 THE TRIUMPH OF CHRISTIANITY
A study of the historical reasons why Christianity emerged as the religion which satisfied the quest for salvation, and of the other religions that competed with it.
2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies 3H3.
Offered in 1983/84.

RELIG ST2F6 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.
Offered in 1982/83.

RELIG ST2I3 ASPECTS OF MUTUALITY IN 20TH CENTURY LITERATURE
An interdisciplinary course offered by the Departments of English, Psychiatry and Religious Studies. It explores the nature of male and female relationships by utilizing literary, psycho-social and religious approaches to 20th century literature, and deals with representative British and American works and genres.
1 lect., 2 tuts.; one term
Prerequisite: Open to students in Level II and above. Not open to students with credit in Religious Studies 3FF3.
Same as English 3EE3.

RELIG ST2P3 EROS AND SALVATION
An investigation of the artistic and philosophical relationship between the erotic and the sacred, especially in Hinduism which holds "desire" (kama) to be one of the four ends of life.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1982/83.

RELIG ST2Q3 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 deprogramming controversy.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1982/83.

RELIG ST2Q6 ATHEISM, SCEPTICISM, AND RELIGIOUS FAITH
A study of the modern western struggle of unbelief and belief with the...
questions of true humanism, science, and God. Readings in the 18th century
writers through contemporary theologians.

2 lects., 1 tut.; two terms
Prerequisite: Open.
Offered in 1982/83.

RELG ST2R3 DIVINE JUSTICE
A study of the concept of the just god with primary reference to the
treatment of the issue in biblical and classical thought.

2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1983/84.

RELG ST2R5 RELIGIOUS THOUGHT IN THE NOVELS OF
TOLSTOY AND DOSTOYEWSKY
A critical examination of the treatment of religion in the major novels of
Tolstoy and Dostoevsky.

3 lects.; 1 term
Prerequisite: Open to students in Level II and above.
Offered in 1982/83.

Same as Russian 2X3.

RELG STY6 YOGA: THEORY AND PRACTICE
A study of both the theoretical and practical sides of Yoga, beginning with
the famous ahortism of Patanjali; its importance and relevance for today.

2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies
3WW3.

RELG STY3 INDIAN ART AND RELIGION
Indian art in relation to its religious background; the problem of the
relationship between art and religion.

2 lects., 1 tut.; one term
Prerequisite: Open. Not open to students with credit in Religious Studies
3V3.
Offered in 1983/84.

RELG STX3 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 lects.; one term
Prerequisite: Open.
Same as Classical Civilization 2X3.

RELG STY6 PSYCHOLOGY AND RELIGION
A study of the role of religion in Greek and Roman public and private life.

2 lects., 1 tut.; two terms
Prerequisite: Open.

RELG STY3 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.
Same as Classical Civilization 223.

LEVEL III AREA COURSES

RELG ST3B3 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 Sociology 3Q3.

RELG ST3BB 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 Sociology 3BB3.

RELG ST3D6 THE POSSIBILITY OF RELIGIOUS BELIEF
An analytical and constructive approach to the concepts and conditions
necessary for responsible religious belief with particular attention given to
problems of religious language and the existence of evil.

2 lects., 1 tut.; two terms
Prerequisite: Religious Studies 2NN3; or permission of the instructor.
Offered in 1982/83.

RELG ST3F3 ASPECTS OF THE STUDY OF RELIGION
Religious studies as a discipline: its relationship to the phenomenon of
religion, and to other areas of scholarly and human endeavour.

2 lects., 1 tut.; one term
Prerequisite: At least 12 units of Level II or III Religious Studies; or
permission of the instructor.

RELG ST3J6 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.

RELG ST3J6 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.
Same as Anthropology 3JJ6.
Offered in 1982/83.

RELG STY3 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, 2X3, 223; or
permission of the instructor.
Offered in 1983/84.

RELG ST3M 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 2D3 or 2EE3; or permission of the
instructor.

RELG STY3 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: Religious Studies 2NN3 or 2E6; or permission of the instructor.
Offered in 1983/84.

RELG STY6 INDIAN PHILOSOPHY
A concise, connected account of Indian philosophy using Hindu, Buddhist
and Jain canonical writings as well as later philosophical writings.

2 lects., 1 tut.; two terms
Prerequisite: Religious Studies 2003 or 2B6; or permission of the instructor.
Offered in 1983/84.

RELG STY6 THE BUDDHIST TRADITION
An historical and philosophical study of Buddhism in India, China and
Japan.

2 lects., 1 tut.; two terms
Prerequisite: Religious Studies 2003 or 206 or 2MM6 or 2B6; or
permission of the instructor.
Offered in 1982/83.

RELG STY3 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: Religious Studies 2NN3, or 2E6; or permission of the
instructor.
Offered in 1982/83.

RELG STY3 THE IDEA OF “RELIGION”
This course will study the emergence of the concept of “religion” in the
West since the Roman times.

2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2NN3; or permission of the instructor.

RELG ST3W3 TAOIST PHILOSOPHY
A study of the Taoist views on Man, Nature, society and culture from the
Tao Te Ching to the Neo-Taoism of the 4th century A.D.

2 lects., 1 tut.; one term
Prerequisite: Religious Studies 206 or 2003 or 2MM6 or 2B6; or
permission of instructor.
Offered in 1983/84.

RELG STY3 THE LETTERS OF PAUL
An examination of the principal themes in Paul’s letters, with special
emphasis on his Christology, anthropology, and soteriology. Modern scholar-
ly views will be considered.

2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2NN3 or 2E6; or permission of the
instructor.
Offered in 1982/83.

RELG ST4Y3 BIBLICAL INTERPRETATION: TRADITIONAL AND
MODERN
A seminar on critical issues in the history of biblical interpretation.

(2 hr.) seminar; one term
Prerequisite: Religious Studies 2NN3 or 2D3 or 2EE3; or permission of the
instructor. Not open to students with credit in Religious Studies 3YY6.
Offered in 1983/84.

RELG ST5X3 THE RELATIONSHIP BETWEEN RELIGIOUS
TRADITION AND MODERNITY
A study of the relationship between religious tradition and modernity.

2 lects.; one term
Prerequisite: Religious Studies 2NN3 or 2E6; or permission of the
instructor.
Offered in 1983/84.
REQUIRED LEVEL IV COURSES FOR HONOURS STUDENTS

RELG ST44F3 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: Enrolment in Honours Religious Studies; or permission of the instructor.

RELG ST44GG 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 (2 hr.) seminar; one term
Prerequisite: Enrolment in Honours Religious Studies.

ADVANCED STUDY COURSES

Level IV Honours students are normally expected to register for at least 6 units of Advanced Study (Religious Studies 4AA6, 4BB6, 4CC6, 4DD6, 4EE6, 4IF6, 4JW6, 4JY3). 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.

RELG ST44A6 Advanced Study in Hindu Religious History
RELG ST44B6 Advanced Study in Buddhist and East Asian Religious History
RELG ST44E6 Advanced Study in Indian Philosophy
RELG ST44F6 Advanced Study in Hebrew Bible and Interpretation
RELG ST44CC6 Advanced Study in Early Jewish and Christian Sources
RELG ST44DD6 Advanced Study in Religion and Western Thought
RELG ST44EE6 Advanced Study in Religion and Western Society
RELG ST44W6 Advanced Study of Religion
RELG ST44Y3 Advanced Study of Religion

SANSKRIT

SANSKRIT4A6 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.

SANSKRIT4B6 READINGS IN SANSKRIT TEXTS
Intermediate course with readings in selected texts.
3 lects.; two terms
Prerequisite: SANSKRIT 3A6 or Equivalent.

HEBREW

HEBREW2A6 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.

HEBREW3A6 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 (Mishna and Aggada). 
two terms
Prerequisite: HEBREW 2A6 or Equivalent.

NEW TESTAMENT AND KOINE GREEK

GREEKID6 INTRODUCTION TO NEW TESTAMENT GREEK
An introduction to the grammar of New Testament Greek. Selected passages from the New Testament are read in the second term.
4 lects.; two terms
Prerequisite: Open.

For Graduate Courses, see Calendar of School of Graduate Studies.

Romance Languages

Faculty as of January 15, 1982

G.A. Warner / Chairman

Professors Emeriti

Harold A. Freeman/B.A. (Saskatchewan), M.A. (Toronto)
Marie L. Stock/B.A. (Queen’s), M.A. (McGill), Ph.D. (Columbia)

Professors

Antonio G. Alessio/D.Litt. (Genoa) (Italian)
Stelio Cro/L. en L. (Buenos Aires) , Dott. Ling. e Lett. (Venice) (Italian)
Everett W. Knight/A.B. (Brown), D. de l’U. (Paris) (French)
Cesar Rouben/L. és S. (Paris), B.A. (Sir George Williams), M.A., Ph.D. (McGill) (French)
G. Derek West/T.D., M.A. (Oxford), Ph.D. (London) (French)

Associate Professors

John D. Browning/B.A., M.Phil. (London), Ph.D. (Essex) (Spanish)
Maria Amparo Gonzalez-Nicolau/Lic. en F.L., Dra. en Fil. y Let. (Barcelona) (Spanish) (part-time)
Pilar Martinez/M. Chem. (Madrid), Ph.D. (Litt. Middlebury), Ph.D. (Madrid) (Spanish)
Owen R. Morgan/M.A. (Nottingham) (French)
Brian S. Pocknell/M.A. (Manchester), D. de l’U. (Paris) (French)

Assistant Professors

Caroline Baynard/L. és L., M. és L. (Toulouse), Ph.D. (Toronto) (French)
Vincent A. Betti/B.A., L. és L. (Laval) (French)
Fernando De Toro/B.A., M.A. (Carleton), Ph.D. (Montreal) (Spanish)
L. Diane Dyer/M.A., B.L.S., Phil. M. (Toronto) (Italian)
Gabriele Erasmi/B.A. (Yale), M.A., Ph.D. (Minnesota) (Italian)
William F. Hanley/B.A. (Toronto), M. és L. (Sorbonne), D. Phil. (Oxford) (French)
Charles E. Jose/B.A. (Western), M.A. (Toronto) (French)
Dominique Lepicq/L. és L. (Caen), M.A. (Ottawa), Ph.D. (Toronto) (French)
Jean-Marie Massenet/L. Phil. (Louvain), M.A. (Ottawa), Ph.D. (Toronto) (French)
Fiorigio Minelli/B.A., M.L. (Western), Ph.D. (Brown) (Spanish)
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)
Anna Whiteside/B.A. (Nottingham), M.A., Ph.D. (British Columbia) (French)

Lecturers

Vittorina Cecchetto/B.A., M.A. (Toronto) (Italian) / part-time

CURRICULUM 1982-84

French

COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERITY PROGRAMME BEYOND LEVEL I

FRENCH 2B3 An Introduction to the Civilization of French Canada
FRENCH 2D3 Mediaeval French Literature in Translation
FRENCH 2P3 Eighteenth-Century French Literature in Translation
BEGINNERS' LANGUAGE COURSES

FRENCH1Y3 READING FRENCH
Designed to provide a working knowledge of French grammar for purposes of translating French into English; deals with the written language only.
2 tuts.; two terms
Prerequisite: Open, except to graduates of Grade 12 or Grade 13 French. Credit in French 1Y3 does not allow registration in a French honours or B.A. programme. (Not to be used by Humanities I students as an R-group course.)
Enrolment is limited.

FRENCH1Z6 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 1B6.
5 hrs. (including lab. practice); two terms
Prerequisite: Open, except to graduates of Grade 12 French or Grade 13 French. Not open to Francophones.
Enrolment is limited.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

FRENCH1A6 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 French Canadian texts. This course is designed for students intending to enter B.A. or Honours French.
4 tuts.; two terms
Prerequisite: Grade 13 French; or permission of the Department. Not open to students registering for credit or registration in French 1B6 or 2Z26.

FRENCH1B6 INTERMEDIATE FRENCH
Review of grammar, oral and written practice. This course is designed 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. Not open to students receiving credit for or registration in French 1A6 or 2Z26.

FRENCH2A3 FRENCH LANGUAGE PRACTICE
2 tuts.; two terms
Prerequisite: French 1A6 or 1B6.

FRENCH2B3 AN INTRODUCTION TO THE CIVILIZATION OF FRENCH CANADA
The role of such factors as the church, the family, language, education and nationalism in the evolution of Quebec, and their reflection in the artistic expression of French Canada. This course is taught in English.
3 lects.; one term
Prerequisite: Grade 13 French or six units of French; or permission of the Department. Not open to students registered in a programme in French, or receiving credit for or in registration in French 2F3 or 2FF3.

FRENCH2C3 FRENCH LANGUAGE PRACTICE: ORAL
2 tuts.; two terms
Prerequisite: Registration in a programme in French; or permission of the Department.
Enrolment is limited; departmental permission slip required.

FRENCH2D3 MEDIAEVAL FRENCH LITERATURE IN TRANSLATION
An introduction to the literature and culture of Mediaeval France through the study of selected works in modern English translation. A reading knowledge of French is not required.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Available as an area course except to students receiving credit for French 203.

FRENCH2F3 THE CIVILIZATION OF FRENCH CANADA I
The church, the family and nationalism in the evolution of Quebec; their reflection in French Canadian literature, painting and architecture.
3 lects.; one term
Prerequisite: French 1A6 or 1B6. Not open to students receiving credit for French 2B3.

FRENCH2F3 THE CIVILIZATION OF FRENCH CANADA II
Such social factors as language and education in the evolution of contemporary Quebec, their reflection in French Canadian Literature, journalism, music and cinema.
3 lects.; one term
Prerequisite: French 1A6 or 1B6. Not open to students receiving credit for French 2B3.

FRENCH2H3 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.

FRENCH2J3 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.

FRENCH2K3 FRANCE AS A NATION
Perspectives on the culture and civilization of France, past and present.
3 lects.; one term
Prerequisite: French 1A6 or 1B6.

FRENCH2P3 EIGHTEENTH-CENTURY FRENCH LITERATURE IN TRANSLATION
The study of major writings of the 18th century in their literary, social and intellectual context. Authors include Montesquieu, Voltaire, Diderot and Rousseau. A reading knowledge of French is not required.
3 lects.; one term
Prerequisite: Open to students in Level II and above except to students registered in a programme in French.

FRENCH2W3 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.

FRENCH2WW3 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.

FRENCH3A3 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.

FRENCH3B3 SEMANTICS
An introduction to various theories of meaning, treating issues such as reference, synonymy, paraphrase, cultural overlap, distinctive features and lexicography. Examples will be drawn primarily from French.
3 lects.; one term
Prerequisite: One of French 2A4, 2E4 or 2A3; or concurrent registration in French 2A3; or permission of the Department.
Alternates with French 4C3.

FRENCH3BB3 CONTEMPORARY QUEBEC THEATRE
Contemporary dramaturgy and representative playwrights such as Marcel Dube and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3; or permission of the Department.

FRENCH3C3 FRENCH LANGUAGE PRACTICE
2 tuts.; two terms
Prerequisite: A grade of at least C in French 2A3, 2A4 or 2E4; or permission of the Department.

FRENCH3CC FRENCH LANGUAGE PRACTICE: TRANSLATION TECHNIQUES
Oral and written translations covering a number of styles (descriptive, narrative, abstract, journalistic, etc.), training in the use of pertinent reference material (grammars, dictionaries).
3 tuts.; one term
Prerequisite: French 2A3 or 2A4; or permission of the Department.
Enrolment is limited; departmental permission slip required.

FRENCH3E3 INTRUMENTAL FRENCH SPANISH
Familiarization with the linguistic characteristics of French-Spanish bilingualism.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.
Alternates with French 3F3.

FRENCH3F3 FRENCH LANGUAGE PRACTICE: ORAL
2 tuts.; two terms
Prerequisite: A grade of at least C in French 2A3, 2A4 or 2E4; or permission of the Department.

FRENCH3H3 GENERAL AND COMPARATIVE PHONETICS
Elementary questions in phonetics and phonology; (physiological basis, speech sounds in isolation and in sequence, the syllable, the phonemes, prosodic features, graphemics); followed by a comparison of the modern French and English sounds of language.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.

FRENCH3I3 SOCIOLINGUISTICS
The study of linguistic variations within French-speaking communities with special reference to the Canadian situation.
3 lects.; one term
Prerequisite: At least six units of Linguistics and registration in a programme in French. Not open to students receiving credit for French 3N3 or 3NN.
Alternates with French 3J3.

FRENCH3J3 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: At least six units of Linguistics and registration in a programme in French. Not open to students receiving credit for French 3N3 or 3NN.
Alternates with French 3I3.

FRENCH3K3 FRENCH LANGUAGE PRACTICE: ORAL
2 tuts.; two terms
Prerequisite: French 2C3 and registration in a programme in French; or permission of the Department.
Enrolment is limited; departmental permission slip required.

FRENCH3L3 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: At least six units of Linguistics and registration in a programme in French. Not open to students receiving credit for French 3N3 or 3NN.
Alternates with French 3I3.

FRENCH3N3 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: At least six units of Linguistics and registration in a programme in French. Not open to students receiving credit for French 3N3 or 3NN.
Alternates with French 3I3.
FRENCH3K3 EIGHTEENTH-CENTURY FRENCH LITERATURE I
The early 18th-century with emphasis on Montesquieu, Marivaux and Prévost, 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.
FRENCH3K3 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.
FRENCH3K3 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.
FRENCH3Q3 SEVENTEENTH-CENTURY FRENCH LITERATURE I
A study of selected plays of 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.
FRENCH3Q3 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.
FRENCH3R3 MEDIAEVAL FRENCH LANGUAGE
This basic introduction to the Old French language provides a reading knowledge of mediaeval French.
3 lects.; one term
Prerequisite: Registration in a programme in French; or permission of the Department.
FRENCH3Y3 FRENCH CINEMA
A survey of French film from 1896 to the present day, with particular emphasis upon such major figures as Renoir, Clair, Bresson, Truffaut and Resnais.
3 lects.; 1 tut., plus one weekly evening film screening; one term
Prerequisite: Open to students in Level II and above. Open as an elective only to students in a programme in French.
Same as Dramatic Arts 3Y3.
FRENCH3Z3 AFRICAN AND CARIBBEAN FRENCH LITERATURE
An introduction to French African and Caribbean literature from the origins of the Negritude movement to the present.
3 lects.; one term
Prerequisite: French 1A6 or 1B6. Not available to students receiving credit for French 223.
FRENCH4A3 FRENCH LANGUAGE PRACTICE
2 tuts.; two terms
Prerequisite: A grade of at least B- in French 3C3 or 3C4 and registration in an Honours programme in French; or permission of the Department.
FRENCH4B3 FRENCH LITERATURE PRACTICE: COMPARATIVE STYLISTICS AND TRANSLATION TECHNIQUES
A course designed for the systematic comparison of French and English with reference to problems in translation.
3 tuts.; one term
Prerequisite: French 3C3.
FRENCH4C3 FRENCH MORPHOLOGY AND SYNTAX
After a brief introduction to basic linguistics and in particular transformational grammar, concepts thus acquired will be applied to the systematic description of word forms (morphology) and their relationship within sentences (syntax).
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. Not available to students receiving credit for French 3L3.
Alternates with French 3B3.
FRENCH4E3 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: Credit in, or registration in, a programme in French; or permission of the Department.
Offered in alternate years.
FRENCH4F3 TOPICS IN EIGHTEENTH-CENTURY FRENCH LITERATURE
1982-83: Voltaire
Specific texts related to the works of other writers of the time. Not open to students receiving credit for French 4V3.
1983-84: The Early 18th-Century French Novel
Representative novels of the early 18th-century with emphasis on the works of Lesage, Crebillon fils and Marivaux. Not open to students receiving credit for French 3M3.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 3K3 or 3K3K 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.
FRENCH4G3 SHORT STORIES OF FRENCH CANADA
A study of traditional and modern story-telling in French Canada, with the folklore as the basic model.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 2F3 or 2FF3 and registration in a programme in French; or permission of the Department.
Offered in alternate years.
FRENCH4H3 QUEBEC POETRY
An analysis of selected writings of Neilligan, Saint-Denis Garneau, Anne Héjibert, and the group of poets known as the Hexagone, emphasizing poetic techniques and the socio-cultural context of Quebec.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 2F3 or 2FF3 and registration in a programme in French; or permission of the Department.
Offered in alternate years.
FRENCH4I3 TOPICS IN MODERN FRENCH POETRY
1982-83: Valéry, Apollinaire, Ponge, Saint-John Perse, Tzara, Aragon, Char, Michaux, Bonnefoy, Thomas, Dupin
Seminar(2 hrs.); one term
Prerequisite: Not available to students receiving credit for French 4I3.
1983-84: Baudelaire, le Parnasse, Le Symbolisme, Verlaine, Rimbaud, Mallarmé et Valéry
Seminar(2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. French 4I3 may be repeated, if on a different topic, to a total of six units.
FRENCH4J3 FRENCH LITERATURE
Representative novels of the early 18th-century with emphasis on the works of Racine, Molière, and the group of poets known as the Hexagone, emphasizing poetic techniques and the socio-cultural context of Quebec.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
Offered in alternate years.
FRENCH4L3 TOPICS IN FRENCH AFRICAN AND CARIBBEAN LITERATURE
1982-83: The novels and short stories of the Senegalese writer Sembene Ousmane
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 223 or 323, and registration in a programme in French; or permission of the Department. French 4L3 may be repeated, if on a different topic, to a total of six units.
Offered in alternate years.
FRENCH4N3 TOPICS IN THE TWENTIETH-CENTURY FRENCH NOVEL
A description of the genre and its evolution in recent years. Not open to students receiving credit for French 4N3.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French 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.
FRENCH4O3 TWENTIETH-CENTURY FRENCH THEATRE
A study of the ideas and dramatic techniques of the playwrights of the modern period who have influenced the development of today's theatre in France.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.
FRENCH4P3 TOPICS IN THE NINETEENTH-CENTURY FRENCH NOVEL
1982-83: Balzac's Novels
1983-84: Nineteenth-Century French Novel after Balzac
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. Not open to students receiving credit for French 3U3, 4U3 or 4TT3.
FRENCH4Q3 TOPICS IN SEVENTEENTH-CENTURY FRENCH LITERATURE
1982-83: French Classical Theatre
An exploration of the themes and techniques of classical dramaturgy in France.
Seminar(2 hrs.); one term
Prerequisite: French 3Q3 and registration in a programme in French; or...
permission of the Department. French 4Q3 may be repeated, if on a different topic, to a total of six units.

**Offered in alternate years.**

**FRENCH43 STUDIES IN MEDIAEVAL FRENCH LITERATURE**
The *Lais* of Marie de France: a selection from "short stories" in verse to illustrate the author's conception of love, her portrayal of characters, and her use of Celtic themes, including supernatural elements.

Seminar (2 hrs.); one term

Prerequisite: French 3R3 and registration in a programme in French; or permission of the Department.

**FRENCH43 LINGUISTICS AND MODERN FRENCH LITERARY CRITICISM (FROM STRUCSTURALISM TO SEMIOTICS)**

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 receiving credit for French 4XX3.

**FRENCH43 TOPICS IN TWENTIETH-CENTURY FRENCH LITERATURE**

1963-84: *Sartre*

A study of selected readings from the works of Sartre. Not open to students receiving credit for 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.

**FRENCH42 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 1982-84**

**COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME**

**ITALIAN 2H3 Aspects of Italian Culture and Civilization**

**ITALIAN 2I6 Italian Literature in Translation**

**BEGINNERS' LANGUAGE COURSES**

**ITALIAN126 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 12 or Grade 13 Italian, or students with credit in or registered in Italian 12Z6. 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 Grade 12 Italian will be required to take a placement test during registration week.

**ITALIAN127 BEGINNERS' INTENSIVE ITALIAN FOR DIALECT SPEAKERS**

The same course as Italian 126, but designed for those students who come from an Italian background and speak or understand an Italian dialect or Standard Italian.

5 hrs.; two terms

Prerequisite: Open, except to graduates of Grade 12 or 13 Italian, or students receiving credit for, or registered in, Italian 126.

**ITALIAN13Y ITALIAN FOR READING KNOWLEDGE**

An introductory grammar course designed to give students a knowledge of the basic structures of the language for the purpose of reading and translating Italian into English.

2 hrs.; two terms

Prerequisite: Open, except to students registered in a programme in Italian or with credit in Italian 126 or Italian 1Z6, or Italian 1A6. (Not to be used by Humanities I students as an R-group course.)

**INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES**

**ITALIAN146 INTERMEDIATE ITALIAN**

An intensive review of the grammatical structures of Italian and an introduction to composition, together with oral practice.

3 hrs.; two terms

Prerequisite: Grade 13 Italian, Italian 126, Italian 1Z6; or permission of the Department.

**ITALIAN223 INTENSIVE ORAL PRACTICE IN ITALIAN**

A conversation course designed to improve oral and aural proficiency in Italian.

2 hrs.; two terms

Prerequisite: Italian 126, Italian 1Z6; or permission of the Department. For students registered in a programme in Italian, this course may be used as an elective only.

**ITALIAN226 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 and registration in a programme in Italian; or permission of the Department.

**ITALIAN226 INTRODUCTION TO ITALIAN LITERATURE**

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.; one term

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.

Alternates with Italian 2I6.

**ITALIAN226 ITALIAN LITERATURE IN TRANSLATION**

A survey course exploring the Italian literature of the 19th-century with special emphasis on the works of Manzoni and Verga.

3 lects.; one term

Prerequisite: Italian 1A6 and 2E6; or permission of the Department. Not open to students receiving credit for Italian 3I6.

Alternates with Italian 3G3.

**ITALIAN3D4 ITALIAN STYLISTICS & ORAL PRACTICE**

An introductory course in the study of Italian used for the purpose of developing a sense of style in the written language.

2 hrs.; two terms

Prerequisite: Italian 2D6; or permission of the Department.

**ITALIAN3G3 ITALIAN ROMANTIC POETRY**

A study of the poetry of the Romantic Era with special emphasis on the works of Pushkin.

3 lects.; one term

Prerequisite: Italian 1A6 and 2E6; or permission of the Department.

Alternates with Italian 3A3.

**ITALIAN3L3 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 and 2E6; or permission of the Department.

Alternates with Italian 3O3.

**ITALIAN3M3 TWENTIETH-CENTURY ITALIAN NOVEL**

A study of the major Italian novelists of the 20th-century with emphasis placed on realism and its influence on contemporary Italian literature.

3 lects.; one term

Prerequisite: Italian 1A6 and 2E6; or permission of the Department.

Alternates with Italian 4J3.

**ITALIAN3O3 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 and 2E6; or permission of the Department.

Alternates with Italian 3L3.

**ITALIAN3P 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 and 2E6; or permission of the Department.

Alternates with Italian 3Q3.
ROMANCE LANGUAGES

ITALIAN3Q3 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 and 2E6; or permission of Department. Not open to students receiving credit for Italian 3N3 or 4Q3.
Alternates with Italian 3P3.

ITALIAN3R6 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 and 2E6; or permission of Department. Not open to students receiving credit for Italian 3I3, 3K3, or 4O3.

ITALIAN4A3 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 and 2E6; or permission of Department. Alternates with Italian 4C3.

ITALIAN4B6 SPECIAL TOPICS IN LANGUAGE STUDIES
Comparative analysis of the most important grammatical structures of English and Italian with special attention to interference phenomena from the Italian dialects on the standard language. The study of the grammar of these languages constitutes the background for discussion of methods and techniques of teaching Italian to speakers of English or of an Italian dialect.
The theoretical part of the course is combined with practical application by teaching small tutorial groups of Italian 126 and 12Z6.
1 lect.; practice teaching (3 hrs.); two terms.
Prerequisite: Registration in Level IV of Honours or Combined Honours in an Italian Programme and permission of the Department.
Enrolment is limited; departmental permission slip required.

ITALIAN4C3 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 and 2E6; or permission of Department. Alternates with Italian 4D3.

ITALIAN4G3 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 and 2E6; or permission of Department. Alternates with Italian 3M3.

ITALIAN4L4 INTRODUCTION TO ITALIAN LINGUISTICS
An introduction to the study of synchronic and diachronic Italian linguistics, to the problem of dialect fragmentation, to the "Question della Lingua" and to early documents of Italian.
2 lects.; two terms
Prerequisite: Italian 1A6 and 2E6; or permission of Department.

ITALIAN4M3 COMPOSITION, SYNTACTICS AND ORAL PRACTICE IN ITALIAN
An essay-writing course based primarily on 20th-century literary material.
3 tuts.; one term
Prerequisite: Registration in Level IV of an Italian programme; or permission of the Department.

ITALIAN4P3 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.

ITALIAN4Q3 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 423 and Spanish 423.

Spanish CURRICULUM 1982-84

BEGINNERS' LANGUAGE COURSE

SPANISH126 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, Grade 13 Spanish or equivalent.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

SPANISH1A6 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 the study of the subtler aspects of the language, composition, and the expansion of vocabulary.
4 hrs.; two terms
Prerequisite: Grade 12 or Grade 13 Spanish, Spanish 126; or permission of the Department.

SPANISH2A4 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.

SPANISH2B3 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 1Z6; or permission of the Department.

SPANISH2C3 INTRODUCTION TO THE CULTURE OF SPANISH AMERICA
A survey of the development of Spanish America from Mayan times to the present day.
3 lects.; one term
Prerequisite: Spanish 1A6.

SPANISH3A4 SYNTAX
A course which provides students with opportunities to develop a deeper awareness of style and a greater command of the spoken and written language.
2 tuts.; two terms
Prerequisite: Spanish 1A6.

SPANISH3A4 STYLISTICS
The study of basic stylistic concepts applied to literary texts.
2 tuts.; two terms
Prerequisite: Spanish 3A4.

SPANISH3B3 SPANISH DRAMA
1982-83: A thematic and analytic study of the principal Spanish playwrights of the 17th century. Works by Lope de Vega, Tirso, Alarcón and Calderón will be included.
1983-84: El Quijote
An analytical study of Cervantes' masterpiece with some consideration of the interpretations and view points of major critics.
3 lects.; one term
Prerequisite: Spanish 2E6.

SPANISH3C3 GOLDEN AGE PROSE
1982-83: The Picaresque Novel
A study of the mode's major masterpieces in the context of the intellectual history of the 17th and 17th centuries in Spain, and of the development of the narrative techniques which launch the modern novel.

SPANISH3E3 MODERN SPANISH-AMERICAN NOVEL
1982-83: 1948 to Present
An examination of the themes and trends of the Spanish American novel over the past 30 years. Works by Rulfo, Cortázar, Garcia Márquez, Sábato, Fuentes, and Asturias might be included.
1983-84: Up to 1948
A study of the development of the Spanish American novel from Izaacs to Azaela. Other authors included will be Icaza, Alcides, Arquedas, Gallegos, and Rivera.
3 lects.; one term
Prerequisite: Spanish 2E6.

SPANISH4A3 MODERN SPANISH NOVEL
1982-83: 20th Century
Critical analysis of major 20th-century novels, including works by Baroja, Cela, Goytsiolou, Fantasio, Lafont, and Delibes.
1983-84: 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
RUSSIAN 1B6 Aspects of Modern Russian Culture
RUSSIAN 2A6 Nineteenth-Century Russian Literature in Translation
RUSSIAN 3D3 Russian Drama Since 1800
RUSSIAN 3E3 Studies in the Russian Novel: Dostoevsky
RUSSIAN 3K6 Twentieth-Century Russian Literature in Translation
RUSSIAN 3T3 Studies in the Russian Novel: Tolstoy
SLAVIC 2F6 Introduction to Slavic Linguistics
SLAVIC 3A6 Survey of Slavic Culture

BEGINNERS' LANGUAGE COURSE
RUSSIAN 126 BEGINNERS' INTENSIVE RUSSIAN
An introduction to basic conversational Russian as spoken in the Soviet Union today. The basic skills of speech and aural comprehension, plus the essential grammar of Soviet Russian.
4 hrs. (lects. and lab. practice); two terms
Prerequisite: Open.

BEGINNERS' CIVILIZATION COURSE
RUSSIAN 106 ASPECTS OF MODERN RUSSIAN CULTURE
A survey of major developments in Russian philosophy, religion, literature, and the arts from the 18th century to the present day.
3 lects.; two terms
Prerequisite: Open.
Offered in alternate years.

INTERMEDIATE AND ADVANCED LANGUAGE, LITERATURE AND CIVILIZATION COURSES
RUSSIAN 2A6 NINETEENTH-CENTURY RUSSIAN LITERATURE IN TRANSLATION
A survey with special concentration on Gogol, Turgeniev, Tolstoy, and Dostoevsky.
2 lects., 1 tut.; two terms
Prerequisite: Open to students in Level II and above; or permission of the Department.
Alternates with Russian 3K6.

RUSSIAN 2C6 INTERMEDIATE LANGUAGE STUDY
3 lects., 1 lab.; two terms
Prerequisite: Grade 13 Russian, or Russian 126; or permission of the Department.

RUSSIAN 2E3 RUSSIAN SHORT STORY
An introduction to the Russian literary language and a thematic study of nineteenth-century short stories. Readings in the original.
2 lects., 1 tut.; one term
Prerequisite: Russian 126; or permission of the Department.

RUSSIAN 3R3 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 28R3.

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., 1 tut.; one term
Prerequisite: Open to students in Level II and above. Not available to students receiving credit for Russian 4E3.
Offered in alternate years.

RUSSIAN 3E3 STUDIES IN THE RUSSIAN NOVEL: DOSTOEVSKY
A detailed study in translation of the major novels of Feodor Dostoevsky, with particular emphasis on the literary, philosophical and religious problems encountered in his work.
2 lects.; one term
Prerequisite: Open to students in Level II and above.
Alternates with Russian 3T3.

RUSSIAN 3K6 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.
Alternates with Russian 2A6.

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, philosophical and religious problems encountered in his work.
2 lects.; 1 tut.; one term
Prerequisite: Open to students in levels II and above. Not available to students receiving credit for Russian 4G3.
Alternates with Russian 3E3.
UKRAINIAN

UKRAIN36 INTRODUCTION TO UKRAINIAN
Basic elements of Ukrainian grammar, elementary composition, selected prose readings.
4 hrs.(including lab.); two terms
Prerequisite: Open. Not available to students receiving credit for Ukrainian 1Q6.
Offered in alternate years.

UKRAIN46 INTERMEDIATE UKRAINIAN
Review of grammar, oral practice, and compositions; readings in the original from representative authors.
3 hrs.(including lab.); two terms
Prerequisite: Ukrainian 1Z6; or permission of the Department. Not available to students receiving credit for Ukrainian 1B6.
Offered in alternate years.

UKRAIN46 ADVANCED UKRAINIAN
Review of syntax, study of idiomatic expression, weekly composition exercises, intensive oral practice in the language lab. and in conversational class, readings in major 19th and 20th century authors.
2 tuts.; 1 hr. conversation; two terms
Prerequisite: Ukrainian 2A6; or permission of the instructor.

Sanskrit

(See “Religious Studies — Sanskrit”)

Science

CURRICULUM 1982-84
Science 2A3, 2B3, 2C3, 2D6, 2G3, 2H3, 2I3, 2K3 and 2L3 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. Enrolment 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: Biology 1G6, Introduction to Biology; Biology 2F3, Ecology; Biology 1H6, Human Physiology; Chemistry 1B7, General Chemistry; Geography 2W3, Hydrology in Canada; Geology 1B6, General Geology; Geology 2B3, Optical Crystallography; Mathematics 1F6, Calculus and Statistics; Mathematics 2H6, Ideas in Mathematics; Physics 2J3, Physics of Musical Sound; and Physics 2M3, Mechanics.

SCIENCE2A3 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.

SCIENCE2C3 SHIFTING CONTINENTS
Theory of plate tectonics, a scientific revolution of earth science; explanations of earthquakes, volcanoes, evolution, climates.
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 in or have received credit for Geology 1A6 or 1B6.

SCIENCE2D6 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., including films, planetarium, and observations; two terms
Prerequisite: Registration in Level II, III, or IV, of a non-science programme. Grade 12 Mathematics required.
Social Work

Faculty as of January 15, 1982

J. McEwan Macintyre/ Director

Professors

Cyril Greenland/MSc. (North Wales)
Harry L. Penny/Dip. Theol. (Union College, British Columbia) , B.A., M.S.W. (British Columbia)

Associate Professors

Jean M.E. 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.Sc., Ph.D. (London)

Assistant Professors

L. William Lee/B.A. (St Thomas, Texas) , M.S.W. (Toronto)
James J. Rice/B.A. , Sir George Williams , B.S.W., M.S.W. (Calgary) , Ph.D. (Exeter)
Muriel Santilli/B.A. (Hunter College) , M.A. (Columbia) , M.S.W. (SUNY, Buffalo)
Boris Stein/B.A. , M.S.W. (McGill)

Lecturer

Maureen J. Orton/B.A., B.S.W. (Toronto) , M.A. (McMaster)

Associate Members

J.A. Byles/B.A. (Western) , M.S.W. (Toronto) , D.S.W. (Washington), Dept. of Psychiatry
A.L. Robb/B.A. , M.A. (British Columbia) , Ph.D. (Essex)

CURRICULUM 1982-84

Except when otherwise designated, the following courses are open only to students registered in the Combined B.A./B.S.W. Programme, or registered in the B.S.W. programme for a second degree.

SOC WORK2B6 SOCIAL WELFARE: GENERAL INTRODUCTION
Purposes and values of social welfare programmes and services. Social welfare policy and the social security system in Canada in historical perspective.
Lects. and discussion; two terms

SOC WORK2C3 THEORY FOR SOCIAL WORK PRACTICE
Knowledge base; social work values, fields of practice and types of intervention. Human growth and development.
Lectures, films, discussions, small task groups; one term

SOC WORK2D5 INTERPERSONAL COMMUNICATION AND INTERVIEWING
Theories of interpersonal communication. Basic skills in interpersonal communication and interviewing.
Lectures, discussions, exercises; one term

SOC WORK3B5 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
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.
SOC WORK D9 THE PRACTICE 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 one day per week; two terms
Prerequisite: Social Work 2D6, 2C3, 2D3, with the exception of B.S.W.
Second Degree students.
Enrolment is limited.

SOC WORK G3 SOCIAL WELFARE POLICY AND PROCESS
Role of values and assumptions in development of welfare policies. Analysis of key concepts in policy planning. Study of policy and programmes in selected areas.
Lectures and seminars; one term

SOC WORK H3 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
This course may be taken for B.A. credit by undergraduates registered in the Labour Studies programme.

SOC WORK J3 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
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK K3 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

SOC WORK M3 FAMILY IN SOCIAL WORK PRACTICE
Examination of relevant aspects of family theory for social work practice; models of family intervention and therapy; agencies and programmes serving families.
Seminars; one term
Prerequisite: Sociology 2U3 is recommended as preparation for this course.

SOC WORK N3 HUMAN SEXUALITY
Basic information on anatomy, physiology, psychology and sociology of sexuality and fertility. Attitudinal self-awareness, communication skills, values regarding sexual identity and roles; analysis of policy issues.
Seminars; one term

SOC WORK P3 DIRECTED READINGS IN SOCIAL WORK
Completion of a major project focusing on a selected social work problem or issue.
Tuts.; two terms
Prerequisite: Permission of the supervising instructor.
Enrolment is limited.

SOC WORK Q4 THE PRACTICE OF GENERAL SOCIAL WORK II
Combined field experiences and seminars to deepen understanding and refine practice skills. Students spend two days per week in social agencies, or with other organizations, in supervised practice. Option of equivalent block placement.
Seminars, group supervision, field practice; two terms
Prerequisite: Social Work 3D9.
Enrolment is limited.

SOC WORK R4 SELECTED SOCIAL ISSUES AND SOCIAL WORK
Critical examination of social work practice in respect to selected social issues. During 1982-83 one section will focus on rehabilitation.
Seminars; one term
Same as Health Sciences 4C3.

SOC WORK S4 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

SOC WORK T4 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
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK U4 CONCENTRATED STUDIES IN SOCIAL WELFARE
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.
SOCIOL2J3 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.

SOCIOL2K3 CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS
Same as Sociology 2J3.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL2M6 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.

SOCIOL2MM3 THE SOCIAL DIMENSION OF RELIGION
Same as Religious Studies 2N3.

SOCIOL2NN3 THE SOCIAL-Psychological DIMENSION OF RELIGION
Same as Religious Studies 2N3.

SOCIOL2Q6 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 in this course may be limited.

SOCIOL2Q6 SOCIOLOGY OF THE FAMILY
An analysis of kinship and family units in comparative and contemporary perspective.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrolment in this course may be limited.

SOCIOL2Q6 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 2Q3.

SOCIOL2Q3 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, and Sociology 1A6; or permission of the instructor. Not open to students who are registered in, or have received credit for, a statistics course.
Enrolment in this course may be limited.

SOCIOL2Q3 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 in this course may be limited.
Same as Anthropology 2Z3.

SOCIOL3A3 EUROPEAN SOCIOLOGICAL THEORY
An advanced examination of classical and contemporary European sociological theory.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 2S3 or 2Q6; or permission of instructor. Not open to students with credit in Sociology 3A6.

SOCIOL3A4A3 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.
SOCIOL353 SELECTED TOPICS IN THE SOCIOLOGY OF EDUCATION
An examination of selected topics in the sociology of education.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 1A6 or permission of instructor.

SOCIOLOGY

SOCIOL383 MAJOR DENOMINATIONS IN CANADA
Same as Religious Studies 3B3.

SOCIOL38C SOCIOC-ECONOMIC DEVELOPMENT
Selected topics in the sociology of underdeveloped countries, including
social stratification, revolution, the place of women, and processes of social
change.
3 hrs. (lects. & seminars); two terms
Prerequisite: Sociology 2M6; or permission of instructor.

SOCIOLOGY

SOCIOLOGY 3C3 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. & discussion); one term
Prerequisite: Sociology 2Y3 or 2Z3 or equivalent; or permission of instructor.

SOCIOLOGY

SOCIOLOGY 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. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3F6 POLITICAL SOCIOLOGY
A survey of social and state institutions, focusing on current debates in the
field.
3 hrs. (lects. & discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3G3 SOCIOLOGY OF HEALTH CARE
The social determinants of illness and of the organization of the health care
sector.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOL366 RESEARCH TECHNIQUES AND DATA ANALYSIS
A comprehensive introduction to the principles of research methods and
data analysis in the social sciences.
3 hrs. (lects. & labs); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 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. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3L3 SELECTED TOPICS IN SOCIOLOGICAL ANALYSIS II
Same as Sociology 3J3.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3M6 RELIGION AND MODERN SOCIETY
An analysis of the relation between religions and society.
3 hrs. (lects. & discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Same as Religious Studies 3J6.

SOCIOLOGY

SOCIOLOGY 3N3 THE SOCIOLOGY OF KNOWLEDGE
An analysis of the role of ideas in the development of social institutions and
the impact of society upon the formation of belief systems and expressive
forms.
3 hrs. (lects & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3O3 ADVANCED SOCIOLOGICAL RESEARCH
This course will provide a detailed study of selected qualitative methods in
Sociology.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3P3 NORTH AMERICAN SOCIOLOGICAL THEORY
An advanced examination of classical and contemporary North American
sociological theory.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 253 or 256; or permission of the instructor. Not
open to students with credit in Sociology 3A6.

SOCIOLOGY

SOCIOLOGY 3Q3 NATIVE AND ETHNIC RELIGIONS IN CANADA
Same as Religious Studies 3B3.

SOCIOLOGY

SOCIOLOGY 3R3 CREATIVITY AND HUMAN INTERACTION: PARTS I AND II
Part I is the same as Social Science 3B3. Part II is the same as Social
Science 3C3.

SOCIOLOGY

SOCIOLOGY 373 THE SOCIOLOGY OF URBAN AREAS
Sociological analysis of urban structure and development, and the social
consequences of urbanization.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3S3 THEORIES OF MASS SOCIETY
This course will be 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. & discussion); two terms
Prerequisite: A previous course in Sociological or Political Theory and
permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3V6 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. & discussion); two terms
Prerequisite: Sociology 2M6. Not open to students with credit in Sociology
2F6.

SOCIOLOGY

SOCIOLOGY 3W3 HISTORICAL METHODS IN SOCIOLOGY
An examination of methods for incorporating historical data and archival
sources into sociological argument.
3 hrs. (seminar & discussions); one term
Prerequisite: Sociology 213; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 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. & discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 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. (lects. & discussion); one term
Prerequisite: Sociology 213; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 3Z3 ETHNIC RELATIONS
An analysis of political, social and economic change in selected locales.
3 hrs. (lects. & discussion); one term
Prerequisite: Sociology 2E6; or permission of instructor.

SOCIOLOGY

SOCIOLOGY 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.

SOCIOLOGY

SOCIOLOGY 4C6 SELECTED PROBLEMS IN SOCIOLOGICAL RESEARCH
Students will undertake a class project.
3 hrs. (seminar); two terms
Prerequisite: Sociology 3H6.

SOCIOLOGY

SOCIOLOGY 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 253
or 256; or permission of the instructor.

SOCIOLOGY

SOCIOLOGY 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.

SOCIOLOGY

SOCIOLOGY 4F3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH
A critical discussion, centring 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.
SOCIOL4H3 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.
SOCIOL4I3 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 253 or 256 and registration in Level IV Honours Sociology, or permission of the instructor.
SOCIOL4J3 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.
SOCIOL4K3 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.
SOCIOL4L3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH II
Same as Sociology 4F3.
3 hrs. (seminar); one term
Offered in alternate years.
SOCIOL4M3 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.
SOCIOL4N3 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.
SOCIOL4O3 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.
SOCIOL4P3 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.
SOCIOL4Q3 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.
SOCIOL4R3 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.
SOCIOL4S3 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.

Spanish
(See “Romance Languages — Spanish”)

Ukrainian
(See “Russian — Ukrainian”)

SOCIOL4V6 SPECIAL TOPICS IN RACIAL AND ETHNIC RELATIONS
A study of the influence of ethnic and racial factors in various societies.
3 hrs. (seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology, or permission of the instructor.
Same as Political Science 4D6.

SOCIOL4X3 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.
Undergraduate Academic Awards

(Effective for awards based on achievement in 1982-83)

The University Senate, acting on behalf of its generous benefactors and donors, bestows academic awards on entering, in-course of scholarship. In recognizing such scholastic 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.

1. GENERAL CONDITIONS RELATING TO ALL ACADEMIC AWARD RECIPIENTS

1.1 Recipients of University Academic Awards may not receive the monetary benefit of more than:

(a) 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

(b) two awards of less than the value of a Senate Scholarship.

Travel scholarships or awards continuing from a previous year (including entrance scholarships), book prizes, medals and trophies are excluded from this limitation. The award still will be shown on the student’s official record even when a student is not so permitted to retain the monetary benefit owing to conditions (a) and (b).

1.2 There are no additional general conditions beyond those noted in 1.1 above attaching to the receipt of travel scholarships, book prizes, medals and trophies, or to the monetary benefits of awards provided exclusively for part-time studies and graduating students. Such awards are made directly to the student, normally not later than November following the Session in which they were earned.

1.3 The monetary benefits of all academic awards not excluded in 1.2 above will be disbursed in the following manner:

(a) Firstly, the student’s fee account will be credited up to the value of full-time Winter Session academic fees for the programme and Level in which the recipient is registered; residence fee account will be credited with the amount of a residence scholarship in January. Such monies are not refundable in cash under any circumstances.

(b) Any benefits in excess of the full-time Winter Session academic fees will be paid directly to the student in November, provided that the recipient is then registered as a full-time student in a baccalaureate degree programme at McMaster University.

1.4 Benefits credited to academic fee accounts 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 award funds, unless an application to apply the benefits to academic fees incurred at a later date is submitted to the Academic Awards section of the Office of the Registrar and is approved.

Students holding 3-year or 4-year full-fee scholarships who choose to accelerate their programmes by completing Summer Session courses and thereby complete their degrees earlier than normal should consult the Academic Awards section of the Office of the Registrar regarding the possibility of reimbursement for Summer Session fees.

1.5 Students registered for second undergraduate degrees are not eligible for academic awards.

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.

2. ACADEMIC AWARDS FOR ENTERING STUDENTS

General Conditions

2.1 All candidates must fulfill the University requirements for admission to a Level I programme.

2.2 All applications for early admission to the University, within not more than two years of completion of secondary school studies, will be considered if applications for entrance scholarships unless an application is explicitly required, as stated in the particular terms of an award.

2.3 To be considered for an entrance scholarship, applicants must obtain at least a first-class average in the secondary school credits required for University admission.

2.4 In order to retain those entrance scholarships which provide for awards beyond Level I, students must complete at the University during each successive Winter Session (September to April) a full load corresponding to at least either:

(a) the minimum number of units required for their Level and programme, or

(b) if the programme does not specify work by individual Level, the average number of units per Level. In addition, retention requires that the student maintain a University Average of at least 10.0 and obtain no F grades.

2.5 Unless otherwise specified, a recipient may hold an entrance scholarship 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.

2.6 Entrance scholarship recipients will begin their studies at the ensuing Winter Session (September to April) unless an application for deferment is submitted to the Academic Awards section of the Office of the Registrar and is approved. Deferments are not normally granted for more than one calendar year.

The McMaster Scholars Programme

Each year up to 5 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, samples of work and letters of recommendation. Details may be obtained from the Academic Awards Office. Value — $10,000 ($2,500 a year for up to four years).

The McMaster Scholars programme incorporates:

THE GEORGE AND NORA ELWIN SCHOLARSHIPS

Established in 1979 by bequest of George and Nora Elwin of Hamilton.

Other Scholarships Open to 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. The recipients must be from outside the City of Hamilton.
Value — $500 each.

THE CHANCELLOR'S 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 eleventh award to be made in 1984.
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 — $6,000 ($1,500 a year for up to four years).

THE GOVERNORS' SCHOLARSHIPS
Six scholarships will be awarded to students entering a full-time programme of study.
Value — up to four years' academic fees.

THE 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 — $6,000 ($1,500 a year for up to four years).

THE AMELIA MORDEN, PAARDEBURG CHAPTER, I.O.D.E., SCHOLARSHIP
Established in 1968 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 1961 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.

THE LLOYD MEMORIAL SCHOLARSHIP IN SCIENCE
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 IN FOREIGN LANGUAGES
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 HARRIS SCHOLARSHIP
Established in 1935 in memory of P. H. Harris of Pickering, Ontario. To be awarded to a student from a secondary school in the City of Hamilton who is entering the Faculty of Science. Preference to be given to a student with a background in science or one who has completed Honours Chemistry or Honours Physics in Grade 13. Value — up to four years' academic fees.

THE ISABELLA CAMPBELL MCNEE SCHOLARSHIP IN MATHEMATICS AND PHYSICS
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 MOURON COLLEGE 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 SPECTATOR SCHOLARSHIP
Established in 1955 by The Hamilton Spectator. To be awarded to a student from Hamilton and district.
Value — $6,000 ($1,500 a year for up to four years).

THE D.E. THOMSON SCHOLARSHIP IN ENGLISH
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 THOROLSON MEMORIAL SCHOLARSHIP
Established in 1978 in memory of Professor Frank Thorolson, 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 IN HISTORY
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 $750 each.

THE LESTER 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 $750 each.

3. ACADEMIC AWARDS AVAILABLE TO FULL-TIME STUDENTS BASED ON UNIVERSITY-WIDE, FACULTY-WIDE OR PROGRAMME-WIDE COMPETITION
3.1 These awards are available only for students qualifying on the basis of work in other than their graduating Session.
3.2 In addition to meeting the General Conditions listed in Section 1, a student must:
(a) Complete during the Winter Session (September to April) immediately preceding the last review, at least the minimum number of units specified in the Calendar for the Level and programme in which the student is registered (e.g., Honours Biology, Level 2 — 31 units; Engineering I — 38 units) or, if registered in a programme which does not specify work by individual Level, at least the average number of units required per Level (e.g. Honours English — 30 units, all Levels).
(b) Obtain at the most recent review a University Average of at least 8.0, and no F grades.
3.3 Students may qualify for these awards only on the basis of work included at the May review, or deferred examinations resulting therefrom.
3.4 Unless otherwise stated explicitly in the terms of a particular award, academic standing will be determined using the Sessional Average, which is the weighted average of the grades in all courses (excluding any designated "Extra") taken during the Winter Session (September to April) immediately preceding the most recent review. The Sessional Average will also be used to break any tie for an award based on another academic criterion.

Medal
THE GOVERNOR GENERAL'S MEDAL
Given by His 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.

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 SOCIETY FOR METALS (ONTARIO CHAPTER) SCHOLARSHIP
Established in 1971 by the local Chapter. To be awarded to the student achieving the highest Sessional Average after completion of at least 33, but not more than 80 units beyond Level I of Honours Metallurgy and Materials Science or Metallurgical Engineering.
Value — $900.

UNDERGRADUATE ACADEMIC AWARDS

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UNDERGRADUATE ACADEMIC AWARDS

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 programs 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 3H4, taken in one Session.
Value — $200.

THE J. DOUGLAS BANKIER MEMORIAL PRIZE
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 Mathematical Sciences, who obtains the highest Sessional Average and who in that Session achieves a grade of at least B in Mathematics 3D6.
Value — $400.

THE M. BANKIER BATES PRIZE
Established in 1975 by Dr. M. Bankier 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 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 Metallurgy and 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 10.0. 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 BP CANADA SCHOLARSHIPS
Established in 1976. Two scholarships to be awarded: one to the student who has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in Chemistry with the highest Sessional Average, and one to a student who has completed at least 110, but not more than 130, units beyond Level I of Chemical Engineering and Management, and who has achieved notable standing and is otherwise deemed meritorious.
Value — $1,000 each.

THE BRAMPTON BRICK LIMITED CERAMIC SCHOLARSHIP
Established in 1980. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of Ceramic Engineering with the highest Sessional Average, which must be at least 10.0.
Value — $1,000.

THE BRIEN SCHOLARSHIP IN PHILOSOPHY
Established 1946 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 with the highest Cumulative Area Average.
Value — $550.

THE JOSEPHINE STAPLES BRIEN PRIZE
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. To be awarded each year to the student who has completed at least 30, but not more 45, units beyond Level I of an Honours programme in Mathematical Sciences with the highest Cumulative Area Average.
Value — $600.

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. Vera Nasecky and Miss June Nasecky 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 30 units beyond Level I of Ceramic Engineering and who, in the judgment of the Department of Metallurgy and Materials Science, show a particular promise in the field of Ceramic Engineering or Materials Science.
Value — $500 each.

THE CANATOM PRIZE
Established in 1982. To be awarded to the student who has attained the highest Cumulative Engineering Average after completion of at least 60, but not more than 75, units beyond Level I of an Engineering Physics programme and who has completed, or is registered in, at least three of Engineering Physics 4D3, 4L3, 4M3 and 4N3 in the following Winter Session.
Value — $250.

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 — $50 and medal (three awards).

THE CLARKE 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 a programme in Commerce and who attains the highest Sessional Average and in that Session attains a grade of at least A — in Commerce 2A/3.
Value — $350.

THE CLASS OF '50 PRIZE IN HONOURS ECONOMICS
Established in 1982 by the Graduating Class of 1950 in Honours Economics. 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 CIVILIZATION 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 Civilization and who, in the judgment of the Department of Classics, shows most promise.
Value — $100.

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 Commerce, Honours Economics, Honours Economics and Mathematics or Honours Economics and Computer Science with the highest Sessional Average. Preference to be given to (a) students who are considering entering the fields of life insurance or Credit Union management and (b) children of Credit Union members.
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 Averages.
Value — $500 and $275 (two awards; one in each programme).

THE DOMTAR SCHOLARSHIP
Established in 1974. 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. Dulumage 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 Honours programme in Philosophy and who, in the judgment of the Department of Philosophy, has achieved the most notable standing.

Value = $100.

Value = $1,000 each (six awards).

THE J.J. JOHNSON SCHOLARSHIP
Established in 1975 in memory of Mr. J.J. Johnson by his friends and former colleagues. 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 Religious Studies.

Value = $125.

THE JURY PRIZE
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 = $125.

THE KATHLEEN MARY JOHNSTON MEMORIAL PRIZE
Established in 1963 by Lawrence D. Johnston in memory of his wife.

Value = $150.

THE KLAUS FRITZ MEMORIAL PRIZE
Established in 1980 by friends of Professor K. Fritzke. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of the three-Level Chemistry programme with the highest Cumulative Area Average.

Value = $125.

THE GENERAL CONTRACTORS ASSOCIATION OF HAMILTON SCHOLARSHIPS
Established in 1979. Three scholarships to be awarded on the basis of scholarship to students who have completed at least 38 units beyond Level I in a programme in Civil Engineering. Recipients should be willing to accept summer employment in the construction industry.

Value = $700 each.

THE GENERAL REFRACTORIES OF CANADA CERAMIC SCHOLARSHIP
Established in 1980. To be awarded to the student entering Level II of Ceramic Engineering with the highest Sessional Average at the completion of Engineering I.

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 of an Honours programme in Geology and who, in the judgment of the Department, attains high standing in geology.

Value = $50, for books.

THE J.W. GILL SCHOLARSHIPS
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 = $350 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 on the recommendation of the Department of Music for excellence in Honours Music to the student who has completed at least 30, but not more than 45, units beyond Level I.

Value = $150, for books.

THE RONALD K. HAM MEMORIAL PRIZE
Established in 1971 in memory of Professor R.K. Ham by his friends and former colleagues. Awarded to the student who has completed at least 60 units, beyond Level I and who, in the judgment of the Department of Metallurgy and Materials Science, 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 of an Honours 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 Average: two to students who have completed at least 30, but not more than 45, units beyond Level I, and two to students who have completed at least 60, but not more than 75, units beyond Level I of a programme in Commerce. Recipients must have obtained all their secondary school education in the Hamilton-Wentworth Region.

Value = $750 each (six awards).

THE DR. THOMAS HOBLEY PRIZE
Established in 1938 by bequest of Miss M. McNee of Windsor. To be awarded to a woman student entering her graduating Session on the basis of the Sessional Average obtained in 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 to students in undergraduate programmes, with the exception of those in their graduating Session and those retaining scholarships of an equal or greater value. 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 10.0 or greater. Currently, approximately 130 scholarships are available annually.

Value = $1,000 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 75, but not more than 95, 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 74, but not more than 94, units beyond Level I of an Honours 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 Honours 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. I.E. French, 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 plaque.

THE KATHLEEN MARY JOHNSTON MEMORIAL PRIZE
Established in 1963 by Lawrence D. Johnston in memory of his wife.

Value = $150.

THE JURY PRIZE
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 = $125.

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
by Level I in Honours Geology and who attains high standing in geology.

Value - $75.

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, Ellen 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 Average Area.

Value - $225.

THE F. JOS. LAMB COMPANY SCHOLARSHIP
Established in 1980. To be awarded to the student entering Level II of Manufacturing Engineering with the highest Sessional Average at the completion of Engineering I, which must be at least 10.0. The scholarship is tenable for three years provided the recipient maintains a Cumulative Engineering Average of at least 10.0.

Value - $3,000 ($1,000 each year).

THE RAY LAWSON SCHOLARSHIPS
Established in 1975 by the Honourable Ray Lawson, O.B.E., D.C.L., D.Ch.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 85, units beyond Level I, and one to a student who has completed at least 110 units beyond Level I.

Value - $500 each.

THE MACGIBBON SCHOLARSHIP
Established in 1970 by bequest of Professor Duncan A. MacGibbon ('38). 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 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 MCGREGOR-SMITH-BURL MEMENTO 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 Burr, and supplemented in 1944 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 PRIZE IN PHYSICS
Established in 1977 to commemorate the contributions of Dr. A. Boyd McLay ('20) 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 - $200.

THE SIMON MCNALLY SCHOLARSHIPS
Established in 1972 by S. McNally and Sons, Limited, in honour of Simon McNally. Two scholarships to be awarded to Canadian citizens completing at least 35, but not more than 90, units beyond Level I of an Honours programme in Engineering experience and background.

Value - $650 each.

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 College with the highest Sessional Average: 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 - $500 each.

THE MURATA ERIC NORTH AMERICA, INC. SCHOLARSHIPS IN HARDWARE AND ELECTRONICS
Established in 1988. 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 Electrical Engineering and who in that Session attains a grade of at least A in Materials 3B4 and Electrical Engineering 3B4 and 3P4; (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 3P4.

Value - $600 each.

THE NIEEMIER 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 B.Sc.N. programme.

Value - $500.

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 and who attains the highest Cumulative Area Average in the Honours History programme.

Value - $150, for books.

THE PAUFIN SCHOLARSHIP
Established in 1957 in memory of Barney David Paufin ('33), by Mrs. Barney David Paufin and Morris Paufin. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I and who attains the highest Cumulative Area Average in an Honours programme in History.

Value - $400.

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, is most promising in classical studies.

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 100, but not more than 115, units beyond Level I of Civil Engineering and Management. Award is based on scholarship (Sessional Average of at least 10.0) and evidence of leadership, self-motivation, and practical aptitude appropriate for a future in the construction industry.

Value - $1,500.

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 Commerce. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.

Value - $350.

THE DR. JOHN A. POLYPKIU SCHOLARSHIP
Established in 1967 in memory of Dr. John A. Pylypiuk and in recognition of Canada's Centennial Year. 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 History with the highest Sessional Average and who in that Session achieves a grade of at least A in History 2J6 (Canadian history).

Value - $750.

THE HERBERT A. RICKER SCHOLARSHIP
Established in 1982 by bequest of Mrs. Edna Elizabeth Ross Reeves of Hamilton in memory of her husband, Herbert A. Ricker. Four scholarships to be awarded on the basis of scholarship and character to: (a) two students who have completed Engineering I, or at least 35, but not more than 90, units beyond Level I of an engineering programme with a Sessional Average of at least 10.0; and (b) two students who have completed Natural Sciences I, or at least 30, but not more than 75, units beyond Level I of a science programme with a Sessional Average of at least 10.0. The recipients must not be holders of another scholarship.

Value - $1,250 each.

THE E. TOGO SALMON PRIZE IN HISTORY
Established in 1973 by friends and colleagues of Professor E.T. Salmon 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 and book(s).
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 Verna Simpson Memorial Prize
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 SME MANUFACTURING ENGINEERING FOUNDATION SCHOLARSHIPS
Established in 1981. Two scholarships to be awarded to two students in the Manufacturing Engineering programme, on the basis of the Sessional Average, which must be at least 10.0.
Value — $1,000 each.

THE C. Gordon Smith Scholarships
Established in 1973 by the Board of Directors of 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 L. Smye Memorial Prizes
Established in 1972 by the Patricia Smye 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 PRIZE
Established in 1971 by the Order Sons of Italy in 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. In recognition of his contribution to education in Hamilton.
Value — $100.

THE SOUTH ONTARIO ECONOMIC DEVELOPMENT COUNCIL SCHOLARSHIPS
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 4C6 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 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, 1G6, and in other tests provided for this scholarship by the Department of Mathematical Sciences.
Value — $400 each.

THE CLARENCE L. Starr Prize
Established in 1946 in memory of Dr. C.L. Starr, M.D., L.L.D., F.A.S.S., Professor of Surgery in the University of Toronto, and an honorary alumnus of McMaster University (L.L.D. 1922). To be awarded to the student in Nursing who attains the highest Sessional Average.
Value — $200.

THE MABEL STOAKLEY SCHOLARSHIP
Established in 1956 by the Young Women’s Canadian Club of Toronto (now the Canadian Women’s 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.M.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 — $100.

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 Collegiate 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 Applied Statistics and Computation, Honours Computer Science and Mathematics, Honours Mathematics or Honours Statistics, and who achieves the highest 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. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.
Value — $900.

THE WAGNER.B. ROSS AND COMPANY 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 the highest Sessional Average and in that Session attains an average of at least 10.0 in Commerce 3AA3 and 3AB3.
Value — $300.

THE UNIVERSITY WOMEN’S CLUB OF HAMILTON SCHOLARSHIP
Established in 1945 by the University Women’s Club of Hamilton. To be awarded to the student who attains the highest Sessional Average in the penultimate Level of her programme.
Value — $300.

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 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 — $50.

THE VANDA 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 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 EMMANUEL 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 10.0.
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 student entering Level I and the other to a 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 PRIZES
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.
UNDERGRADUATE ACADEMIC AWARDS

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.

Residence Scholarships
Nine scholarships were established in 1982 by the University for students in residence at the University.
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 10.0) in an undergraduate programme, with the exception of those in their graduating Session:

Bates Residence Scholarship
Brandon Hall Residence Scholarship (2 awards)
Edwards Hall Residence Scholarship
Matthews Hall Residence Scholarship
McKay Hall Residence Scholarship
Wallingford Hall Residence Scholarship
Whidden Hall Residence Scholarship
Woodstock Hall Residence Scholarship

In 1982, the value of each scholarship is $300.

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 10.0 in addition to meeting the conditions noted in Section 3, above.
In 1982, the value of a Senate Scholarship is $500.
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 R. ASHALL SCHOLARSHIP
Established in 1965 by bequest of his wife, Edith M. Ashall.

THE EDWIN MARVIN DALLEY MEMORIAL SCHOLARSHIPS
Established in 1966 by bequest of Edwin Marvin Dalley of Hamilton.

THE HAMILTON INDUSTRIAL SCHOLARSHIPS
Established in 1956.

THE BERTRAM OSMER HOOKER SCHOLARSHIP
Established in 1957 by bequest of Isobel F. Hooper. To be awarded in Arts.

THE NINA LOUISE HOOKER SCHOLARSHIP
Established in 1959 by bequest of Bertram O. Hooper.

THE TONY PICKARD MEMORIAL SCHOLARSHIP

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 1939.

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

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 Greg Alexander. Two scholarships to be awarded to men students who have completed at least 60, but not more than 75, units beyond Level I 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, L.L.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 I 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 WHIDDEN MEMORIAL SCHOLARSHIP
Established in 1963 by bequest of Mrs. T. Russell Whidden (B.A. '18 Brandon, M.A. '32), daughter of former Chancellor Howard P. Whidden, in memory of her husband, Dr. T. Russell Whidden ('11). 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 any one of the following subject fields (singly or in combination): Biochemistry, Biology, Chemistry, Geology, Metallurgy and Materials Science, Physics. Candidates for this scholarship must have attained high standing in the subjects of their programme and, 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. ACADEMIC AWARDS FOR UNDERGRADUATE STUDENTS BASED ON A SINGLE ACHIEVEMENT
4.1 These awards are granted in June on the basis of achievement during the preceding Winter or Summer Sessions.
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 AMERICAN-STANDARD PRIZE
Established in 1978. To be awarded to the student in the Ceramic Engineering programme who attains the highest grade in Geology 276.
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 RUBY 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.

THE CANADIAN CLUB OF HAMILTON SCHOLARSHIP
Established in 1936 by the Canadian Club of Hamilton. To be awarded to the student who attains the highest standing in one of History 303, 306 or 326.
Value — $150.

THE CANADIANUKRAINIAN WOMEN'S COMMITTEE (HAMILTON BRANCH) PRIZES
Established in 1972. To be awarded to (a) the student who attains the highest standing in Ukrainian 2A6; and (b) the student who attains the highest standing in Ukrainian 2A6.
Value — (a) and (b) $100 each, (c) Book.
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 2G3.

THE CONSUL GENERAL OF ITALY BOOK PRIZE
Established in 1982. To be awarded each year to in-course students for excellence in Italian civilization, literature and art.

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 3P3 and to the student who achieves the highest standing in Italian 3J3.
Value — $75.

THE CRANSTON PRIZES
Established in 1958 by William H. Cranston of Midland in honour of his parents, J. Herbert Cranston (‘08) and Eva Wilkins Cranston (‘07). 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: (a) $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 1C4.
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 GERMAN EMBASSY 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 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 INTERNATIONAL BOOK PRIZE
Awarded from time to time to in-course students for proficiency in German studies.

THE DR. S.P. KLIMASKO PRIZE
Established in 1973. To be awarded to the student who attains the highest standing in Ukrainian 3A6.
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 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 3J6 (Economic Development) or, in exceptional circumstances, for work in a related area.
Value — $900.

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 1D3.
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 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 PROCTOR 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 SERBO-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 1Z6.

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 the 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 Alumni Association and awarded from time to time to in-course students for proficiency in German and Russian.

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 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 EXCLUSIVELY FOR PART-TIME STUDENTS
5.1 To be eligible for consideration for these awards, a student, in addition to meeting the General Conditions listed in Section 1, must obtain, at the most recent review, a University Average of at least 8.0 and no F grades.
5.2 These awards are intended primarily for students who are pursuing a degree programme on a continuing part-time basis (i.e. regularly registered in fewer than 24 units in any Session).

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 in the Fall to part-time students on the basis of University Average at most recent review.
Value — $450 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 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. Ten scholarships to be awarded in the Fall to part-time students with the highest University Average at the most recent review.
Value — $200 each.

6. ACADEMIC AWARDS FOR GRADUATING STUDENTS
6.1 To be eligible for consideration for the following awards, which are granted in the Spring, a student must:
(a) Obtain at the most recent review a University Average of at least 8.0, and no F grades.
(b) Obtain a Graduation Average of at least 8.0.

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 member of 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 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 graduand in Engineering having the highest Graduation Average.

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 on the recommendation of the Faculty of Social Sciences to a student in the graduating class who, on the basis of scholarship, is judged to be an outstanding member of the faculty.

THE HURD MEDAL
Established in 1955 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.

THE MEDAL IN THE CREATIVE AND PERFORMING ARTS
Established in 1973 by the Faculty of Humanities. To be awarded on recommendation of the Faculty of Humanities to a student for outstanding achievement in studio art, creative writing, or in either the compositional or performing aspects of music, the dance, multimedia, the theatre, or film.

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 WILLIAM AND LIDA BARNES MEMORIAL PRIZE IN HISTORY
Established in 1969 by their son, William D. Barnes, 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 — $200.

THE MARION BATES BOOK PRIZE
Established in 1967. Centennial Award, by the Alumni Association of McMaster Alumni in honour of Marion Bates, Dean of Women from 1946 to 1964. To be awarded to a student graduating 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.Sc. 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 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 3AA3, 3AB3, 4A5, and 4AB3.
Value — $150.

THE DENTON COATES MEMORIAL PRIZE
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 Metallurgy and Materials Science, has demonstrated outstanding achievement in independent research as exemplified by the senior thesis in Metallurgy 4K4 or Ceramics 4K4.
Value — $300.

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 — $225.

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 1982 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 her graduating year in a woman student in Arts or Science who has attained notable standing in scholarship and has shown qualities of leadership.
Value — $200.

THE WALTER SCOTT MCLAY SCHOLARSHIP
Established in 1938 in honour of Dean McClay, by his daughter, Mrs. R.R. McClain (Marjorie in 1925) 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, LL.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. The Prize is a Brunton-type compass.

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 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.

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 each.

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 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 4G5G.

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 SOCIAL WORK PRIZE
Established in 1982. To be awarded to the student with the highest Graduation Average in the Social Work programme.

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. These gold keys 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 10.0) and have completed the programme in the normal number of years.

Three awards.

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.
FINANCIAL ASSISTANCE

Financial Assistance

BURSARIES

Unless otherwise specified, application should be made to the Office of the Dean of Men or to the Office of the Dean of Women.

THE ELIZABETH ARBUCKLE MEMORIAL BURSARY
Established in 1979 in memory of Elizabeth Arbuckle by her husband, Brendan Arbuckle, to assist any full-time female student with dependent children.

THE OTA EDUCATIONAL FOUNDATION INC. BURSARIES
Originally established in 1959 by the ATA Trucking Industry Educational Foundation, Inc. For assistance to undergraduates in Levels II or III who, because of extenuating circumstances, would be unable to continue their studies without such assistance.

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 scholarship and other considerations, according to regulations suggested by the Foundation.

The J.P. Bickell Foundation provides a sum of money for the assistance of students specializing in geology.

THE DORIS PARTRIDGE COLE BURSARY
Established in 1981. To be provided to worthy students in memory of Doris Partridge Cole (‘49). Value - $500

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 BURSARY
Established in 1961 by Wallingford Hall Committee of which she was the Treasurer from 1918-1958. The income is awarded at the discretion of the Dean of Women.

THE WILFRID N. PATerson BURSARIES
Established in 1953 by the Friends of McMaster Inc., and in 1978, named in memory of Wilfrid N. Paterson (‘31) who was one of the active members. To be awarded to students in any programme.

THE JAMES EDWARD GRADER MEMORIAL BURSARY
Established in 1964 by his sister. To be awarded to an able student specializing in 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 EDWIN W. HILBORN BURSARY
Established in 1965 by bequest of Edwin W. Hilborn. To be awarded to students in any programme.

THE MARY A. HILL BURSARY
Established in 1976 by bequest of Mary A. Hill. To be awarded to a woman student in any programme, preference to be given to one who has obtained matriculation standing from a secondary school in Hamilton.

THE IBM CANADA BURSARIES
Established in 1962 by International Business Machines Canada Limited. A sum of $1000 is provided annually for students who have satisfactory standing and who demonstrate financial need.

THE KHAKI UNIVERSITY AND YOUNG MEN’S CHRISTIAN ASSOCIATION MEMORIAL BURSARIES
Established in 1921 by the Khaki University of Canada and the Young Men’s Christian Association. To assist students in any programme, preference to be given to children of World War I veterans.

THE RAYMOND C. LABARGE MEMORIAL BURSARIES
Established in 1973 by friends and associates in memory of Raymond C. Labarge (‘36), Ottawa, Deputy Minister of National Revenue, Custom and Excise Division; an active member of the Alumni Association, and a member of the University’s Board of Governors. Four bursaries will be available for students experiencing financial problems in completing their university programmes. The bursaries will be provided to the most deserving students 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. A student who applies for a bursary should have a record of academic performance that has normally been at the upper second-class level or higher. He or she should also have demonstrated a sense of social awareness, interest in and concern for others and been an active participant in University or general community affairs. Selection will be made in March each year from those who submit applications to the Office of the Dean of Men or the Office of the Dean of Women. 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 a student who is a permanent resident of Canada. After graduation, recipients will be expected to reimburse the fund to the extent of their award so that the plan can assist increasing numbers of students.

3M CANADA INC. BURSARY
Established in 1980, a bursary of $500 to be awarded annually to a student in Business or a Science.

THE McMASTER STUDENTS’ UNION UNDERGRADUATE BURSARY
Established in 1982 by the 1982-83 MSU Student Representative Assembly. To assist those undergraduate MSU members who demonstrate pressing financial need.

THE PROCTOR AND GAMBLE BURSARIES
Established in 1957 by the Proctor and Gamble Company of Canada, Limited. A sum of $2,100 is provided annually to assist students in any programme. Recipients must expect to maintain permanent residence in Canada, but there are no other restrictions. It is hoped by the Company that any student who benefits from the fund will later contribute to the general bursary funds of the University when in a financial position to do so. Value — Minimum of $100 each.

THE JAMES AND ELIZABETH ROBERTS BURSARY
Established in 1957 by R.H. Roberts in memory of his parents to assist any male student of good academic standing.

THE ERIC SCHLICHTING MEMORIAL BURSARY
Established in 1966 by his family, classmates and friends. To assist a student in a programme in geochemistry, geology, or other field of science, in that order of preference.

THE SAM SMURLICK BURSARY
Established in 1978 by the Smurlick family in memory of Sam Smurlick (‘35). To be awarded to students in any programme.

THE UNIVERSITY WOMEN’S CLUB OF HAMILTON BURSARIES
Established in 1960 by the University Women’s Club of Hamilton. To be awarded to a woman student at the discretion of the Dean of Women.

THE YATES BURSARIES

LOANS

Unless otherwise specified, application should be made to the Office of the Dean of Men or the Office of the Dean of Women.

THE A.H. ATKINSON LOAN FUND
Established in 1967 by A.H. Atkinson for short-term loans for undergraduate engineering students. Applications to be directed to the Associate Dean of Engineering.

THE DEAN OF WOMEN’S EMERGENCY FUND
Established and continued by the McMaster Alumnae and individual benefactors to assist needy women students.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) STUDENT LOAN FUND
The Hamilton Section of the E.I.C. has instituted a fund for the provision of loans for undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

THE HAC 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. Application should be made to the Associate Dean of Engineering.

THE LOUISE HOLMES MEMORIAL LOAN FUND
Established in 1958 by her parents in memory of Louise Holmes, B.A. (‘48). To assist women students in any programme.
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 for students in any programme or as specified. The amount of money available thus varies from year to year.
B. Princess Marina Chapter, I.O.D.E., Loan Fund. Established in 1975. Disposition of the funds is at the discretion of the Dean of Women, to whom application should be made.
D. Muriel Clark Ridden Loan Fund. Established in 1964 by the Right Honourable Stanley Baldwin Chapter, I.O.D.E.
G. Margaret B. Sutterby Memorial Fund. Established in 1955 by the 67th University Battery Chapter, Imperial Order of the Daughters of the Empire.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS LOAN FUND
Established in 1968 by the Hamilton Section of the I.E.E.E. To assist students in a programme in engineering. Applications to be directed to the Associate Dean of Engineering.

THE RUSSELL E. LOVE MEMORIAL LOAN FUND
Established in 1981 by bequest through the Optimist Club of Hamilton. To assist men 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 women students in the final level of any programme.

THE McMASTER ENGINEERING SOCIETY LOAN FUND
Established in 1971 by the 1970-71 McMaster Engineering Society Executive on behalf of the members of the M.E.S. for the provision of short-term loans to undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

THE PI BETA PHI FRATERNITY LOAN FUND
Established in 1958 by the local alumnae of Pi Beta Phi. To assist honours women students in Level IV of an Arts or Science programme.

THE PROFESSIONAL ENGINEERS' WIVES' ASSOCIATION LOAN FUND
Established in 1972 for the provision of loans for undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

THE SOCIETY OF AUTOMOTIVE ENGINEERS (ONTARIO SECTION) STUDENT LOAN FUND
Established in 1962 by the Ontario Section of the S.A.E. To assist students in a programme in engineering. Loan applications should be made to the Associate Dean of Engineering.

THE IVOR WYNNE MEMORIAL LOAN FUND
Established in 1971 in memory of Ivor Wynne, Dean of Students. To assist needy students in any programme.

THE UNIVERSITY LOAN FUNDS
Small short-term emergency loans from the University funds are not normally available to incoming students. However, assistance of this nature may be available to registered full-time students who can demonstrate need.
General Information

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 books, the new H.G. Thode Library of Science and Engineering, the Map Library located in the Burke 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 1981 contained over 1,180,000 volumes, about 900,000 microform items, 111,000 maps and aerial photos, 24,000 audio-visual items and 1,650 linear metres of archival material. There is a substantial collection of government publications and current periodical titles number over 12,000.

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 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 25,000 volume collection of eighteenth century material is one of the major Canadian collections in the field. Among more modern material are the papers of Vera Brittain, Samuel Beckett, Anthony Burgess, Pierre Berton, Farley Mowat, Peter Newman 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 and Cook, Chan, Ruby M.C., B.S.S.

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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

Andre de, Carmo, B.A. (Braz), M.L.S. (McGill) /Librarian, Cataloguing, Health Sciences Library

Ball, Kathryn, B.A. (Laurentian), M.L.S. (Western) /Librarian, Reference Services


Branton, Sharon L., B.A., B.L.S. (Toronto) /Cataloguing Librarian, Health Sciences

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Clark, Dorothy Tudhope, B.A., B.L.S. (Toronto) /Librarian, Reference Services

Cook, David E., B.A., M.L.S. (Toronto) /Documents Librarian

Donkin, Kate, B.A. (Toronto), M.A. (McMaster) /Map Curator, University Map Library

Findlay, Peggy Eleanor, B.A. (York), M.L.S. (Dalhousie) /Information Services Librarian, Science & Engineering

Freeze, Barbara, B.A., B.L.S. (British Columbia) /Interlibrary Loan Librarian

Honzik, Elizabeth Else, B.Sc. (McGill), M.L.S. (Toronto) /Coordinator, Circulation Services

Hill, Graham Roderick, B.A. (Newcastle), 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

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Koger, Merike, B.A. (McMaster), M.L.S. (Toronto) /Order Librarian, Collections Development

Kraav, Marju, B.A. (McMaster), M.S. (Columbia) /Associate University Librarian for Systems Development

Lawrence, Arthur, A.I.B. /Associate Director, Library Administration

Maggs, Margaret Liddell, M.A. (Glasgow), A.L.A. /Associate University Librarian, Reader Services

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McCoy, Edward, A.L.A. /Librarian, Processing Services

McPherson, Myrna, B.A., M.L.S. (Toronto) /Librarian, Processing Services

Morley, Judith, B.A. (McMaster), B.L.S. (Toronto) /Librarian, Processing Services

Nunn, Victor, B.A. (York), M.L.S. (Western) /Collections Librarian

Panton, Linda W., B.A. (Mount Allison), M.L.S. (Western) /Coordinator of Hospital Libraries

Pasi, Narendra Math, 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) /Librarian, Business Library

Pickett, Beatrice Marion, B.A. (McMaster), B.L.S. (Toronto) /Librarian, Processing Services

Pottier, Ann, B.A. (Principia College), B.L.S. (Toronto) /Librarian, Reference Services

Racheter, Carol, B.A., B.L.S., M.L.S. (Toronto) /Director of Processing Services

Robinson, Beatrix H., B.A. (Rand), F.S.A.L.A./Health Sciences Librarian

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) /Assistant Russell Archivist

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, Stepan, 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

Ulenyk, Elizabeth, B.A., M.L.S. (McGill) /Information Services Librarian, Reference and Circulation Health Sciences

Whiteman, D. Bruce, B.A. (Trent), M.A., M.L.S. (Toronto) /Librarian, Research

University Art Gallery

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 1,600 Canadian and European art works with a specialized collection of over 140 German Expressionist prints.

The Gallery is open daily except Fridays and Saturdays. Call Local 4685 for further information.

Residences

For many years, the University has owned and operated residences for students, both men and women, on campus. The rooms are provided with staple articles of furniture, tables, chairs, beds, mattresses, pillows, and all necessary bedding. Residents are required to supply towels at their own expense. An on-campus Student Health Service, located in McKay Hall and staffed with qualified medical practitioners, is open to all students five days per week.

The women's residences (752 beds) are administered by the Dean of Women, and the men's residences (600 beds) as well as the co-educational residence (598 beds) by the Dean of Men.

An additional 505 spaces are available in an apartment-style residence, with stove and refrigerator, draperies and wall-to-wall carpeting. All other furnishings are supplied by students themselves. Enquiries from both men and women should be directed to the Dean of Men.

Students applying to McMaster will receive a letter of instruction concerning application for residence. When students receive their Letters of Acceptance, forms concerning residence application will be enclosed. Confirmation of residence will require 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 anytime between May 1 and August 31 should apply directly to the Conference Office, Commons Building, 101B. Applications and advance reservations are available from March 1 each year.

Athletics

So that all students have the opportunity to keep fit, compete in athletics at their own level, and enjoy sports of their choosing, the School of Physical Education and Athletics offers a variety of programmes.

For those who wish to relax and enjoy their leisure time, a wide recreational programme is offered, including everything from sauna baths and swimming to squash and weight training. Most of the traditional club activities are offered and instruction is provided to assist beginners with the skills involved.

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 students 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.

**COMPUTER SERVICES: Information Processing & Academic Computing Services (IPACS)**

Bryce, Jim T., B.Sc., Manager of Operations, (ACS)
Fleming, William H., M.Sc., Ph.D., Associate Director, Special Systems, Academic, (ACS)
Gowland, Douglas M., C.A., C.M.C., Associate Director, (IPS)
Keech, Gerald L., B.A.Sc., M.Sc., Ph.D., Director, IPACS
Kenworthy, Derek J., B.A., D.Phil., Computing Consultant
MacDonald, Jackie, Administrative Co-ordinator, IPACS
Matson, Richard P., Chief Operator, (ACS)
O'Day, Patrick J., Manager, Operations and Control, (IPS)
Redish, Kenneth A., B.Sc., Computing Consultant
Shepard, Robert K., Computer Service Co-ordinator, Science & Engineering, (ACS)
Stadelman, Barbara, Supervisor, Data Entry, (IPS)
Stansfield, E. Kenneth, M.S., Computer Service Co-ordinator, Arts, (ACS)

**Stephens, John S., B.Sc., Ph.D., Associate Director, Computer Services, Academic, (ACS)**
Wakeham, Lorna, Control & Accounting Supervisor, (ACS)

IPACS provides computing services in support of both academic and non-academic applications. The facilities available for academic use include a Control Data Cyber 170/720 dual processor system, an International Business Machine model 3031 computer, as well as several smaller computers. Student time-sharing terminal areas are located in the Burke Sciences Building, Rooms 240-245, The John Hodgins Engineering Building, Room 234A and in Kenneth Taylor Hall, Room B110.

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. In addition to the elective (for credit) course offerings of the Unit for 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.

**McMaster Institute For Energy Studies**

Dr. John Kirkaldy, Director

The Institute was established in 1980 by a group of engineers, scientists and social scientists at McMaster interested in energy-related problems. The main objective is to encourage communication among the different fields of study concerned with energy, ranging from social policy issues, economics, environmental protection to energy transmission, and storage, renewable energy and nuclear energy. The Institute publishes *The Energy Newsletter* three times a year.

**Urban Documentation Centre**

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 15,000 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 subscribes 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 Urban Documentation Centre is located in the General Sciences Building, Room 415.

**Office on Aging**

Professor K. Kinanen, Coordinator
Dr. Ronald Bayne, Coordinator

This office co-ordinates multi-discipline and multi-faculty initiatives in education and research in aging. The scope 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. Students may contact the Office on Aging for information on education and research in aging, and health and social services available for an aging population. The office's activities are supported by University funding as well as the Hamilton Foundation and other foundations for specific projects.
GENERAL INFORMATION

Nuclear Reactor
Butler, Michael Paul, B.Eng., M.Eng., P.Eng., Reactor Supervisor
Copley, John Richard Dawn, M.A., Ph.D., Professional Scientist
Ernst, Peter Irving Clayton, B.Eng., M.Sc., Chief Reactor Supervisor
Fleming, William Herbert, M.Sc., Ph.D., Reactor Consultant
Harvey, John W., B.Sc., Ph.D., Senior Health Physicist
Marshall, Kenneth, Assistant Supervisor
McDougall, John Blackwood, B.Sc., Reactor Superintendent

A pool-type research reactor is in operation on the McMaster campus. This reactor first achieved criticality in 1959, and operated initially at a power level of one megawatt producing a peak thermal neutron flux of \(1.5 \times 10^{13}\) neutrons/cm\(^2\)/sec. The power level was increased to two megawatts in 1964. The shielding was designed for five megawatts with a commensurate increase in flux. Early in 1972, the heat transport system was upgraded to permit operating at the maximum design power level. Present baseline power is two megawatts. The core contains plates of uranium alloy enriched to 93\% in U\(^{235}\) and cooled and moderated with ordinary water.

Sample targets are activated for researchers in various irradiation systems.

The reactor is housed in a reinforced concrete building designed for low air leakage. Access is through the Nuclear Research Building which provides “hot” laboratories and other special equipment for nuclear research.

The reactor is used by several science and engineering departments, as well as by the Department of Nuclear Medicine. The reactor has resulted in the expansion of existing research programmes and in the establishment of new fields of investigation and is having a far-reaching effect on the work of McMaster University.

Services to the Students

DEAN OF MEN, AND DEAN OF WOMEN
The Dean of Men, and Dean of Women are available to all students with grievances, problems or questions of a varied nature. Requests for emergency financial assistance through small University loans or bursaries should be made to these offices. The office of the Dean of Men is in the Commons Building, Room 101E, and the office of the Dean of Women is in the Divinity College, Room 236. See also Residences.

CHAPEL SERVICES
One each weekday of the university session, there is a chapel service at 10:30 a.m. in the University Chapel. These services are conducted by members of the student body or by members of the faculty. From time to time members of the University community lead special services. 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.

UNIVERSITY CHAPLAINS
Catholic and Protestant chaplains on campus provide for a wide range of student services in worship, discussion groups, pastoral counselling, 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 Hamilton Hall, Room 312; telephone ext. 4207, 4208.

STUDENT COUNSELLING SERVICES
R. Heinzl, Director
C. Goodrow, Career Counsellor
P. Heron, Counselling Psychologist
D. Lawson, Career Counsellor
D. Palmer, Academic Skills Counsellor
W. Wilkinson, Counselling Psychologist

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 and family 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. Others experience difficulties with their studies, or wish to maximize their efficiency in studying, or need to improve their study and communication skills.

In addition to individual counselling services, comprehensive group programmes are presented regularly in such areas as educational and career planning, effective reading and essay writing, communication and assertiveness skills, human relations and stress management. Seminars and workshops are held on such topics as preparing for university, effective study methods and various areas related to career development and the employment search process.

The office maintains a comprehensive and continually updated career and educational resource centre 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.

OVERSEAS STUDENTS’ ADVISOR’S OFFICE
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, south end, and the telephone number is 522-0942 or 525-9140 ext. 4441, 4442.

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, bus schedules and free phones for local calling. The Off-Campus Housing Service is located in the Commons Building, Room 101C, extension 4347.

STUDENT PLACEMENT SERVICE
The Canada Employment Centre, in conjunction with the University, has made available on campus a Student Placement Office.

Students desiring assistance in finding suitable employment are interviewed by the Placement Officer to determine interests, abilities, and qualifications. These students may then be introduced to the Placement Officer by appropriate employers. This is done by direct referral to local or out-of-town employers, or through interviews scheduled for visiting recruiters. Almost all of the major national employers are active in this recruiting, and a large number of these firms send a recruiter to the University.

The Student Placement Service concentrates mainly on the placement of graduating students. However, assistance in finding summer jobs and part-time employment is also given to undergraduates.

Students are encouraged to visit the office during their freshman year to become familiar with our services even though they are not seeking immediate employment. Office hours are 8:30 a.m. to 4:30 p.m., Monday through Friday.
FOOD SERVICE
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 normally eligible for meal plans may purchase plans through the Department of Food Services in the Commons Building. The University reserves the right to limit the number of meal plans as and when it sees fit. Several coffee shops are strategically located throughout the campus, in Senior Sciences Building, Togo Salmon Hall, Kenneth Taylor Hall, and the lower level of the Refectory Building (Rathskeellar). There is also food service available in a student-operated facility in Wentworth House, and in the cafeterias in McMaster University Medical Centre. Supplementing these facilities are vending machines at many locations about the campus dispensing cigarettes, drinks, sandwiches and pastries.

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 Bookstores maintain 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, and students, faculty and staff of McMaster are allowed a 10% discount on all books.

POST OFFICE
Located in the basement of Gilmour Hall, the Post Office offers full postal service.

Student Government and Activities
The McMaster Students Union Inc. operates, directly or indirectly, all student clubs and organizations, and a variety of student services, concerts, and similar events. The Students Union also owns and operates the Silhouette newspaper and McMaster Radio, CFMU-FM 93.3. ALL FULL TIME undergraduate registered students are members in good standing as well as those part-time students taking any day winter-session courses, and, as such, are entitled to all its benefits and services. The MSU is owned and operated by the undergraduate student body.

The Union itself is governed by the Student Representative Assembly (SRA), a council of up to 35 undergraduates. All but two are elected in March by their fellow students in the various faculties; each has a proportionate number of seats relating directly to the size of the faculty. The President and Treasurer of the MSU 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 having questions about student government, or wishing to bring a matter before the SRA, should contact their representative, President or Vice-President.

The duties of the SRA are to vote on matters of policy for the MSU. It is the SRA, for example, which decides how funds will be allocated, what programmes undertaken, and who will run them. The SRA elects from its own ranks members of the Administrative Board, which is charged with making recommendations on most matters to the full SRA.

STANDING COMMITTEES
Under the direction of the Student Representative Assembly, four standing committees have been formed, covering the spheres of academics, student services, finances and external affairs. Composition of the committees is a combination of student assembly members and interested MSU members-at-large. Undergraduate student involvement is encouraged at the committee level. Vacancies are announced in the student newspaper, The Silhouette. All inquiries should be directed to the MSU Office, Hamilton Hall, Room 217.

Within the MSU, several commissions have been established to organize and run certain services and activities:

- The Programming Administrator organizes social and educational programmes for the MSU; the Director is available to assist any organization or undergraduate to organize an event.

The Ticket Administrator through the Programming Administrator organizes the sale of tickets for MSU-sponsored campus-wide events.

The Club Administrator coordinates all campus clubs and activities for the MSU.

The Ombudsman and The Researcher help students with problems they have internal and external to the University, and do research into student concerns.

Further information regarding MSU areas of concern are available in the MSU Office, Hamilton Hall.

SERVICES
The MSU also provides these services for undergraduates:

- The Downstairs John, located in the basement of Wentworth House, is open 11:30 a.m. to 1:00 a.m., weekdays, and from 7:00 p.m. to 1:00 a.m. Saturdays, for food, draft beer, liquor, wine and relaxation. A McMaster student identity card is required for admission; each student may invite one guest.

- The Rathskeellar is located in the basement of the Refectory. The "Rat" is a quiet folkly alternative to the "John's" rock and roll and is open Monday through Saturday in the evening with live entertainment. A McMaster student identity card is required for admission.

- The Day Care Centre, operated by the MSU for the children of McMaster students, faculty members, staff and community members, is located in MacNeill Baptist Church, King Street at Cline Avenue in Westdale. For further information, telephone 526-1544.

- The Bread Bin, a grocery store in Hamilton Hall, Room 101, stocks groceries, tobacco and sundries, all sold on a non-profit basis.

- The Women's Centre, located in Hamilton Hall, Room 404, offers a comfortable place for discussion and resources on women's issues. They provide a well stocked reference library.

- The Sexual Education Centre provides information and/or referrals upon request. A service operated for the whole campus community, it is located in Hamilton Hall, Room 317; telephone 522-5053, ext. 2041.

- Campus Cinema provides all members of the McMaster community with low cost, popular films twice weekly.

- The Information Office, located in Hamilton Hall, Room 226, provides a variety of services including information about the MSU, the University and the Hamilton community, ticket sales and exam reprints.

- The Games Room, located on the fourth floor of Hamilton Hall, is equipped with pinball machines, billiard tables and all sorts of board games and ping pong tables. A McMaster student identity card is required to obtain balls and games.

- In addition to most of the above services, and the MSU itself, Hamilton Hall is the home of many other student organizations and services. Undergraduates are encouraged to familiarize themselves with the building, organizations and services.

ONTARIO PUBLIC INTEREST RESEARCH GROUP (OPIRG)
The Hamilton local of OPIRG was established in 1975 when consumer activist Ralph Nader visited our campus. Since that time OPIRG has continued to function at a high level of activity, thanks to active volunteers, donations and government grants.

OPIRG is composed of people working to improve society through constructive social change. The organization aims to articulate and pursue, through public education forums and seminars, the media and government bodies, the concerns of students and the community at large about issues of substantial public interest. Issues OPIRG is presently concentrating on include occupational and environmental health hazards, energy, human rights, the food industry in Canada, and the effects of corporate concentration on people's lives. OPIRG is non-partisan, non-profit research and public education oriented. It is directed by staff and an elected Board of Directors drawn mainly from undergraduate students. The present voluntary membership fee is $4.00.

McMaster Association of Part-time Students
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 9:00 am - 9:30 pm Monday to Thursday, 9:00 am to 1:00 pm Friday (9:00 am - 5:00 Friday Summer Day). MAPS Executive Assistant, Ms. Maxine Hartley, is available to help students. If you have a question pertaining to university procedure or a problem of any kind, Maxine 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 availability, 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 evening 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. Phone: 525-9140, Extension 2021. Phone or visit!

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.

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 Petty Trespass Act of Ontario.

Discipline
The regulation of discipline within the University is delegated by the Senate to the President and by him is entrusted to the Dean of Men and the Dean of Women.

Fines may be imposed for breaches of University regulations and, in more serious cases, a student may be placed on probation or a recommendation may be made to the Senate for the suspension of University privileges. It is expected that students will co-operate in encouraging a wholesome student opinion, observing all regulations, and in every way upholding the good name of the University.

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 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; most active are those in Hamilton, London and New York City. Each of the growing number of professional branches includes alumni who shared a common discipline while at McMaster; nursing, medicine, divinity and physical education 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, publishing a quarterly magazine, arranging for alumni summertime accommodation at campuses across Canada, sponsoring an annual Grads’ Day (when all alumni are encouraged to return to campus for reunions), among other activities.

In turn, the association works to benefit the alma mater by encouraging alumni to acquaint worthy students with the advantages of attending the 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, and by inviting alumni to give financial support to the University.

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.

Secondary School Teaching
Students interested in secondary school teaching and in taking qualifying courses at an authorized Ontario college of education, should consult the following basic pamphlets, which are available from the registrar at the universities mentioned:

Calendar of the Faculty of Education, University of Toronto, Toronto, Ontario.
Calendar of the Faculty of Education, Queen’s University, Kingston, Ontario.
Calendar of the School of Education, Lakehead University, Thunder Bay, Ontario.
Calendar of the College of Education, Brock University, St. Catharines, Ontario.

These calendars may also be consulted in the Registrar’s Office and in the offices of the Deans of Studies at McMaster. The Deans of Studies can advise regarding the interpretation of these documents with respect to programmes offered at McMaster.
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H.I. Flaxman (’81), B.Com., Hamilton

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R.F. Love, B.A.Sc., M.B.A., Ph.D.
R.J. Adams, B.A., M.A., Ph.D.
One faculty vacancy to be filled

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C.K. Campbell, Hons.B.Sc.(Eng.), S.M., Ph.D., F.E.I.C., F.R.S.A.
W.W. Smeltzer, B.Sc., Ph.D., D.Sc., F.R.S.C., F.A.S.M.
D.P. Taylor, Ph.D., Ph.D.

REPRESENTING THE FACULTY OF HUMANITIES

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K. Von Schilling, B.Sc.N., M.S.
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D.B. MacLean, B.Sc., Ph.D., F.C.I.C.
B.A. Oaks, B.A., M.A., Ph.D.
H.P. Schwarz, A.B., M.Sc., Ph.D.

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REPRESENTING THE UNDERGRADUATE STUDENTS OF THE UNIVERSITY
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K.-K. Chew
R.W. Cooley
Three vacancies to be filled

REPRESENTING THE GRADUATE STUDENTS OF THE UNIVERSITY
J.C. Bacher
M.P. Heyes
Four vacancies to be filled

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M.E. Burville, ('50), B.A., M.A.
J. Forrester, B.A., M.A., M.Ed.
A.F. Ryckman, B.A., R.T.
W. Scarrow, ('49), B.A.

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H.A. Leal/ Chancellor

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Sydney E. Emberley, Assistant to the President (Facilities Planning)
The Reverend Melvyn R. Hillmer, B.A., B.D., Th.D., Principal of the Divinity College
Larry R. Kurtz, B.A., M.A., Ph.D., Dean of Student Affairs
Ken Fredrick, B.A., Director of Alumni Affairs
Graham R. Hill, B.A., M.A., M.L.S., University Librarian
Alan Lawley, Director of Information and Publications
1982-84
Undergraduate Calendar
ADDENDUM

Office of the Registrar
McMaster University

Sessional Dates

Page 1
The scheduling of examinations and tests during the final 5 days of instruction is banned; the following are the days:
1982
Thursday, December 2 through Thursday, December 9
1983
Tuesday, April 6 through Thursday, April 8
Thursday, December 1 through Thursday, December 8
1984
Tuesday, April 3 through Tuesday, April 10

Admission Requirements

Page 9
A. Admission from Ontario Secondary Schools: Early Admission: add the following second paragraph:
If you are granted early admission, you must 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 mark. Accordingly, the University reserves the right to withdraw offers of admission to those applicants who do not meet the minimum average prespecified for the programme using the final Grade 13 mark.

Page 9
Engineering I
revise part of the admission requirements as follows:
Courses in English I is limited and admission is by selection. Experience indicates that students with weighted Grade 13 average of 70.0% or greater have a good chance of success in Engineering programmes. Students with a standing lower than 70.0% will be expected to demonstrate evidence of unusual promise which will also be considered. Minimum requirements for consideration:
1. overall weighted average of more than 70.0% in six credits offered for the Secondary School Honour Graduation Diploma, AND
2. weighted average of more than 70.0% in the following five credits: one credit in each of Grade 12 Chemistry, Algebra, Functions and Relations, Chemistry and Physics.

Academic Regulations

Page 17
Deans' Honour List
insert after the second sentence:
The number of units of work on which Deans' Honours in Engineering is calculated is 36 units; however, the Deans will be given the power to exercise his discretion where the full load of a particular level in a programme is less than 36 (e.g. Civil Engineering and Engineering Mechanics, Level IV, 34-36 units).

Faculty of Business

Page 23
add new programme:
The Faculty of Business, together with the Department of Economics, offers a four-level Honours programme in Commerce and Economics. The programme includes a modified version of Commerce II which requires a more extensive understanding of the interactions among business, government and the economic environment.

for students preparing for careers which require a deep knowledge of the interactions among business, government and the economic environment.

In addition, if appropriate academic standing has been attained in undergraduate courses, credit will be given towards the Master of Business Administration degree. Normally, this will reduce the M.B.A. programme to one additional academic year beyond the Honours programme in Commerce and Economics.

Credit towards a variety of professional designations can be obtained within the Honours Programme in Commerce and Economics. Specific details are provided on Page 23 of the Undergraduate Calendar: 1982-83. However, it should be noted that the possibility of obtaining credit towards professional programmes is more limited than in the Honours Programme.

Level IV (1983-84 only): 36-38 units
R Chemical Engineering 2D4, 3A4, 4K4, 5L4; Commerce 2M3, 3F3, 4Q3, 5A3 or 5B3; Engineering 4A1; Statistics 3M3.
E 8 to 10 units electives from liberal studies or approved technical electives.

Level IV (effective 1984-85): 36-38 units
R Chemical Engineering 3E2, 3G2, 3L2, 3P2; Commerce 2M3, 3F3, 4Q3, 5A3 or 5B3; 3-5 units of approved electrical science; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3M3.

Level V (1982-84 only): 36 units unchanged

Level V (1984-85 only): 37 units.
R Chemical Engineering 3F3, 3G3, 4L4, 4M4 or 4V4; 9 units selected from Chemical Engineering 4B3, 4C2, 4F3, 4G2, 4D3, Chemistry 333 and Engineering 4U3, including at least one of the last three courses; Commerce 4P3; Engineering 4A1.
E 9 units Commerce electives selected from all Level III and IV Commerce Courses.

Level V (effective 1985-86): 38 units.
R Chemical Engineering 4K3, 4L3, 4M3, 4N4 or 4V4; 9 units selected from Chemical Engineering 4B3, 4C3, 4F3, 4G2, 4D3, Chemistry 333 and Engineering 4U3, including at least one of the last three courses; Commerce 4P3; Engineering 4A1.

E 9 units of Computer selected from all Level III and IV Commerce courses.

Page 27
B. ENG. MGT. IN COMPUTER ENGINEERING AND MANAGEMENT

Page 28
B. ENG. MGT. IN ELECTRICAL ENGINEERING AND MANAGEMENT

Page 28
B. ENG. MGT. IN MECHANICAL ENGINEERING AND MANAGEMENT

Page 28
B. ENG. MGT. IN ELECTRICAL ENGINEERING AND MANAGEMENT

Page 29
B. ENG. MGT. IN MECHANICAL ENGINEERING AND MANAGEMENT

Page 30
Mechanical Engineering programmes of study revised:
Level I: replace "Psychology 1A6 or Sociology 1A6" with English 2E6.
Level IV (effective 1985-86): replace English 2E6 with "Psychology 1A6 or Sociology 1A6".

Page 30
B. ENG. MGT. IN MECHANICAL ENGINEERING AND MANAGEMENT

Page 30
Mechanical Engineering programmes of study revised:
Level III: replace Mechanical Engineering 3M3 with 3M2, and change 30 units to 35 units.

Page 30
Mechanical Engineering programmes of study revised:
Level III: replace "Applicants who are assessed highest on the above criteria will be invited for a personal interview to assess..." to "Applicants will be asked to come to the University for a selection interview...".

Page 31
Occupational Therapy and Physiotherapy Programme

Page 31
Occupational Therapy and Physiotherapy Programme

Page 31
Occupational Therapy and Physiotherapy Programme

Page 31
Occupational Therapy and Physiotherapy Programme
Faculty of Humanities

Page 42
Department of Classics
The Honours, Combined Honours and B.A. programmes in Classical Civilization have been revised titled “Classical Studies.” The various programmes have been revised as follows:

COMBINED HOURS IN CLASSICAL STUDIES AND ANOTHER SUBJECT
in Programme Group 1: change Classical Greek 2B3 to 2B4; change Latin 2B3 to 2B4.

Page 44
B.A. IN CLASSICAL STUDIES
in Programme Group 2: change Classical Greek 2B3 to 2B4; change Latin 2B3 to 2B4.

HONOURS CLASSES
Levels II, II and IV: change Greek 2B3 to 2B4; change Greek 2B3 to 2B4
E: Electives of which at least must not be Area courses.

COMBINED HONOURS IN GREEK AND ANOTHER SUBJECT
Levels II, III and IV:
R: change Greek 2B3 to 2B4.

COMBINED HONOURS IN LATIN AND ANOTHER SUBJECT
Levels II, III and IV:
R: change Latin 2B3 to 2B4.

B.A. IN LATIN
Levels II and III: change from 60 units to 61 units
R: change Latin 2B3 to 2B4.

Page 50
Department of Romance Languages
Italian Section
The various programmes have been revised in part as follows:

HONOURS ITALIAN: Alternative A
R: add Italian 2D6, 3E5, 4D6, 4E6; 9 units of Level III or IV Italian courses; History 3A3; 9 units from the Faculty of Humanities, including 9 units of English, if not previously completed.

Page 51
HONOURS ITALIAN: Alternative B
Italian 2D6 will be included in calculating the Graduation Average.
R: Italian 2A6, 2D6, 2E6, 3D6; one of Italian 3L3 or 3P5; Italian 4L6, 4P6; 9 units of Level II or IV Italian courses; History 3A3; 6 units from the Faculty of Humanities including 6 units of English, if not previously completed.

COMBINED HONOURS IN ITALIAN AND ANOTHER SUBJECT
A: Alternative B
Levels II, III and IV;
R: change Italian 2B3 to 2B4.

RECOMMENDED DISTRIBUTION OF ITALIAN AREA COURSES
Level IV statement: Italian 3A4, 6A, 6P and additional units of Levels III and IV Italian to total 17 to 19 units.

Faculty of Science

Page 56
Department of Biology
HONOURS BIOLOGY AND PSYCHOLOGY
Area Courses: add: Biology 4P4, 4C3; Psychology 3E2, 3W3
Level III:
R: replace Psychology 3W3 with Psychology 2E3

Page 59
Department of Geography
B.Sc. IN GEOGRAPHY
Area courses: add: Geography 2M3

Page 60
Department of Mathematical Sciences
HONOURS MATHEMATICAL SCIENCES
add following the Admission statement:
For students intending to enter Honours Computer Science Major, add to Admission Statement, following “Natural Sciences I”:
- including Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

Page 61
MATHMATICAL SCIENCES MAJOR
add following the Admission statement:
For students intending to enter Honours Computer Science Major, add to Admission Statement, following “Natural Sciences I”:
- including Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

HONOURS COMPUTER SCIENCE AND MATHEMATICS Major
Area Courses: delete: Computer Science 3G2

Page 62
change: “may be” to “is” in paragraph preceding “Honours Computer Science.”

HONOURS COMPUTER SCIENCE
add to Admission Statement, following “Natural Sciences I”:
- including Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

Area Courses: delete: Mathematics 4P3; add: Computer Science 3P3; Computer Science 2N3, 2P3, 4I3 are not Area Courses.

Level II:
R: delete Computer Science 1B3

COMPUTER SCIENCE MAJOR
add to Admission statement, following “Natural Sciences I”:
- including Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

Area Courses: delete: Mathematics 4P3; add: Computer Science 3P3; Computer Science 2N3, 2P3, 4I3 are not Area Courses.

Level II:
R: delete Computer Science 1B3

B.Sc. IN COMPUTER SCIENCE
add to Admission statement, following “any Level I programme”:
- including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

Area Courses: add: Computer Science 3P3, 4I3; Computer Science 2N3, 2P3 are not Area Courses.

Level II:
R: delete Computer Science 1B3

Faculty of Social Sciences

Page 66
insert following sixth paragraph in left column:
Deadlines
In future, the Faculty of Social Sciences will not consider applications for admission after the dates stated in this Calendar. Registrations after the stated deadline will not be accepted unless documentation is provided showing good cause; and permission of instructors to enter classes late is required. Dropping and adding of courses will be permitted only within the period stated in the Calendar.

Page 68
Department of Economics
add after “Department of Economics”:
- Honours Commerce and Economics (Honours Faculty of Business: Honours Commerce and Economics)
- in conjunction with the Faculty of Business, a programme is offered in Business and Economics. Since students register in the Faculty of Business details concerning admissions, the programme of study and academic requirements are given in the Faculty of Business section of the Calendar.

HONOURS ECONOMICS AND COMPUTER SCIENCE
Area Courses: add to Admission statement, following “any Level I programme”:
- including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3.

Department of Geography
HONOURS GEOGRAPHY AND GEOLOGY (B.A.)
insert:

Students wishing to enter this programme are to follow the procedures for admission to the Limited Enrolment Program in Geography, as outlined in the Undergraduate Calendar (see Addendum in 1982-84 Undergraduate Calendar, page 175).

Page 69
Labour Studies
B.A. IN LABOUR STUDIES
insert before italicized paragraph: “Students are strongly advised to select Level I courses which are prerequisites for courses required in Levels II and III and to maximize choices among these courses.”

insert, preceding Level II description:

Normally, students will complete all Level II requirements before proceeding to Level III.

"B.A. in Labour Studies students are not eligible for admission to Commerce Courses (see 1982-84 Undergraduate Calendar Page 97) other than those specified in the B.A. in Labour Studies curriculum, even where they have fulfilled the necessary prerequisites (for example, Commerce 3B3).”

Level II:
R: replace Commerce 3B3 with 2A3; delete Psychology 3G3

Level III:
R: replace Commerce 3A3 with 3A3; add after Politics 3G3: Psychology 3D3; replace with Economics 3G3 with 3I3.

Page 71
Department of Psychology
B.A. IN PSYCHOLOGY
Level II:
change “Mathematics 1L3” to: “Mathematics 1L3 + any other 3 units of Mathematics.”

Page 73
Department of Sociology
HONOURS SOCIOLOGY
Level II, III, and IV:
R: change in part to read: “The individual units of Level I, II, III, and IV Sociology (including at least 12 units of Level IV Sociology) and not more than 6 units of Level III Sociology.”

Courses by Departments
(listing of changes in units, course content, title and prerequisites, new courses and deletions)

Page 78-79
Anthropology
ANTHRO 2B3: change title to: Native Peoples of North America
ANTHRO 401: add to prerequisite, following “Biology 1C3 or Biology 2C3.”

Page 81
Art and Art History
add: ART HIST 2B3 American Painting in the Twentieth Century
This course explores the emergence of American painting as an international force in modern western art. Particular attention is given to such movements since World War II abstract expressionism, "pop" art, minimalism and pop realism.
3 elect.; one term
Prerequisite: Open to students in Level II and above.
add: ART 1C3 The Language of Drawing
This course explores the techniques and problems of drawing in the studio setting. Practice will be supplemented with discussion of the nature and role of drawing in the Western tradition.
1 studio practice (3 hours): two terms
Prerequisite: Open. Not available to students registered in credit in Art 1B3 or 1D3. (Not to be used by Humanities students as a R-group course.)

Page 84
Biochemistry
add: BIOCHEM 3G3 Genetic Engineering and Biotechnological Theory, applications and methods in biotechnology with emphasis on recombinant DNA, hybridomas, and antibody engineering.
3 elect.; one term
Prerequisite: Completion of Biochemistry 2G6, 3G4 Biochemistry 2B3, 2C3 and 3G4; and registration in Chemistry 3G4 or 4G2 or 4G4.
Offered in 1983-84

Page 87
Biology
BIOLOGY 2B3: change prerequisite to read: “Biology 1G3, or 1W1, or a grade of a least B-; and on Chemistry 1A7, 1B7, 1C7.”
add: CHEM ENG 4A4
add: CHEM ENG 4D3 Dispersed Phase and Particle Processes
Particle size characterization, filtration, fluidization, sedimentation, coagulation and flotation. 3 lects.; one term
Prerequisite: Chemical Engineering 304 or Civil Engineering 304 or permission of the Department.

delete: CHEM ENG 4K1
add: CHEM ENG 4K3 Reactor Design
Non-ideal flow, mixing, catalytic kinetics, packed, fluidized bed reactors. Two phase reactors. 3 lects.; two terms
Prerequisite: Chemical Engineering 3K3 or permission of the Department.

add: CHEM ENG 4L2 Advanced Laboratory Skills
Experiments and projects in transport phenomena, reaction kinetics and reactor design.
lab 1 (3); one term
Prerequisite: Chemical Engineering 3L2.

add: CHEM ENG 4M1 Separations
Distillation column design; transport phenomena, laminar, turbulent and unsteady state mass transfer. Analogies. Adsorption, extraction, adsorption, ion exchange, drying, humidification, crystallization.
3 lects.; one term
Prerequisite: Chemical Engineering 3M4 or permission of the Department.

CHEM ENG 4N4: change from "two terms" to "one term"; add: effective course title, to read: Chemical Engineering 4N4, 3E3, 3G3, 3K3, 3M4.

Page 92

Civil Engineering
civ ENG 64: change title to: CIV ENG 64
add: CIV ENG 64L Design of Stormwater Systems
Investigation, planning and design of systems in a hydrologic management of a real drainage system: flood control, drainage, recreation, municipal and biological values of wastewater treatment and conservation authorities and public bodies. Site visits and design sessions using computer programs.
2 lects.; 1 lab; 1 tutorial (2); one term
Prerequisite: Civil Engineering 3M4 or permission of the instructor.

Page 95

Classics
GREEK 2F3 change to: 2F4; course now "two terms".

Page 96

LATIN 3R1 change to: 3R4; course now "two terms".

Page 97

Commerce
delte after the Curriculum Statement:
"Students who are not eligible for Commerce courses should refer to the business course listing in the Calendar." Page 98

add: 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 4B2: change prerequisite to: "effective 1984-85: Commerce 3B3; or Labour Studies 3A3.
COMMERCE 4B3: change prerequisite to: "effective 1984-85: Commerce 3B3; or Labour Studies 3A3."

Page 99

add: COMP LIT 123 Biblical Traditions in Literature
A study of the influence of the Bible on western literatures, especially English. Approaches may include the examination of the Bible as a reference, 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 2P3.

Computer Science
delte, following list of instructors:
Suggested Computer Science Options Available to students other than Computer Science majors.
For Science-oriented students: Computer Science 1B3, 1C3, 1D3, 1D4, 2P3, 2T3, 4N3, 4V3.
For Business-oriented students: Computer Science 1A3, 3A3, 3B3, 4T3, 4V3.

COMP SCI 1H3: change title to: "Introduction to Computing for Humanities and Social Science"

Page 100

COMP SCI 2B3: add to prerequisite: "One of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, and ..."

COMP SCI 3L2: add to prerequisite: "Computer Science 2B3 and ..."

COMP SCI 2N3: change course title to: "Advanced Fortran" and change prerequisite to: "Open to students who have completed or are registered in Computer Science 2P3. Computer Science 2L3 and 2P3 are mutually exclusive. Students who have completed or are registered in one may not register in the other."

Page 101

add: COMP SCI 2P4 Pascal and Problem Solving
Simple and intermediate Pascal programming, Data Types, Control statements, Recursion, Structural programming, Computer applications 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, 1P6, or Engineering 1D3 and Mathematics 1N6.

COMP SCI 3C2: add to prerequisite: ... or Computer Science 2P3 and registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management.

COMP SCI 3D2: change prerequisite to: "Computer Science 1C3, and one of Computer Science 2L3, 2P3, in registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management.

COMP SCI 3T1: change prerequisite to: "One of Computer Science 2L3, 2P3 or 2A3, or concurrent registration, in Computer Science 2A3.

add: COMP SCI 3P1 Scientific Data Processing
Basic techniques of constructing large scientific data processing systems, file organization, and data base techniques for managing large volumes of data. Computer graphics, data presentation and systems design will be discussed.

Prerequisite: Computer Science 2L3 or 2P3.

COMP SCI 3T1: change prerequisite to: "One of Computer Science 2L3, 2P3 or 2A3, or concurrent registration, in Computer Science 2A3.

Page 108

Dramatic arts
add: DRAM ART 223 German Drama in Translation
A study of selected plays from the early nineteenth century (Biedenkopf) to the early 1970s (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 223
Offered 1984-86 only

Page 109

Electrical and Computer Engineering
ELEC ENG 4E3: change title to: Mini Computer Systems
ELEC ENG 4H3: change title to: Microprocessor Systems

Page 106

Engineering Physics
ENG PHYS 3N1: change title to: "Principles of Fusion Energy" and change description and prerequisite to:
Fusion reactions and kinetics ; charged particle trajectories and focusing; magnetic and inertial confinement; energy viability and burn cycles; current and emerging fusion reactor concepts.
3 lects.; one term
Prerequisite: Physics 2M6 and Mathematics 3C6 or equivalent.

Page 109

English
add: ENGLISH 1D3 Biblical Traditions in Literature
A study of the influence of the Bible on western literatures, especially English. Approaches may include the examination of the Bible as a reference, imagery, typology, doctrinal themes and narrative structures.
3 lects.; one term
HISTORY 316: begin to: "In the Middle Ages." 

HISTORY 334: begin to: "In the Middle Ages." 

HISTORY 354: begin to: "In the Middle Ages." 

Health Sciences

BIOG 2F3: begin to: "In the Middle Ages." 

HISTORY 394: begin to: "In the Middle Ages." 

3 hrs. (lect. 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 Polish 216.

POLISH 2Z6 Intermediate Polish

A course designed to further the student’s command of oral and written Polish. It will concentrate on developing conversations as well as studying basic grammatical structures and rules of composition.

Two terms.

Prerequisite: Polish 1Z6 or permission of the Department

delete: RUSSIAN 186

Page 148

delete: RUSSIAN 496 (course revised as SLAVIC 496 Independent Research)

delete: CHINESE 12A, 12Z, 22Z, 22ZD

dell: SERBO CR 22Z Intermediate Serbo-Croatian

Review of grammar, oral, practical activities and compositions; readings in the original of representative authors in both Cyclic and Latin scripts and in ekavian and jekavian variants of the literary language.

5 hrs.; two terms.

Prerequisite: Serbo-Croatian 1Z6 or permission of the Department

Page 149

Science

SCIENCE 32G: begin to: "In the Middle Ages." 

Page 150

Social Work

SOC WORK 3D9: replace with: "Field practice equivalent to 10 hours per week" and add: "Option of summer block placement." 

Page 147

Italian Languages

ITALIAN 413: change to: "In the Middle Ages." 

Page 148

Russian

Russian 306: begin to: "In the Middle Ages." 

Page 149

Sociology

SOCIOLOGY 350: begin to: "In the Middle Ages." 

Page 150

Sociology

Add: "In the Middle Ages." 

Page 150

Sociology

Add: "In the Middle Ages." 

Page 150

Sociology

Add: "In the Middle Ages." 

Page 150

Polish

POLISH 2Z6 Beginners’ Polish

An introduction to basic conversation and written Polish, teaching the skills of listening, speaking, reading and writing.