McMaster University

Undergraduate Calendar

1984-1986

This Calendar covers the period from September 1984 to August 1986, inclusive.

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

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

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

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Using the Calendar

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

Sessional dates, admission procedures, regulations, and fees appear first, followed by the various degree programmes offered by each Faculty. The section following that is an alphabetic listing first by Faculty and then by department of the programmes and courses offered by the University. The next section on Academic Awards lists all the awards and scholarships offered to Undergraduate students. Bursaries and loan funding is also listed. At the back of the Calendar is a section of information about University services, libraries, residences, research laboratories, computing facilities, and student activities.

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 and the special programme in Arts and Science. The programmes are described by department in the Faculty section of the Calendar. The programme descriptions specify which courses and what academic standing is required in order to satisfy the University’s requirements for awarding a Bachelor’s degree.

After consulting the programmes, you will note that some courses are required and some are electives. You should then look at the courses offered by the University to determine the prerequisite requirements you must meet in order to register for a specific course.

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
A reference listing of pamphlets from other universities on Secondary School teaching is provided under General Information in this calendar.

GENERAL INTEREST NON-CREDIT STUDIES
Brochures about non-credit programmes and special offerings, available from the School of Adult Education
McMaster University

Named after Senator William McMaster, who bequeathed funds to endow a "Christian School of Learning", McMaster University grew out of educational work initiated by Baptists in central Canada as early as the 1830's. 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 11,500 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 programmes 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 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 the B.Sc.N. degree programme. The Bachelor of Health Sciences degree may be earned in Occupational Therapy or Physiotherapy.

The Faculty of Business offers the Honours B.Com., Honours B.Com. Arts, and B.Com. degrees. 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 Ceramic 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 complete listing 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 900 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 over 13,000 periodical titles. The Library has an extensive special collections section which includes the Bertrand Russell Archives, 18th Century materials and major Canadian collections. Facilities for programmes in the Humanities include modern Language Laboratories, music rehearsal rooms, art studios, an art gallery, and seminar rooms. The work of the Faculties of Science and Engineering is supported by sophisticated facilities which include a Nuclear Reactor and Van De Graaff Accelerator. Computing facilities support academic and non-academic applications with the following installations: a Control Data CYBER 170/730 dual processing system; a CYBER 170/815 system; one IBM 3031; two VAX 11/780's and one VAX 11/750. The University also has time-sharing terminal areas available for student use, in addition to numerous minicomputers and microprocessors located in departments to support academic programme needs.

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

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

Access to downtown Hamilton and the activities that a major city has to offer is easy. As part of the extensive downtown redevelopment, new facilities, which support cultural life of the city, have been constructed in recent years. These include an Art Gallery, a Convention Centre and Hamilton Place, an auditorium which seats over 2,600 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 that includes teaching facilities.
### Sessional Dates

#### Dates for 1984-85 Winter Session

<table>
<thead>
<tr>
<th>Date</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1984</strong></td>
<td></td>
</tr>
<tr>
<td>Friday June 29</td>
<td>Last day for applications for Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 10 and</td>
<td>Level 1 Registration.</td>
</tr>
<tr>
<td>Saturday August 11</td>
<td></td>
</tr>
<tr>
<td>Wednesday August 15 to</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 17</td>
<td>Registration as per schedule published annually.</td>
</tr>
<tr>
<td>Tuesday September 4 to</td>
<td>Classes begin.</td>
</tr>
<tr>
<td>Friday September 7</td>
<td></td>
</tr>
<tr>
<td>Monday September 10</td>
<td>Last day for registration and for changing registration in or replacing first-term and full-year courses.</td>
</tr>
<tr>
<td>Friday September 21</td>
<td>No classes.</td>
</tr>
<tr>
<td>Saturday October 6</td>
<td>Thanksgiving Day — No classes.</td>
</tr>
<tr>
<td>Monday October 8</td>
<td>Last day for withdrawing from a first-term course.</td>
</tr>
<tr>
<td>Friday October 12</td>
<td></td>
</tr>
<tr>
<td>Friday October 26</td>
<td>Last day for application for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday November 9</td>
<td>Autumn Convocation.</td>
</tr>
<tr>
<td>Monday December 3 to</td>
<td>No examinations or tests may be held in Undergraduate courses.</td>
</tr>
<tr>
<td>Friday December 7</td>
<td>First-term classes end.</td>
</tr>
<tr>
<td>Saturday December 8 to</td>
<td>1. Final Examinations in first-term courses.</td>
</tr>
<tr>
<td>Friday December 21</td>
<td>2. Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td></td>
<td>3. Mid-Session Tests in Level 1 courses.</td>
</tr>
</tbody>
</table>

| **1985**                    |                                                                         |
| Thursday January 3          | Classes begin for second-term and for courses offered from January to June. Registration for second-term courses in some Faculties. |
| Friday January 11           | Last day for registration and for changing registration in second-term courses and courses offered from January to June. |
| Monday January 28           | Classes begin for courses offered from February to June.                |
| Friday February 15          | 1. Last day for withdrawing from second-term and full-year courses.      |
|                             | 2. Last day for changing registration in February to June courses.       |
|                             | 3. Last day for changing Programme and completing a Graduation Information Card for graduation at Spring Convocation. |
| Monday February 25 to       | Mid-term Recess.                                                        |
| Saturday March 2            |                                                                         |
| Friday March 8              |                                                                         |
| Friday April 5              | Last day for withdrawing from courses offered from January to June and from February to June. |
| Thursday April 4 through    | Good Friday — No classes.                                              |
| Friday April 12             | No examinations or tests may be held in Undergraduate courses.          |
| Wednesday April 10          | Classes end.                                                            |
| Saturday April 13 to        | 1. Final Examinations.                                                  |
| Tuesday April 30            | 2. Deferred Examinations arising from December Examinations.            |
| Friday May 17               | Faculty of Health Sciences Convocation.                                 |
| Thursday May 30 to          | Spring Convocations.                                                    |
| Saturday June 1             | Examinations in courses offered from January to June and from February to June. |
| Monday June 24 to           |                                                                         |
| Thursday June 27            |                                                                         |

#### Dates for 1985-86 Winter Session

<table>
<thead>
<tr>
<th>Date</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1985</strong></td>
<td></td>
</tr>
<tr>
<td>Friday June 28</td>
<td>Last day for application for Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 9 and</td>
<td>Level 1 Registration.</td>
</tr>
<tr>
<td>Saturday August 10</td>
<td></td>
</tr>
<tr>
<td>Wednesday August 14 to</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday August 16</td>
<td>Registration as per schedule published annually.</td>
</tr>
<tr>
<td>Tuesday September 3 to</td>
<td>Classes begin.</td>
</tr>
<tr>
<td>Friday September 6</td>
<td></td>
</tr>
<tr>
<td>Monday September 9</td>
<td>Last day for registration and for changing registration in or replacing first-term and full-year courses.</td>
</tr>
<tr>
<td>Friday September 20</td>
<td>Last day for withdrawing from a first-term course.</td>
</tr>
<tr>
<td>Friday October 11</td>
<td>No classes.</td>
</tr>
<tr>
<td>Saturday October 12</td>
<td>Thanksgiving Day — No classes.</td>
</tr>
<tr>
<td>Monday October 14</td>
<td>Last day for application for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday October 25</td>
<td>Autumn Convocation.</td>
</tr>
<tr>
<td>Friday November 8</td>
<td>No examinations or tests may be held in Undergraduate courses.</td>
</tr>
<tr>
<td>Monday December 2 to</td>
<td>First-term classes end.</td>
</tr>
<tr>
<td>Friday December 6</td>
<td>1. Final Examinations in first-term courses.</td>
</tr>
<tr>
<td>Friday December 6</td>
<td>2. Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Saturday December 7 to</td>
<td>3. Mid-Session Tests in Level 1 courses.</td>
</tr>
<tr>
<td>Friday December 20</td>
<td></td>
</tr>
</tbody>
</table>

| **1986**                    |                                                                         |
| Monday January 6            | Classes begin for second-term and for courses offered from January to June. Registration for second-term courses in some Faculties. |
| Wednesday January 15        | Last day for registration and for changing registration in second-term courses and courses offered from January to June. |
| Monday January 27           | Classes begin for courses offered from February to June.                |
| Friday February 7           | Last day for changing registration in February to June courses.          |
| Friday February 14          | 1. Last day for withdrawing from second-term and full-year courses.      |
|                             | 2. Last day for changing Programme and completing a Graduation Information Card for graduation at Spring Convocation. |
| Monday February 24 to       | Mid-term Recess.                                                        |
| Saturday March 1            |                                                                         |
| Friday March 7              |                                                                         |
| Friday March 28             | Last day for withdrawing from courses offered from January to June and from February to June. |
| Monday April 7 through      | Good Friday — No classes.                                              |
| Friday April 11             | No examinations or tests may be held in Undergraduate courses.          |
| Friday April 11             | Classes end.                                                            |
| Monday April 14 to          | 1. Final Examinations.                                                  |
| Wednesday April 30          | 2. Deferred Examinations arising from December Examinations.            |
| Friday May 16               | Faculty of Health Sciences Convocation.                                 |
| Thursday May 29 to          | Spring Convocations.                                                    |
| Saturday May 31             | Examinations begin in courses offered from January to June and from February to June. |
| Monday June 23 to           |                                                                         |
| Thursday June 26            |                                                                         |
### Dates for Summer Sessions 1984 - 1986

#### Summer Day Session 1984
- **Tuesday July 3**: First-term day classes begin. Last day for registration and changes of registration.
- **Wednesday July 4**: Last day for withdrawing from first-term courses of the Summer (Day) Session.
- **Monday July 9**: Last day for withdrawing from second-term and full-session courses of the Summer (Day) Session. Civic Holiday — No classes.
- **Tuesday July 10**: Second-term day classes begin.
- **Monday July 17**: Last day for withdrawing from second-term courses of the Summer (Day) Session.
- **Thursday August 6**: Class end.
- **Tuesday August 14**: Summer Session Examinations and Deferred Examinations arising from April Examinations.
- **Friday August 17**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday October 26**: Deferred Examinations arising from Summer Session Examinations.
- **Saturday December 8 to Friday December 21**: Deferred Examinations arising from Summer Session Examinations.

#### Summer Evening Session 1984
- **Wednesday May 9**: First-term evening classes begin. Last day for registration and changes of registration.
- **Tuesday May 15**: Last day for withdrawing from first-term courses of the Summer (Evening) Session.
- **Monday May 21**: Victoria Day — No classes.
- **Friday May 25**: Last day for withdrawing from second-term courses of the Summer (Evening) Session.
- **Thursday June 21**: First-term Summer Session classes end. Examinations in first-term courses.
- **Monday June 25 and Wednesday June 26**: Second-term evening classes begin.
- **Monday July 2**: Canada Day — No classes.
- **Friday July 13**: Last day for withdrawing from second-term and full-session courses of the Summer (Evening) Session. Civic Holiday — No classes.
- **Monday August 6**: Summer Session classes end.
- **Tuesday August 14**: Summer Session Examinations and Deferred Examinations arising from April Examinations.
- **Wednesday August 15 to Friday August 17**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday October 26**: Deferred Examinations arising from Summer Session Examinations.
- **Friday November 9 to Friday December 21**: Deferred Examinations arising from Summer Session Examinations.

#### Summer Day Session 1985
- **Tuesday July 2**: First-term day classes begin. Last day for registration and changes of registration.
- **Wednesday July 3**: Last day for withdrawing from first-term courses of the Summer (Day) Session. Civic Holiday — No classes.
- **Monday July 8**: Second-term day classes begin. Last day for withdrawing from second-term and full-session courses of the Summer (Day) Session. Civic Holiday — No classes. Classes end.
- **Tuesday July 23**: Deferred Examinations arising from April Examinations.
- **Friday July 26**: Summer Session Examinations and Deferred Examinations arising from April Examinations.
- **Monday August 5**: Deferred Examinations arising from April Examinations. Autumn Convocation.
- **Wednesday August 14**: Defend Examinations arising from April Examinations.
- **Wednesday August 15 and Friday August 16**: Last day for application for Deferred Examinations arising from Summer Session Examinations. Autumn Convocation.
- **Friday October 25**: Deferred Examinations arising from Summer Session Examinations.
- **Friday November 8**: Deferred Examinations arising from Summer Session Examinations.
- **Saturday December 7 to Friday December 20**: Deferred Examinations arising from Summer Session Examinations.

#### Summer Evening Session 1985
- **Wednesday May 8**: First-term evening classes begin. Last day for registration and changes of registration.
- **Tuesday May 14**: Victoria Day — No classes.
- **Monday May 20**: Last day for withdrawing from first-term courses of the Summer (Evening) Session.
- **Friday May 24**: First-term classes end. Examinations in first-term courses.
- **Thursday June 20**: Second-term evening classes begin.
- **Monday June 24 and Tuesday June 25**: Second-term evening classes begin. Second-term and full-session courses in the Summer (Evening) Session. Civic Holiday — No classes.
- **Wednesday June 26**: Summer Session classes end.
- **Monday July 1**: Canada Day — No classes.
- **Friday July 12**: Last day for withdrawing from second-term and full-session courses in the Summer (Evening) Session. Civic Holiday — No classes.
- **Monday August 5**: Summer Session classes end.
- **Wednesday August 14**: Deferred Examinations arising from April Examinations.
- **Wednesday August 15 and Friday August 16**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday October 25**: Deferred Examinations arising from Summer Session Examinations. Autumn Convocation.
- **Friday November 8**: Deferred Examinations arising from Summer Session Examinations.
- **Saturday December 7 to Friday December 20**: Deferred Examinations arising from Summer Session Examinations.

#### Summer Day Session 1986
- **Wednesday July 2**: First-term day classes begin. Last day for registration and changes of registration.
- **Thursday July 3**: Last day for withdrawing from first-term courses of the Summer (Day) Session. Second-term day classes begin.
- **Tuesday July 8**: Last day for withdrawing from second-term and full-session courses of the Summer (Day) Session. Civic Holiday — No classes. Classes end.
- **Wednesday July 23**: Last day for withdrawing from second-term and full-session courses of the Summer (Day) Session. Civic Holiday — No classes.
- **Monday July 28**: Summer Session classes end.
- **Monday August 4**: Summer Session Examinations and Deferred Examinations arising from April Examinations.
- **Thursday August 14**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday August 15 to Monday August 18**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday October 31**: Autumn Convocation.
- **Friday November 14**: Autumn Convocation.

#### Summer Evening Session 1986
- **Wednesday May 7**: First-term evening classes begin. Last day for registration and changes of registration.
- **Tuesday May 13**: Victoria Day — No classes.
- **Monday May 19**: Last day for withdrawing from first-term courses of the Summer (Evening) Session. First-term classes end. Examinations in first-term courses.
- **Friday May 23**: Second-term evening classes begin.
- **Thursday June 19**: Second-term and full-session courses in the Summer (Evening) Session. Civic Holiday — No classes.
- **Monday June 23 and Tuesday June 24**: Summer Session classes end.
- **Wednesday June 25**: Canada Day — No classes.
- **Tuesday July 1**: Last day for withdrawing from second-term and full-session courses in the Summer (Evening) Session. Civic Holiday — No classes.
- **Friday July 11**: Summer Session classes end.
- **Monday August 4**: Summer Session Examinations and Deferred Examinations arising from April Examinations.
- **Thursday August 14**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday August 15 to Monday August 18**: Last day for application for Deferred Examinations arising from Summer Session Examinations.
- **Friday October 31**: Autumn Convocation.
- **Friday November 14**: Autumn Convocation.
Application Procedures

IMPORTANT DATES
Because of the large number of applications we receive, the University has established application deadlines. **You must apply by the dates below, in order for your application to be considered.** Many of the programmes have a limited number of places available for applicants; it is, therefore, in your own interest to apply early.

**Deadline** | **Programme**
---|---
November 15 | Medicine — for admission in the following September
February 15 | Nursing — non-Grade 13 Applicants
March 1 | Social Work
March 15 | Labour Studies
April 1 | Nursing — Grade 13 Applicants
April 15 | Summer evening courses
May 31 | Summer day courses
July 15 | Full-time Winter Session courses commencing in September
August 15 | Part-time Winter Session courses commencing in September
November 30 | Winter Session courses commencing in January

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

FORMER MCMASTER STUDENTS
If you have previously registered at McMaster, but did not attend last year, you must write to the 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 extension 4796). Your application will be considered by the appropriate Faculty committee.

APPLICANTS WITH DISABILITIES
The university encourages disabled persons to apply for admission to its programmes, 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 Calendar and Scheduling Officer (Gilmour Hall, Room 107A, telephone extension 4339) who will identify the appropriate faculty adviser with whom they should speak as well as discuss facilities and resources available at the University.

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

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

PROGRAMMES ENTERED IN LEVEL I
McMaster University has the following Level I programmes: Arts and Science I, Business I, Engineering I, Humanities I, Music I, Nursing I, Physical Education I, Natural Sciences I and Social Sciences I.

The application procedures differ according to your current academic qualifications and your ultimate goals. You may determine the procedure you have to use by answering each of the questions below in sequence until you are directed to the procedure you must follow.

Do you wish to receive grades in the courses you take?

DO YOU WANT TO RECEIVE GRADES?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>

Do you wish to study as a part-time student (i.e. take less than 24 units)?

PART-TIME OR FULL-TIME?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>

Do you wish to study for an undergraduate (bachelor's) degree?

UNDERGRADUATE OR POSTGRADUATE?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>

Do you already have an undergraduate degree?

DO YOU HAVE AN UNDERGRADUATE DEGREE?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>

Are you seeking to enter Level I?

WANT TO ENTER LEVEL I?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>

Are you now taking one or more Ontario Grade 13 subjects?

WANT TO ENTER LEVEL I?

<table>
<thead>
<tr>
<th>Yes</th>
<th>Follow Procedure D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Follow Procedure E</td>
</tr>
</tbody>
</table>
**PROCEDURE A:**

This procedure applies to applicants who are now taking one or more Ontario Grade 13 subjects in day school and wish to enter a full-time degree programme. Application forms (OUAC 101) are available from your guidance office. You should choose one of the following programmes and complete the form:

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

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

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**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, extension 4796). You should choose one of the following programmes and complete the form:

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

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

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

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**PROCEDURE C:**

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

Obtain an application form (OUAC 105) from the Admissions Officer (Gilmour Hall, Room 120, telephone 525-9140, extension 4796). You should choose one of the degree programmes listed in this calendar, and complete the form.

Send the form and the application fee to the Application Centre.

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**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. students taking work for credit at another university; or
4. second-degree candidates.

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

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**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). A Listener does not 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 4757).

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**PROGRAMMES ENTERED ABOVE LEVEL I**

**Canadian Studies, Engineering Management, and Labour Studies** begin at Level II. Admission requirements appear in this calendar under Admissions. You should also refer to the specific Faculty sections. If your qualifications do not fit the requirements exactly, you should write to Undergraduate Admissions, Room 120, Gilmour Hall, McMaster University.

If you wish to enter **Medicine, Nursing and Physiotherapy and Occupational Therapy**, refer to the Faculty of Health Sciences section of this Calendar. You should obtain the appropriate application form and make any enquiries at the Health Sciences Registry (McMaster University Medical Centre, Room 1B7, telephone 525-9140 Extension 2114). Medicine commences after three years of undergraduate study and Level IV is the level of entry to the Occupational Therapy and Physiotherapy programme.

The level of entry for **Social Work** is Level II. Admission to the Combined B.A. and Social Work Programme is by selection of the applicants who have completed, or are completing, 30 units of work. Students, enrolled at McMaster, who are interested should apply directly to the School of Social Work. Students wishing to apply for transfer from another university must clearly indicate on the application form which specific Arts programme they wish in conjunction with their Social Work programme.
Admission Requirements

The University reserves the right to change any information contained in this section at any time without notice. The University Senate may limit enrolment in programmes where the available resources indicate the need, so that admission to most Level 1 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 experimental programmes are offered in some Ontario secondary schools and welcome applicants from these programmes. If you are such an applicant and do not meet exactly the subject requirements outlined below, you should write to the Associate Registrar (Admissions) who will ensure that your application is carefully considered. Changes in the secondary school curriculum are being implemented; Grade 13 courses and the new Ontario Academic Courses will be considered equally.

Early Admission From Ontario Secondary Schools

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

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

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

Regular Admission From Ontario Secondary Schools

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

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

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

The "weighted average" is computed as in the example below:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Mark</th>
<th>Credits</th>
<th>Marks × Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject A</td>
<td>66</td>
<td>1</td>
<td>66</td>
</tr>
<tr>
<td>Subject B</td>
<td>70</td>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>Subject C</td>
<td>80</td>
<td>1.5</td>
<td>120</td>
</tr>
<tr>
<td>Subject D</td>
<td>56</td>
<td>0.5</td>
<td>28</td>
</tr>
<tr>
<td>Subject E</td>
<td>72</td>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td>Subject F</td>
<td>60</td>
<td>1</td>
<td>60</td>
</tr>
</tbody>
</table>

"Weighted average" = 416 ÷ 6 = 69.3%.

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

Admission From Level 4 (Grade 12)

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

1. Grade 12 has been completed with high academic standing (normally 80% or higher, or the equivalent);
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 1 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 I (Special Programme)

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

1. one Grade 13 credit in English;
2. one Grade 13 credit in Calculus;
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 I

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 70.0%.

Since Business I enrolment is limited, the minimum overall average of 70.0% will not guarantee admission. An average of approximately 75% will probably be required.

Engineering I

Enrolment in Engineering I is limited and admission is by selection. Experience indicates that students with weighted Grade 13 averages of 80% or greater have a good chance of success in Engineering programmes. Students with a standing lower than 80% who nevertheless provide evidence of unusual promise 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, including,
2. a weighted average of more than 70.0% in the following five credits: one Grade 13 credit in each of Grade 13 Calculus, Algebra, Functions and Relations, Physics, Chemistry.
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 I**
Enrolment in Humanities I may be limited and admission is by selection.
Required:
1. Grade 13 English, with a grade of at least 60%;
2. another Grade 13 language (if you have not met this requirement, you may be admitted but you must pass a Level 1 language course other than English in your first 18 units of work);
3. additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall weighted average of 65.0%.

Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered. The Faculty of Humanities recommends that the Grade 13 courses presented for admission be selected from Humanities subjects such as English, Languages, History, Music, Theatre and Visual Arts and from non-Humanities core courses such as Biology, Chemistry, Geography, Mathematics and Physics. In the event that it is necessary to limit enrolment, particular attention will be given to a student's performance in these subjects.

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

**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 70.0% or better have a good chance of success in science programmes and will be given priority. The following are the minimum requirements for consideration:
1. Grade 13 Calculus;
2. Grade 13 Physics or a second Grade 13 Mathematics;
3. One Grade 13 credit of Biology, or Chemistry, or another Mathematics;
4. A weighted average of at least 60.0% in Calculus and the two additional credits specified above;
5. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with an overall average of at least 60.0%.

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) is also desirable. The majority of Science degree programmes at McMaster require Chemistry 1A7; this course has as its prerequisite, Grade 13 Chemistry. Although Grade 13 English is not a required course for admission, a very large proportion of students entering Natural Sciences I have taken it. We strongly urge all prospective students to take Grade 13 English.

**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 13 English;
2. Grade 13 Chemistry;
3. One of Grade 13 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 to the student 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 the programme desired. Advanced credit will normally be given to well-qualified students who have completed at least two years of work.

In the granting of credit attention will be given to:
1. the applicant's performance in the college programme;
2. the duration of the previous programme;
3. the programme taken at the college and the programme to which entry is sought;
4. the applicant's secondary school record.

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

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

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 after only one or two years of study are also 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 Grade 12
Newfoundland Year I Memorial University of Newfoundland Grade 12
Northwest Territories Year I Memorial University of Newfoundland Grade 12
Nova Scotia Grade 12
Prince Edward Island Year I University of Prince Edward Island Grade 12
Quebec Year I CEGEP (General Course) Grade 12
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
The following policy applies to applicants from outside Canada. We have, for convenience, indicated our admission requirements for applicants from selected countries.

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

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

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. for Engineering I and Natural Sciences I, Mathematics, pure or applied, and one of Physics or Chemistry with the other at the ordinary level);
3. an average of at least "C" 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. for Engineering I or Natural Sciences I, Mathematics, pure or applied, and one of Physics or Chemistry, with the other at the ordinary level);
3. an average of at least "C" in the two Advanced Level subjects for non-limited enrolment programmes. Limited enrolment programmes require first-class honours standing.
4. standing satisfactory to McMaster University in the University of Michigan English Language Test. Details of the test will be sent upon receipt of a formal application for admission.

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.

F. SPECIAL STUDENTS (MATURE STUDENTS)
Applicants who have attended university are not admissible as special students.

Full-time Study
If you do not meet the normal admission requirements described in Section A: Admission from Ontario Secondary Schools, you may be admitted "on university probation" to full-time study provided you satisfy all of the following three conditions:
1. you are at least 21 years old or will be in the calendar year in which you propose to start; 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 May, June and August) and are considered qualified by the appropriate Faculty Admissions Committee.

The writing of the test will be waived for those who have satisfactorily completed a certificate programme (see 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 Associate Registrar (Admissions).

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

If you are admitted, you may register as a "Special Student" and may take up to six units of work 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.
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 obtain credit only for courses in which you have achieved at least a "C" (third-class honour) standing. Assessment of courses for transfer credit is subject to the guidelines of the individual Faculties. If your native language is not English, you must obtain standing satisfactory to the University in the University of Michigan English Language Test. The University of Michigan authorization form will be sent upon receipt of a formal application for admission.

A student transferring to McMaster University must satisfy the Residence Requirements set out in the section 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 section Academic Regulations. Application forms are obtainable from the Associate 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 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 Information).

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 MCMASTERS CERTIFICATE PROGRAMMES

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

L. ENRICHMENT PROGRAMME

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

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

Interested students are invited to contact the Office of Admissions for information regarding available courses and application procedures.

M. STUDENTS STUDYING IN CANADA ON STUDENT AUTHORIZATION (VISA)

In limited enrolment programmes the number of places available in Level I will not exceed 5% of the total Level I enrolment in those programmes.

N. ADVANCED CREDIT

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

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

The regulations which follow are the general regulations of the University. You should read both these general regulations and the Faculty regulations which may be more stringent and appear in the Faculty sections of this Calendar.

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

Honours and three-level degree programmes are offered in the Faculties of Humanities, Science, and Social Sciences and in the Arts and Science Programme, and Major programmes are offered in the Faculty of Science only. The general regulations governing these programmes appear in this section of the Calendar. The regulations governing programmes in Business, Engineering, Engineering and Management, Medicine, Nursing, Occupational Therapy and Physiotherapy, Social Work, and Physical Education appear in the appropriate Faculty sections. In the event there is a conflict between the programme regulations for these seven programmes and the general regulations in this chapter, the programme regulations take precedence.

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

General Regulations

RESIDENCE REQUIREMENTS

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

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

In order to obtain a three-level first undergraduate degree, you may satisfy the residence requirements either:
1. by completing the final Level and at least one other Level (a minimum of approximately 60 units of work) at McMaster University, or
2. by completing the final Level (approximately 30 units of work) at McMaster University, including at least 18 units of Area courses. These units 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.

REGISTRATION

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

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. You should note that in order to qualify for most scholarships, you should register for the full load prescribed for your programme and level.

Extra Work. If you wish to take more than the normal number of units prescribed for a level, you may do so only with the permission of the 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.

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

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

Limit on Level I Courses. After you have completed Level I, you may obtain credit in no more than 12 additional units of courses beginning with the digit 1 in a 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 credit may be obtained in no more than 42 units of Level I courses in a three-level programme and in no more than 48 in a four-level programme.

Letters of Permission. If you wish to attend another university to take courses which will carry credit towards a McMaster degree, you must obtain permission ahead of time. To do this you must seek a "Letter of Permission" from your 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 permission has been granted to take the last courses for the degree at another institution. You should note that the grades obtained in courses taken at another university will not be included in the various McMaster averages, and, therefore, cannot be used to raise standing.

Cancellation of a Course. If you cancel a course during the change of registration period, it will not show on your record. After that the course will show on your record. The grade will be recorded as CAN (cancelled) if the course is cancelled up to and including the last date for withdrawing from the course shown in the Sessional Dates.

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

Counselling is available to assist you in course selection and in some programmes is compulsory.

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.
ALEADIC REGULATIONS

Your identity card must be surrendered to the Dean of Studies. Fees are not refunded unless this procedure is followed.

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

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

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

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

FINAL EXAMINATIONS

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

The mid-year tests in December for Level I courses and the final examinations for two and three-credit courses normally are of two hours duration. Final examinations for courses of four or more credit hours are of three hours duration.

If examinations or tests are held in the final week of the terms of the Winter Session except for those specifically approved by the Undergraduate Council. The appropriate dates appear in the Sessional Dates.

Tests and examinations organized by the Office of the Registrar may be scheduled in the morning, afternoon, or evening, Monday through Saturday. You should arrange to be 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 when 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 from a doctor to the Office of the Registrar. The certificate must define both the disability and the period of absence, and must be submitted by the end of the examination period.

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

A deferred examination privilege may be granted by your Faculty Reviewing Committee if you fail to write a final examination for a certifiable medical or compassionate reason, provided that you have submitted the certificate by the end of the examination period.

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.

GRADING SYSTEM

The grade for a course is normally determined by combining the grades obtained on coursework, assignments, tests, and examinations. The results of all courses attempted will appear on your transcript.

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Units</th>
<th>CAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>6</td>
<td>60</td>
</tr>
<tr>
<td>B</td>
<td>6</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>30</td>
<td></td>
<td>213</td>
</tr>
</tbody>
</table>

AVERAGE = 213 ÷ 30 = 7.1

Terminology

This glossary of terminology is arranged in alphabetic sequence.

Area Courses ("A" courses) are those courses in which the grades are used in computing the Cumulative Area Average 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 indicates the level of the course; the letter(s) in the middle identifies the specific courses within the level; and the final digit defines the number of units of credit associated with the course.

Cumulative Area Average (CAA) is computed as shown in the example below, using the best 80% of the grades obtained in the Area courses prescribed for the programme beyond Level I, provided that at least 12 units of Area courses have been attempted since the CAA was computed. For students re-admitted to the University after obtaining a University Average of less than 2.0, the CAA will be computed from the time of re-admission.

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

The grades in the following example are ranked in descending sequence. Since the student has taken 27 units, the average will be computed on the basis of the best 21.6 units (21.6 = 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</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>(6) X 6</td>
<td>60</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(6) X 6</td>
<td>48</td>
</tr>
<tr>
<td>B-</td>
<td>7</td>
<td>(6) X 6</td>
<td>42</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>(3) X 3</td>
<td>18</td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td>(6) X 0.6</td>
<td>1.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>(27) X 80%</td>
<td>=21.6</td>
<td>169.8</td>
</tr>
</tbody>
</table>
ACADEMIC REGULATIONS

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

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

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

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

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>(Units)</th>
<th>GA Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>11</td>
<td>(6) x 6</td>
<td>66</td>
</tr>
<tr>
<td>A</td>
<td>10</td>
<td>(6) x 6</td>
<td>60</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>(3) x 3</td>
<td>27</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(6) x 6</td>
<td>48</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>(3) x 3</td>
<td>24</td>
</tr>
<tr>
<td>B−</td>
<td>7</td>
<td>(3) x 3</td>
<td>21</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>(6) x 0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>(42)</td>
<td>(42) X 80% =33.6</td>
<td>298.2</td>
</tr>
</tbody>
</table>

GA = 298.2 / 33.6 = 8.9

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 register in Level I and normally 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 is specified for each programme in the Faculty section of this calendar.
2. to indicate at what stage in a programme a student normally takes a given course. Level I courses (beginning with the digit 1) normally are taken by students registered in Level I, Level II courses by students registered in Level II, etc. The level designation is only a guideline, however, in that the academic regulations and curriculum requirements may provide for deviations from this guideline.

Programme Probation may be assigned to students who do not meet the normal promotion requirements on the Cumulative Area Average, calculated on at least 12 units of area work, is used; and

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

Reviewing Period. 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. A unit is roughly equivalent to one lecture-hour per week for one term or two hours of laboratories or seminars per week for one term. Most courses are of 3 or 6 units credit. Normally 30 or more units or work are specified for a Level; approximately 90 units or more constitute the work for a three-level degree and 120 units or more for a four-level degree.

University Average is computed on the grades obtained in all courses since the last review of student standing.

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

Programmes Of Study and Academic Standing

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

ACADEMIC STANDING

Academic standing is reviewed in May and August each year for students who
1. have completed at least 18 units of work since the last review, or
2. may be eligible to graduate at the next Convocation, or
3. were admitted under the part-time mature student provision and have attempted the first 12 units of work which constitute their probationary period.

In the review of academic standing, three sets of decisions are made:
1. whether a student may continue at the University for which the University Average, calculated on at least 18 units, is used;
2. whether a student may continue in a programme for which the Cumulative Area Average, calculated on at least 12 units of area work, is used; and
3. whether a student may graduate and the classification of the degree, for which the Graduation Average is used.

REQUIREMENTS FOR LEVEL I

If you enter the University without advanced standing being granted, you must attempt a full load of Level I work before proceeding to the work of higher levels. Admission to the programmes beyond Level I is based on the performance in Level I, and you must meet the normal requirements prescribed in the following section Minimum Requirements for Continuance at the University in order to continue at the University. If you meet the requirements for continuance at the University after completing the Level I work but fail to meet the admission requirements of any programme, you may continue at the University for one additional reviewing period. You will be registered as "Irregular" on programme probation. If you again fail to qualify for admission to a programme, you may not continue without special permission. If you are repeating Level I voluntarily, your registration status will be "clear admission".
In the case of part-time students the Associate Dean has the discretion to permit students to take some of the work in the higher levels prior to having attempted the full load of Level I. Decisions will be made on an individual basis according to the special circumstances that apply in the particular case.

MINIMUM REQUIREMENTS FOR CONTINUANCE AT THE UNIVERSITY

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

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

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

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

PROGRAMME REQUIREMENT FOR B.A. AND B.SC. PROGRAMMES

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 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 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.

SECOND UNDERGRADUATE DEGREES

Credit for courses taken towards a first undergraduate degree may be applied to a second undergraduate degree. All the additional work needed to obtain the second degree must be taken at McMaster University.

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

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

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.
SENATE POLICY STATEMENTS

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

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

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

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

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

Senate Policy Statements

The University has defined its expectations of students in both the academic and non-academic life of the University community, and developed procedures to ensure that all members of the community receive equitable treatment. Each year at registration, you will receive the document Senate Policy Statements which contains the following:

1. Academic Ethics and Procedures for Handling Instances of Academic Dishonesty;
2. Code of Conduct;
3. Student Appeal Procedures; and
4. the University's Statement on Human Right.

ACADEMIC ETHICS

The expectations of the University for academic work and the procedures for dealing with alleged cases of academic dishonesty are contained in the document distributed annually. Academic dishonesty is defined as false or misleading representation.

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

APPEAL PROCEDURES

The University believes students have a right to a fair and equitable procedures for the lodging and hearing of complaints arising from University regulations, policies and actions that might affect them directly. The University has established formal procedures so that students who think they may not have been treated fairly, 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 or arising.

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.

DEANS' HONOUR LIST

Each year outstanding students are recognized by their being named to the Deans' Honour List for which a minimum average of 9.5 is required. In the case of full-time students, this average must have been attained during a session on at least 30 units. The number of units of work on which Deans' Honours in Engineering is calculated is 36 units; however, the Dean has the power to exercise 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). 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.

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.

CODE OF CONDUCT

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

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

STATEMENT ON HUMAN RIGHTS

McMaster University wishes to ensure the full and fair implementation of the principles of the Ontario Human Rights Code which states that every person has a right to equal treatment with respect to: services, goods and facilities, without discrimination because of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, age, marital status, family status or handicap.

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

STUDENT RECORDS

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

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The fees payable by a student are composed of an academic fee and supplementary fees. The academic fees payable are calculated on a per unit basis up to the maximum stated under “standard fee” shown in the 1983-84 fee schedule, below. The full supplementary 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, McMaster Fund, 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.

Please note that all NEW students will have a $5.00 photo I.D. card fee levied. A fee of $10.00 will be charged for all replacement photo I.D. cards. Your photo I.D. card will be a requirement at the Bookstore, Libraries, Examinations and various student locations and events.

The University reserves the right to assess supplementary fees or charges in some courses or programs 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 the University adding interest at the rate of 1 1/2% per month on unpaid fees in excess of the second instalment after September 30, 1984, and on all unpaid fees after the due date for the second instalment, January 15, 1985. 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. Any of the foregoing requirements 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 Manager, Financial Services in the Business Office.

No student may be eligible for any 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.

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

Full-time students should note that fees are payable in full during the registration period in August/September. Prepayment of academic fees is encouraged to simplify the registration process (see below Prepayment of Academic Fees). Payments through installments are also available, with the first payment being due by September 1, or at the time of registration, and the second, including the service charge of $20, due in January.

Part-time students should note that payment of fees must accompany registration. Payments through installments are also available, with the first payment due upon registration and a post-dated cheque for the balance, including a service charge of $20, due in January, and February 28 for the January registrant.

Registration 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 will be subject to an additional administrative charge of $15.00. Fees paid by a cheque which is returned by the bank are considered unpaid fees at the date the cheque was deposited and interest charges described above will be applied. The cheque must be replaced and include the additional administrative charge of $15.00.

“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, including the refund schedule, for any given academic year will be sent to each student during the summer preceding September registration.

Full-time fees for an academic load of 28 units or more during 1983-84 and, which are subject to change were as follows:

<table>
<thead>
<tr>
<th>Standard Supplementary Fee</th>
<th>Payable in August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering; Engineering and Management I, III, V</td>
<td>$1196.00 $116.50 $1312.50</td>
</tr>
<tr>
<td>Engineering and Management II, IV</td>
<td>1100.00 116.50 1216.50</td>
</tr>
<tr>
<td>Medicine I, II</td>
<td>2103.00 90.00 2193.00</td>
</tr>
<tr>
<td>Medicine III</td>
<td>1402.00 77.00 1479.00</td>
</tr>
<tr>
<td>Nursing</td>
<td>1100.00 116.50 1216.50</td>
</tr>
<tr>
<td>All other programmes</td>
<td>1100.00 106.50 1206.50</td>
</tr>
</tbody>
</table>

For academic loads between 24 and 27 units, the fee was $38.75 per unit plus full supplementary fees. For students taking less than 24 units, the fee was $38.75 per unit plus a supplementary fee of $1.25 per unit for membership in the McMaster Association of Part-time Students, or the McMaster Students’ Union.

The following fees for full-time Visa students were charged during 1983-84 and are subject to change.

<table>
<thead>
<tr>
<th>Visa in Course (Prior to '82)</th>
<th>Entering '82 or Later</th>
<th>Supplementary Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing Engineering</td>
<td>$2190.00 $6160.00 $116.50</td>
<td></td>
</tr>
<tr>
<td>Medicine I and II</td>
<td>3376.00 9330.00 90.00</td>
<td></td>
</tr>
<tr>
<td>Medicine III</td>
<td>2267.00 6237.00 77.00</td>
<td></td>
</tr>
<tr>
<td>All other programmes</td>
<td>2190.00 3780.00 106.50</td>
<td></td>
</tr>
</tbody>
</table>

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 or at the time of registration, whichever comes first. 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.

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. Deferments 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 1983-84, with corresponding dates for payment of these fees, for students living on campus for the period September 6 to the end of the spring examinations are:

<table>
<thead>
<tr>
<th></th>
<th>Payable in Full by</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>$2285.</td>
<td>$1600.</td>
<td>$705.</td>
</tr>
<tr>
<td>Apartments Per Person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room Only</td>
<td>1140.</td>
<td>800.</td>
<td>360.</td>
</tr>
<tr>
<td>Food Plan Only</td>
<td>1145.</td>
<td>800.</td>
<td>365.</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 Manager of Residence Administration, Commons Building, telephone 525-9140, extension 4223.

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 $20 is added to fees not paid in August.

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

The following rates apply to 1984 only. For successive years and other enquiries, contact the Conference Office, Commons Building, Room 1018, telephone 525-9140, extension 4781.

<table>
<thead>
<tr>
<th></th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Double Occupancy</td>
<td></td>
</tr>
<tr>
<td>Individual Nights</td>
<td>$12 per person</td>
</tr>
<tr>
<td>First Week</td>
<td>$60 per person</td>
</tr>
<tr>
<td>Second &amp; Successive Weeks</td>
<td>$32 per person</td>
</tr>
<tr>
<td>Single Occupancy</td>
<td></td>
</tr>
<tr>
<td>Individual Nights</td>
<td>$16 per person</td>
</tr>
<tr>
<td>First Week</td>
<td>$80 per person</td>
</tr>
<tr>
<td>Second &amp; Successive Weeks</td>
<td>$42 per person</td>
</tr>
</tbody>
</table>

### Miscellaneous Fees

As a guide, the following fees were in effect for the 1983-84 academic year.

- **Campus health service (optional)**
  - for part-time (day) students .............................................................. $12.00
  - for part-time (evening) students .......................................................... $18.00

- **McMaster Student Union Fee** for
  - part-time students/per unit to 24 units ........................................... 1.25
  - part-time students/per unit over 24 units ........................................ 2.50

- **Transcripts**
  - up to 5 copies ordered and processed at the same time ........................ 3.00

- **Failure to file an advance registration**
  - by students in course before the due date ........................................ 25.00

- **Administrative fee for students**
  - reinstated following cancellation for non-payment of fees ................... 25.00

- **Installment charge** ........................................................................ 15.00

- **Replacement of Diploma** ................................................................. 25.00

- **Replacement of M.D. Diploma** .......................................................... 25.00

- **Replacement of Student I.D. Card** .................................................... 25.00

- **Replacement of Food Card** ............................................................... 15.00

- **Returned cheque charge** ................................................................ 15.00

- **Nursing additional charge to cover the cost of printed programme material** .......................................................... 10.00

- **Medical students additional charge to cover the cost of printed programme material** .......................................................... 10.00

### 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. White shoes and hose are also necessary.

**Transportation**

Students are responsible for expenses involved in transporting themselves to community agencies, making home visits or in connection with other clinical practice. 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 1983) to write the comprehensive registration examinations administered by the College of Nurses of Ontario.

**Insurance of Personal Property on University Premises**

The University cannot assume any responsibility for the personal property of any employees, faculty members, or students, nor does the University carry any insurance that would cover their personal property.
In most cases, personal fire insurance policies provide an automatic 10% extension covering property away from home. It is suggested that insurance policies be inspected to be certain that this is the case.

**Death and Dismemberment Insurance**

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

**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 five plans:
- Ontario Study Grant Plan
- Canada Student Loans Plan
- Ontario Student Loans Plan
- Ontario Special Bursary Plan
- Ontario Work-Study Plan

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

**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 assumed to assume more responsibility for educational costs or to turn for assistance to student loans plans outlined below.

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

**Canada Student Loans Plan**

A federal government plan, administered by the provincial government, which provides loans to needy students for completion of any level of study. Maximum assistance under this plan is about two-thirds of standard costs at an Ontario institution.

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

The federal government recently expanded its Canada Student Loans Plan to include loans 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.

**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.

**Ontario Work-Study Plan**

A recent addition to the OSAP package which is intended to complement the original four plans. It offers to needy students part-time jobs during the school year to help them meet exceptional costs, often unexpected, not recognized under OSAP. It also helps students who lack resources expected under OSAP criteria or, whose assessed need under OSAP is not met because of grant/loan maximums or, who do not wish to borrow further due to high debt load.

Costs of this plan are shared equally by the provincial government and a local sponsoring agency which must be a non-profit organization, such as the university.

For information and applications contact:
- Student Financial Aid Office
- Divinity College, Room 229
- McMaster University
- Hamilton, Ontario
- L8S 4K1
- Telephone: (416) 525-9140, extension 4319

*Students should also refer to the Supplementary Student Financial Aid section in this calendar for information about bursaries and loans.*
Degrees and Programmes

Undergraduate Degrees Awarded
McMaster University offers the following undergraduate degrees:

Duration in Years

Arts and Science Programme
B.Arts Sc. .................................................. 4
B.Arts Sc. (Honours) ................................. 3

Faculty of Business
B.Com. ...................................................... 4
B.Com. (Honours) ................................. 4
B.Com. Arts (Honours) ......................... 4

Faculty of Engineering
B.Eng. ...................................................... 4
B.Eng. Mgt. .............................................. 5

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.Mus. .................................................... 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) ......................... see below
B.P.E. .................................................... 4
B.P.E. (Second Degree) ......................... see below

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

- Anthropology 1A3, 1B6, 1Z3
- + Art 1C3
- + Art History 1A6
- + Biology 1G6, 1H6
- Canadian Studies 1A6
- + Chemistry 1B7
- Classical Civilization 1A6
- Comparative Literature 1A6
- Computer Science 1B3, 1C3, 1H3
- Dramatic Arts 1A6
- Economics 1A6
- English 1A6, 1B6
- French 1A6, 1B6, 1Z6
- Geography 1A6, 1B6, 1D6
- + Geology 1B6
- German 1A6, 1B6, 2B6
- Greek 1Z6
- History 1C6, 1D6, 1L6
- Humanities 1A6
- Humanities 1B6
- Italian 1A6, 1B6, 1Z26
- Labour Studies 1A3, 1B3
- Latin 1Z6
- Linguistics 1A6
- + Mathematics 1A6, 1B4, 1F6, 1G4, 1K3, 1L3, 1M3
- + Materials 1A3, 1B3
- Music 1A6
- + Philosophy 1B6, 1D6
- Physics 1A7, 1B7, 1C7
- Polish 1A6
- Political Science 1A6
- Psychology 1A6
- Religious Studies 1B6, 1C6, 1E6, 1F6, 1Z6
- Russian 1Z6
- Serbo-Croatian 1A6
- Sociology 1A6
- Spanish 1A6, 1Z6
- Ukrainian 1A6

* These courses are not acceptable for the 6-unit liberal studies elective required in Engineering I.
+ These courses are not acceptable for the 6 units of Humanities, Social Sciences, or Science electives required in Natural Sciences I.

Provision exists for a university graduate to take a second undergraduate degree. This programme is normally shortened. The application for admission is necessary for entry to a second degree programme and it should be submitted by the application deadlines. (see Application Procedures)
### Degrees by Programme

<table>
<thead>
<tr>
<th>Subject</th>
<th>Bachelor's Degree</th>
<th>Major Degree</th>
<th>Honours Degree</th>
<th>Combined Honours Degree</th>
<th>Professional Degree</th>
<th>Course Areas Not Offered As Degrees</th>
</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.ArtsSc.</td>
<td>B.Sc.*</td>
<td>B.Sc.*</td>
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<tr>
<td>Arts and Science</td>
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<tr>
<td>Computer Sciences and</td>
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<td>Applied Mathematics</td>
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<tr>
<td>Theoretical Physics and</td>
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<td>Applied Mathematics</td>
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<td>Applied Physics</td>
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<td>Applied Statistics and</td>
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<td>Computation Art</td>
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<tr>
<td>Art and Art History</td>
<td>B.A.*</td>
<td>B.A.*</td>
<td>B.A.*</td>
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<td></td>
<td>X</td>
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<tr>
<td>Asian Studies</td>
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<tr>
<td>Biochemistry</td>
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<td>B.Sc.</td>
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<td>X</td>
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<tr>
<td>Bioengineering</td>
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<tr>
<td>Biology</td>
<td>B.Sc.</td>
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<td>B.Sc.</td>
<td>B.Sc.; B.A.</td>
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<tr>
<td>Business</td>
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<td>X</td>
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<tr>
<td>Canadian Studies</td>
<td>B.A. (combined)</td>
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<tr>
<td>Ceramic Engineering</td>
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<tr>
<td>Chemical Engineering</td>
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<tr>
<td>Chemistry</td>
<td>B.Sc.</td>
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<td>B.Sc.</td>
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<td>X</td>
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<tr>
<td>Chinese</td>
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<td></td>
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<td>Civil Engineering</td>
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<tr>
<td>Classical Studies</td>
<td>B.A.*</td>
<td>B.A.*</td>
<td>B.A.*</td>
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<tr>
<td>Classics</td>
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<tr>
<td>Commerce</td>
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<tr>
<td>Comparative Literature</td>
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<tr>
<td>Computer Engineering</td>
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<tr>
<td>Computer Science</td>
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*Degree programme is available through a combination of evening and summer study.
H.M. Jenkins/B.A., Ph.D., Director

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 specialisation in a discipline or problem area through the use of electives. A.N. Whitehead expressed the philosophy of the Arts and Science Programme when he wrote:

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

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

The core curriculum consists of courses offered by the Council of Instructors of the Arts and Science programme, together with other courses offered by Departments. The core curriculum is designed to meet three major objectives: 1. to increase understanding of biological and physical sciences, behavioural sciences, technology, and the arts; 2. to develop skill in the use of the written and spoken word, and in quantitative reasoning; and 3. to foster the art of practical inquiry into problems of public concern.

Meeting the last of these objectives is the aim of inquiry seminars which begin in Level I and continue in upper levels. To investigate with skill and insight a serious public issue, such as world population growth 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.

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.

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

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

**Combined Honours.** Students in the Arts and Science Programme may undertake Combined Honours programmes in many disciplines within the Social Sciences or Humanities. To enrol in such a programme, students should consult the Director of the Arts and Science Programme and the Associate Dean (Studies) of the Faculties Social Sciences or Humanities.

Combined Honours programmes may also be taken in Mathematics or Computer Science. The requirements for these programmes are described below.

The Combined Honours programmes offer a coherent sequence of courses through which the student can achieve some depth of knowledge in a discipline while pursuing a liberal education.

**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. Continuation **beyond Level II** requires a Cumulative Area Average of at least 7.0.

Calculation of the Graduation Average includes Arts and Science 2A6 and 2D6.

**Area Courses:**
- All courses completed by students who are in Level II, III, or IV, except those designated as extra at the time of registration, are Area Courses.

**Arts and Science 1C6 must be completed in Level I. Students** enrolled in B.Arts Sc. must complete at least one of Arts and Science 3C6, 3CC6. Students enrolled in B.Arts Sc. (Honours) must complete both Arts and Science 3C6 and 3CC6. Arts and Science 3C6 or 3CC6 may be substituted with a course of study of another age or culture, as approved by the Director. (A fourth course, Arts and Science 3X6 is being offered in 1984-85, and may also be used to complete the requirements for 3C6, 3CC6.)

**Level I: 30-32 units**
- Arts and Science 1A6, 1B6, 1C6; Biology 1A6; Mathematics 1A6 or mathematics courses approved by the Director as a substitute. Biology 1A6 must be completed by the end of Level II.
- E Electives to make a total of 30 to 32 units.

**Level II: 30-32 units**
- Arts and Science 2A6, 2D6, one of 3C6, 3CC6, 3X6 (may be taken in Level III); Statistics 2R6 or mathematics courses approved by the Director as a substitute: Biology 1A6 must be completed by the end of Level II.
- E Electives to make a total of 30 to 32 units.

**Level III: 30-32 units**
- Arts and Science 3B6, either 3A6 or 3D6, and one of 3C6, 3CC6, 3X6 (if not already completed).
- E Electives to make a total of 30 to 32 units. Students enrolled in B.Arts Sc. may include Arts and Science 3C6, 3CC6 or 3X6 as an elective if any of these courses were completed in Level II.

**Level IV: 30-32 units**
- Arts and Science 3A6 or 3D6 (whichever not completed in Level III); Arts and Science 3C6, 3CC6, if not completed, or a course approved by the Director; 6 to 12 units from Arts and Science 4A6, 4A7, 4C6, 4C12.
- E Electives to make a total of 30 to 32 units.

**COMBINED HONOURS ARTS AND SCIENCE AND COMPUTER SCIENCE**

**Continuation to Level II** requires a weighted average of at least 7.0 in the best 80% of the 31 units of Level I including Mathematics 1A6, and one of Mathematics 1B4 or 1C4. Continuation **beyond Level II** requires a Cumulative Area Average of at least 7.0 in all courses taken in Levels II, III and IV and a CAA of at least 7.0 in the Computer Science component.

Calculation of the Graduation Average includes Arts and Science 2A6 and 2D6. A single Graduation Average will be calculated.

**Area Courses:**
- Arts and Science courses completed by students who are in Level II, III, or IV, except those designated as extra at the time of registration, are Area Courses. All Level II, III, IV Computer Science courses. (except 2A3, 2N3, 2P3, 313, 413).
Arts and Science 1C6 must be completed in Level I. Both Arts and Science 3C6 and 3CC6 must be completed. Arts and Science 3C6 or 3CC6 may be substituted with a course of study of another age or culture, as approved by the Director. (A fourth course, Arts and Science 3X6 is being offered in 1984-85 only, and may also be used to complete the requirements for 3C6, 3CC6.) Because of resource limitations, enrolment in Computer Science and all joint programmes involving Computer Science is limited. Students intending to enrol in this programme should consult the Unit.

**Level I:** 31 units
- R Arts and Science 1A6, 1B6, 1C6; Mathematics 1A6, 1B4; Computer Science 1B3 or 1H3.

**Level II:** 34-36 units
- R Arts and Science 2A6, 2D6; Biology 1A6; Statistics 2D4 or 3M3; Computer Science 1C3, 2B3, 2L3; Mathematics 2F4.

**Level III:** 33 units
- R Arts and Science 3A6, 3B6, one of 3C6, 3CC6, 3X6; Computer Science 3A3, 3B3, 3C3, 3D3, 3T3.

**Level IV:** 33 units
- R Arts and Science 3D6, one of 3C6, 3CC6, 3X6; Computer Science 4G6 and 9 additional units of Level III or IV Computer Science courses.
- E 6 units of electives.

**COMBINED HONOURS ARTS AND SCIENCE AND MATHEMATICS**

Continuation to Level II requires a weighted average of at least 7.0 in the best 80% of the 28-34 units of Level I including Mathematics 1A6, and one of Mathematics 1B4 or 1G4. Continuation beyond Level II requires a Cumulative Area Average of at least 7.0, in all courses taken in Levels II, III and IV and a CAA of at least 7.0 in the Mathematics component.

Calculation of the Graduation Average includes Arts and Science 2A6 and 2D6. A single Graduation Average will be calculated.

**Area Courses:**

All Arts and Science courses completed by students who are in Level II, III, or IV, except those designated as extra at the time of registration, are Area Courses. All Level II, III, IV Mathematics courses.

Arts and Science 1C6 must be completed in Level I. Both Arts and Science 3C6 and 3CC6 must be completed. Arts and Science 3C6 or 3CC6 may be substituted with a course of study of another age or culture, as approved by the Director. (A fourth course, Arts and Science 3X6 is being offered in 1984-85 only, and may also be used to complete the requirements for 3C6, 3CC6.)

**Level I:** 28-34 units
- R Arts and Science 1A6, 1B6, 1C6; Mathematics 1A6, one of 1B4 or 1G4; Biology 1A6 (must be completed by the end of Level II).

**Level II:** 28-35 units
- R Arts and Science 2A6, 2D6; Statistics 2D4 or 3M3; Mathematics 2A5, 2B4, 2F4; Biology 1A6 (if not completed).

**Level III:** 32-34 units
- R Arts and Science 3A6, 3B6, one of 3C6, 3CC6, 3X6; Mathematics 3A6, 3E4 and one of 2C4, 2B4, 3F6, 3H4, 3L4, 3P4, 3Q4, Statistics 3D6.

**Level IV:** 31-36 units
- R Arts and Science 3D6, one of 3C6, 3CC6, 3X6; one of 4A6 or 4C6; one of Mathematics 2C4, 3B4, 3F6, 3H4, 3L4, 3P4, 3Q4 and 9 to 12 additional units of Mathematics or Statistics from Mathematics 4A6, 4B4, 4C4, 4E6, 4K4, 4Q3, 4S4, 4U4, Statistics 4M3.

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**Faculty of Business**

A.Z. Szendrovits/M.A., Ph.D., Dean of Business
C. Bentzen-Bilkvist/B.A., Undergraduate Student Advisor

The Faculty of Business offers three programmes, each of which spans four levels of study. The Honours Commerce programme, which leads to the Honours Bachelor of Commerce (Honours B.Com.) degree, provides substantial concentration in business subjects beyond the essential core of studies. The Honours Commerce and Economics programme, which is offered in conjunction with the Department of Economics, leads to the Honours Bachelor of Commerce and Arts (Honours B.Com. Arts) degree. This programme combines extensive amounts of work in both Commerce and Economics. The Commerce programme, which leads to the Bachelor of Commerce (B.Com.) degree, contains the essential grounding in business subjects and promotes the broadening of horizons through studies in Social Sciences, Humanities and Science. These three programmes are referred to collectively as "the Commerce programmes". In addition, the Faculty of Business participates in a five-level programme for the Bachelor of Engineering and Management (B.Eng.Mgt.) degree. This programme provides a full course of study in Engineering and includes a complete core of business subjects. Details concerning the B.Eng.Mgt. programme and its academic regulations are given in the Faculty of Engineering section of this Calendar. Also, the Faculty of Business offers courses in the B.A. programme in Labour Studies which is described in the Faculty of Social Sciences section of this Calendar.

**The Commerce Programmes**

In Level I, students who wish to pursue any of the Commerce programmes establish a foundation in computer science, economics, mathematics and psychology or sociology, and take additional elective work. While this course of study is prescribed in Business I, students who establish similar backgrounds in the Level I programmes of other Faculties are also considered for admission to Level II (Commerce II). Students must gain admission to Commerce II in order to proceed towards the Honours B.Com., Honours B.Com. Arts or, B.Com. degree. In Level II, a wide range of business subjects (accounting, finance, marketing, organizational behaviour, statistical analysis for business) are introduced and the foundation in economics is extended. Elective work is taken from non-Commerce courses.

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

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., Honours B.Com.Arts, B.Com. or B.Eng.Mgt. degree.

Credit towards a variety of professional designations can be obtained within the Commerce programmes and the Engineering and Management programme. The Institute of Chartered Accountants of Ontario requires 45 units of designated course work for academic prequalification. 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 Commerce 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 Commerce programme. In the other programmes, the possibility of obtaining credit towards professional qualifications is more limited; for instance, 30 credits are available towards the C.A. designation in the Commerce 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.

Part-Time Studies

While any of the Commerce programmes can be undertaken through part-time studies, Level IV Commerce courses are rarely offered in evenings 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, the Honours B.Com.Arts 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 any of the Commerce programmes. Such students may wish to apply for admission to the M.B.A. programme.

Continuing Students

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

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 Undergraduate Student Advisor (KTH-118).

Academic Regulations

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

Cumulative Commerce Average

The Cumulative Area Average for the Commerce programmes is termed the Cumulative Commerce Average (CCA) and is the weighted average of grades in all courses, including non-Commerce courses, attempted and repeated subsequent to admission to Commerce Level II, 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 this load requirement. Such reductions will be applied as late as possible in a student's programme. In any Winter Session, a student may not register for more than 30 units 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 Commerce programme. A student who maintains a CCA of at least 7.0 with no more than 6 units of F grades, and maintains at least a 7.0 cumulative weighted grade-point average in extra courses taken beyond Economics 1A6, may continue in the Honours Commerce and Economics programme. A student who maintains a CCA of at least 4.0, with no more than 6 units of F grades, may continue in the Commerce programme. There is no probationary status in any of the Commerce programmes. A student whose Cumulative Commerce Average is less than 4.0 or who has more than 6 units of F grades in the CCA may not continue in any of the Commerce programmes.

Change of Programme

A student may transfer between Commerce programmes prior to entering Level IV, provided that the academic requirements of the new programme have been met and an acceptable revised programme of work can be established. This revised programme of work must be approved by the Associate Dean (Academic Programmes).

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

Repeated Courses

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

"Extra" Courses

Courses in addition to those which constitute the student's programme must be designated "Extra" at registration and the grades obtained in such courses affect neither eligibility for continuation in the programme nor graduation standing, 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 any of the Commerce programmes. No Extra courses may be scheduled in a manner which would delay completion of a student's programme.

Level of Registration

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

Re-admission

A student who is ineligible to continue in a Commerce programme may apply for re-admission to Commerce after not less than one year. Application for re-admission must be made in writing to the Associate Dean (Academic Programmes) 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 having become ineligible to continue in a Commerce programme must repeat all the courses of the Level at which he became ineligible to continue unless specific course exemptions are granted. The determination of eligibility to continue 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 Course Changes section of this Calendar).

Graduation
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 any of the Commerce programmes. 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 to any of the Commerce programmes beyond Commerce Level II is not possible.

Level II: 30 units
R Commerce 2AA3, 2BA3, 2FA3, 2MA3, 2QA3; Economics 2G3 or 2L6; Mathematics 2H3 or 2M6.
E Electives to make a total of 30 units.

Students who wish to proceed in the Honours Commerce and Economics programme must take Economics 2L6 and 2M6. Students who wish to proceed in the Honours Commerce programme or the Commerce programme 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.

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 (Accounting): Commerce 3AB3, 4AA3, 4AB3, 4AC3, 4AD3, 4AE3, 4AF3.
Group 2 (Personnel and Industrial Relations): Commerce 3BA3, 3BB3, 4BA3, 4BB3, 4BC3, 4BD3, 4BE3.
Group 3 (Finance): Commerce 3FB3, 4FA3, 4FB3, 4FC3.
Group 4 (Marketing and International Business): Commerce 3MB3, 4MB3, 4MC3.
Group 5 (Environment): Commerce 4PB3, 4PC3, 4PD3.
Group 6 (Production and Management Science): Commerce 4QB3, 4QC3.

HONOURS B.COM.ARTS
Requirements for continuation towards the Honours B.Com.Arts degree are specified under Academic Regulations.

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

Level IV: 30 units
R Commerce 4PA3, 4QA3; six additional units in Commerce, twelve units in Economics including one of Economics 2K3, 313, 3M6 or 3R3 if not taken previously.
E 6 units of electives beyond Level I, from other than Commerce and Economics courses.

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; Economics 3A3, 3AA3; six additional units in Economics.

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/B.Sc., M.S., Ph.D., P.Eng., Dean of Engineering
M.B. Ives/B.Sc., Ph.D., F.A.S.M., P. Eng., Associate Dean of Engineering
D. Weaver/M.A.Sc., Ph.D., P.Eng./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 of 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

All the McMaster baccalaureate degree programmes in Engineering are accredited by the Canadian Accreditation Board of the Canadian Council of Professional Engineers. Provincial Engineering Associations accept the accreditation as a major requirement for admission to the qualification Professional Engineer.

Courses offered in the Engineering and Management programme will be creditable to professional business designations. 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.

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**Academic Regulations**

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

**Engineering I**

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

**Admission to Level II Engineering Programmes**

Students completing Engineering I will, insofar as is possible, be given a free choice of Level II programme. However, there may be restrictions on enrolments in certain Level II programmes, and the University Average at the completion of Engineering I may be used to determine individual student eligibility for such programmes.

**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, 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 Programme Probation.

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

**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 order to qualify for most scholarships, students should register in the full load of work prescribed by programme and level. In any Winter Session, a student may not register for more units than specified for the programme and level of registration without the approval of the Associate Dean of Engineering.

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

Engineering I Programme
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.

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

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

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

Level II: 38 units
R Chemistry 2A4, 2T5; Engineering 2M4, 2N3, 2P4; English 2E6;
Materials 2F3, Mathematics 2M6; Metallurgy 2C3.

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

Level III: 37 units
R Ceramics 404 or 4P4; Chemical Engineering 204; Chemistry 2F3,
Geology 2B4; Materials 3B4, 3D6, 3E6; Mathematics 3V6.

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

Level IV: 37-38 units
R Ceramics 4A1, 4K4, 4L4, 4M4 or 4P4; Engineering 3P3; Engineering
4B3 or Chemical Engineering 4N4; Materials 4E3. Ceramics 404 and
4P4 can be taken in either Level III or Level IV, but both courses are
required.
E 6 units liberal studies elective and 9 units Level III or IV approved
technical electives, which may include Chemical Engineering 3P3 and
Engineering 3Q3.

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

Level II: 38 units
R Chemical Engineering 2C2, 2D4, 2F4, 2G3, 2H3; Chemistry 2M5;
Engineering 2F4; English 2E6; Mathematics 2M6.

Level III: 36 units
R Chemical Engineering 3A4, 3D3, 3E3, 3G3, 3K3, 3L2, 3M4, 3P3;
Chemistry 208; Statistics 3M3.

Level IV: 35 units
R Chemical Engineering 4K3, 4L2, 4M3, 4N4, either 4W4 or 4Y4; 9 units
selected from: Chemical Engineering 4B3, 4C3, 4S3, 4T3, 423, and
Chemical Engineering 4D3, Chemistry 313, Engineering 413, including
at least one of the last three courses; Engineering 2M4.
E 6 units liberal studies electives.

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

Level II: 35 units
R Chemical Engineering 2C2, 2D4, 2F4; either Chemical Engineering
2G3 or Commerce 3QB3; Commerce 2AA3, 2BA3; Economics 2G3,
2H3; Mathematics 2M6.

Level III: 38 units
R Chemical Engineering 3A4, 3D3, 3K3, 3M4; Chemistry 208; Com-
merce 2FA3, 3AA3; Engineering 2F4; English 2E6.

Level IV: 39 units
R Chemical Engineering 3E3, 3G3, 3L2, 3P3, Commerce 2MA3, 3FA3,
4QA3, 3BA3 or 3BB3; Engineering 2M4, 4A1; Psychology 1A6 or
Sociology 1A6; Statistics 3M3, 3Y2.

Level V (1984-85 only): 40 units
R Chemical Engineering 3P3, 4A5, 4L2, 4N4 and 4W4 or 4Y4; 9 units
selected from Chemical Engineering 4B3, 4C3, 4S3, 4T3, 423 and
Chemical Engineering 4D3, Chemistry 313 and Engineering 413,
including at least one of the last three courses; Commerce 4PA3;
Engineering 5A1.
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, 4L2, 4M3, 4N4 and 4W4 or 4Y4; 9 units
selected from Chemical Engineering 4B3, 4C3, 4S3, 4T3, 423, 4D3,
Chemistry 313 and Engineering 413, including at least one of the last
three courses; Commerce 3MA3, 4PA3, Engineering 5A1.
E 6 units of Commerce selected from all Level III and IV Commerce
courses.

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

Level II: 39 units
R Civil Engineering 2A2, 2B4, 2C4, 2D3, 203; Engineering 2C3, 2P4,
2Q4; English 2E6; Mathematics 2M6.

Level III: 36 units
R Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4, 3K3, 3M4, 3P4; Engineer-
ing 3P3, Mathematics 3J4.

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: 34-36 units
R Engineering 4B3; 25 to 27 units chosen from Level IV Civil Engineering
courses.
E 6 units liberal studies elective.
CIVIL ENGINEERING AND MANAGEMENT (B.ENG,MGT.)

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

Level II: 39 units
R Commerce 2A2, 2B2, 2C4, 2D3; Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Engineering 2F4; English 2E6; Mathematics 2M6.

Level III: 39 units
R Civil Engineering 2BB2, 2D3, 3K3, 3M4, 3O4; Commerce 2FA3; Engineering 2C3, 2Q4, 3P3; 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: 39-40 units
R Civil Engineering 3A3, 3B3, 3C4, 3G4, 3J4; 3 or 4 units of Level IV Civil Engineering courses; Commerce 2MA3, 3FA3, 4QA3, 3BA3 or 3BB3, 3AA3; Engineering 4A1; Statistics 3Y2.

Level V: 37-38 units
R 15 to 16 units (17 to 18 units in 1985-86) of Level IV Civil Engineering; Commerce 4PA3 (and Commerce 3MA3 in 1985-86); Engineering 3P3, 3A1;
E 9 units (6 units in 1985-86) Commerce electives selected from Level III and IV Commerce courses; liberal studies or approved technical electives to make a total of 37-38 units.

E 9 units (6 units in 1985-86) Commerce electives selected from Level III and IV Commerce courses; liberal studies or approved technical electives to make a total of 37-38 units.

(Note: Commencing 1986-87, Engineering 3P3 will no longer be required in Level V and additional Level IV Civil Engineering must be taken.)

COMPUTER ENGINEERING (B.ENG.)

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

Level II: 39 units
R Computer Science 2B3, 2L3; Electrical Engineering 2B4, 2D3, 2F3, 2K3; Engineering 203, 253; English 2E6; Mathematics 2P4, 2Q4.

Level III (1984-85 only): 37 units
R Computer Science 3A3, 3E3; Electrical Engineering 3B4, 3C4, 3F4, 3G4, 3H3, 3K4; Mathematics 3K5; Statistics 3X3.

Level III (commencing 1985-86): 38 units
R Computer Science 3A3, 3E3; Electrical Engineering 2H3, 3B4, 3C4, 3H3, 3K4, 3T4, 3U4; Mathematics 3K3; Statistics 3X3.

Level IV: 36-37 units
R Computer Science 3C3, 4F3, 4L3; Electrical Engineering 4E4, 4H4; Engineering 4B3.
E 6 units liberal studies elective; 10 or 11 units from Computer Science 4E4, 4H4 and Level III or IV Electrical Engineering or Engineering Physics.

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

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

Level II: 39 units
R Commerce 2AA3, 2BA3; Computer Science 2B3, 2L3; Electrical Engineering 2B4, 2D3, 2F3, 2K3; Engineering 203, 253; Mathematics 2P4, 2Q4.

Level III (1984-85 only): 38 units
R Commerce 2F3, 3A3; Electrical Engineering 3B4, 3C4, 3H3, 3K4; Engineering 2O3; English 2E6; Mathematics 3K5; Statistics 3X3.

Level III (commencing 1985-86): 38 units
R Commerce 2FA3, 3A3; Economics 2G3, 2H3; Electrical Engineering 2H3, 3B4, 3C4, 3H3, 3K4; English 2E6; Mathematics 3K3; Statistics 3X3.

Level IV (1984-85 only): 40 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Computer Science 3C3, 3E3; Electrical Engineering 3F4, 3G4, 3H3, 3K4; Engineering 4A1; Psychology 1A6 or Sociology 1A6.

Level IV (commencing 1985-86): 39 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Computer Science 3A3, 3C3, 3E3; Electrical Engineering 3F4, 3G4, 3K4; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3Y2.

Level V: 37-39 units
R Commerce 4PA3; in 1984-85 only, one of Commerce 2MA3, 3FA3, 3BA3 or 3BB3; (Commerce 3MA3, 4QA3 in 1985-86); Computer Science 4F3, 4L3; Electrical Engineering 4E4, 4H4; Engineering 5A1.

(Note: In 1986-87 only, Level V will require Engineering 2S3)

E 9 units (6 units in 1985-86) Commerce electives selected from Level III and IV Commerce courses; 7 to 9 units from Computer Science 4E3, 4W3 and Level III or IV Electrical Engineering or Engineering Physics.

ELECTRICAL ENGINEERING (B.ENG.)

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

Level II: 36 units
R Electrical Engineering 2B4, 2D3, 2F3, 2H3, 2K3; Engineering 203, 253; English 2E6; Mathematics 2P4, 2Q4.

Level III (1984-85 only): 37 units
R Electrical Engineering 3B4, 3C4, 3F4, 3G4, 3H3, 3K4, 3N3, 3S3, Mathematics 3K5; Statistics 3X3.

Level III: (commencing 1985-86): 36 units
R Electrical Engineering 3B4, 3C4, 3H3, 3K4, 3N3, 3S3, 3T4, 3U4; Mathematics 3K3; Statistics 3X3.

Level IV: 37-39 units
R 16 units of Electrical Engineering Level IV courses; Engineering 4B3.
E 6 units liberal studies elective; 12-14 units Level III or IV approved technical electives.

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

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

Level II: 39 units
R Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Electrical Engineering 2B4, 2D3, 2F3, 2H3, 2K3; Engineering 203; Mathematics 2P4, 2Q4.

Level III (1984-85 only): 38 units
R Commerce 2FA3, 3A3; Electrical Engineering 2H3, 3B4, 3C4, 3H3, 3K4; English 2E6; Mathematics 3K5; Statistics 3X3.

Level III (commencing 1985-86): 37 units
R Commerce 2FA3, 3A3; Electrical Engineering 3B4, 3C4, 3H3, 3T4, 3U4; Mathematics 3K3; Statistics 3X3.

Level IV (1984-85 only): 39 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Electrical Engineering 3F4, 3G4, 3H3, 3K4; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3Y2.
E 7 units Level III or IV approved technical electives.

Level IV (commencing 1985-86): 37 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Electrical Engineering 3F4, 3G4, 3K4, 3N3; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3Y2.

(Note: Commencing in 1986-87, Electrical Engineering 3F4, 3G4 will be discontinued and Engineering 253 will be required in Level IV.)

Level V (1984-85 only): 38-39 units
R Commerce 4PA3; Electrical Engineering 3S3; Engineering 5A1.
E 9 units Commerce electives selected from Level III and IV Commerce courses; 22 to 23 units Level III or IV approved technical electives, of which at least 15 units must be selected from Electrical Engineering Level IV courses.
FACULTY OF ENGINEERING

Level V (commencing 1985-86): 38-39 units
R Commerce 3MA3, 4PA3, 4QA3; Engineering 5A1.
E 6 units Commerce electives selected from Level III and IV Commerce courses; 22 to 23 units Level III or IV approved technical electives, of which at least 15 units must be selected from Electrical Engineering Level IV courses.

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

Level II: 37 units
R Engineering 203, 2P4, 2W4; Engineering Physics 2A3, 2E4; English 2E6; Mathematics 2P4, 2Q4; Physics 2C5.

Level III: 38 units
R Chemical Engineering 204 or Mechanical Engineering 3Q4; Engineering Physics 3D3, 3E3, 3F3; 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 38 units.

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

The following areas and courses are suggested as technical electives for Level IV:
Biomedical Engineering: Electrical Engineering 4U4; Engineering 4X3, Engineering Physics 3X3, 4Y3.
Lasers and Electro-Optics: Engineering Physics 4G3, 4R3, 4S4
Nuclear Engineering: Engineering Physics 4D3, 4L3, 4N3

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

Level II: 38 units
R Commerce 2A3, 2BA3; Economics 2G3, 2H3; Engineering 203, 2P4, 2W4; Engineering Physics 2A3, 2E4; Mathematics 2P4, 2Q4.

Level III: 38 units
R Commerce 2MA3, 3A3, 2FA3; English 2E6; Mathematics 3C6; Physics 2C5, 3B6; Psychology 1A6 or Sociology 1A6.

Level IV: 37 units
R Chemical Engineering 204 or Mechanical Engineering 3Q4; Commerce 3FA3, 4QA3, 3BA3 or 3BB3; Engineering 4A1; Engineering Physics 3D3, 3E3, 3F3, 4C2; Mathematics 3Q4; Physics 3M6; Statistics 3Y2.

Level V: 40 units
R Commerce 4PA3 (and Commerce 3MA3 in 1985-86); Engineering 5A1; Engineering Physics 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4D3, 4E3, 4F3, 4G3, 4N3, 4S4, 4W3, Physics 4D6.
E 9 units (6 units in 1985-86) Commerce electives selected from Level III and IV Commerce courses; approved technical electives to make a total of 40 units.

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

Level II: 37 units
R Engineering 2M4, 203, 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 3S6; Mechanical Engineering 3A3, 3C3, 3E4, 3Q4, 3R3. Either Engineering 3R3 and Mechanical Engineering 4X3 or, 6 units liberal studies elective.

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

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

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 203, 3M3, 3N3; Mathematics 3V6, Mechanical Engineering 3A3, 3C3, 3D3, 3E4, 3M2, 3O4, 3R3.

Level IV: 36-39 units
R Mechanical Engineering 4G3, 4M4, 4P2, 4Q3, 4R3, 4S3; Engineering 4B3 or Mechanical Engineering 4C3.
E 6 units liberal studies elective; three of the following courses: Ceramics 404; Chemical Engineering 4T3; Civil Engineering 3K3; Electrical Engineering 3S3, Engineering 3P3, 3Q3, 3R3, 4J3, 4X3; Engineering Physics 4D3, 4X3, Mechanical Engineering 4A3, 4D3, 4F3, 4L3, 4T3, 4V3, 4W3, 4Y3, 4Z3. Electives must be chosen so that no more than 21 units are taken in any one term.

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

Level II: 39 units
R Commerce 2AA3, 2BA3; Economics 2G3, 2H3; Engineering 2M4, 2P4, 2W4; English 2E6; Mathematics 2M6; Mechanical Engineering 2A3.

Level III: 37 units
R Commerce 2FA3, 3AA3; Engineering 2Q4; Mathematics 3V6; Mechanical Engineering 2A3, 2D3, 3M2, 3O4, 3R3; Psychology 1A6 or Sociology 1A6.

Level IV: 36-37 units
R Commerce 2MA3, 3FA3, 3BA3 or 3BB3; Engineering 203, 3M3, 4A1; Mechanical Engineering 3A3, 3C3, 3E4, 4C3, 4P2; Statistics 3Y2.
E 3 or 4 units Level III or IV approved technical electives.

Level V: 38 units
R Commerce 4PA3 (and Commerce 3MA3 in 1985-86); Engineering 5A1; Mechanical Engineering 4G3, 4M4, 4Q3, 4R3, 4S3.
E 9 units (6 units in 1985-86) Commerce electives selected from Level III and IV Commerce courses; additional approved Level III or IV technical electives, which must include at least 9 units of Mechanical Engineering, to make a total of 38 units.

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

Level II: 38 units
R Chemistry 2A4, 2T5; Engineering 2M4, 203, 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 204; 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: 37 units
R Engineering 3M3 or 3N3, 4B3; Materials 4E3; Metallurgy 4A1, 4C4, 4K4, 4L4.
E 6 units liberal studies elective; 9 units Level III or IV approved technical electives.

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Faculty of Health Sciences

D.R. McCalla B.Sc., M.Sc., Ph.D., FCIC, Vice-President (Health Sciences)
J.C. Laidlaw M.A., M.D., Ph.D., FRCP(C), FRCSC, FRCP, Dean
R.F. Maudsley, M.D., FRCS(C), FRCP, Dean
E. Genton B.S., M.D., FACP, Associate Dean (Health Services)
M. Gent M.Sc., Associate Dean (Research Services)

For information concerning Health Sciences programmes contact E. Rhodes, Assistant Registrar (HSC).

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

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

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

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

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

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

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

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

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

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

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

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 application supplying documentation or evidence which, at the time, or subsequently, is found to be falsified will be withdrawn from consideration. Any student admitted to the programme having submitted false evidence will be asked to withdraw.

Health Regulations for Admission

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

For students in the M.D. programme a further health examination is provided by the University before commencing the clerkship.

Application Deadline

Specific application procedures are detailed in the appropriate sections of the Calendar and are rigidly adhered to:

**November 15** for admission to the M.D. programme in Medicine in the following September.

**February 15** for admission of non-Grade 13 applicants to the B.Sc.N. programme in the following September.

**April 15** for admission to the B.Sc.N. programme in the following September.

**April 15** for admission to the B.H.Sc. programme in the following September.

Clinical Course Requirements

Where, in the opinion of the faculty, the performance of the student in clinical practice may jeopardize or endanger the welfare of the patient or the patient's family, the student may be removed from clinical experience at any time during the academic year, until continuation in the course is reviewed.

Information and Counselling

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

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

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

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

The graduate 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
- Surgery

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

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

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

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

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

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

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

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

ADMISSION POLICY AND OTHER PROCEDURES
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 the 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.

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

Eligibility
Before registering in the M.D. programme in September, students must have completed a minimum of three full years in a recognized university and have at least an overall second class ("B") average in their university career. A "year" is defined as the block of work approved by Faculty, and specified in the programme descriptions in their university calendar. It is the candidate’s responsibility to document, from their university calendar upon request, that the block of work submitted equates to a "year" as previously defined. In 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 as described below.
HEALTH SCIENCES - MEDICINE

Criteria for Selection
Both academic and personal qualities will be taken into account. Academic achievement will be assessed on the basis of course grades available at the time of application. The years completed most recently prior to application may be given additional weight.

Personal qualities will be assessed on the basis of all or some of the following:

a. A letter written by the applicant.
b. An autobiographic sketch.
c. References (three).
d. Individual interview.
e. Simulated tutorial exercise (Group Interview).

Approximately 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.

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

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

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 meet the requirements of (a), (b) or (c). An applicant who does not meet the requirements of (a), (b) or (c) qualifies for (d). While the application of those qualifying for (d) are considered, these applicants are selected only when their suitability is judged on all criteria to be clearly superior to that of other candidates. Geographic status is determined from the Autobiographic Sketch. McMaster applicants are requested to note, if possible, their assessment of their geographic status in this section of the application material provided by OMSAS.

Special Applicants
Special Applicants must:

a. 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 requirements of three years of university, but lack the required overall standing.
b. be qualified for the Hamilton Health Region, the Northwestern Ontario or the Ontario geographic status (see 5 above);
c. have demonstrated exceptional personal performance and contributed significantly to society in the light of available opportunities.

Individuals who consider themselves eligible for consideration in this category MUST contact 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 $12,000.

Admission with Advanced Standing
As the McMaster M.D. curriculum does not parallel that of most other medical schools, applications for transfer with advanced standing are considered only in exceptional circumstances. All applicants are considered for Year I.

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 32S, (Room 187), or from the Ontario Medical School Application Service, Box 1328, Guelph, Ontario N1H 7P4. Completed application forms, the application fee and requested documents must be received by the Ontario Medical Schools Application Service 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.

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 licencing body of that province regarding registration.

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

Canadian Intern Matching Service
The Matching Service is a clearing house designed to help final year Canadian medical students obtain the first post-M.D. year programme of their choice, and to help programme directors obtain the students of their choice. It provides an orderly method for students to decide where to train and for programme directors to decide which applicants they wish to enrol. For both students and directors, it removes the factors that generate unfair pressures and premature decisions. The deadline for receipt of completed applications is October 15.

Further information is available from the Office of the Assistant Registrar (Health Sciences), Extension 2114.

Student Affairs
Within the School of Medicine there is a Student Affairs Group which reports to the M.D. Education Committee in matters of liaison between students and faculty, financial aid to students and academic and personal counselling. This group meets on a regular basis to deal with student affairs and to recommend policy changes which will be beneficial to the needs of medical students.
Learning Methods
To achieve the objectives of the M.D. programme students are introduced to patients with health problems within the first level of the curriculum. In this way, students understand the relevance of what they are learning, maintain a high degree of motivation and begin to understand the importance of responsible professional attitudes.

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

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

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

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

THE CURRICULUM PLAN
The M.D. curriculum comprises 6 units, an Elective Programme and Revision Time. The curriculum plan showing the relative proportion of time accorded to these units in the 2 ½ calendar years is illustrated below.

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<th>JAN</th>
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<tr>
<td>UNIT 1</td>
<td>15 WEEKS</td>
<td>CHRISTMAS BREAK</td>
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<th>UNIT 2</th>
<th>12 WEEKS</th>
<th>ELECTIVE</th>
<th>UNIT 3</th>
<th>12 WEEKS</th>
<th>HOLIDAY</th>
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<tr>
<td>UNIT 4</td>
<td>12 WEEKS</td>
<td>ELECTIVE</td>
<td>UNIT 5</td>
<td>12 WEEKS</td>
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<td>4 WEEKS</td>
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<tr>
<td>UNIT 6</td>
<td>THE CLERKSHIP</td>
<td>32 WEEKS</td>
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<td></td>
<td>CHRISTMAS BREAK</td>
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Unit 6 includes 16 weeks of elective time, plus 4 weeks of holiday time.

Programme Outline for Unit 1
The goal of Unit 1 is to provide an introduction to the M.D. programme, emphasizing a global view of the determinants of health and illness. Factors from both the external and the internal environment will be considered, as they determine the clinical presentation in an individual. Concepts and information from three knowledge perspectives will be studied: the population perspective, the behavioural perspective, and the biological perspective. Students will begin to acquire basic skills of critical appraisal, clinical skills and in particular learning skills. During this unit, students will become familiar with the health care system in the Hamilton region and the opportunities for learning which it offers.

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

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

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

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

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

The Clerkship Programme consists 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 Centre, Hamilton General Hospital, Henderson General Hospital, St. Joseph's Hospital and Chedoke Hospital. The elective experience can be carried out in various activities utilizing local and regional resources.

Electives
Electives are an integral part of the undergraduate curriculum at McMaster University. They may be considered the epitome of self-directed learning since students must define goals for electives which are appropriate for their own needs. The responsibility for planning electives rests entirely with students and their faculty advisors.

The two types of electives in the M.D. undergraduate programme are:

1. **Block Electives**: The Block Electives programme is intended to enable students of varying backgrounds and experiences to pursue their own interests and design full-time programmes to advance their individual goals. Specifically, the student may use the programme for one or more of the following:
   a. to pursue portions of the M.D. programme in greater depth;
   b. to undertake scholastic endeavour in a subject of special interest which may lie outside the normal curriculum;
   c. to pursue areas of academic deficiency;
   d. to examine health delivery systems outside the Hamilton District.
The periods which have been set aside for block electives include post-Unit 2 (6 weeks), post-Unit 4 (6 weeks), and during Unit 5 (16 weeks).

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

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

FINANCIAL INFORMATION

Financial difficulties are among the most frequent problems experienced by students in undergraduate medical schools. At McMaster, these are intensified by the lack of opportunity for summer employment as well as by the relatively scarcity of financial assistance funds available to the medical school.

In this situation, it is incumbent on students admitted to the M.D. programme to clarify immediately their personal financial situation and to secure or identify sufficient support to meet their financial obligations over the subsequent three years. The School of Medicine cannot assume this responsibility and students have to draw on their savings, accept assistance from their families, spouses, and banks, or face the prospect of withdrawing from the programme.

The approximate annual expenses (1983–84) for a student in McMaster’s M.D. programme were as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Academic fees</td>
<td>$2,193</td>
</tr>
<tr>
<td>Room/lodging</td>
<td>3,240</td>
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<tr>
<td>Meals/board</td>
<td>3,080</td>
</tr>
<tr>
<td>Books</td>
<td>700</td>
</tr>
<tr>
<td>Equipment (diagnostic)</td>
<td>700</td>
</tr>
<tr>
<td>Household supplies, laundry &amp; miscellaneous</td>
<td>1,100</td>
</tr>
<tr>
<td>Transportation</td>
<td>1,000</td>
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<tr>
<td><strong>Total (approximately)</strong></td>
<td><strong>$12,000</strong></td>
</tr>
</tbody>
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In addition to Government financial assistance programmes, 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 female medical student or intern. In special cases, a loan up to $1,000 may be made to a student for recognized postgraduate training. Loans are payable within five years of date of issue, after which time interest will be charged at a rate of 5% compounded annually. Information regarding these loans may be obtained from the Secretariat, Federation of Medical Women of Canada, Box 8244, Ottawa, Ontario K1G 3H7.

**Medical Officer Training Plan.** The Department of National Defence administers a programme for medical students known as the Canadian Forces Medical Officer Training Plan. Under this plan, students may be subsidized (tuition plus pay) throughout their undergraduate medical studies and internship. To qualify for enrolment a student must be acceptable without condition in a course in medicine in a Canadian university or in an accredited internship.

Further information on this programme and on the career opportunities in medicine in the Canadian Armed Forces may be obtained from local Canadian Forces Recruiting Centres. In Hamilton, the Recruiting Centre is at 150 Main Street West. Telephone 523-2751.

**Final Year Clerkship Stipend.** The Ontario Hospital Services Commission will make a grant of $3,000 to each student, payable in 24 instalments of $125 per month, for educational development within a teaching hospital for the equivalent of 40 weeks in the final year.

In relation to the Ontario Student Assistance Program, the O.H.S.C. grant will be taken into account in assessing the amounts of the awards for those students who are eligible.

**Other Funds.** The School of Medicine through the Student Affairs Office, (Room 1B7, Health Sciences Centre) administers a small loan and bursaries programme to assist some medical students who may be in need. Unfortunately, these funds are limited and cannot be relied on to meet a major portion of any student’s financial obligations. The source of these funds includes: The Ontario Medical Association Bursaries and Loan Fund, The William Andrew Vanderburgh St. 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 which characterizes its M.D. programme nor replace its prudence of Health Sciences’ financial assistance awards.

A small, but growing number of estates and agencies have donated funds to the University and the School of Medicine for purposes of recognizing scholastic merit among medical students. In order to meet the requirements of these awards within the spirit of co-operative scholarship, these funds are administered by the School’s Student Financial Aid Committee to support individual students in their pursuit of specific elective projects or activities. Students are required to submit an application through the Student Affairs Office (Room 1B7, Health Sciences Centre) outlining the nature of their work and the need for funds.

**The School of Nursing**

In 1942, McMaster University began its first programme in Nursing, which was operated co-operatively by the University and the Hamilton General Hospital. Since the establishment of McMaster University’s School of Nursing in 1946, students have received a Bachelor of Science in Nursing degree upon graduation. The programme has functioned completely under the supervision of the University, while enjoying the full co-operation of community hospitals and agencies in the operation of its clinical courses. In July, 1974, the Schools of Nursing and Medicine became the Faculty of Health Sciences.

Applicants often wish to discuss the implications of embarking upon a degree programme in nursing. During the school year Health Sciences Information Sessions are presented. Information about these sessions may be obtained from the Student Affairs Office (Gilmour Hall, Room 102, Ext. 4287). Any applicant wishing to discuss the aspects of the admission process to the B.S.c.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.

Applicants who are accepted into the programme are invited each June to attend counselling sessions before making their decision to accept or decline the offer. This is done in order that they may assess for themselves their suitability for the McMaster Nursing programme. Details of these counselling sessions are forwarded with the letters of acceptance.

**THE B.S.C.N. PROGRAMME**

The School of Nursing is committed to education, research, and service. As students progress in the B.S.C.N. programme, they will find an ever increasing emphasis on interpersonal skills, independent learning, and leadership qualities. Although these skills and attitudes may not be assessed prior to admission, applicants should evaluate their own potential for developing abilities to interact with others and to assume leadership roles.

Learning takes place in an environment conducive to openedness and sharing among students and staff. Emphasis on small group tutorials and self-directed learning promotes the development of self-evaluation skills and problem-solving abilities. Extensive audio-visual, laboratory and library resources support a belief in the importance of independent study. Experiences in controlled settings, such as the use of simulated 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.
Objectives of the B.Sc.N. Programme

The aim of the B.Sc.N. programme is to provide students with broad university education as nurses which will enable them to function as beginning practitioners in primary, secondary and tertiary health care settings. The programme will enable graduates to respond to the existing and changing nursing and health needs of society.

The central competence to be achieved is the ability to use systematically biologic and psychosocial knowledge in the understanding and nursing management of patients' health and health care problems.

In order to achieve this goal, the following will be demonstrated.

Knowledge:
1. identify the important influences on the health status of individuals and groups;
2. identify and implement practices which promote improved health;
3. identify and define health/illness problems at the individual, family and community level;
4. understand the underlying biophysical and psychosocial mechanisms of health/illness problems;
5. define the physical, emotional and/or social aspects of health problems and provide nursing care of patients and/or families;
6. understand major influences on the health care system, most specifically on the provision of nursing services throughout that system.

Skills:
1. critically appraise information from a variety of sources: health care research, humanities, behavioural and biological sciences; and integrate this information and evidence with the theories and practice of nursing;
2. provide nursing care in a variety of health care settings;
3. continue to recognize personal learning needs, select appropriate learning resources and evaluate personal progress.

Personal Qualities:
1. maintain and further develop such personal characteristics as:
   a. awareness of personal assets; potential and limitations;
   b. awareness of own and others contribution to patient care;
   c. responsibility for effecting change;
   d. ability to relate to and show concern for other individuals;
   e. demonstration of ethical behaviour and professional accountability in health care practice;
2. function as a contributing member of multidisciplinary groups in the identification, resolution and management of health problems.

Admission Policy and Procedure

As places in the B.Sc.N. programme are limited, admission is by selection of applicants. Possession of published minimum requirements does not guarantee admission. High qualifications are expected of the applicants selected. In selecting candidates for admission, final marks will be used if they are available; when they are not, interim marks will be used. Other selection methods (interview, autobiographical letter) may be used. While a proportion of places for Level 1 in the programme 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.

Admission Procedure

Applications for all studies beginning in September must be postmarked no later than midnight of the previous April 1st for Grade 13 applicants and February 15 for non Grade 13 applicants.

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.

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 February 15.

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.

A. Applicants to the Basic (A) Stream From Secondary Schools

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

   The Grade 13 admission average will be calculated on the best six credits, two of which are the required English and Chemistry courses.

2. Applicants with qualifications equivalent to Grade 13
   Applicants from other provinces and countries must present the qualifications listed in the section Admission Requirements in this calendar and meet the subject requirements for Nursing.

B. Applicants to the Basic Stream with Other Qualifications

1. Mature Applicants
   Applicants who do not meet the stated admission requirements will normally be considered if they:
   1. are at least 21 years old or will be in the calendar year in which they propose to commence university studies; and
   2. have not attended secondary school for a full time basis for at least two years; and
   3. have completed or plan to have completed successfully Grade 13 Chemistry or equivalent prior to enrolment in the programme; and
   4. provide an autobiographical letter.

   Such applicants will be asked to come to the University for a selection interview.

2. University Students
   Applicants who are currently university students will be considered if they:
   1. achieve a minimum of a second class standing in their current university programme (students with lower grades owing to extenuating circumstances may request special consideration); and
   2. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test; and
3. have completed or plan to have successfully completed Grade 13 Chemistry or equivalents prior to enrolment in the programme; and
4. provide an autobiographical letter.
   Such applicants will be asked to come to the University for a selection interview.

3. College Students
   Applicants from college programmes who do not qualify as mature applicants will normally be considered if they:
   1. have achieved a minimum of a second class honour standing in their Secondary School Graduation Diploma and in their current College programme; and
   2. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test; and
   3. have completed or plan to have successfully completed Grade 13 Chemistry or equivalent prior to enrolment in the programme; and
   4. provide an autobiographical letter.
   Such applicants will be asked to come to the University for a selection interview.
   Applicants currently enrolled in a diploma nursing programme will be considered on the above conditions. The University does not credit diploma nursing courses. Any nurse holding or being eligible for nursing registration prior to the date of entry will not be considered for admission to the Basic (A) Stream of the undergraduate B.Sc.N. programme. See Diploma Registered Nurses below.

C. Admission Above Level I
   Students wishing to be considered for transfer from other nursing degree programmes should write to the Assistant Registrar (Health Sciences). Students who have completed university work other than in a nursing degree programme wishing to transfer into nursing will be considered on an individual basis. If accepted, they may receive credit for, or exemptions from, some elective work on the basis of courses already completed, but they may be required to make up deficiencies. In some cases, it may be possible for deficiencies to be removed during the summer prior to registration. Such students are advised to secure counselling from the School of Nursing for possible advance standing. Diploma registered nurses will be considered on the basis of criteria outlined below.

D. Diploma Registered Nurses
   Applicants who are diploma registered nurses normally should satisfy the following conditions:
   1. have current Certificate of Competence as a Registered Nurse in Ontario or be eligible to write the Registration Examinations; and
   2. show evidence of at least two years full-time, or equivalent, nursing practice within the five years prior to the date of entry; and
   3. can demonstrate evidence of educational achievement within the past five years, e.g. University courses with at least "B" standing, College courses (full year) with at least "B" standing, in addition to successful completion of the basic diploma nursing programme; and
   4. provide three letters of reference which address performance and ability as a health professional and their potential for success in this programme; and
   5. provide an autobiographical letter.
   Applicants who are assessed highest on the above criteria will be invited for a personal interview to assess:
   a. reasons for applying to this programme,
   b. reasons for continuing education,
   c. self-assessment abilities, and
   d. interpersonal qualities.

E. Part-time Students
   Students will be permitted to enter, proceed through and graduate from the B.Sc.N. programme on a part-time basis. University and programme rights and responsibilities governing the full-time undergraduate students will govern the part-time student.
   As enrolment is limited, places reserved for part-time students at each level will be restricted. Nursing courses are available only during the day. Electives may be taken either in the day or evening.

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 deny 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.

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:

Level I Nursing
   A student in Level I must:
   1. achieve a University Average (UA) of at least 2.5; and
   2. achieve an average of at least 4.0 in the Nursing and required Health Science courses; and
   3. achieve a grade of at least C- in the Nursing and required Health Science courses with the exception that a grade of D-, D, or D+ is permissible in one Health Science course.
   A student who fails to meet these requirements may not continue in the programme but may seek readmission by writing to the B.Sc.N. Programme Chairman.

Area Courses:
   The Area courses consist of all the Nursing and Health Science courses above Level I.
   The following courses are designated "clinical courses":
   
   Basic (A) Stream: Nursing 2L6, 2H4, 3X7, 3Y7, 4J7, 4K7:
   Diploma Registered Nurses (B) Stream: Nursing 3L5, 3M5, 3N8, 4S5, 4T5, 4Z8.

A grade of at least C- is required in all Area courses with the exception that a grade of D-, D, or D+ is permissible in a non-clinical Area course only once beyond Level I. In order to meet these requirements an Area course may be repeated only once. If a student fails to meet the minimum grade requirements after repeating the course, he or she may not continue in the Nursing programme.
   A course for which credit has been granted may be repeated only when approval is granted by the B.Sc.N. Programme Chairman.

Cumulative Area Average
   The Cumulative Area Average for the B.Sc.N. programme is the weighted average of all the Nursing and required Health Sciences courses attempted and repeated beyond Level I, and is used to determine whether a student may continue in the programme, may continue on Programme Probation or may not continue in the programme.

Continuation in the Programme
   To continue in the B.Sc.N. programme a student must obtain a University Average (UA) of at least 2.5 and a Cumulative Average of at least 4.0. A student whose CAA is at least 3.5 may, at the discretion of the Faculty proceed in the programme and will be placed on Programme Probation. A student may be placed on Programme Probation only once during the total programme.

Failure
   A student whose Cumulative Area Average is less than 3.5, or a student whose CAA is less than 4.0 and who has not been granted
Programme Probation may not continue in the programme. A student who fails to obtain a Cumulative Area Average of 4.0 at the completion of the period on Programme Probation, may not continue in the B.Sc.N. programme. A student may normally repeat a Level of work only once.

**Extra Courses**
Courses in addition to those which constitute the B.Sc.N. programme may be designated “Extra” at registration. The grades obtained in such courses will not be included in the CAA nor will the units be included in those required for graduation. The designation “Extra” cannot be added or removed retroactively.

**Level of Registration**
Level describes where a student is placed in the programme. A student is required to register in that Level for which more than 6 units of work is incomplete. Work of a higher Level may be undertaken, if prerequisites are met, with the permission of the Programme Chairman.

**Selection of Electives**
After a student has completed Level I he or she may take no more than 18 units of courses beginning with the digit 1.

**Graduation Average**
The Graduation Average (GA) for the B.Sc.N. programme is based on the best 36 units or best 80% of all Level III and Level IV Area courses, whichever is greater. The GA is used to determine whether a student may graduate from the programme.

**CURRICULUM FOR THE B.SC.N. PROGRAMME - BASIC (A) STREAM**
The faculty has planned the curriculum so that the study of nursing, the physiological, psychological and social sciences, and the humanities are interrelated and span the entire programme. In Level I, the amount of nursing experience is relatively small; the major proportion of study is in the behavioural and natural sciences. The nursing component increases progressively through Levels II, III, and IV, as the study of natural sciences is completed. Normally, because of timetable constraints, courses must be taken in the Level indicated in the curriculum.

Six units in Sociology or Anthropology are required by the end of Level II. In at least one of Levels I, II, III, or IV, six units of elective are to be chosen from the Humanities, and six additional units from one of Psychology, Sociology, or Anthropology are to be chosen at or above Level II.

**Level I: 32 units**
- R Health Sciences 1A6, 1B7, Nursing 1F7; Psychology 1A6. E 6 units.

**Level II: 38 units**
- Terms 1 and 2: 34 units
  - R Health Sciences 2B8; Nursing 2L6, 2M5; E 15 units.
- Term 3: 4 units
  - R Nursing 2H4.

**Level III: 33 units**
- R Health Sciences 3A4, 3B4, Nursing 3S8, 3X7, 3Y7. E 3 units.

**Level IV: 32 units**
- R Health Sciences 4L4; Nursing 4A2, 4E6, 4J7, 4K7. E 6 units.

**CURRICULUM FOR THE B.SC.N PROGRAMME - DIPLOMA R.N. (B) STREAM**
The programme of study for Diploma Registered Nurses is integrated with existing course offerings. The practice of nursing in diverse clinical settings will occur in all academic terms. The curriculum is designed to build on the existing knowledge and skills of the students, to prevent duplication of learning experiences and to prepare the students to function in the expanded role in community and institutional settings.

The curriculum is planned for two full calendar years if taken on a full-time basis. If taken on a part-time basis, students are normally allowed six years to complete the programme requirements.

Each level of the programme will consist of eight months of academic study with concurrent clinical practice, followed by 6 to 8 weeks of concentrated clinical practice in one setting. The concentrated experience is designed to provide the student with the opportunity to develop areas of specific interest and to demonstrate decision-making capacity in those areas such as e.g. primary care, oncology, gerontology, etc. Six units of Level I Psychology and Sociology or Anthropology are required. In addition, units of electives are to be chosen from the Humanities and six additional units from one of Psychology, Sociology or Anthropology at Level II or above.

**Level III: 55 units**
- Terms 1 and 2: 35 units
  - R Health Sciences 1A6, 1B7, 3A4; Nursing 3L5, 3M5, 3S8.
- Term 3: 14 units
  - R Nursing 3N8. E 6 units.
- Summer Term E 6 units.

**Level IV: 54 units**
- Terms 1 and 2: 34 units
  - R Health Sciences 2B8, 3B4, 4L4; Nursing 4A2, 4E6, 4S5, 4T5.
- Term 3: 14 units
  - R Nursing 42B. E 6 units.
- Summer Term E 6 units

**Occupational Therapy and Physiotherapy Programme**
The post-professional Bachelor of Health Science Programme is available to graduates of Mohawk College's diploma programme in Occupational Therapy or Physiotherapy and holders of diplomas in Occupational Therapy and/or Physiotherapy from other institutions. Through an emphasis on the synthesis of the theoretical and clinical components of practice, the programme provides an opportunity for increased academic and scholarly preparation. In this way, the student will acquire an improved understanding of the health care problems of clients. This degree programme is offered under the auspices of Continuing Health Science (Post Professional) Education within the Faculty of Health Sciences. Further professional development is offered through the various Master and Doctoral programmes in the Faculty of Health Sciences.

**OBJECTIVES OF THE B.H.Sc. PROGRAMME**
The Programme is designed to further the development of a health care professional who will be able to:
1. Understand the physical, biological and behavioural mechanisms of health problems including aspects such as molecular, individual, family and community.
2. Understand the political, economical, sociocultural and epidemiological factors which influence health policies and the systems and models of health care delivery.
3. Examine in depth, issues related to the responsibilities of the professions of Occupational Therapy and Physiotherapy in the delivery of health services.
4. Analyze and critique the scientific basis of the professions of Occupational Therapy and Physiotherapy, and critically evaluate emerging data related to these professions.
5. Plan and complete an investigation into a specific area of clinical practice. Principles of scientific inquiry and clinical reasoning will be emphasized.
ADMISSION POLICY AND PROCEDURE

Applicants from Mohawk College Programmes in Occupational Therapy and Physiotherapy
The Faculty of Health Sciences, McMaster University, participates with the Faculty of Health Sciences at Mohawk College in the diploma programmes of Mohawk College in Occupational Therapy and Physiotherapy. To be considered for admission to the B.H.Sc. Programme, graduates from the Mohawk programmes should present:
1. Mohawk College Diploma of Occupational Therapy or Physiotherapy (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 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
Successful applicants 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 at McMaster University 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 1 for the classes beginning in September. Transcripts of marks from Mohawk College or other institutions must be provided by the student.

It is the applicant's responsibility to ensure that all application documentation is received by April 15.

All applicants will be informed of the admission decision by June 1.

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 McMaster University. Additional course work to a maximum of 43 units may be required at the discretion of the Admissions Committee.

This phase is available either full-time or part-time. Under normal circumstances, the phase should be completed in one year as a full-time student or three years as a part-time student.

The student must attain a University Average of at least 4.0 and a minimum grade of C− in each course 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:
R 12 units from Biochemistry, Biology, Chemistry, Health Sciences; 12 units from Anthropology, Psychology, Sociology; Health Sciences 3A4, and 3C3.

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 19 units of study completed entirely at McMaster University, to include four Level IV required courses, and one or more elective courses chosen from available undergraduate offerings at the third or fourth year level. 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.

Course Load
The Programme is available in a modified full-load or part-time format. Full-load students will normally complete 13 to 16 units of course work between September and December. The remaining course work may be completed in subsequent terms. Full-load students are advised not to carry a course load of greater than 16 units in one term.

Students may choose to complete the programme on a part-time basis. Elective courses will be selected from courses available during the day or evening throughout the year. Required courses are available only in the Winter Session during the day. Under normal circumstances, part-time students are expected to complete the programme within three years. Permission of the Programme Director is required to alter this time limit.

Students who have completed electives on a part-time basis may transfer to full-load status to complete the required courses during the first term of the Winter Session. Requests for transfers must be received by April 1 of the year in which the student seeks to register.

Repetition of a Course
To repeat a course for which credit has been obtained, approval of the 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
For students who request to study Hth. Sci. 4C3/4D3, priority will be given as follows:
a. B.H.Sc. students who have completed Hth. Sci. 4A3 and/or Hth. Sci. 4B4
b. B.H.Sc. students
c. Other students

As enrolment in these courses is limited, where numbers warrant, a process of random clinical study areas, within the priorities noted above.

The same clinical study area must be selected for Hth. Sci. 4C3 and Hth. Sci. 4D3. Permission of the instructor is required to register in Hth. Sci. 4D3 in a different term from Hth. Sci. 4C3.

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
Faculty of Humanities

D.P. Gogan/B.A., M.A., Ph.D., Dean of Humanities
H.J. Ferns/B.A., Dip.Ed., M.A., Ph.D., Associate Dean of Humanities (Studies)
P. Kalins/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 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.

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), and Slavic Studies (including Polish, Russian, Serbo-Croatian, Ukrainian).

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.

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 Studies, Dramatic Arts, English, French, German, Greek, History, Italian, Latin, Music, Philosophy, Russian and Spanish. Combinations may also be possible with certain Natural and Social Sciences disciplines and with the Arts and Science programme (e.g., English and Computer Science, History and Political Science, Philosophy and Biology). 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. Registration in such combinations must be approved through the Associate Dean of Humanities (Studies).

Part-Time Study
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 Studies, Dramatic Arts, English, History, Philosophy, Russian.

For part-time students who are unable to attend the regular Winter Day Session, the following B.A. programmes are available: Humanities B.A., Art, Art History, Classical Studies, Dramatic Arts, English, French, History, Italian, Philosophy, Russian, Spanish.

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.
Academic Regulations

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

Registration and Course Changes

It is the responsibility of the student to ensure that the programme of work undertaken meets the requirements for the degree. In the Faculty of Humanities, students are required to preregister in March for the following Winter Session. When registering or making changes to course selection, students must seek the written approval of the appropriate Departmental Counsellor and the Dean of Studies. Dates for final registration and course changes appear in the Sessional Dates at the beginning of this Calendar and are rigidly adhered to.

Cross-listed Courses

Any student for whom a cross-listed course is an Area course under one of its listings must register for it under that listing. For example, Art History 2B3 is cross-listed as Classical Civilization 2B3, so students in an Art History programme wishing to register for this course must register for it under the label Art History 2B3. Such courses will then be used in calculating the student’s Cumulative Area Average and possibly the Graduation Average.

Deadlines

The Faculty of Humanities will not consider applications for admission after the dates stated in this Calendar. Registrations after the stated deadlines will not be accepted unless documentation is provided showing good cause and including permission of instructors to enter classes late. Dropping and adding of courses will be permitted only within the periods stated in this Calendar.

Withdrawal

Students who wish to withdraw from the University are required to advise the Dean of Studies Office in writing. Students must surrender their identification cards to the Dean of Studies to ensure the processing of any fee refunds. Students who fail to withdraw formally from any course(s) by the stated deadlines will remain registered whether or not they attend classes and will be assigned a grade.

Readmission

A student who “May Not Continue Without Permission” may apply for readmission. Readmission is not guaranteed. Applications for readmission must be made in writing to the Associate Dean of Humanities (Studies) by June 30. Applications should explain the student’s past performance and include reasons why the student would expect to succeed in the programme if readmitted. Students may be asked to provide letters of reference to support their applications, and may be expected to take oral or written tests to gain readmission.

Students will not be considered for readmission to Humanities I from other Faculties unless their pre-University work either meets the current admission requirements of the Faculty of Humanities, or did meet the Faculty’s admission requirements when they were first admitted to the University.

The computation of Cumulative Area Averages begins anew at such readmission.

Academic Regulations Pertaining to the Department of Music

The Graduation Average will be computed on a minimum of 39 units of Area courses for the B.Mus. degree in Education and on a minimum of 42 units of Area courses for a B.Mus. degree in History and Theory.

Normally, students with an undergraduate degree in Music will not be admitted to a B.Mus. degree programme as a second undergraduate degree.

Third Year Study Elsewhere

Students enrolled in Honours Programmes, single or combined, involving French, German, Italian or Spanish, may apply to take part in McMaster University’s Third Year Study Elsewhere programme at an appropriate university in France, Germany, Italy, Spain or the province of Quebec. Students may choose to spend one or two terms in this programme according to their wishes and perceived needs. The programmes at the host universities are specially designed to suit students at the Third Year Level, and consist principally of advanced and intensive language studies, with a high cultural and literary content.

To be eligible to take part in this programme, students are expected to complete Level II with a weighted average of at least 8.0 in their language component. No fees are payable to McMaster University for the Third Year Study Elsewhere Programme, but students must pay all travel, study and living expenses. For students who may be in need of financial assistance, O.S.A.P. (The Ontario Student Aid Programme) grants and O.S.A.P. loans are available for this programme. Furthermore, McMaster University offers some bursaries to those in need of help with travel expenses to Europe.

Students must maintain links through correspondence with their departmental advisors at McMaster University while they are engaged in study elsewhere, and all credit for work completed is confirmed after departments have reviewed the student’s academic achievement following their return and entry into their final year of study. The maximum credit available in this way is fifteen units per term or thirty units for a full year of study, equivalent to Level III. In certain cases, students may be recommended for the Deans’ Honour List on the basis of work undertaken in the programme.

Note: Students who are enrolled in a Combined Honours Programme involving a language and a non-language component (such as History or Political Science) can usually be granted permission to take part in Third Year Study Elsewhere for at least one term by special arrangement, provided they make early application.

Summer Immersion Programmes in French

The government-sponsored summer language bursary programme offers university students the opportunity to take French courses at a large number of accredited institutions. Students who wish to attend another university in order to participate in a language immersion programme must make a petition in writing to the Dean of Studies after being placed in the appropriate level of study. Detailed course descriptions must be submitted so that an assessment may be made and Letters of Permission may be issued on the students’ behalf. Students not registered in a programme in French may take up to 12 units of credit in this manner. Students registered in a programme in French may take a maximum of six units of credit as elective work only.

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; 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 B.A. and Honours B.A. Degrees

B.A. IN HUMANITIES

While this is a non-specialist B.A. in the Humanities, a selected theme of study provides a structure for the programme.
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 1A6 or 1B6.

Note: Students entering the Humanities B.A. programme from another programme or from another university must complete a minimum of 30 units of work while registered in the programme.

General Requirements
6 units of Science from courses in Physical Geography and Psychology, and the courses mentioned under the heading "Science" in the "Courses by Departments" section of this calendar;

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

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

I. Historical and Philosophical Studies
Canadian Studies 1A6, 2A3, 2B3, 3E3, 3F3
Classical Civilization 2F3, 2U3, 2V3, 2X3, 2Z3, 3M3, 4N3
French 2F3, 2FF3
History (all courses)
Humanities 1B6
Italian 2H3
Philosophy (all courses)
Slavic 3A6
Spanish 2B3, 2C3

II. Languages and Literatures (excluding beginners" (1Z6-level language courses)
Classical Civilization 1A6, 2D3, 2E3, 3C3, 3I3
Comparative Literature (all courses)
English (all courses)
French (excluding 2F3, 2FF3)
German (all courses)
Greek 2C3, 2E3, 2F3, 2Q3, 2R4
Humanities 1A6
Italian (excluding 2H3)
Latin 2B3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R4
Polish 2Z6
Russian (all courses)
Serbo-Croatian 2Z6
Slavic 2F6, 3B6
Spanish (excluding 2B3, 2C3)
Ukrainian 2A6, 3A6

III. The Arts
Art History (all courses)
Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3
Dramatic Arts (excluding courses cross-listed with Literature departments)
Music 1A6, 2A6, 3A3, 3AA3, 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 selected Humanities Areas.

Levels II and III: 60 units
R Humanities 2A6; at least 12 units of work in addition to the Level I course in each of two Humanities Areas (as outlined above), 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.

E 24 units of electives.

Themes of Study
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, however, that many students will be interested in potential themes and areas already identified. These include Medieval 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 arrange for counselling with a member of the Committee of Instruction for the Humanities B.A. programme. Names and extensions of Programme Counsellors can be obtained from the Office of the Associate Dean of Humanities (Studies), New Hall, Room 112.

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 and Art 1F6.

Area Courses:
All Level II, III and IV Art courses, excluding Art 2D3 and 2E3; all Level II, III and IV Art History courses, excluding Art History 406; Philosophy 2H3.

Levels II, III and IV: 90 units
R 39 units of Art including Art 2A4, 2B4, 2C3, 2F4, 3F6 and 4B12 and 6 additional units of Level III or IV Art; 18 units of Art History, at least 12 of which must be Level III and IV Art History courses; Philosophy 2H3.
E 30 units of elective, 12 of which may be from Art and/or Art History.

Note: Students in Honours Art must complete Art 2A4, 2B4, 2C3, 2F4 before registering in Level III or IV Art courses. They must take Art 3F6 concurrently with any one of Art 3A6, 3B6, 3E6, 4A6.

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; Philosophy 2H3.

Levels II, III and IV: 90 units
R 51 units of Art History, including Art History 3V3, 406 and 27 other units of Levels III and IV Art History; Philosophy 2H3.
E 36 units elective, of which 18 may be from departmental offerings but no more than 12 of which may be Art History.
FACULTY OF HUMANITIES

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; Philosophy 2H3.

Levels II, III and IV: 90 units minimum
R 33 units of Art History which must include at least 9 units of Level II Art History and 24 units of Levels III and IV Art History, including Art History 3V3 and at least one Level IV course in Art History; 3 additional units of Art History or Philosophy 2H3.
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 AND 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 and, for those students wishing a studio component, a grade of at least C — in Art 1F6.

Area Courses:
All Level II, III and IV Art History courses; Philosophy 2H3.

Levels II and III: 60 units
R 30 units of Art History and/or Art History beyond Level I, including at least 15 units of Art History (Philosophy 2H3 may be substituted for 3 units of Art History), at least 9 units of Level III or IV Area courses; 6 units of Humanities.
E 24 units elective, of which 12 may be Art History.

Note: Graduates of this programme who have taken no Art courses beyond Level I will receive a B.A. in Art History only, and, in Level III, will be registered in the Honours Art History programme only.

Canadian Studies

HONOURS FRENCH AND CANADIAN STUDIES
(see: “Department of Romance Languages — French”)

HONOURS POLITICAL SCIENCE AND CANADIAN STUDIES
(see: “Faculty of Social Sciences — Political Sciences”)

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

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B — in Canadian Studies 1A6 and satisfaction of the admission requirements for the Honours B.A. programme in the other subject. Students who have not taken Canadian Studies 1A6 in Level I will be required to include it in Level II of their programme and should consult the Chairman of the Committee of Instruction.

Area Courses:
All Level II, III and IV Canadian Studies courses, and all Canadian Area courses: Anthropology 3A3, 3F3; Art History 3B3; Dramatic Arts 3BB3; Economics 2K3, 3C6, 3F3; English 2C3, 2G6, 323; French 2F3, 2FF3, 3AA3, 3BB3, 4U3; Geography 2E3, 3D3, 4U3, 4Z3; History 2J6, 3C3, 3V6, 4N6; Music 3T3; Political Science 2G6, 3DD6, 3GC3, 316, 456; Religious Studies 3B3, 3BB3; Sociology 2H6, 3BB3, 3Q3, 4O3. Other courses may qualify as Canadian Area courses. Students wishing to register in a course not on the list should consult with the Chairman of the Committee of Instruction.

Levels II, III and IV: 90 units minimum
R Canadian Studies 1A6 (if not completed in Level II); Canadian Studies 2A3, 2B3, 3E3, 3F3, 4F3; 18 units from courses designated as Canadian Area courses listed above, 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.

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).

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

Admission:
Completion of any Level I programme with a grade of at least C — in Canadian Studies 1A6 and satisfaction of the admission requirements for the B.A. programme in the other subject.

Area Courses:
All Level II and III Canadian Studies courses, and all Canadian Area courses: Anthropology 3A3, 3F3; Art History 3B3; Dramatic Arts 3BB3; Economics 2K3, 3C6, 3F3; English 2C3, 2G6, 323; French 2F3, 2FF3, 3AA3, 3BB3, 4U3; Geography 2E3, 3D3, 4U3, 4Z3; History 2J6, 3C3, 3V6, 4N6; Music 3T3; Political Science 2G6, 3DD6, 3GC3, 316, 456; Religious Studies 3B3, 3BB3; Sociology 2H6, 3BB3, 3Q3, 4O3. Other courses may qualify as Canadian Area courses. Students wishing to register in a course not on the list should consult with the Chairman of the Committee of Instruction. Only one Cumulative Area Average and Graduation Average is calculated.

Levels II and III: 60 units minimum
R Canadian Studies 2A3, 2B3, 3E3, 3F3, and 12 units of courses designated as Canadian Area courses listed above; the Area requirements of the B.A. programme of the other subject.
E To the approximate total of 48 units of Area work in the two components of the combined B.A. programme, students must add elective work to make a minimum overall total of 60 units beyond Level I.

Language Requirement
Before proceeding to Level III of the programme, the student in the combined B.A. programme in Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a grade of at least D in French 1A6 or 1B6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French.
The Canadian Area courses required for the Canadian Studies portion of the combined B.A. programme must be exclusive of Canadian Area courses offered by the student's department (e.g., a student in the B.A. in Canadian Studies and History may not use History courses to fulfill the Canadian Area component).

Department of Classics

HONOURS CLASSICAL 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 Classical Civilization 1A6. (Students are encouraged to include at least one of Greek 1Z6 or Latin 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 1Z6, if not completed in the Level I programme. Ancient History courses: History 2L6, 3GG3, 3LL3, 3MM3, 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)

1. Classical Archaeology and Art History: Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
2. Greek and Roman Literature in Translation: Classical Civilization 2E3, 3C3, 3I3, 4A3.

Levels II, III and IV: 90 units minimum

R Classical Civilization 2D3, 4F3; 36 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 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 Classical Civilization 1A6. With the approval of the Departmental Counsellor, one of Greek 1Z6, Latin 1Z6 or History 1L6 with a grade of at least C – may be substituted for Classical Civilization 1A6.

Area Courses:

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

Programme Groups: (at least 3 units must be taken from each of the three Programme Groups; students are encouraged to take at least 6 units of Greek or Latin.)

1. Classical Archaeology and Art History: Classical Civilization 2B3, 2C3, 3G3, 3R3, 3S3, 4L3.
2. Greek and Roman Literature: Classical Civilization 2E3, 3C3, 3I3, 4A3; Greek 2C3, 2E3, 2F3, 2Q3, 2R4, 3M3, 3N3, 3Q3, 4L3, 4M3 4Q3; Latin 2B3, 2E3, 2G3, 2L3, 2M3, 2Q3, 2R4, 3D3, 3L3, 3Q3, 4A3, 4M3, 4Q3.

Levels II and III: 60 units

R 24 units from courses listed above under Programme Groups, including at least 3 units from each Programme Group; 12 units from the Faculty of Humanities.

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

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

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 weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Greek 1Z6 and a grade of at least B in Latin 1Z6. (Students 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, 3GG3, 3LL3, 3MM3, 4D6, 4I6.
**FACULTY OF HUMANITIES**

Greek 2E3 and Latin 2G3 will be included in calculating the Graduation Average.

**Levels II, III and IV: 91 units**

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<tr>
<th>Requirement</th>
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<tbody>
<tr>
<td><strong>R</strong> Greek 2C3, 2E3, 2F3, 2Q3, 2R4; Latin 2B3, 2E3, 2G3, 2Q3, 2R4; 29 units of Levels III and IV Greek and Latin, including Greek 3Q3, 3R2, 4Q3, 4R2 and Latin 3Q3, 3R2, 4Q3, 4R2; 12 units of Classical Civilization or Ancient History.</td>
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<tr>
<td><strong>E</strong> 18 units of elective, 6 of which may be from Latin and Greek.</td>
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**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 126. (Students with Grade 13 Greek are eligible for advanced study and should consult the Department of Classics.)

Area Courses:

- All Level II, III and IV Greek Courses.

Greek 2E3 will be included in calculating the Graduation Average.

**Levels II, III and IV: 90 units minimum**

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<tr>
<td><strong>R</strong> Greek 2C3, 2E3, 2F3, 2Q3, 2R4, 3M3, 3N3, 3Q3, 3R2, 4L3, 4M3, 4Q3, 4R2.</td>
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<tr>
<td><strong>E</strong> To the approximate total of 74 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.</td>
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**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 126. Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.

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**

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<tr>
<td><strong>R</strong> Latin 2B3, 2E3, 2G3, 2Q3, 2R4, 3D3, 3L3, 3Q3, 3R2, 4A3, 4M3, 4Q3, 4R2.</td>
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</tr>
<tr>
<td><strong>E</strong> To the approximate total of 74 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.</td>
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**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 B in Latin 126. Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.

Area Courses:

- All Level II, III and IV Latin courses.

**Levels II and III: 60 units**

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<tr>
<td><strong>R</strong> Latin 2B3, 2E3, 2G3, 2Q3, 2R4, 3Q3 or 4Q3, 3R2 or 4R2 and 3 units of Level III or IV Latin; 12 units from Classical Civilization courses, History 2L6 and 3MM3.</td>
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<td><strong>E</strong> 24 units elective, 12 of which may be from Latin.</td>
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</table>

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**

**HONOURS 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 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, excluding Dramatic Arts 3E3.

**Levels II, III and IV: 90 units**

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<tr>
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<tr>
<td><strong>R</strong> Dramatic Arts 2A6, 2C3, 2E3, 2A6, 3P3, 3D3, 1 of 3C3, 3P3, 3K6, 4A6, one of 4E3, 4F3, plus 6 additional units of Level II Dramatic Arts and 9 additional units of Level III or IV Dramatic Arts.</td>
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<td><strong>E</strong> 36 units, 18 of which may be from Dramatic Arts.</td>
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</table>

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

**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, excluding Dramatic Arts 3E3.

**Levels II, III and IV: 90 units minimum**

<table>
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<tr>
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<tbody>
<tr>
<td><strong>R</strong> Dramatic Arts 2A6, 2C3, 2E3, 3A6, 3P3, 3K6, 4A6, one of 4E3, 4F3, plus 6 additional units of Level II Dramatic Arts and 9 additional units of Level III or IV Dramatic Arts.</td>
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<tr>
<td><strong>E</strong> 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.</td>
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Students must have a working knowledge of a language other than English (at least high school Grade 13 or university 126). Those who do not meet this requirement should consult the Chairman of the Committee. Students who meet the prerequisites for courses on drama in languages other than English offered by the Departments of Classics, German, Romance Languages or Slavic Studies may take up to 6 units of such courses as a part of their Dramatic Arts R-group with the approval of the Chairman of the Committee.

**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, excluding Dramatic Arts 3E3.

Levels II and III: 60 units
R  Dramatic Arts 2A6, 2C3, 2E3, 3K6, one of 3C3, 3P3, plus 3 additional units of Level III or IV Dramatic Arts; 12 units from the Faculty of Humanities.
E  24 units, of which 12 may be Dramatic Arts.

Department of English

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 at least five of the six indicated fields must be taken.

Field I:  English 3D3, 3DD3, 4E6 (Medieval)
Field II:  English 3I3, 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, 3Q3, 3QQ3, 4N6 (Studies in Language, Criticism and Genre)

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

Area Courses: English 2B6, 2G6, 2H6, 2I6, 2V6, 3Q3, 3QQ3, 3T3, 3V6, 4B6, 4E6, 4G6, 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: Linguistics 1A6, 2L3, 2M3, 3I3, 3M3, English 2S3, 2T3, 2V6. The Department strongly advises students to fulfill this requirement before Level III.

Note: If English 2V6 is taken in fulfillment of the language requirement, it may not be used to fulfill the English Area requirements.

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, 3DD3, 4E6 (Medieval)
Field II:  English 3I3, 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, 3Q3, 3QQ3, 4N6 (Studies in Language, Criticism and Genre)

Area Courses: English 2B6, 2G6, 2H6, 2I6, 2V6, 3Q3, 3QQ3, 3T3, 3V6, 4B6, 4E6, 4G6, 4L3, 4M3, 4N6.
FACULTY OF HUMANITIES

Levels II and III: 60 units
R 12 units from English 2B6, 2G6, 2H6, 2L6, 2V6; 18 units from English 3D3, 3DD3, 3I3, 3K6, 3Q3, 3QQ3, 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: Linguistics 1A6, 2L3, 2M3, 3I3, 3M3, English 2Z3, 2T3, 2V6. The Department strongly advises students to fulfill this requirement before Level III.

Note: If English 2V6 is taken in fulfillment of the language requirement, it may not be used to fulfill the English Area requirements.

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:
History 3J6 and all Level II, III and IV German courses, excluding German 2H3, 2J3, 2K3, 2L3 and 2Z6.

Levels II, III and IV: 90 units
R 48 units of German including German 3A3, 3B3, 4G3, 15 additional units of Level III and IV literature and/or philology courses and 6 additional units of Level III and IV German; History 3J6.
E 36 units, 9 of which may be from German.

Alternative B (for students entering with German 1Z6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least A – in German 1Z6.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3 and 2L3.

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

Levels II, III and IV: 90 units minimum
R German 2A3, 2E3, 2F3, 3A3, 3B3, 4G3; 24 additional units of German, at least 15 of which must include Level III and IV literature and/or philology courses.
E To the 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. Students are strongly advised to take History 3J6 as an elective.

Alternative B (for students entering with German 1Z6)

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in German 1Z6.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3, 2L3 and 2Z6.

Levels II, III and IV: 90 units minimum
R German 2A3, 2F3, 3A3, 3B3, 4G3; 24 additional units of German, at least 15 of which must include Level III and IV literature and/or philology courses.
E To the 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.

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 a study of German and Austrian history in their programmes are advised to take History 3J6.

HONOURS GERMAN 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.

Alternative A (for students entering with German 1A6)

Admission:
Completion of any Level I programme with a grade of at least B – in German 1A6 and in Political Science 1A6.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3, 2L3 and 2Z6.

Levels II, III and IV: 90 units minimum
R German 2A3, 2E3, 2F3, 2G3, 2Y6, 226, 3A3, 3B3, 3Q3, 3R3, 3X6; History 3J6; at least 63 units of Level III and IV literature and/or philology 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.

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 a 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 grade of at least A – in German 1Z6 and B – in Political Science 1A6.
Area Courses:
All Level II, III and IV German courses excepting 2H3, 2J3, 2K3 and 2L3. All Level II, III and IV Political Science courses; History 3J6.
German 2A3, 2E3, 2F3 and 2G3 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units
R German 2A3, 2E3, 2F3, 2G3, 2Y6, 2Z6, 3A3, 3B3, 4G3, 9 additional units of German, at least 6 of which must include Level III and IV literature and/or philology courses and at least one Level IV German course; Political Science 2P6, 9 to 12 units from Political Science 2E6, 3M6, 3P3, 3Q3, 3R3, 3X6; History 3J6; at least 6 units of Level IV Political Science; 6 to 9 additional units of Political Science, to make a total of 36 units of Area courses in Political Science, only 12 of which may be from Level II courses.
E 15 units.

With the approval of the Departments of German and Political Science and of the Associate Deans of Humanities and Social Sciences, Level III of Honours German and Political Science may be replaced by courses of study at a university in a German-speaking country. Students who plan to spend their third year abroad must have a minimum of B Cumulative Area Averages in each of German and Political Science in their second year.

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 with a grade of at least C – in German 1A6.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3, 2L3 and 2Z6.

Levels II and III: 60 units
R 24 units of German, including German 2A3, 2F3, 3A3, 3B3; and 12 units from the Faculty of Humanities or 12 units of work approved by the Department.
E 24 units, 12 of which may be from German. Students are strongly advised to take History 3J6 as an elective.

Alternative B (for students entering with German 1Z6)

Admission:
Completion of any Level I programme with a grade of at least A – in German 1Z6 and permission of the Department.

Area Courses:
All Level II, III and IV German courses, excluding 2H3, 2J3, 2K3 and 2L3.

Levels II and III: 60 units
R 30 units of German, including German 2A3, 2E3, 2F3, 2G3, 2Y6, 2Z6 and at least one Level III German course; 6 units from the Faculty of Humanities or 6 units approved by the Department.
E 24 units, 6 of which may be from German. Students are strongly advised to take History 3J6 as an elective.

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

Level II:
12 units of Level II History; 6 units of Level II or III History.

Level III:
6 units of Level III History; 6 units of Level III or II History; 6 units of Level IV History.

Level IV:
6 units of Level III History; 12 units of Level IV History.

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 the Level I programme.

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 seminar may be taken before Level III.

Level Distribution

Level II:
6 units of Level II History; 6 units of Level II or Level III History.

Level III:
6 units of Level III History or Level II History; 6 units of Level IV History. A three-field requirement (see below) must be satisfied by the end of Level III.

Level IV:
6 units of Level III History; 6 units of Level IV History.

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 each 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
Level II:
History 2J6; 6 additional units of Level II History.
Level III:
12 units of Level III History (6 units may be Level IV History with permission).

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 three of the following six fields of History: European, Ancient, Asian, Canadian, British, and United States.

Department of Music

HONOURS PROGRAMMES FOR B.MUS. DEGREE
Completion of a Music degree requires considerable day-time attendance.

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: 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 1G2.

Area Courses:
Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2H4, 3AA3, 3E4, 3J4, 3K3, 3L3, 3M4, 3N3, 3O3, 3T3, 3U3, 4E4, 4K3, 4L3, 4M4, 4N3, 4O3, 4P3.

The Graduation Average will be computed on a minimum of 39 units of Area courses.

Levels II, III and IV: 91 units
R Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2G2, 2H4, 3AA3, 3E4, 3J4, 3K3, 3L3, 3M4, 3N3, 3O3, 3T3, 3U3, 4E4, 4K3, 4L3, 4M4, 4N3, 4O3, 4P3 (only one of 3T3, 3U3 may be taken for R-credit).
E 24 units, 12 of which may be from Music.

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, 4B3, 4BB3, 4C4, 4E4, 4H3, 4I3, 4S3, 4Z3.

The Graduation Average will be computed on a minimum of 42 units of Area courses.

Levels II, III and IV: 90 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, 4B3, 4BB3; 6 units from Music 3T3, 3U3, 4H3, 4I3; (only one of 3T3, 3U3 may be taken for R-credit).
E 24 units, 12 of which may be from Music.

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, 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, 4B3, 4BB3, 4C4, 4E4, 4H3, 4I3, 4S3, 4Z3.

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

Levels II, III and IV: 90 units minimum
R Music 2B3, 2BB3, 2C2, 2CC2, 2D2, 2DD2, 2E4, 2H4, 3B3, 3BB3, 4B3, 4BB3; 6 units from Music 3T3, 3U3, 4H3, 4I3; (only one of 3T3, 3U3 may be taken for R-credit).
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, 12 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, 12 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; one of 2B3, 2R3, 2C6, 3A6, 3G3, 3O3, 4H3 and 24 additional units of Philosophy, at least 21 units of which must be Level III or IV Philosophy courses.
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.

Philosophy 2C6 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units minimum
R Philosophy 2A6; one of 2B3, 2R3, 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 with a grade of at least B in any Level I Philosophy course, and Biology 1A6 or 1G6 with a grade of at least B, and 6 units of Level I Mathematics.

The degree programme has unified Area courses; therefore, only a single Cumulative Area Average and Graduation Average is calculated. Students are advised to note carefully the prerequisites for all courses listed in this programme.

Area Courses:
All Level II, III and IV Philosophy courses; Biology 2B3, 2C3, 2E3, 2F3, 3F6, 3H6, 3J3, 3J6, 3O3, 3Q3, 4E3, 4M3, 4Q3; Chemistry 208.

Levels II, III and IV: 90 units
R Biology 2B3, 2C3, 2E3; 12 units from Biology 3F6, 3H6, 3J3, 3J6, 3N6, 3O3, 3Q3, 4E3, 4M3, 4Q3, including at least one Level IV Biology course (Chemistry 208 may replace 6 units of the above Biology courses); Philosophy 2A6; one of 2B3, 2R3; 2C6; one of 2D3, 2G3, 2L3; one of 3G3, 3N6, 3L3, 3O3, 3S3, 3W3; additional Level III or Level IV Philosophy courses to make a total of 42 units of Philosophy.
E Electives to make a total of at least 90 units.

HONOURS PHILOSOPHY AND MATHEMATICS
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 Mathematics 1A6 or 1C6 and Mathematics 1B4, and a grade of at least B in 6 units of work acceptable to the Department of Philosophy. Students who have taken Mathematics 1G6 instead of 1B4 will be considered for admission to Honours Philosophy and Mathematics.

The degree programme has unified Area courses; therefore, only a single Cumulative Area Average and Graduation Average is calculated.

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

Levels II, III and IV: 94-97 units
R Mathematics 2A5, 2B4, 2F4, 3A6, 3E4; two of Mathematics 2C4, 3B4, 3L4, 3P4, 4B4; two of Mathematics 4A6, 4E6, 4K4; Philosophy 2A6; one of Philosophy 2B3, 2R3, 2C6; 24 units of Level III or Level IV Philosophy (including at least one Level IV Philosophy course).
E Electives to make a total of 94 to 97 units.

B.A. IN 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 grade of at least C in a Level I course acceptable to the Department.

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

Levels II and III: 60 units
R Philosophy 2A6, 2C6; 12 units of Philosophy, including at least 6 units of Level III or IV Philosophy; 12 units from the Faculty of Humanities or 12 units approved by the Department. If no Philosophy course was taken in Level I, 6 units of Philosophy must be included in the 12 units taken from the Faculty of Humanities.
E 24 units, 12 of which may be from Philosophy.
Department of Romance Languages

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: 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 3Y3.

Levels II, III and IV: 90 units
R 15 units of French Language Practice courses, including French 2A3, 3C3, 4A3, 4B3; 24 units of French/Francophone Literature and Civilization courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, three three-credit units of French 4G3, 4GG3, 4H3; 9 units of French/Francophone Literature and Civilization courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, three three-credit units of French 4G3, 4GG3, 4H3; 15 additional units of French.
E 36 units elective, 18 of which may be 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: Language and Linguistics

Admission:
Completion of any Level I programme (including a Level I English course and Linguistics 1A6) 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.)

Students who are interested in entering this programme, but lack satisfactory background in French, should consult the French Section for ways of meeting the programme requirements.

Area Courses:
All Level II, III and IV courses in French, except 3Y3.

French 2G3 and 2H3 will be included in calculating the Graduation Average.

Levels II, III and IV: 90 units
R French 2A3, 3C3, 4A3; French 2G3, 3C3, 4B3, 4BB3; 15 units of French/Francophone Literature or Civilization courses, including one of French 2J3, 2JJ3 and one of French 2W3, 2WW3 and at least 3 units of Level III or IV French; French 2H3 plus 12 units of French Linguistics courses to be selected from French 3B3, 3E3, 3G3, 3I3, 3J3, 3K3, 4E3, 4X3, 4Z3; 12 units of English beyond Level I (to be determined in consultation with the French Section).
E 27 units, 12 of which may be French.

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
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 3Y3.

Levels II, III and IV: 90 units minimum
R 12 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 18 units of French/Francophone Literature courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, two three-credit units of French; 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 CANADIAN 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 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 3Y3, and all Level II, III and IV courses in Canadian Studies and in Canadian Area courses.

Levels II, III and IV: 90 units
R 15 units of French Language Practice courses, including French 2A3, 3C3, 4A3; 12 units of French-Canadian Civilization and Literature courses, including French 2F3 and 2FF3; 12 units of French Area courses, excluding French and Canadian Language Practice courses; Canadian Studies 2A3, 2B3, 3E3, 3F3, 4E6; 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 and the Associate Dean of Humanities (Studies), Level III of Honours French and Canadian Studies may be replaced by courses of study at a Canadian francophone or Canadian bilingual university.

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 3Y3.

Levels II and III: 60 units
R 9 units of French Language Practice courses, including French 2A3 and 3C3; 9 units of French/Francophone Literature and Civilization courses, including one of French 2J3, 2JJ3, one of French 2W3, 2WW3, one of French 3K3, 3KK3, one of French 3Q3, 3QQ3, 9 additional units of French; 9 units from the Faculty of Humanities.
E 24 units elective, 12 of which may be from French.
HONOURS ITALIAN
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 and 216.

Levels II, III and IV: 90 units minimum
R Italian 2D6, 2E6, 2Z6, 3D4, 3R6, 4L4, 4P3, 9 units of Level III and IV Italian courses; History 3A3, 9 units from the Faculty of Humanities, including 6 units of English, if not previously completed.
E Electives, 12 of which may be Italian, to make a total of at least 90 units.

Upon completion of 60 units of work (including 12 units of required Level II Italian Area courses), and with the approval of the Department of Romance Languages and the Associate Dean of Humanities (Studies), Level III of Honours Italian may be replaced by courses of study at an Italian university.

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 and 216.

Levels II, III and IV: 90 units minimum
R Italian 2D6, 2E6, 2Z6, 3D4, 3R6, 3L3 or 3O3, 4L4, 4M4, 4P3; 3 units of Level III or IV Italian; History 3A3.
E Electives, 12 of which may be Italian, to make a total of at least 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:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Levels II, III and IV: 90 units minimum
R Italian 2D6, 2E6, 2Z6, 3D4, 3L3 or 3O3, 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</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Italian 2E6, 226.</td>
</tr>
<tr>
<td>III</td>
<td>Italian 2D6, 3R6 and additional units of Levels III and IV Italian to total 15 to 16 units.</td>
</tr>
<tr>
<td>IV</td>
<td>Italian 3D4, 4L4, 4P3 and additional units of Levels III and IV Italian to total 17 to 19 units.</td>
</tr>
</tbody>
</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 B— in Italian 1A6.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Levels II and III: 61 units
R Italian 2D6, 2E6, 2Z6, 3D4, 3R6, and 3 additional units of Level III or IV Italian literature; 12 units from the Faculty of Humanities, including 6 units of English, if not previously completed.
E 24 units elective, 12 of which may be Italian.

Alternative B (for students entering with Italian 1Z6 or 1ZZ6)
Admission:
Completion of any Level I programme with a grade of at least B— in Italian 1Z6 or 1ZZ6.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A3 and 216.

Levels II and III: 60 units
R Italian 2D6, 2E6, 2Z6, 3D4, 3R6, and 3 additional units of Level III or IV Italian literature; 9 units from the Faculty of Humanities, including 6 units of English, if not previously completed.
E 24 units elective, 12 of which may be Italian.

Honours Spanish
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 summer 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.

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; 30 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, 2C3; History 2C6 or 3AA3.
- 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.

B.A. IN 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.

Alternative A (for students entering with Spanish 1A6)

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

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

Levels II and III: 60 units
R Spanish 2A4, 2E6; either 2B3 or 2C3; 3A4; 9 units of Level IV Spanish Literature courses.
E 24 units of elective, 9 of which may be Spanish.

Alternative B (for students entering with Spanish 1Z6)

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

Area Courses:
Spanish 1A6 and all Level II, III and IV Spanish courses.
Levels II and III: 61 units
R Spanish 1A6, 2B3, 2C3, 2E6, 3A4; 9 units of Level IV Spanish
Literature courses to be taken in Term II of Level III; and 6 units from
the Faculty of Humanities.
E 24 units of elective, 9 of which may be Spanish.

Department of Slavic Studies

HONOURS RUSSIAN 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 Russian 126.

Area Courses:
All Level II, III, and IV Russian courses; History 3H6, 4O6; Political
Science 2K6, 3D6, 4J6; Slavic 2F6, 3A6, 3B6, 4H6.

Levels II, III and IV: 90 units
R Russian 2C6, 3C6, 4C6 and two of 4A3, 4B3, 4D3, 4F3; one of 2A6,
3K6; History 3H6, Political Science 2K6; and additional Area courses
to make a total of 54 units.
E 36 units, 18 of which may be from 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 126.

Area Courses:
All Level II, III and IV Russian courses; Slavic 4H6.

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

Levels II, III and IV: 90 units minimum
R Russian 2C6; one of 2A6, 3K6; two of 4A3, 4B3, 4D3, 4F3; Slavic
4H6; 3C6, 4C6; and additional units of Russian to total 36 units.
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 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 126 and 6 units
acceptable to the Department of Political Science, including a grade
of at least B— in Russian 126. A Level I course in Political Science
is recommended.

Area Courses:
All Level II, III and IV Russian and Political Science courses; Slavic
4H6.

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
12 additional units beyond Level II in Political Science; Russian 2C6,
3C6, 4C6; one of 2A6, 3K6; two of 4A3, 4B3, 4D3, 4F3, Slavic 4H6;
and additional units of Russian to make a total of 36 units.
E 18 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 126.

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

Levels II and III: 60 units
R Russian 2C6; one of 2A6, 3K6; one of 4A3, 4B3, 4D3, 4F3; 3C6 and 6
additional units of Russian Area courses; 9 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, 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 Polish 1Z6, Russian 126, Serbo-Croatian 1Z6,
Ukrainian 1Z6.

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

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

Levels II, III and IV: 90 units
R Slavic 2F6, 3A6, 3B6; Russian 126 (if not previously taken), 2C6, 3C6;
12 units from Polish 1Z6, 2Z6, Serbo-Croatian 1Z6, 2Z6, Ukrainian
1Z6, 2A6, 3A6; 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 Polish 1Z6, Russian 126, Serbo-Croatian 1Z6,
Ukrainian 1Z6.

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

Levels II and III: 60 units
R Slavic 2F6, 3A6, 3B6; Russian 126 (if not previously taken), 2C6, 3C6;
and 12 units from Polish 1Z6, 2Z6, Serbo-Croatian 1Z6, 2Z6, Ukrainian
1Z6, 2A6, 3A6.
E Electives, 12 of which must exclude Area courses, to make an overall
total of 60 units.

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., Associate 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. Wood/B.A., Programmes Assistant

The Faculty of Science provides studies through the following Departments:

- Biochemistry
- Biology
- Chemistry
- Geography
- Geology
- Mathematical Sciences
- Metallurgy and Materials Science
- Physics
- Psychology

All Departments offer four-level Honours B.Sc. programmes which prepare students for graduate studies, 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 and Materials Science. 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 and Course Changes

All programme and course changes must be made through the Office of the Deans of Science (Studies) and are subject to the deadline dates established by the University. (See Sessional Dates section of this Calendar.)

Beyond the September deadline date, first-term courses may be cancelled up to the October deadline but may not be replaced by second-term courses; beyond the January deadline date, second-term courses may not be replaced. Students who cancel a full-year course by the January deadline date may add a second-term course provided that their second-term work load is not thereby increased.

Up to the end of Level III, students may be permitted to transfer between B.Sc. and Major, and Major and Honours, programmes, on the recommendation of the Department concerned and with the approval of 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 neither 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 by June 15 to the Chairman of the Committee on Re-admissions, Office of the Deans of Science (Studies), and should include an explanation of the student’s previous academic performance and reasons why the student would expect to succeed in the programme if re-admitted. If the student has been Required to Withdraw for one calendar term 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, based on academic achievement. Students should consult with the Departments concerned if there are any questions about entry to limited enrolment programmes.”

Limited Enrolment in Computer Science:

Beginning in May, 1982, an enrolment target of a total of 50 students in Level III of Computer Science programmes in the Faculties of Science and Social Sciences has been set.

In order to implement this target, enrolment in Computer Science 2L3 is limited to 70 students registered in Mathematical Sciences II, Computer Science II, Computer Science and Economics II, Arts and Science II. In addition to this number there will be approximately 50 to 70 students from the Engineering Faculty registered in Computer Engineering or Computer Engineering and Management.

Selection will take place at the end of Level I; the criteria will be the student’s University Average and application to enrol in a programme leading to a Computer Science degree.

Once students are admitted to Level II of Computer Science, Computer Science and Economics or Mathematical Sciences including Computer Science 2L3, they will be allowed to complete the desired degree programme in Computer Science, subject to maintaining the required standing.

Students completing McMaster Level I programmes and seeking entry to the programme will be given preference over students seeking to transfer from other programmes or other universities.

Limited Enrolment in Geology:

Enrolment in Level II of Geology and joint Geology programmes (B.A. and B.Sc.) is limited to 50 students. In order to enrol in any of the Geology or joint Geology programmes at or above Level II, students must submit a Registration Form to the Office of the Registrar prior to June 30 of the year in which enrolment is sought.

Beginning in 1984 the selection will take place at the end of Level I. The criteria are i) application to enrol in a programme leading to a Geology degree, ii) satisfying the admission requirements for the programme, and iii) the University Average based on a minimum of 30 units of Level I courses.

In 1984-85 a maximum of 50 students will be admitted. Forty places will be reserved for McMaster students and the further 10 places will be filled by competition between McMaster students and students transferring from other universities. A small number of transfer students will be considered for Levels III and IV provided they have completed the necessary courses at the lower levels. Some candidates for a second degree will be accepted within the total number of places available.

The Faculty will endeavour to complete this selection procedure and inform all applicants by the end of July.

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Level I Programme

Natural Sciences I: 30 to 33 units

ONE of Mathematics 1A6 or 1F6

ONE or TWO of a and b:
   a) Chemistry 1A7
   b) Physics 1A7 or 1B7 or 1C7

Additional selections from c to j to make a total of 30 to 33 units:
   c) Biology 1A6
   d) Computer Science 1B3 or 1B3 and 1C3
e) Geography 1A6
   f) Geology 1A6
   g) Materials Science 1A3 or 1A3 and 1B3
   h) Mathematics 1B4 or 1G4
   i) Psychology 1A6
   j) 3 or 6 units of Level I Humanities and/or Social Sciences.

With the exception of Mathematics, no more than one full-year course may be taken from any subject.

With the permission of the Dean of Studies, well-prepared students may be permitted to elect up to six additional units.

The choice in the programme that a first level student may elect is considerable and should be made carefully with the admission 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 complete Natural Sciences I with high standing but who lack a Level I course required for entry into the desired Level II programme may be permitted entry to that programme after consultation with 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. General Biochemistry and Biotechnology and Genetic options are available at Level IV.

Admission:
Completion of Natural Sciences I, including Mathematics 1A6 with a weighted average of at least 7.0 in one of Chemistry 1A7, 1C8 and either Mathematics 1A6 or one of Physics 1A7, 1B7, 1C8. Biology 1A6 or 1B7 must be completed before entry into Level III: its election in Level I is recommended. The election of one of Physics 1A7, 1B7, 1C7, 1C8 in Level I or II is recommended.

Area Courses:
Biochemistry 2A3, 2B3, 2C3, 2D3; Biology 2A4, 2S8, 2T5, 3A4, 3D6, 3E6, 3L3, 3U3, 306, 4B4, 4L3, 4M3, 4N3, 4Q3, 4U5, 4V3; Chemistry 2F4, 2N4, 2Q5, 3A4, 3D6, 3E6.

Level II: 35 units

R Biochemistry 2A3; 2B3; 2C3; 2D3; or 2U3; 3A4; or 3D6; 3E6; 3L3; 3U3; 306.
E 6 units. Computer Science 2B3 is recommended.

Level III: 31-35 units

R Biochemistry 3B3, 3C3, 3L4; Language 3D6; Biology 2C3 (if not completed); 6-13 units from Biology 2B3 (if not completed) and Level III or IV Biotechnology, Biology or Chemistry courses to make a total of 25 to 29 units.

For students planning to enter the Biotechnology and Genetic Engineering Option, Biology 2B3 and 303 must be completed by the end of Level III; Biology 3E3 is recommended.
E 6 units, excluding Biochemistry.

Level IV (General Biochemistry Option): 31-33 units

R One of Biochemistry 4B6, or 4L3 and 4P3, or 4G3 and 4L3; Biotechnology 4E3, 4M3 and 9 units of Level IV Biochemistry, 4 to 6 units of Level III and IV courses from any Science discipline.
E 6 units.

Level IV (Biotechnology and Genetic Engineering Option): 30-33 units

A CA of at least 8.0 on completion of Level III is required for admission.
R Biochemistry 4D3, 4E3, 4G3, 4M3, 4B6 or 4P3; 6 units of Level IV Biochemistry, 3 to 6 units of Level III or IV courses from any Science discipline (Biochemistry 303 must be selected if not taken at Level III).

Biochemistry 4I3, 4P2 and 4V3 are recommended.
E Electives to make a total of 30 to 33 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, 1G4 or 1G6, and one of Biology 1A6, 1B7, 1C7, 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:
Biochemistry 2A3, 3B3, 3C3, 3L2, 3L4, 4B6, 4D3, 4E3, 4M3, 4N3, 4Q3, 4U5; Chemistry 2A4, 2S8, 2T5, 3A4, 3D6, 3E6, 3L3, 3U3, 3A4, 3D3, 4G7, 4K5, 4U5.

Level II: 34-35 units

R Biochemistry 2A3; 2B3; 2S8, 2T5; Mathematics 2G3, 2O3; Biology 1A6, and one of Physics 1A7, 1B7, 1C7, if not completed in Level I; courses in a Science discipline to make a total of 31 to 32 units.

For students considering Level III Honours Biochemistry should elect Biology 2C3.
E 3 units

Level III: 33-35 units

R Biochemistry 3B3, 3C3, 3L2 or 3L4; Chemistry 3U3, 3D6, 3A4 or 3E6.
E Electives to make a total of 33 to 35 units.

Level IV: 32-35 units

R Biochemistry 4E3 and 4M3, and two of Biochemistry 4D3, 4I3, 4Q3; one of Biochemistry 4B6, 4L3 (same as Chemistry 4L3), Chemistry 4G7; one of Chemistry 3A4, 3E6, 4K5; 3 units of Level III or IV Chemistry.
E Electives to make a total of 32 to 35 units.

BIOCHEMISTRY MAJOR

Admission:
Completion of Natural Sciences I, including Mathematics 1A6 with a weighted average of at least 4.0 in one of Chemistry 1A7, 1C8, and either Mathematics 1A6 or one of Physics 1A7, 1B7, 1C7, 1C8. Biology 1A6 or 1B7 must be completed before entry into Level III and its election in Level I is recommended. The election of one of Physics 1A7, 1B7, 1C7, 1C8 in Level I or II is also recommended.

Area Courses:
Biochemistry 2A3, 3B3, 3C3, 3L2, 3L4, 4B6, 4D3, 4M3, 4E3, 4G3, 4L3, 4M3, 4N3, 4Q3; Biology 2B3, 2C3, 3A4, 3D6, 3E6, 3L3, 3U3, 306, 4B4, 4L3, 4M3, 4N3, 4Q3, 4U5, 4V3; Chemistry 2F4, 2N4, 2Q5, 3A4, 3D6, 3E6, 3L3, 3U3, 3A4, 3D3, 4G7, 4K5, 4U5.

Level II: 35 units

R Biochemistry 2A3, Chemistry 2N4, 2S8; one of Chemistry 2Q5, 2T5; Biology 2C3 or 1A6 (if not completed); 3 or 6 units above Level I from any Science discipline. Election of Biology 2B3 in Level II is recommended for students who have completed Biology 1A6.
E 6 units. Computer Science 2B3 is recommended.

Level III: 31-35 units

R Biochemistry 3B3, 3C3, 3L4; Chemistry 3D6; Biology 2C3 (if not completed); 6-13 units from Biology 2B3 (if not completed) and Level III or IV Biotechnology, Biology or Chemistry courses to make a total of 25 to 29 units.

For students planning to enter the Biotechnology and Genetic Engineering Option, Biology 2B3 and 303 must be completed by the end of Level III; Biology 3E3 is recommended.
E 6 units, excluding Biochemistry.

Level IV: 32-35 units

R Biochemistry 2A3; Chemistry 2Q5; one of Chemistry 208 or 2S8; one of Chemistry 2F4 or 2N4; Biology 2C3 or 1A6 (if not completed in Level I); courses from any Science discipline, to make a total of 26 to 29 units. Election of both Biology 2B3 and 2C3 is recommended.

Students planning to take Chemistry 3F3 must have completed Chemistry 208.
E 6 units.
Faculty of Science

Level III: 31 units
R Biochemistry 3B3, 3C3, 3L4; Chemistry 3D6 or 3F3; 6 units from Area courses including at least 3 units of Level III or IV Biochemistry, Biology or Chemistry; Biology 2C3 (if not completed); and courses from any Science discipline to make a total of 25 units.
E 6 units, excluding Biochemistry.

Level IV: 30-32 units
R Biochemistry 4B6 or 4L3; Biochemistry 4E3 or 4M3 and 9 units of Level IV Biochemistry and Area courses to make a total of 20 to 22 units. Students with a CAA of at least 7.0 are eligible to take Biochemistry 4P3; students with a CAA of at least 8.0 are eligible to take Biochemistry 4G3.
E Electives to make a total of 30 to 32 units.

Department of Biology

Honours Biology

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7, or 1C8, and one of Physics 1B7, 1A7, 1C7, 1C8, with at least B — in either Biology 1A6 or 1B7 and at least B — in one of Mathematics 1A6, Chemistry 1A7, 1C8, Physics 1B7, 1A7, 1C7, 1C8.

Area Courses:
All Levels II, III and IV Biology courses except Biology 3V6, 326; Biochemistry 3B3, 3C3, 3G6, 4D3, 4E3, 4M3; Engineering 4X3; Geology 3D6, 4D3, 4F3; Psychology 3F6, 3R3, 3S3, 3T3.

Students are advised to note carefully the prerequisites for all Levels III and IV courses listed in the following programme, particularly Biochemistry 3B3, 3BB3 and 3G6.

Level II: 34-35 units
R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 2O8; Chemistry 2Q5, or Computer Science 1B3 (if not completed) and Statistics 2R6.
E Electives, excluding Biology and Biochemistry to make a total of 34 to 35 units.

Level III: 30-33 units
R 15 to 18 units from Levels III and IV Area courses in Biology; 6 to 9 units of Area courses to make a total of 21 to 24 units.
E Electives, at least 3 units of which must not be from Biology or Biochemistry, to make a total of 30 to 33 units.

Students planning to enter the Biotechnology and Genetic Engineering Option at Level IV are advised to note carefully the admission requirements.

Level IV (General Biology Option): 31-32 units
R 17 to 19 units of Levels III and IV Area courses in Biology, including Biology 4F4 or 4C8; 6 to 9 units of Area courses to make a total of 25 to 26 units.
E Electives to make a total of 31 to 32 units.

Level IV (Biotechnology and Genetic Engineering Option): 31-33 units
Admission:
Completion of Level III Honours Biology with a CAA of at least 9.0 and including Biology 3H6, 303, 6 to 9 units from Biology 3E3, 313, 3N6; one of Biochemistry 3G6, 3B3, or 3BB3.
R Biology 4A3, 4F4 or 4C8, 4P6; Biochemistry 4D3; 7 to 9 units from Biology 4I3, 4V3, 4B4, 4O3 to make a total of 25 to 27 units.
E 6 units of electives to make a total of 31 to 33 units.

Honours Biology and Geology

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, one of Physics 1A7, 1B7, 1C7 or 1C8, and Mathematics 1A6 with at least B — in Biology 1A6 or 1B7 and at least B — in Geology 1A6.

Biology 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, 356, 3Y6, 4D6, 4F4, 4C8, 4Q3, 4Z3; Geology 2B6, 2C6, 3C6, 3D6, 4D3, 4F3, 4K6, 4M6, 4S6.

Level II: 35-36 units
R Biology 2E3, 2F3; Geology 2B6, 2C6; Mathematics 1G4, 1G6 or Statistics 2R; Chemistry 2Q5 or Chemistry 2F4.
E Electives, 3 units of which may not be from 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 3C0, 4S6, 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.)

Geology 3E2 is normally taken at the end of Level III.

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 3C0, 4M6, 4D3, 4F3, 4K6, 4S6 which must include at least 6 units from Geology and at least 6 units from Computer Science 4F4, 4C8 and Geology 4K6 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 B — in Philosophy 1B6 or 1D6.

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 3B3, 3G6; all Levels II, III and IV Philosophy courses.

Level II: 34-35 units
R Biology 2B3, 2C3, 2E3, 2F3; Philosophy 2B3 or 2C3, 2D3 or 2G3, 2A6 or 2C6; 2L3 or 3W3; either Chemistry 2O8 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 3G6; 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 Philosophy 4W3; 12 units from Levels III and IV Biology Area courses and Biochemistry 3B3 or 3G6; 12 units from Philosophy 3G3 or 3N6; 356 or 4C8; 3L3 or 3Q3.
E 6 units elective.

Honours Biology and Psychology

Admission:
Completion of Natural Sciences 1, including Chemistry 1A7 or 1C8, one of Physics 1A7, 1B7, 1C7, or 1C8 with at least B — in Biology 1A6 or 1B7 and at least B — in Psychology 1A6.

Biology 2E3 will be included in calculating the Graduation Average.

Students must complete a minimum of one laboratory course in Psychology and one in Levels III or IV Biology. A minimum of 18 units from Psychology and a minimum of 18 units from Biology must be included in the total required courses for Levels III and IV combined.
**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 I., including Chemistry 1A7 or 1C8 and Mathematics 1A6 and 1G4 or 1G6. A grade of at least B must be achieved in Chemistry 1A7 or 1C8 in one of Mathematics 1A6, 1G4, 1G6, Physics 1A7, 1B7, 1C7, 1C8. One of Physics 1A7, 1B7, 1C7, 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4 or 1G6.

For students who enter this programme from September 1984, the following will prevail.

**Area Courses:**

Chemistry 2A4, 2S8, 3A4, 3D6, 3E6, 3I3, 3L3, 3U3, 4A3, 4C3, 4D3, 4G7, 4R3, 4S3, 4T4; Chemical Engineering 2D4, 2F4, 3K3, 3M4.

**Level II:** 32-35 units

R Chemistry 2A4, 2S8; Chemical Engineering 2D4, 2F4; Computer Science 1B3 (if not completed); Mathematics 2C3, 2D3.

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

**Level III:** 31-34 units

R Chemistry 3D6, 3E6, 3I3, 3L3, 3K3; Chemical Engineering 3M4.

E 6 to 9 units elective, 6 of which may not be Chemistry, to make a total of 31 to 34 units.

**Level IV:** 32-35 units

R Chemistry 3A4, 4A3 or 4D3, 4C3 or 4R3 or 4S3, 4T4; either Chemistry 4K5 or Chemical Engineering 3K3; 3 units of Level III or IV Area courses.

E Electives to make a total of 32 to 35 units. The following are among courses which are relevant: Engineering 204; Materials 4D3, 4E3; Metallurgy 2C3, 3C3, 4C3, 4N3; Chemical Engineering 3D3, 3P3, 4K3, 4N4; Business 3W6, 3X3, 3Y3; 3Z3, 3S; Physics 2B6.

For students who entered this programme before September 1984, the following will prevail.

**Area Courses:**

Chemistry 2A4, 2S8, 2U3, 2X1, 3A4, 3B4, 3C4, 3D6, 3E6, 3I3, 3Y3, 4A3, 4C3, 4D3, 4R3, 4S3, 4T4; Chemical Engineering 2D4, 2F4, 3K3, 3M4, 3E6, 4S3.

**Level III:** 32 units

R Chemistry 3B4, 3D6, 3E6, 3I3; Chemical Engineering 3M4.

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

**Level IV:** 33-36 units

R Chemistry 3A4, 3C4, 3Y3, 4A3 or 4D3, 4C3 or 4R3 or 4S3, 4T4.

E 12 to 15 units of electives, to make a total of 33 to 36 units.

**HONOURS CHEMISTRY**

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

**Admission:**

Completion of Natural Sciences I., including Chemistry 1A7 or 1C8 and Mathematics 1A6 and 1G4 or 1G6. A grade of at least B must be achieved in Chemistry 1A7 or 1C8 in one of Mathematics 1A6, 1G4, 1G6, Physics 1A7, 1B7, 1C7, 1C8. One of Physics 1A7, 1B7, 1C7, 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4 or 1G6.

**Area Courses:**

Biology 2B3, 2C3, 2E3, 3F6, 3H6, 3I3, 3J3, 3K6, 3N6, 3O3, 3P3, 3Q3, 3Y6, 4C3, 4E3, 4F4, 4M3, 4P6, 4S6; Psychology 2H3, 2R6, 2T3, 3B3, 3E3, 3F6, 3K3, 3M6, 3N6, 3P3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W6, 3X3, 3Y3, 4D6, 4E7, 4Q3; Statistics 2R6.

**Level II:** 32-35 units

R Biology 2B3 and 2C3; Psychology 2T3 and 2H3; Statistics 2R6 or Psychology 2R6; Chemistry 2O8.

E 6 to 9 units elective. Students are advised to take English 3A3 and Chemistry 2Q5 as electives in Levels II and III.

**Level III:** 33-36 units

R 12 units from Biology 2E3, 3H6, 3O3, 3P3, 3Y6, 4E3; Psychology 3W6; 6 units from Psychology 3E3, 3F6, 3K3, 3M6, 3N6, 3P3, 3R3, 3S3, 3T3, 3U3, 3V3, 3Y3; Biochemistry 3O6 or 3B3.

E 3 to 6 units elective, excluding Biology or Psychology, to make a total of 33 to 36 units.

**Level IV:** 33-34 units

R One of Biology 4F4, 4C8, Psychology 4D6; 18 to 22 units (with at least 9 units from Biology and 9 units from Psychology) from Levels III and IV Biology Area courses and Levels III and IV Psychology Area courses.

E Electives to make a total of 33 to 34 units.

**BIOLOGY MAJOR**

**Admission:**

Completion of Natural Sciences I., including Chemistry 1A7 or 1C8, with at least C in Biology 1A6 or 1B7 and at least C— in one of Mathematics 1A6, Chemistry 1A7, 1C8, Physics 1B7, 1A7, 1C7. One of Physics 1B7, 1A7, 1C7, 1C8 is strongly recommended in Level I.

**Area Courses:**

All Levels II, III and IV Biology courses, except Biology 3V6, 3Z6, 4C8; Biochemistry 3B3, 3G6.

**Level II:** 32 units

R Biology 2B3, 2C3, 2D3, 2E3, 2F3; Chemistry 2O8.

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.

E Electives, at least 6 units of which may not be from Biology or Biochemistry, to make a total of 30 to 33 units.

Students in Levels III and IV of this programme should select Area courses in consultation with the Chairman of the Department of Biology.

**B.Sc. IN BIOLOGY**

**Admission:**

Completion of Natural Sciences I., including Chemistry 1A7 or 1C8 and at least a grade of C— in Biology 1A6 or 1B7. One of Physics 1A7, 1B7, 1C7, 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; Biochemistry 2E3; Computer Science 1B3 (if not completed).

E 6 to 9 units, of which 6 must be from the Faculties of Social Sciences or Humanities.

**Level III:** 30 units.

R Biology 3V6, 3Z6; 6 units of Level III Biology Area courses; Statistics 2R6.

E 6 units from the Faculties of Social Sciences or Humanities.
For students who enter this programme from September 1984, the following will prevail:

**Area Courses:**
Chemistry 2A4, 2S8, 2T5, 2X1, 3A4, 3D6, 3E6, 3I3, 3L3, 3M3, 4A3, 4B3, 4C3, 4D3, 4G7, 4K5, 4P3, 4Q3, 4R3, 4S3, 4Y3.

For students interested in physical chemistry, recommended electives throughout the programme include Mathematics 3C6, Statistics 3M3 and Physics 2B6.

**Level II: 30-33 units**
- R Chemistry 2A4, 2S8, 2T5, 2X1; Mathematics 2G3, 203, Computer Science 1B3, if not completed in Level I.
- E 3 to 9 units elective, excluding Chemistry, to make a total of 30 to 33 units.

**Level III: 31-34 units**
- R Chemistry 3A4, 3D6, 3E6, 3I3, 3M3.
- E 9 to 12 units elective, 6 of which may not be Chemistry, to make a total of 31 to 34 units.

**Level IV: 31-35 units**
- R 21 units selected as follows: Chemistry 4G7, 4K5, 4A3 or 4D3, 4C3 or 4R3 or 4S3; 4B3 or 4Q3 or 4Y3; an additional 6 to 9 units from Level III or IV Natural Science or Engineering courses.
- E Electives to make a total of 31 to 35 units.

For students who entered this programme before September 1984, the following will prevail:

**Area courses:**
Chemistry 2A4, 2S8, 2T4, 2U3, 2X1, 3A4, 3C4, 3D6, 3E6, 3I3, 3Y3, 4A3, 4B3, 4C3, 4D3, 4E4, 4F3, 4G7, 4P3, 4Q3, 4R3, 4S3.

For students interested in physical chemistry, recommended electives throughout the programme include Mathematics 3C6, Statistics 3M3 and Physics 2B6.

**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 Level 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 I**, including Mathematics 1A6 and 1G4 or 1G6, Chemistry 1A7 or 1C8 and Physics 1A7, with a grade of at least B- in Chemistry 1A7 or 1C8 and Physics 1A6. The election of Physics 1A7 is recommended.

Chemistry 2U3 and Geology 2D5 will be included in calculating the Graduation Average.

For students who enter this programme from September 1984, the following will prevail:

**Area Courses:**
Chemistry 2A4, 2S8, 2T5, 3A4, 3E6, 3L3, 3U3, 4C3, 4P3, 4R3, 4S3; Geology 2B6, 2C6, 2D5, 3C6, 3G4, 4B6, 4M6, 4Q4.

**Level II: 34 units**
- R Chemistry 2S8, 2T5, Geology 2B6, 2C6, Mathematics 2G3 and 203.
- E 3 units elective, excluding Chemistry and Geology.

Geology 3E2 is normally taken at the end of Level II.

**Level III: 36 units**
- R Chemistry 2A4, 3E6, 3U3; Geology 2D5, 3C6, 3E2, 3G4. Attention is drawn to Geology 3E2 which is scheduled outside of regular term.
- E 6 units elective.

**Level IV: 32-34 units**
- R 20 to 22 units selected as follows: Chemistry 3A4; 16 to 18 units of Levels III and IV Chemistry and Geology to include at least 6 units of Area courses from each.
- E 12 units of electives.

For students who entered this programme before September 1984, the following will prevail:

**Area Courses:**
Chemistry 2A4, 2S8, 2T4, 2U3, 3A4, 3E6, 3I3, 4C3, 4P3, 4R3, 4S3; Geology 2B6, 2C6, 2D5, 3C6, 3G4, 4B6, 4M6, 4Q4.

**Level III: 35 units**
- R Chemistry 3E6; Geology 2D5, 3C6, 3E2, 3G4; Mathematics 203.
- E Attention is drawn to Geology 3E2 which is scheduled outside of regular term.
- E 9 units of elective.

**Level IV: 31-34 units**
- R 21 units selected as follows: Chemistry 3A4, 3I3; 14 units of Level 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.

**Admission:**
Completion of **Natural Science I**, including Mathematics 1A6 and 1G4 or 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 or 1G4. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G4 are strongly recommended.

Chemistry 2A4 will be included in calculating the Graduation Average.

For students who enter this programme from September 1984, the following will prevail:

**Area Courses:**
Chemistry 2A4, 2S8, 2T5, 3E6, 4B3, 4C3, 4G7, 4K5, 4Q3, 4Y3; Physics 2B6, 2C5, 3B6, 3K4, 3M6, 3N3, 4F3, 4J4, 4K3, 4Q4.

**Level II: 33-34 units**
- R Chemistry 2S8, 2T5; Physics 2B6, 2C5; Mathematics 2G3, 203.
- E 3 to 4 units to make a total of 33 to 34 units. Computer Science 1B3 is recommended if not taken in Level I.

**Level III: 34 units**
- R Chemistry 2A4, 3E6; Physics 3M6; 6 to 10 units from Physics 3B6, 3K4, 3N3, 3M3, 3C6.
- E Electives to make a total of 34 units.

**Level IV: 31-34 units**
- R At least 25 units of Level III and Level IV Chemistry and Physics, which must include: Chemistry 4G7 or Physics 4J4 or Physics 4Q4, 4F3, Chemistry 4K5; Chemistry 4Y3 or Physics 3K4, if not taken in Level III.
- E 6 to 9 units, to make a total of 31 to 34 units.

For students who entered this programme before September 1984, the following will prevail:

**Area Courses:**
Chemistry 2A4, 2S8, 2T4, 3C4, 3E6, 3Y3, 4B3, 4C3, 4E4, 4F3, 4G7, 4Q3; Physics 2B6, 2C5, 3B6, 3K4, 3M6, 3N3, 4F3, 4J4, 4K3, 4Q4.
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.

Admission:
Completion of Natural Sciences I, including Chemistry 1A7 or 1C8 and Mathematics 1A6 and 1G4 or 1G6. A grade of at least C must be achieved in Chemistry 1A7 or 1C8 and one of Mathematics 1A6, 1G4, 1G6, Physics 1A7, 1B7, 1C7, 1C8. One of Physics 1A7, 1B7, 1C7, 1C8 must be taken before entry into Level III; its election as part of Natural Sciences I is strongly recommended. Students will also be considered for admission if they have completed Mathematics 1B4 instead of 1G4 or 1G6.

For students who enter this programme from September 1984, the following will prevail.

Area Courses:
Chemistry 2F4, 208, 2P4, 2R2, 3B4, 3F3, 3I3, 3K6, 3Q4, 4A3, 4B3, 4C3, 4D3, 4K5, 4P3, 4Q3, 4R3, 4S3, 4T4, 4Y3.

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: 30-32 units
R Chemistry 3B4, 3F3, 3K6, 3Q4; Mathematics 2G3 and 203, if not taken previously.
E Electives to make a total of 30 to 32 units.

Level IV: 30-32 units
R Chemistry 3I3, 4K5, 4A3 or 4D3, 4C3 or 4R3 or 4S3, 4T4 and 3 units of Level IV Area courses.
E 9 to 11 units elective to make a total of 30 to 32 units.

For students who entered this programme before September 1984, the following will prevail.

Area Courses:
Chemistry 2F4, 208, 2P4, 2R2, 3B4, 3C4, 3D6, 3F3, 3I3, 3K6, 3Q4, 3V3, 4A3, 4C3, 4D3, 4P3, 4R3, 4S3, 4T4.

Level III: 30-32 units
R Chemistry 3B4, 3F3, 3K6, 3Q4; Mathematics 2G3 and 203, if not taken previously.
E Electives to make a total of 30 to 32 units.

Level IV: 30-32 units
R Chemistry 3C4, 3Y3, 4A3 or 4D3, 4P3, 4C3 or 4R3 or 4S3, 4T4.
E 10 to 12 units elective to make a total of 30 to 32 units.

B.Sc. IN CHEMISTRY
Admission:
Completion of Natural Sciences I, including Chemistry 1A7 or 1C8 with a grade of at least C, and Mathematics 1A6, Mathematics 1G4 or 1G6, and one of Physics 1A7, 1B7, 1C7 or 1C8 must be taken before Level III. The election of Mathematics 1G4 or 1G6 and one of Physics 1A7, 1B7, 1C7, 1C8 as part of Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2F4, 208, 2P4, 2R2, 3B4, 3F3, 3I3, 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, 3I3, 3K6, 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. Computer Science 1B3 or 1H3 must be completed by the end of Level III. Students should 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, 3O3, 3W3. Computer Science 1B3 or 1H3, 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.

Level IV: 30 units
R Geography, 4C6, and at least 12 additional units of Level IV Area courses.
E Electives to make a total of 30 units, 6 of which may not be 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 a grade of at least B— in both Geography 1A6 and Geology 1A6. Chemistry 1A7 must be completed by the end of Level II.

Geology 2D5 will be included in calculating the Graduation Average.

Area Courses:
Geography 2F3, 2K3, 2L6, 2M3, 2T3, 2W3, 3E3, 3F3, 3I3, 3K3, 3M3, 3O3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4I3, 4K3, 4Q3, 4R3, 4V3, 4W3. Geography 2B6, 2C6, 2D5, 3C6, 4E6, 4M3, 4M6, 4T3.

Level II: 33 units
R Geography 2L6, 2T3, and one of Geography 2F3, 2K3, 2M3, 2W3; 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.

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Level III: 34-35 units
R Geography 3E3, 3M3, 3O3, and one of 3F3, 3K3, 3W3; Geology 2D5, 3C6, 3E2.
E 9 to 10 units electives, at least 3 of which may not be Geography or Geology.
FACULTY OF SCIENCE

Level IV: 30-33 units
R Six units of Level IV Geography Area courses; 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:

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 is limited. Students wishing to enter any of these programmes should consult the Department.

HONOURS BIOLOGY AND GEOLOGY
(See "Department of Biology")

HONOURS CHEMISTRY AND GEOLOGY
(See "Department of Chemistry")

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(See "Faculty of Science — Department of Geography")

HONOURS GEOLOGY
(See "Faculty of Social Sciences — Department of Geography")

Admission:
Completion of Natural Sciences I, including Geography 1A6, Mathematics 1A6, Chemistry 1A7 or 1C8, and at least one of Biology 1A6 or 1B7 and Physics 1A7, 1B7, 1C7, 1C8. A grade of B — must be obtained in each of Geography 1A6 and one other of the courses listed previously.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6, 3G4, 3J3, 4B6, 4E6, 4K6, 4M6, 4T3.

Level II: 33-35 units
R Geology 2B6, 2C6, 2D5, Chemistry 2P4, whichever one of Biology 1A6, 1B7, Physics 1A7, 1B7, 1C7, 1C8 not already completed; Science and/or Engineering courses approved by the Department to make a total of 27 to 29 units.
E 6 units elective, excluding Geology.

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Level III: 33-36 units
R Geology 3C6, 3D6, 3E2, 3G4, 3J3; Materials 3D3; 3 to 6 units Science and/or Engineering courses.
E 6 units elective, excluding Geology.

Level IV: 32 units
R Geology 4B6, 4M6, and either 4E6 or 4K6.
E 14 units of electives to make a total of 32 units.

HONOURS GEOLOGY AND PHYSICS
Admission:
Completion of Natural Sciences I, including Geography 1A6, Physics 1A7, Chemistry 1A7 or 1C8, Mathematics 1A6 and 1G6, with a grade of at least B — in each of Geography 1A6 and Physics 1A7. Students will also be considered for admission if they have completed one of Physics 1B7, 1C7, 1C8 instead of Physics 1A7; however, Physics 1A7 is strongly recommended.

Area Courses:
Geology 2B6, 2C6, 2D5, 3A3, 3B3, 3C6, 3J3, 4E6; Physics 2B6, 2C5, 3G3, 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, 2C5; Mathematics 2G3, 2O3.
E 6 units excluding Geology and Physics. Computer Science 1B3 is strongly recommended.

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Level III: 31-34 units
R Geology 2D5; Geology 3A3, 3B3, whichever not already completed; Physics 3E2, Physics 2H3 or one of Chemistry 2P4, 2T4, 2T5; Physics 3M6; Physics 3G3 or 4S3; Mathematics 3C6.
E 3 to 6 units of electives to make a total of 31 to 34 units.

Level IV: 31-34 units
R Geology 3C6; Geology 3A3, 3B3, whichever not already completed; Physics 4B4, 4K3; one of Physics 3G3, 4S3, whichever not already completed; 6 additional units of Level III or IV Geology or Physics.
E 6 to 9 units of electives.

GEOLGY MAJOR
Admission:
Completion of Natural Sciences I, including Geography 1A6 and Chemistry 1A7 or 1C8, with a grade of at least C — in Geography 1A6 and one of Biology 1A6 or 1B7, Chemistry 1A7, or 1C8, Mathematics 1A6, Physics 1A7, 1B7, 1C7, 1C8.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6, 3G4, 4B6, 4E6, 4K6, 4M6, 4T3.

Geology 2D5 will be included in calculating the Graduation Average.

Level II: 31-32 units
R Geology 2B6, 2C6; Physics 2B6, 2C4; Biology 1A6 or 1B7, if not already completed, or 6 units of Science and/or Engineering courses approved by the Department.
E 9 to 10 units elective, 6 of which may not be Geology.

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

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: 30 units
R Geology 3D6, 4B6, 4E6, 4M6.
E 6 units of electives to make a total of 30 units.

GEOLGY AND PHYSICS MAJOR
Admission:
Completion of Natural Sciences I, including Geography 1A6, Physics 1A7, Chemistry 1A7 or 1C8, Mathematics 1A6 and 1G4 or 1G6, with a grade of at least C — in each of Geography 1A6 and Physics 1A7. Students will also be considered for admission if they have completed one of Physics 1B7, 1C7, 1C8 instead of Physics 1A7; however, Physics 1A7 is strongly recommended.
Area Courses:
Geology 2B6, 2C6, 2D5, 3A3, 3B3, 3C6, 3J3, 4E6; 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, 2G3; Mathematics 2G3, 2D3.
E 6 units excluding Physics and Geology. Computer Science 1B3 is strongly recommended.

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Level III: 30-32 units
R Geology 3A3 or 3B3; Physics 2H3 or one of Chemistry 2P4, 2T4, 2T5; Physics 3P3; Physics 3G3 or 4S3; 3 units of Geology or Physics.
E 6 to 8 units of 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 3C6; Physics 3G3 or 4S3, whichever not already completed; 9 to 11 units of Level III or IV Geology or Physics, of which 6 to 7 units must be Level III or IV Physics.
E 8 to 10 units of electives to make a total of 29 to 31 units.

B.Sc. IN GEOLOGY
Admission:
Completion of Natural Sciences 1, including Geology 1A6, one of Chemistry 1A7, 1C7, 1G8 and Mathematics 1A6, with a grade of at least C – in Geology 1A6.

Area Courses:
Geology 2B6, 2C6, 2D5, 3C6, 3D6, 3G4.

Level II: 30-31 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).

Geology 3E2 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Level III: 31 units
R Geology 2D5, 3C6; 3D6 or 3G4; 3E2.
E Electives to make a total of 31 units, 6 of which may not be Geology. Geology 3D6 or 3G4, whichever not already completed as “R” 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 one of 1G4, 1G6, 1B4, and 6 units acceptable to the Department of Mathematical Sciences.

For students intending to enter Honours Computer Science and Mathematics or Honours Computer Science and Statistics, one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 is required in Level I.

This is a common Level II programme from which the student may enter Honours programmes in Computer Science; Computer Science and Mathematics; Computer Science and Statistics; Mathematics; Statistics; and Theoretical Physics and Applied Mathematics.

Area Courses:
Computer Science 2B3, 2L3; Mathematics 2A5, 2B4, 2C4, 2F4; Statistics 2D4, 3M3; Physics 2C5.

Level II: 32-35 units
R Mathematics 2A5, 2B4; Statistics 2D4; 8 to 14 units from Computer Science 1C3, 2B3, 2L3, Mathematics 2C4, 2F4, Physics 2C5, Statistics 3M3.
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.

Students intending to enter Honours Mathematics must take Mathematics 2C4 and should take Mathematics 2F4. In Honours Computer Science and Statistics, and Honours Statistics, Mathematics 2C4 must be completed by the end of Level III. In Honours Computer Science and Mathematics, both Mathematics 2C4 and 2F4 must be completed by the end of Level III.

Students intending to enter Computer Science and Statistics must take Computer Science 1C3 (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, (if not already completed), 2B3, 2L3.

Students intending to enter Theoretical Physics and Applied Mathematics must take Physics 2B6 and 2C5.

The Department of Mathematical Sciences requires that all Honours students entering Level III or IV must have their programmes approved by the Chairman or designate.

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, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4W3, 4X3; Mathematics 2C4, 2F4, 3A6, 3E4, 3F6, 3L4, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4C4, 4O3, 4Q6, 4S4; Statistics 3D6, 3M3, 3U3, 4G3, 4J3, 4M3, 4R3, 4S3, 4T3, 4V3, 4X3.

Levels III and IV: 64-68 units
R Computer Science 3A3, 3D3, 4G6, 6 units of Computer Science Area courses; Mathematics 2C4 (if not completed), 2F4 (if not completed), 3A6, and one of Mathematics 4A6, 4C4, 4Q6, 4S4; 6 units of Mathematics or Statistics Area courses; 4 to 10 units of Area courses.
E Electives to make a total of 64 to 68 units, at least 6 of which must not be from the Department of Mathematical Sciences.

HONOURS COMPUTER SCIENCE AND STATISTICS

Admission:
Completion of Level II of Honours Mathematical Sciences, including Computer Science 2B3, 2L3, or Level II of Honours Computer Science, including Mathematics 2A5, 2B4.

Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4X3, 4W3; Mathematics 2C4, 3Q4, 3R3, 3T3, 4H3, 4O3, 4Q6; Statistics 3D6, 3M3, 3U3, 4G3, 4J3, 4M3, 4R3, 4S3, 4T3, 4U3, 4V3.

Levels III and IV: 64-68 units
R Computer Science 3A3, 3D3, 4G6; Mathematics 2C4 (if not completed), 3T3; Statistics 3D6, 3M3 (if not completed); 10 to 12 units of Mathematics or Statistics Area courses, at least 6 units of which must be Statistics Area courses; 3 to 4 units of Area courses.
E Electives to make a total of 64 to 68 units, at least 6 of which must not be from the Department of Mathematical Sciences.

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.
Levels III and IV: 64-68 units
R Mathematics 2C4 (if not completed), 2F4 (if not completed), 3A6, 3E4, 3A6; 6 units of Area courses.
E Electives to make a total of 64 to 68 units, at least 6 of which must not be from the Department of Mathematical Sciences.

HONOURS STATISTICS

Admission:
Completion of Level II Honours Mathematical Sciences or Level II Honours Computer Science including Mathematics 2A5 and 2B4. Students are strongly urged to complete Computer Science 1B3 or 1H3 before entering Level III.

Area Courses:
Computer Science 2A3, 2B3, 2L3, 3A3, 3P3; Mathematics 2C4, 3A6, 3E4, 3F6, 3Q6, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4A6, 4K4, 4Q6, 4O3; all Level III and IV Statistics courses.

Levels III and IV: 64-68 units
R Mathematics 2C4 (if not completed), 3A6 or 306, 3T3 or 4A6; Statistics 3D6, 3M3 (if not completed), 4M3, at least 24 units from Area Courses of which at least 9 units must be Statistics courses.
E Electives to make a total of 64 to 68 units, of which at least 6 units must not be from courses in the Department of Mathematical Sciences.

MATHEMATICAL SCIENCES MAJOR

Admission:
Completion of any Level I programme, with an average of at least 4.0 in Mathematics 1A6, and one of 1B4, 1G4, 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 Computer Science; Computer Science and Mathematics; Computer Science and Statistics; Mathematics; and Statistics.

For students intending to enter Computer Science Major, Computer Science and Mathematics Major, or Computer Science and Statistics, one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 is required in Level I.

Area Courses:
Computer Science 2A3, 2B3, 2L3, 2P3; 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), 2B3, 2L3; Statistics 2D4, 3M3.

Students intending to enter Computer Science and Statistics must take Computer Science 1C3 (if not completed), 2B3, 2L3 and Statistics 2D4. Statistics 3M3 is strongly recommended as an elective.

Students intending to enter Level III Computer Science or Computer Science and Statistics must take Computer Science 1C3 (if not completed), 2B3 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.

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, 3E3, 3J3, 3P3, 3T3, 4E3, 4F3, 4G6, 4I3, 4J3, 4L3, 4W3, 4X3; Mathematics 3E4, 3F6, 3L4, 3O6, 3Q4, 3R3, 3S3, 3T3, 4C4, 4H3, 4O3, 4Q6, 4S4; Statistics 3D6, 3M3, 3U3, 4J3, 4M3, 4R3, 4S3, 4T3, 4U3, 4Y4.

Levels III and IV: 60-64 units
R Computer Science 3A3, 3D3, 4G6, 6 units of Computer Science Area courses; Mathematics 306; one of Mathematics 4C4, 3T3 and 403, 4Q6, 4S4; 6 units of Mathematics or Statistics Area courses; 4 to 6 additional units of Area courses.
E Electives to make a total of 60 to 64 units, at least 6 units of which must not be from the Department of Mathematical Sciences.

COMPUTER SCIENCE AND STATISTICS MAJOR

Admission:
Completion of Level II of Mathematical Sciences Major, including Statistics 2D4 and Computer Science 2B3, 2L3, or Level II of Computer Science Major, including Mathematics 2G3, 2O3.

Area Courses:
Computer Science 3A3, 3B3, 3C3, 3D3, 3E3, 3P3, 3T3, 4E3, 4F3, 4G6, 4J3, 4L3, 4X3, 4W3; Mathematics 3Q4, 3R3, 3T3, 4H3, 4O3, 4Q6; Statistics 3D6, 3M3, 3U3, 4M3, 4R3, 4S3, 4T3, 4U3, 4V3.

Levels III and IV: 60-64 units
R Computer Science 3A3, 4G6; Mathematics 3T3; Statistics 3D6, 3M3 (if not completed); 12 units of Computer Science Area courses; 9 to 10 units of Mathematics and Statistics Area courses; 3 to 4 units additional Area courses.
E Electives to make a total of 60-64 units, at least 6 units of which must not be from the Department of Mathematical Sciences.

MATHEMATICS MAJOR

Admission:
Completion of Level II Mathematical Sciences Major, including Statistics 2D4 or, Level II Computer Science Major including Mathematics 2G3 and 2O3.

Area Courses:
All Levels III and IV Mathematics and Statistics courses; Computer Science 2P3.

Levels III and IV: 60-64 units
R Mathematics 306, 3T3, 24 units of Area courses.
E Electives to make a total of 60 to 64 units, at least 6 of which must not be from the Department of Mathematical Sciences.

STATISTICS MAJOR

Admission:
Completion of Level II Mathematical Sciences Major, including Statistics 2D4 or Level II Computer Science Major including Mathematics 2G3 and 2O3. Students are strongly urged to complete Computer Science 1B3 or 1H3 before entering Level III.

Area Courses:
Computer Science 2A3, 2P3, 3I3, 3D3, 3P3, 3T3, 4I3, 4W3; Mathematics 306, 3Q4, 3R3, 3S3, 3T3, 3X3, 3Y3, 4C4, 4H3, 4O3, 4Q6; all Level III and IV Statistics courses.

Levels III and IV: 60-64 units
R Mathematics 306, 3T3, 4O3, 3D6, 3M3 (if not completed); 18-22 units of Area courses, at least 9 units of which must be Statistics courses.
E Electives to make a total of 60-64 units at least 6 of which must not be from the Departments of Mathematical Sciences.

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, 1G4, 1G6.

Area Courses:
Mathematics 2G3, 2J6, 2K3, 2O3; Computer Science 2P3; Statistics 2D4; all Level III Mathematics and Statistics courses.

Levels II and III: 60-62 units
R Mathematics 2G3, 2J6, 306, 3T3; 4 to 6 additional units of Area courses.
E Electives to make a total of 60-62 units, at least 12 units 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 is limited. Students intending to enter any Computer Science programme should consult the Unit.

HONOURS COMPUTER SCIENCE

Admission:
Completion of Natural Sciences I including Computer Science 1B3 or 1H3 and a weighted average of at least 7.0 in Mathematics 1A6, and one of Mathematics 1B4, 1G4, 1G6, and 6 units acceptable to the Unit.

Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G4, 1G6, 1B4 and 6 units acceptable to the Unit with a weighted average of at least 7.0 and who have completed one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.

Area Courses:
All Level II, III and IV Computer Science courses (except 2A3, 2N3, 2P3, 3L3, 4L3); Mathematics 2A5, 2B4, 2C4, 2F4, 3E4, 3L4, 3Q4, 3R3, 4C4, 4H3, 4Q6, 4S4, 4W4; Statistics 2D4, and all Level III and IV Statistics courses; Physics 2B6, 3B6, 4D6.

Level II: 32-34 units
R Computer Science 1C3 (if not completed), 2B3, 2L3; Statistics 2D4; Mathematics 2F4; one of Mathematics 2A5, 2B4, 2C4.
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 Level III and IV Mathematics courses; 6 to 9 units of Area courses.
E Electives to make a total of 32 to 34 units, which may include Mathematics 2A5, 2B4, 2C4.

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 2A3, 2C4; Physics 2B6, 3B6, 4D6.

COMPUTER SCIENCE MAJOR

Admission:
Completion of Natural Sciences I, including Computer Science 1B3 or 1H3, with a weighted average of at least 4.0 in Mathematics 1A6, and one of Mathematics 1B4, 1G4, 1G6, and 6 units acceptable to the Unit.

Students registered in Level I in another Faculty who have completed Mathematics 1A6, one of Mathematics 1G4, 1G6 or 1B4 and 6 units acceptable to the Unit with a weighted average of at least 4.0, and who have completed one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.

Area Courses:
All Level II, III, and IV Computer Science courses (except 2N3, 2P3); Mathematics 2G3, 2J6, 2Q3, 3E4, 3L4, 3Q4, 3R3, 4C4, 4F3, 4H3, 4Q6, 4S4; Statistics 2D4, and all Level III and IV Statistics courses; Physics 2B6, 3B6, 4D6.

Level II: 30-32 units
R Computer Science 1C3 (if not completed), 2B3, 2L3; Statistics 2D4; Mathematics 2J6; two of Mathematics 2G3, 2K3, 2O3.
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 of Area Courses of which at least 3 units must be Mathematics or Statistics courses beyond Level II.
E Electives to make a total of 30 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 3T3, 4G6; 9 units of Computer Science courses beyond Level II; 3 to 6 units from Area courses.
E Electives to make a total of 30 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.

B.Sc. IN COMPUTER SCIENCE

Admission:
Completion of any Level I programme including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 and with an average of at least 4.0 in Mathematics 1A6, and in 6 other units acceptable to the Unit.

Area Courses:
All Level II, III and IV Computer Science courses (except 2N3, 2P3); all Level II, III and IV Mathematics courses; Business 3W6.

Level II: 30 units
R Computer Science 1C3 (if not completed), 2A3, 2B3, 2L3; 3 units of any Mathematical Sciences courses.
E 12 units, at least 6 units of which must not be from the Department of Mathematical Sciences.

It is recommended that students choose their electives so that 18 units of Level II and Level III courses are in a single subject. Economics 1A6 and Business 3W6 are recommended.

Level III: 30 units
R Computer Science 3A3, 3D3, 3I3, 3R6 and one of Computer Science 3T3, 3T4, 4J3.
E 12 units, at least 6 of which must not be from the Department of Mathematical Sciences.

It is recommended that students elect Statistics 3M3 in Level III.

Department of Metallurgy and Materials Science

HONOURS METALLURGY AND MATERIALS SCIENCE

Admission:
Completion of Natural Sciences I, including Mathematics 1A6, 1G4 or 1G6, and Chemistry 1A7 or 1C8, with a weighted average of at least 7.0 in Chemistry 1A7 or 1C8 and one of Mathematics 1A6, 1G4 or 1G6, or Physics 1A7. Physics 1A7 must be taken in Level I or II; its election in Level I is strongly recommended.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T5; Engineering 203, 3P3, 3Q3, and 4J3; Mathematics 2A5, 2C4, 2G3, and 2O3; Physics 4K3.

Level II: 35-37 units
R Chemistry 2A4, 2T5; Computer Science 1B3; Mathematics 2G3, 2O3; Engineering 203 (unless Materials 1A6 completed); Materials 2F3; Metallurgy 2C3; Physics 1A7, or if completed, Physics 2B6; Engineering 2P4. (If Physics 1A7 is taken in Level II, no other Physics course may be selected.)
E Electives, if necessary, to make a total of at least 35 units.
FACULTY OF SCIENCE

Level III: 34 units
R Materials 3B4, 3D6, 3E6; Mathematics 3C6; Physics 2B6, if not completed; Chemistry 2G3 or Physics 3M6 (which may be deferred to Level IV).
E Electives to make a total of 34 units, 6 units of which may not be selected from courses in Ceramics, Chemistry, Computer Science, 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 Materials 4E3; Metallurgy 4A1, 4K4, 4L4; Physics 3M6, if not completed; 12 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, Computer Science, Mathematical Sciences, Materials, Metallurgy or Physics.

METALLURGY AND MATERIALS SCIENCE MAJOR

Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G4 or 1G6, and Chemistry 1A7 or 1C8, with a weighted average of at least 4.0 in Mathematics 1A6 and Chemistry 1A7 or 1C8. Physics 1A7 must be taken in Level I or II; its election in Level I is strongly recommended.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T5; Engineering 203, 3P3, 3Q3, and 4J3; Mathematics 2A5, 2C4, 2G3, and 203; Physics 4K3.

Level II: 30-33 units
R Chemistry 2T5; Computer Science 1B3, Mathematics 2G3, 203; Engineering 203 (unless Materials 1A6 completed); Engineering 2P4 or 2R4; Materials 2F3; 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 2B6, if not completed, 6 units electives which may not be selected from courses in Ceramics, Chemistry, Computer Science, 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, Computer Science, Mathematical Sciences, Materials, Metallurgy or Physics.

Department of Physics

HONOURS CHEMISTRY AND PHYSICS
(See “Department of Chemistry”)

HONOURS GEOLOGY AND PHYSICS
(See “Department of Geology”)

HONOURS PHYSICS

Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G4 or 1G6, Physics 1A7 and one of Chemistry 1A7, 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 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G4 or 1G6 are strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences 1.

Area Courses:
Physics 2B6, 2C5, 2H3, 3H4, 3M6, 3T3, 4A2, 4B4, 4D6, 4E3, 4R3, 4T3; Mathematics 2A5, 3C6; Biology 3Q3.

Level II: 33-36 units
R Physics 2B6, 2C5, 2H3, Mathematics 2A5, 2C4; Computer Science 1B3.
E Electives to make a total of 33-36 units, at least 6 of which must not be from Physics. Statistics 2D4 or 3M3 is recommended.

Students who have completed Level II of Honours Physics are eligible to proceed to Level III of Honours Physics, Honours Applied Physics, and Honours Theoretical Physics and Applied Mathematics. They may also be considered for admission to Level III of Honours Metallurgy and Materials Science, preferably if Materials 1A6 or Engineering 203 has been completed in Level II.

Level III: 32-35 units
R Physics 3H4, 3K4, 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, 3X3, 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 4W3.

Level III: 34-36 units
R Physics 3B6, 3H4, 3M6, 2H3 (if not completed); Mathematics 3C6; additional units chosen from Physics 3K4, 3N3, 3T3, 3X3, 3Y3, Engineering Physics 3D3, 3K4, 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 APPLIED PHYSICS (HEALTH AND RADIATION OPTION)

Admission:
Completion of Natural Sciences 1, including Mathematics 1A6, 1G4 or 1G6, Physics 1A7 and Chemistry 1A7, and one of Biology 1A6, Computer Science 1B3, with a weighted average of at least 7.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G4 or 1G6 are strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

Area Courses:
Physics 2B6, 2C5, 2H3, 3H4, 3M6, 3T3, 4A2, 4B4, 4D6, 4E3, 4R3, 4T3; Mathematics 2A5, 3C6; Biology 3Q3.

Level II: 33-35 units
R Physics 2B6, 2C5, 2H3, Mathematics 2A5, 2C4; Computer Science 1B3 and Biology 1A6 (if not completed); one of Computer Science 2P3, 3N3.
E Electives to make a total of 33-35 units. Chemistry 2D4 and Statistics 3M3 are strongly recommended.

Level III: 33-35 units
R Physics 3H4, 3M6, 3T3; Mathematics 3C6; Biology 3Q3, 7-10 units from Physics 3B6, Mathematics 3Q4, Chemistry 2F3.
E Electives to make a total of 33-35 units.
Level IV: 33-35 units
R Physics 4A2, 4B4, 4D6, 4E3, 4Q4, 4R3, 4T3; Engineering Physics 4W3; one of Engineering 4X3, Engineering Physics 4Y3. The project of Physics 4Q4 must be taken in Health and Radiation Physics.
E Electives to make a total of 33-35 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); 3 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 I, including Mathematics 1A6, 1G4 or 1G6, Physics 1A7 and one of Chemistry 1A7, 1C8 with a weighted average of at least 4.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G4 or 1G6 are strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

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, if not completed.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be Physics. Statistics 3M3 is recommended.

Level III: 29-32 units
R Physics 3H4; either Physics 3M6, Mathematics 3C6, 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, 4F4, 14 to 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.

PHYSICS MAJOR (HEALTH AND RADIATION PHYSICS OPTION)
Admission:
Completion of Natural Sciences I, including Mathematics 1A6; 1G4 or 1G6, Physics 1A7, one of Chemistry 1A7, 1C8, one of Biology 1A6, Computer Science 1B3, with a weighted average of at least 4.0 in Physics, one of the Mathematics courses, and any other required course. Students will also be considered for admission if they have completed (i) Mathematics 1B4 instead of 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G6 or 1G4 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; Engineering Physics 4Y3.

Level II: 31-33 units
R Physics 2B6, 2H3; one of 2C5, 2G3; Mathematics 2G3, 2O3; Computer Science 1B3 and Biology 1A6 if not completed; one of Computer Science 2N3, 2P3.
E Electives to make a total of 31 to 33 units. Chemistry 2D4, and Statistics 3M3 are strongly recommended.

Level III: 31-34 units
R Physics 3B6, 3H4, 3P3, 3T3; Biology 3Q3; Chemistry 2F3
E Electives to make a total of 31 to 34 units.

Level IV: 30-32 units
R Physics 4A2, 4D6, 4E3, 4Q4, 4R3, 4T3; one of Engineering 4X3, Engineering Physics 4Y3. The project of 4Q4 must be taken in Health and Radiation Physics.
E Electives to make a total of 30 to 32 units.

B.Sc. IN PHYSICS
Admission:
Completion of Natural Sciences I, including Physics 1A7, Mathematics 1A6, 1G4 or 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 1G4 or 1G6; (ii) one of Physics 1B7, 1C7, 1C8 instead of 1A7. However, Physics 1A7 and Mathematics 1G4 or 1G6 are strongly recommended. It is also recommended that Computer Science 1B3 be taken in Natural Sciences I.

Area Courses:
Physics 2B6, 2G3, 2H3 and all Levels III and IV Physics courses; Mathematics 2G3; Chemistry 2P4, 2R2.

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.
E 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 (B.Sc.)
(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 2U3, 3C6, 3E3, 3Q3Q3, 3S3, 3V3, 4E7, 4QQ3.

Area Courses:
All Psychology courses above Level I.

Level II: 33-35 units
R Psychology 2H3, 2R6, 2T3, 3 units of Level II Psychology; one of English 1A6, 1B6, 3A3 or Humanities 1A6; 12 to 14 units chosen from Biochemistry, Biology, Chemistry, Physics, or Mathematical Sciences.
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, Physics or Mathematical Sciences. If Psychology 2D6 was completed in Level II, then 6 additional units of Level III Psychology must be substituted for 3W6.
E Electives to make a total of 32 to 34 units.

Level IV: 30-33 units
R Psychology 4D6; 12 to 13 units of Levels III and IV Psychology.
E Electives to make a total of 30 to 33 units.

The electives taken during Levels III and IV must include a minimum of 6 units which are not Psychology.

B.Sc. IN PSYCHOLOGY
(For B.A. Degree Programme in Psychology, see “Faculty of Social Sciences — B.A. in Psychology”)

Admission:
Completion of Natural Sciences I, with a grade of at least C- in Psychology 1A6.

At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2U3, 3C6, 3E3, 3QQ3, 3S3, 3V3.

Area Courses:
All Psychology courses above Level I.

Level II: 30-32 units
R Either Psychology 2T3 and 2H3 or 2D6; Psychology 2R6; one of English 1A6, 1B6, 3A3 or Humanities 1A6; 6 to 8 units chosen from Biochemistry, Biology, Chemistry, Mathematical Sciences or Physics.
E Electives to make a total of 30 to 32 units, at least 3 of which must not be from Psychology.

Level III: 30-32 units
R 12 units of Level III Psychology; 6 to 8 units chosen from Biochemistry, Biology, Chemistry, Mathematical Sciences or Physics, beyond Level I.
E Electives to make a total of 30 to 32 units, at least 6 of which must not be from Psychology.

Science

B.Sc. IN SCIENCE
Admission:
Completion of Natural Sciences I, including at least two courses from Level I Biology, Chemistry and Physics, and with a weighted average of at least 4.0 in two or more Mathematics or Science courses. Chemistry 1A7 or 1C8 and one of Physics 1B7, 1A7, 1C7, 1C8 must be taken in Level I or II. The election of both in Level I is strongly recommended.

Area Courses:
All Level II and III Natural Science and Mathematical Sciences courses.

Level II: 30 units
R 18 units of Level II and III Natural or Mathematical Sciences courses, including Chemistry 1A7 or 1C8 (if not completed) and one of Physics 1B7, 1A7, 1C7, 1C8 (if not completed).
E 12 units, at least 6 of which are not Area courses.

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 Level II and III Natural or Mathematical Sciences courses, at least 12 units of which must be from Level III.
E 12 units, at least 6 of which are not Area courses.

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)
E. Frank/M.A., Student Advisor
D. Jacobs/Student Advisor
J. Weston/B.A., Student Advisor
E. Moore/Programmes Co-ordinator

The social sciences are concerned with the systematic study of activities of human relationships in societies which range from the primitive to the post-industrial. There is also growing interest among social scientists in the interaction between people and their natural and artificial environments. Developments in theory and refinements of method have, in recent years, given great impetus to social science studies and research.

The Faculty of Social Sciences includes the following departments or schools and programmes:

Anthropology, Economics, Labour Studies, Physical Education, Political Science, Religious Studies, Social Work, Sociology, Geography and Psychology have programmes in the Faculty of Social Sciences as well as in the Faculty of Science.

The Faculty offers Bachelor of Arts, Honours Bachelor of Arts and Professional programmes. The Honours programmes provide a richer concentration in the particular field, as well as an extended time of study, and are normally a requirement for those who contemplate proceeding to graduate studies. In many cases, students may combine work in two departments and be graduated with a Combined Honours Degree in the two subjects. The Faculty of Social Sciences is participating fully in helping interested students combine concentration in a social science area with concentration in Canadian Studies, in Arts and Science or any department in the Faculty of Humanities.

The two schools, Social Work and Physical Education, offer programmes of study which lead to the B.A./B.S.W. degrees in one case, and the B.P.E. degree in the other. The B.S.W. degree may be attained separately by those who have already received one undergraduate degree.

Students are strongly advised to take advantage of the extensive counselling services provided by the Faculty. New students in particular should plan a programme of study that will allow them a number of options when they enter Level II.

Academic Regulations

Students enrolled in a programme in the Faculty of Social Sciences, in addition to meeting the Academic Regulations of the University, shall be subject to the following regulations of the Faculty of Social Sciences.
FACULTY OF SOCIAL SCIENCES

Humanities Requirements
Students registered in programmes in the Faculty of Social Sciences, except for those registered in the Bachelor of Physical Education programme and the B.A./B.S.W. programme, are required to complete 6 units of courses chosen from the Faculty of Humanities before graduation, preferably before Level II. Students registered in B.A. programmes in Geography or Psychology will fulfill this requirement by completing English 1A6 or 1B6 and students registered in the Economics programme will fulfill the requirement by completing English 1A6 or 1B6 or Humanities 1A6.

Deadlines
The Faculty of Social Sciences will not normally consider applications for admissions, admission to a second degree, registrations, or dropping and adding of courses after the deadlines stated in this Calendar unless written documentation is provided showing good cause, as determined by the Faculty Admissions, Study and Reviewing Committee.

Course Selection and Changes
A student must ensure that the selection of courses meets the degree requirements for the programme in which the student is registered, that any prerequisites have been met, and that written permission of the instructor has been obtained if required. Considerable inconveniences would result for a student whose registration does not meet the requirements.

All registrations, programme and course changes must be approved by the Associate Dean (Studies) and are subject to the deadline dates established by the University as published in this Calendar under Sessional Dates.

Students may be permitted to transfer between B.A. and Honours programmes on the recommendation of the Department concerned and with the approval of the Associate Dean (Studies). Applicants for transfer are subject to the deadline dates established by the University.

Re-admission
A student who is ineligible to continue in the Faculty of Social Sciences may apply for re-admission. Application for re-admission must be made in writing to the Associate Dean (Studies) before the application deadline for the session in which the student seeks to be re-admitted. The letter of application should include an explanation of the student's academic performance and reasons why the student would expect to succeed if re-admitted. Further guidelines for the letter of application may be obtained from the Office of the Associate Dean (Studies).

In considering a student's request for re-admission, the Faculty's Admissions, Study and Reviewing Committee will use several criteria, including the student's academic record before and after admission to McMaster, the letter of application and the student's ability in English, which may be assessed by a test for which a fee may be charged. Students are advised that re-admission is a privilege given only to those who are able to show good reasons for an expectation of improved academic performance. In the case of students who have been Required to Withdraw, re-admission will not be considered for a session beginning within 12 months of this requirement, except in extraordinary circumstances. If a student is applying for re-admission after the 12 month withdrawal period, a letter of reference from an employer may be required.

Re-admission is not automatic or guaranteed.

Combined Honours 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 approximately 36 units of work beyond Level I in each Department (normally 12 units of work per level in each).

For special requirements in Honours programmes, and for taking extra units, either as extra work or as make-up work, see the University's statement on Academic Regulations in this Calendar.

Part-time Studies
Subject to limitations of course offerings, a student may pursue on a part-time basis any programme in the Faculty of Social Sciences. Normally, students will arrange their programme of studies in consultation with a Student Advisor in the Office of the Associate Dean (Studies) and with the Undergraduate Advisor of the appropriate Department.

Bachelor of Arts Programmes
For special requirements in Bachelor of Arts programmes, and for taking extra units, either as extra work or as make-up work, see the University's Statement on Academic Regulations in this Calendar.

A student must obtain at least 4.0 in the required Level I work in the area in which the student wishes to concentrate in Level II.

There is no provision for combined degrees in the 3-Level Bachelor's Degree programmes except for Canadian Studies and Another Subject, where the other subject may be from the Faculty of Social Science or the Faculty of Humanities. This programme is described in the Faculty of Humanities section of this Calendar.

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, 3P3, 3Q3, 4E3, 4G3, 4J3, 4L3, 4M3, Social Work 3C3, 3J3, 4J3, 4M3, 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

Social Sciences I: 28-30 units

R 12 units from: Anthropology 1A3, 1Z3 and/or 1B6; Canadian Studies 1A6; Economics 1A6; Geography 1A6, 1B6 and/or 1D6; Labour Studies 1A3 and/or 1B3; Political Science 1A6; Psychology 1A6; Religious Studies 1B6, 1C6, 1E6, 1F6 or 1J6; Sociology 1A6.

Students registered in programmes in the Faculty of Social Sciences are required to complete 6 units of courses chosen from the Faculty of Humanities as stated above, Academic Regulations, Humanities Requirement.

Students may take more than 12 units of work in the Faculty of Social Sciences if they wish, subject to the conditions outlined in E (Electives) below.

E 18 units elective. Normally, a student will take only 6 units of work in any one discipline (excluding Mathematics). In special circumstances, a student may be permitted to take up to 12 units in one discipline. Students may take 16 units elective if Mathematics 1A6 and 1B4 are chosen.

Physical Education I: 32 units

R Physical Education 1A6, 1B3, 1E3, 1F3; Practicum: 2 units; Biology 1J3.

E 12 units (10 units if Mathematics 1A6 and 1B4 are chosen). Biology 1H3 is strongly recommended.

Department of Anthropology

Anthropology includes the four major subfields of Social/Cultural Anthropology, Physical/Biological Anthropology, Archaeology and Linguistics. Students may specialize in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites (see course listings by department in the Calendar).

Cultural/Social: Anthropology 2B3, 2C3, 2F3, 2G3, 2H3, 2J3, 2P3, 2Q3, 2R3, 2X3, 2Z3, 3A3, 3B3, 3C3, 3D3, 3E3, 3F3, 3G3, 3H3, 3J3, 3J6, 3L3, 3P3, 3S6, 3T3, 3V3, 3X3, 3Z3, 4A3, 4I3, 4N3, 4Y3.
FACULTY OF SOCIAL SCIENCES

Physical/Biological
Anthropology: Anthropology 2D3, 2E3, 2J3, 2K3, 3Z3, 3N6, 3O6, 4Q3, 4P3, 4Q3 (relevant courses are also offered by Biology and Physical Education).

Archaeology: Anthropology 2A3, 2N3, 2O3, 3K3, 3U3, 4E3, 4F3, 4M3 (relevant courses are also offered by History and Classics).

Linguistics: Anthropology 2L3, 2M3, 2Q3, 2T3, 3H3, 3I3, 3Y3, 4K3 (relevant courses in other departments include: English 3C3; French 3B3, 3G3, 3L4, 4K3; Russian 2F6; Psychology 3C3).

Courses not distinguished by subfield include the reading courses 2W3, 3W3, 4G3 as well as the seminar course 4B3.

In planning your programme, it is important to take note of the prerequisites of certain of the higher level courses.

HONOURS ANTHROPOLOGY
Admission: Completion of 30 units with an average of at least 7.0 in Anthropology 1A3 and 1Z3 or an average of at least 7.0 in Anthropology 1B6 and 1A3 or 1Z3.

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: 90 units
R 36 units of Anthropology Area courses, including Anthropology 2F3, 3S6 and 4I3, Psychology 2B3 and at least 9 additional units of Level IV Anthropology courses.

Honours students are also required to take at least 3 units above Level I in each of the four Anthropology subfields. These requirements are in effect for students entering Level II in the 1984-85 calendar year.

E Electives to make a total of 90 units.

B.A. IN ANTHROPOLOGY
Admission: Completion of 30 units with an average of at least 4.0 in Anthropology 1A3 and 1Z3 or an average of at least 4.0 in Anthropology 1B6 and 1A3 or 1Z3.

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

Levels II and III: 60 units
R 24 units of Anthropology beyond Level I, including Anthropology 2F3.
E Electives to make a total of 60 units.

Canadian Studies
(See "Faculty of Humanities — Canadian Studies")

Department of Economics

HONOURS COMMERCE AND ECONOMICS
(See "Faculty of Business — Honours Commerce and Economics")
In conjunction with the Faculty of Business, a programme is offered in Honours Commerce and Economics. Since students register in the Faculty of Business, details concerning admission, the programme of study and academic requirements are given in the Faculty of Business section of the Calendar.

HONOURS ECONOMICS
Admission: Completion of any Level I programme with an average of at least 7.0 in Economics 1A6 and 6 units of Mathematics (or another 6 units acceptable to the Department), including a grade of at least B— in Economics 1A6. Students entering the programme in 1985-86 must complete one of English 1A6, 1B6, or Humanities 1A6 by the end of Level II.

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.

Mathematics 1F6 or 1G6 may be substituted for items 2 and 3.

Students with credit in Mathematics 1B4 or 1G4 must consult a Departmental adviser.

Levels II, III and IV: 90 units
R 48 to 66 units of Economics, including Economics 2L6, 2M6, 3O6, 3A3, 3AA3, one of 2K3, 3I3, 3M3, 3K3; at least 24 units outside of Economics; Mathematics requirements as described above; additional units as described above under Admission if not completed in Level I.
E Electives to make a total of 90 units. Mathematics 2L3 is recommended as preparation for Economics 3A3, 3AA3.

COMBINED HONOURS IN ECONOMICS AND ANOTHER SUBJECT
With the approval of both departments concerned, students may arrange to follow a Combined Honours programme in Economics and another subject in the Faculties of Social Sciences or Humanities. The Economics component of such programmes is described below. Unless otherwise specified below, Cumulative Area Averages are computed separately for each subject. Students wishing to arrange such programmes are urged to discuss their interests with the departments concerned. Requirements for a number of specific joint Honours programmes that have been arranged in the past are also described below.

Admission:
Completion of any Level I programme, including a grade of at least B— in each of Economics 1A6 and 6 units of the other subject. Students entering the programme in 1985-86 must complete one of English 1A6, 1B6, or Humanities 1A6 by the end of Level II.

The Economics component of the Graduation Average is computed on all Level II, III and IV Economics courses.

Mathematics Requirement
See Honours Economics.

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

Levels II, III and IV: 90 units
R At least 36 units of Economics, and additional courses as required by the other department, selected as follows: Economics 2L6, 2M6, 3O6 (students combining Economics with Religious Studies or a subject in Humanities may substitute Economics 2F3 for 3O6); 3A3, 3AA3; Mathematics requirements as described under Honours Economics and additional units as described above under Admission if not completed in Level I; three or six units of Statistics offered by the other department may be substituted for Economics 2B3 or 3O6 respectively.
HONOURS ECONOMICS AND COMPUTER SCIENCE
Admission:
Completion of any Level I programme, including one of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3, and including a grade of at least B— in Economics 1A6 and an average of at least 7.0 in Mathematics 1A6 and Mathematics 1G4 or 1B4. Students entering the programme in 1985-86 must complete one of English 1A6, 1B6, or Humanities 1A6 by the end of Level II.

The Graduation Average is computed on all Level II, III and IV Economics and Computer Science courses.

Area Courses:
All Level II, III and IV Economics and Computer Science courses.

Levels II, III and IV: 90 units
R At least 36 units of Economics, including Economics 2L6, 2M6, 3A3, 3AA3; one of Economics 2K3, 3I3, 3M3, 3R3; one of Statistics 2D4, 3M3; one of Economics 3O6, Statistics 3DE; Computer Science 1C3, 2B3, 2L3, 3A3, 3D3, 4G6; two of Computer Science 3B3, 3C5, 3E5, 3T3; 6 additional units of Computer Science; and additional units as described above under Admission if not completed in Level I. Selection of all of Computer Science 3B3, 3C3, 3E3, 3T3 is advised. Computer Science 2A3, 3I3, 4L3 are recommended as preparation for Business Data Processing.

Because of resource limitations, enrolment in Honours Economics and Computer Science is limited. Students intending to enter the programme must consult the Unit for Computer Science in the Department of Mathematical Sciences.

HONOURS ECONOMICS AND GEOGRAPHY
Admission:
Completion of any Level I programme with a grade of at least B— in each of Economics 1A6 and Geography 1B6. One of English 1A6, 1B6, Humanities 1A6 and, the Mathematics requirements listed under Honours Economics 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, 3M3, 3O3, 3T3, 3X3, 4C6, 4H3, 4I3, 4J3, 4T3, 4X3, 4Y3; all Level II, III and IV Economics courses.

Level II: 30 units
R Geography 2L6 or Economics 3O6; Geography 2B3, 2R3, 2Y3; Economics 2L6, 2M6; one of Economics 2K3, 3I3, 3M3, 3R3 (this requirement may be met in Level III or IV); Mathematics requirements as listed under Honours Economics if not completed in Level I; English 1A6 or 1B6 or Humanities 1A6 if not completed in Level I.
E Electives to make a total of 30 units.

Level III: 30 units
R Geography 3N3, 3O3 and at least 6 units of Geography 3G3, 3T3, 3X3; Economics 3A3, 3AA3, and 6 additional units of Economics; and a course in computer programming, if not taken in Levels I or II.
E 6 units elective.

Level IV: 30 units
R Geography 4G6 and at least 6 other units of Level IV Area courses in Geography; 12 units of Economics.
E 6 units elective.

HONOURS ECONOMICS AND MATHEMATICS
Admission:
Completion of any Level I programme, including a grade of at least B— in Economics 1A6 and an average of at least 7.0 in Mathematics 1A6 and 1B4 (or 1G4). Students entering the pro-gramme in 1985-86 must complete one of English 1A6, 1B6 or Humanities 1A6 by the end of Level II.

The Graduation Average is computed on all Level II, III and IV Economics, Mathematics and Statistics courses.

Area Courses:
All Level II, III and IV Economics, Mathematics and Statistics courses.

Levels II, III and IV: 90 units
R At least 36 units of Economics and 37 units of Mathematical Sciences, selected as follows: Economics 2L6, 2M6, 3A3, 3AA3; one of 2K3, 3I3, 3M3, 3R3; Statistics 2D4; either Economics 3O6 or Statistics 3DE; Mathematics 2A3, 2B4, 2F4; one of 2C4, 3A6, 3O6; 16 units from Mathematics 3E4, 3F6, 3P4, 3Q4, 3R3, 3S3, 3T3, 4A6, 4C4, 4G4, 4O3, 4U4, Statistics 3D6, 3G3, 3J3, 4G3, 4J3, 4X3; additional units as described above under Admission if not completed in Level I.
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. Students entering the programme in 1985-86 must complete one of English 1A6, 1B6 or Humanities 1A6 by the end of Level II.

Area Courses:
All Economics and Political Science courses.

The mathematics requirements for the programme are described above under Honours Economics.

Level II: 30 units
R Economics 2L6 and 2M6; one of Economics 2K3, 3I3, 3M3, 3R3 (may be postponed to Levels III or IV); 12 units from Level II Political Science (Political Science 2F6 is recommended); Mathematics requirements if not completed in Level I; additional units as described above under Admission if not completed in Level I.
E Electives to make a total of 30 units, at least 3 of which must be outside of Economics and Political Science.

Level III: 30 units
R Economics 3A3, 3AA3 and 3O6; 12 units of Level III or IV Political Science.
E 6 units elective.

Level IV: 30 units
R 12 units of Economics, including 3 units from Economics 2K3, 3I3, 3M3, 3R3 (if not previously completed); 6 units of Level IV Political Science and 6 units of either Level III or IV Political Science.
E 6 units elective.

B.A. IN ECONOMICS
Admission:
Completion of any Level I programme with an average of at least 4.0 in Economics 1A6, Mathematics 1K3, 1L3 and 1M3 (for exceptions to this requirement, see Mathematics requirements below), including a grade of at least C— in Economics 1A6. Students entering the programme in 1985-86 must complete one of English 1A6, 1B6 or Humanities 1A6 by the end of Level II.

Students who have not completed their Mathematics requirements in Level I must do so by the end of 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 by the end of Level II.

1. Grade 13 Calculus or Mathematics 1K3.
2. Mathematics 1A6 or 1M3. (Students entering Level II in 1984-85 are exempt from this requirement).
FACULTY OF SOCIAL SCIENCES

Mathematics 1F6 or 1G6 may be substituted for items 2 and 3. Students with credit in Mathematics 1B4 or 1G4 must consult a Departmental adviser.

Levels II and III: 60 units
R 24 to 36 units of Economics, including one of Economics 2K3, 3I3, 3M3, 3R3; Economics 2G3 or 2L6; Economics 2H3 or 2M6; Economics 2B3 or 3G6; Mathematics requirements as described above, and additional units as described above under Admission if not completed in Level I; at least 24 units outside Economics, including Mathematics and other required outside courses taken in Levels II and III.
E Electives to make a total of 60 units.

Department of Geography

HONOURS GEOGRAPHY (B.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 Level I Geography, and an average of at least 7.0 in that and 6 additional units. English 1A6 or 1B6 or Humanities 1A6, 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. Computer Science 1B3 or 1H3 must be completed by the end of Level III. Students are advised to take Geography 1A6 or 1B6 in Level I and to take 2L6 in Level II. Geography 303 must be taken in Level III. Students should consult the “Handbook for Undergraduate Geographers”, which may be obtained from the departmental office.

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

Level II: 30 units
R Geography 2L6, at least 9 units of 2B3, 2D3, 2F3, 2K3, 2L6, 2W3, 2Y3, at least 3 additional units of Geography; English 1A6 or 1B6 or Humanities 1A6 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. Computer Science 1B3 or 1H3, 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: 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”)

Students wishing to enter this programme are to follow the procedures for admission to the Limited Enrolment Programme in Geology.

Admission:
Completion of any Level I programme with a grade of at least B in both Geography 1A6 and Geology 1A6. 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 1B7 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 2D5 will be included in calculating the Graduation Average.

Area Courses:
Geography 2F3, 2K3, 2L6, 2M3, 2T3, 2W3, 3E3, 3F3, 3I3, 3K3, 3M3, 3O3, 3V3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4K3, 4Q3, 4R3, 4V3, 4W3; Geology 2B6, 2C6, 2D5, 3C6, 4E6, 4M6.

Level II: 31-33 units
R Geography 2L6, 2T3 and one of Geography 2F3, 2K3, 2M3, 2W3; 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.

Geology 3E2 is normally taken at the end of Level II.

Level III: 29-33 units
R Geography 3E3, 3M3, 3O3, and one of 3F3, 3K3 or 3W3; Geology 2D5, 3C6, 3E2; Chemistry 1B7 if not previously completed.
E Electives to make a total of 29 to 33 units, at least 3 of which may not be Geography or Geology.

Level IV: 30-32 units
R 6 units of Level IV Geography Area courses; 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 to 32 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 Level I Geography with a grade of at least C in English 1A6 or 1B6 or Humanities 1A6 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, 2L6, 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 units
R At least 6 units from Geography 3D3, 3F3, 3G3, 3K3, 3M3, 3N3, 3T3, 3W3, 3X3, 3W3, 4A3, 4C6, 4D3, 4E3, 4G3, 4K3, 4Q3, 4R3; Economics 3D3; Labour Studies 2A3, 3A3; Commerce 2BA3, 4BC3, 4BD3; Political Science 3X6; Social Work 2B6; Sociology 3Y3.

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 an average of at least 4.0 in 12 units from: Economics 1A6; History 1C6; Mathematics 1K3, 1L3; Political Science 1A6; Psychology 1A6; Sociology 1A6.
Students are strongly advised to select Level I courses which are prerequisites for courses required in Levels II and III and so maximize choice among these courses.

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 Admissions Committee may wish to interview each applicant.

Area Courses:
Economics 3D3; Labour Studies 2A3, 3A3; Commerce 2BA3, 4BC3, 4BD3; Political Science 3X6; Social Work 2B6; Sociology 3Y3.
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 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: 30 units
R Labour Studies 2A3; Commerce 2B3A3; Social Work 2B6; and 15 to 18 units from: Commerce 2AA3, Economics 2B3, 2G3, 2H3; History 2J6; Political Science 2F6, 2G6; Psychology 2C3, Social Work 3H3, 3J3; Sociology 2D6, 2J3, 2V6.
E Electives to make a total of 30 units.

Level III: 30 units
R Commerce 4B3C, 4B03; Labour Studies 3A3; at least 12 units, which must include at least one of Economics 3D3, Political Science 3X6 and Sociology 3Y3; and additional units from Commerce 3BB3, Economics 3E3, 3S3, History 3KK6, Political Science 3Z6, Psychology 3D3, Social Work 3H3, 3J3, Sociology 3F6 and 3L3.
E Electives 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 electives 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 courses.
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.

Repeated Courses
Students who have failed (F Grade) any area course, or who have not achieved a CPEA of 4.0 at each review, may be granted permission to repeat any failed required course or replace elective courses which are area courses, up to 6 units per Level. In order to be admissible to continue in the Physical Education programme, a minimum grade of C- must be obtained in any repeated course, and a minimum CPEA of 4.0 must be obtained for the Level in question.

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
The student must ensure that the programme of work undertaken meets the requirements for the degree. All theory and practicum 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
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.

Level I: 32 units
R Physical Education 1A6, 1B3, 1E3, 1F3; Practicum: 2 units; Biology 1J3.
E 12 units, excluding Physical Education (10 units. if Mathematics 1A6 and 1B4 are chosen). Biology 1J3 is strongly recommended.

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, 1F3, 2A3, 2B3, 2C6, 2D3, 2F3, Biology 1J1, 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 ECONOMICS AND POLITICAL SCIENCE
(See "Department of Economics")

HONOURS GERMAN AND POLITICAL SCIENCE
(See "Faculty of Humanities — Department of German")

HONOURS RUSSIAN AND POLITICAL SCIENCE
(See "Faculty of Humanities — Department of Slavic Studies")

HONOURS 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, 206 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 206 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 206.
E 12 units elective, only 6 of which may be from Political Science.

Level IV: 30 units
R Political Science 426; 6 units of Level IV Political Science; 6 units of either Level III or IV Political Science.
E 12 units elective.

COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT
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 not fewer than 36 units of Political Science, of which only 12 units may be Level II courses and at least 6 units should be in Level IV courses.

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 3E3, 3F3; 6 additional units of Canadian Studies; 6 units from Political Science 3F6, 3DD6, 3EE6, 3FF6, 3GG6, 3HH6, 3II6, 3JJ6, 3JJJ6, 6 additional units of Level III Political Science.
E 6 units, excluding Political Science and Canadian Studies.

Level IV: 30 units
R Canadian Studies 4E6; 6 additional units of Canadian Studies; 6 units from Political Science 4G6, 4F6, 4W6; 6 additional units of Level III or IV Political Science.
E 6 units elective, excluding Political Science and Canadian Studies.

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 (B.A.)
(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 or Humanities 1A6 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 Psychology 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 2U3, 3C6, 3E3, 3QQ3, 3S3, 3V3, 4E7, 4QQ3.

Psychology 2R6 will be included in calculating the Graduation Average, if it is taken in Level III.

Area Courses: All Psychology courses above Level I.

Level II: 30 units
R Psychology 2H5, 2R6, 2T3; 3 units of Level II Psychology; 6 units of courses chosen from the Faculty of Science, excluding Psychology and the Mathematics course taken to meet the admission requirements (e.g. Mathematics 1K3, 1M3).
E Electives to make a total of 30 units, at least 6 of which must not be from Psychology.

Level III: 30 units
R Psychology 3W6; 12 units of Level III Psychology, or 6 units of Level III Psychology and Psychology 2R6 (if not completed). If Psychology 2D6 was completed in Level II, then 6 additional units of Level III Psychology must be substituted for Psychology 3W6.
E Electives to make a total of 30 units, 6 of which must not be from Psychology.

Level IV: 30-31 units
R Psychology 4D6; 12 units of Levels III or IV Psychology.
E Electives to make a total of 30 units.

B.A. IN PSYCHOLOGY
(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 or Humanities 1A6. 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 above Level I.

Level II: 30 units
R Psychology 2G3 and either 2T3 and 2H3, or 2D6; 3 units of Level II Psychology; Mathematics 1L3 or any other 3 units of Mathematics; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology; English 1A6 and 1B6 or Humanities 1A6 and the 3 units of Mathematics required by the programme.
E 9 units of electives, 3 of which must not be from Psychology.

Level III: 30 units
R 12 units of Level III Psychology; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology.
E 12 units, 6 of which must not be from Psychology.

Department of Religious Studies

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.

Part-time students should be aware that the required courses in Levels II, III and IV 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: Religious Studies 2B6, 2DD3, 2E63, 2E6, 2G6, 2H6, 2I6, 2J63, 2K6, 2L6, 2M6, 2M3, 2N6, 2N3, 2O6, 2O3, 2R6, all Levels III and IV Religious Studies courses.

Level II: 30 units
R At least 12 units, including Religious Studies 2NN3 and 2O3 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 4F3, 4G3, 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, 2O3, 3F3, 4F3, 4G3, 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.

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.
FACTOR OF SOCIAL SCIENCES

Area Courses:
Religious Studies 2B6, 2D3, 2EE3, 2E6, 2G6, 2I3, 2JJ3, 2KK3, 2LL3, 2MM6, 2M3, 2NN3, 2N3, 2OO3, 2R6; all Level II Religious Studies courses.

Level II: 30 units
R At least 12 units, including Religious Studies 2NN3 and 2OO3, 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 II 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 must 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 the applicant's holding an undergraduate degree, normally with an average of at least 6.0, from a recognized university, and personal suitability as evaluated by written statements and interviews. The School requires that Level I be completed by April of the year in which the student applies to the programme. However, Term IV (Jan./Feb.-June) courses may be included. 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 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, 3I3, 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 must 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 completed 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, 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 6.0, from a recognized university, and personal suitability as evaluated by written statements and interviews. The School requires that Level I be completed by April of the year in which the student applies to the programme. However, Term IV (Jan./Feb.-June) courses may be included. 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 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+. Students may take a maximum of 6 units of Level IV independent research (Sociology 4M3/4N3). Students should check the Calendar and Departmental Handbook for prerequisites and course descriptions.
PART-TIME DEGREE STUDIES

The University offers a broad range of educational opportunities for students who wish to take degree studies on a part-time basis. In addition to the day time offerings to the summer and winter sessions, a wide selection of evening classes is available in sessions beginning in September, January, April and May. A small selection of courses will be offered on Saturday mornings during the Fall and Winter.

Most of these are open to full- and part-time students alike. The academic programmes for both groups of students are identical, the only difference being that part-time students will progress more slowly through their programmes. All programmes require a degree of specialization in one or two related subjects.

Part-time Degree Studies

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Most of these are open to full- and part-time students alike. The academic programmes for both groups of students are identical, the only difference being that part-time students will progress more slowly through their programmes. All programmes require a degree of specialization in one or two related subjects.

Each student taking degree courses will associate with one of the undergraduate faculties (Business, Humanities, Science and Social Sciences). By so doing, you establish a relationship with the academic counsellors of your Faculty and with the departments concerned with your major intellectual interest. If your interests change, it is often possible to transfer to another department or Faculty.

A variety of programmes is available through a combination of evening and summer study. The section of this Calendar, Degrees and Programmes, lists all the programmes offered by the University, with those completely available through evening and summer study indicated with an asterisk (*). There are specific regulations that part-time students should be aware of. They are described below. You should also familiarize yourself with the requirements and information found in this Calendar in the following sections: Admissions, Academic Regulations and Sessional Dates as well as the programme descriptions found in specific Faculty sections.

Admission

Applicants who satisfy the normal admission requirements of the University may register for part-time study. Those who do not satisfy these requirements may be 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,” with the approval of the Faculty Dean of Studies, may take only 6 to 7 units of work per session until 12 to 14 units are completed.

The University welcomes to its courses students who wish to obtain university credit but who do not wish to follow a degree programme. The same conditions and alternatives apply to “Occasional Students” as 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, CAAT) programmes.

Availability of Courses

Although both daytime and evening courses are in principle open to part-time students, part-time students often have other responsibilities which restrict them to the courses offered in the evenings, in the summer, or on weekends. We have, therefore, listed the 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 three-Level Programmes and some of the Honours Programmes over a five- or six-year period. For those who can arrange to take day courses, the options are greatly enlarged.

Students registered in Summer School should note that they are restricted to taking no more than 12 units in the Summer Session 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.

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 through brochures and newspaper advertising. These courses are not included in the listing in this Calendar.
PART-TIME DEGREE STUDIES

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 to discuss preparation and plans for degree study. His office will be open in the day and certain evenings. More detailed information concerning programmes and course content is provided by the Academic Counsellors within each Faculty as follows:

Business (extension 4432)
- Humanities (extension 4326)
- Science (extension 2612)
- Social Sciences (extension 4604)

General information on courses, application procedures and admission regulations is provided by the Registrar's Office (525-9140, ext. 4796). Information about non-credit courses and special offerings is available through the School of Adult Education (525-9140, ext. 4757).

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, 106 Gage Street, which is directed by the Council on Continuing Education for Brantford and Brant County. The staff of this Centre 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 Hamilton 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 during the day. MAPS Executive Assistant, Ms. Judy Worsley, is available during these hours to help students.

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:

- Session Code
- Summer Evening, 1984 A
- Summer Day, 1984 B
- Winter Evening, 1984-85 C
- January to June Evening, 1985 D
- Summer Evening, 1985 E
- Summer Day, 1985 F
- Winter Evening, 1985-86 G
- January to June Evening, 1986 H
- Summer Evening, 1986 I
- Summer Day, 1986 J

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

1A3 Introduction to Anthropology: Culture and Society
1B6 The Study of Language
123 Introduction to Anthropology: Human and Cultural Origins
2A3 World Prehistory: Paleolithic
2B3 Native Peoples of North America
2E3 Physical Anthropology
2F3 Social Anthropology
2G3 Folklore Studies
2K3 Social Biology
2N3 World Prehistory: Neolithic Cultures
2P3 Peoples of the Pacific
2Q3 Linguistics and the Study of Culture
2R3 Religion, Magic, and Witchcraft
2X3 Warfare and Aggression
3A3 Ethnology: The Canadian North
3B3 Ethnology: Europe
3D3 Ethnology: Pacific Islands
3F3 Contemporary Northern Peoples
3L3 Primitive Systems of Thought
3S6 The History of Anthropological Theory
3T3 Competition and Conflict
3U3 Canadian Prehistory
3Z3 Medical Anthropology
4A3 Theories of Social Evolution
4B3 Current Problems in Anthropology
4E3 Advanced Regional Archaeology
4I3 Contemporary Anthropological Theory
4L3 Culture and the Individual

ART

1C3 The Language of Drawing
2E3 Introductory Design and Composition

ART HISTORY

1A6 Introduction to the Study and History of the Visual Arts
2G3 The Art of the Medieval World
2N3 Italian Baroque
2O3 The Origins of Modern Art

3D3 French and Flemish Painting 1320-1500
3L3 Painting in Venice
3M3 Modern Architecture
3Q3 Master Printmakers
3T3 Man and Nature
3W3 The Art of Photography
4M3 Aspects of the Art of Matisse and Picasso

BIOLOGY

2F3 Fundamentals of Ecology

BUSINESS

3V3 Business Law
3X3 Business Finance
3Z3 Human Resource Management

CHEMISTRY

1A6 General Chemistry
2O6 Organic Chemistry
2P4 Physical Chemistry

CLASSICAL CIVILIZATION

2F3 Greek and Roman Science and Technology
2U3 Social Life and Thought of the Greeks
2V3 Social Life and Thought of the Romans
3S3 The Roman City: An Archaeological Study

COMMERCIAL SCIENCES

2A3A3 Financial Accounting
2B3A3 Organizational Behaviour
2FA3 Financial Instruments and Institutions
2QA3 Computer-Augmented Statistical Analysis
3A3A3 Cost and Managerial Accounting
3AB3 Financial Accounting II
3BA3 Industrial Relations
3BB3 Personnel
3FB3 Securities Analysis
3MA3 Introduction to Marketing Research
3MB3 Consumer Motivation
3QA3 Decision Science for Managers
3QB3 Business Data Processing
4BC3 Collective Bargaining
4BD3 Settlement of Industrial Disputes
4QA3 Production/Operations
### COMPUTER SCIENCE
- P3 Introduction to Computing for Business
- P3 Introduction to Computing for Science
- P3 Introduction to Computing for Humanities and Social Science
- A3 Introduction to Cobol Programming
- A3 Pascal and Problem Solving
- A3 Business Systems Analysis and Data Organization

### DRAMATIC ARTS
- A6 Topics in Theatre History: Independent Study
- A6 Performance and the Idea of Theatre 900-1700
- B6 Modern Drama in English
- B6 Topics in 20th-Century Drama
- B6 Topics in Theatre History: Independent Study
- B6 Theory of Drama and Theatre
- B6 Theatre Historiography
- B6 Perspectives in Dance: A Cultural Survey

### ECONOMICS
- A6 Introductory Economics
- A6 Analysis of Economic Data I
- A6 Intermediate Price Theory
- A6 Economic History of Canada
- A6 Intermediate Microeconomics
- A6 Advanced Economic Theory I
- A6 Advanced Economic Theory II
- A6 Public Finance
- A6 Labour Economics
- A6 Topics in Labour Economics
- A6 Economic History of the United States
- A6 Marxist Economics
- A6 Industrial Organization
- A6 Analysis of Economic Data II
- B1 Selected Topics II

### ENGLISH
- A6 Literature in English: Major Authors
- A6 The Development of English Drama
- A6 Canadian Literature
- A6 American Literature
- A6 Modern British Literature
- A6 The Earliest English Literature
- A6 Beowulf
- A6 Shakespeare: Selected Plays
- A6 Studies in 16th-Century Literature
- A6 Spenser
- A6 Studies in 17th-Century Literature
- A6 English Literature (1600-1800)
- A6 Topics in Medieval and Renaissance Literature
- A6 Chaucer and His Contemporaries
- A6 Romantic Poetry
- A6 Victorian Poetry
- A6 The British Novel

### FRENCH
- A6 Intermediate French
- A6 Beginners' Intensive French
- A6 French Language Practice
- A6 French Language Practice: Oral
- A6 The French Civilization of Canada I
- A6 Nineteenth-Century French Literature I
- A6 Nineteenth-Century French Literature II
- A6 Twentieth-Century French Literature I
- A6 Twentieth-Century French Literature II
- A6 The Modern French-Canadian Novel
- A6 French Language Practice: Intermediate Translation
- A6 French Language Practice: Oral
- A6 Eighteenth-Century French Literature I
- A6 Seventeenth-Century French Literature I
- A6 Seventeenth-Century French Literature II
- A6 African and Caribbean French Literature
- A6 Topics in Eighteenth-Century French Literature

### GEOGRAPHY
- A6 Physical Processes of Landforms and Atmospheres
- A6 Location, Land Use and Conflict
- A6 Cultural Geography
- B3 Urban Geography

### HISTORY
- C6 The Modern World: The Era of European Primacy
- C6 The Civilization of the West
- C6 Ancient States and Empires
- C6 Early Modern Europe 1400-1715
- C6 United States History
- C6 Europe in the Middle Ages
- C6 The History of Canada
- C6 European Society from Absolutism to Democracy
- C6 British History 1500 to the Present
- C6 The Rise and Fall of Imperial Spain
- C6 The Town in United States History
- C6 Ancient China: Selected Topics in the History of China prior to 221 B.C.
- C6 Selected Topics in the Recent History of the United States
- C6 History of Medicine in Canada
- C6 Medieval Society
- C6 The History of the Indian Subcontinent
- C6 The History of Modern Russia
- C6 Canada in the Twentieth Century
- C6 Pre-Historic and Proto-Historic Greece
- C6 Religion and Politics in the Age of the Reformation
- C6 British History 1815-1945
- C6 Studies in Canadian History: French Canada
- C6 Special Topics in British Imperial History
- C6 Special Topics in the History of the United States before 1865

### HUMANITIES
- A6 Critical Thinking

### ITALIAN
- A6 Intermediate Italian
- A6 Beginners' Intensive Italian
- A6 Advanced Italian
- A6 Introduction to Italian Literature
- A6 Italian Stylistics and Oral Practice
- A6 Italian Humanism
- A6 Twentieth-Century Italian Novel

### LABOUR STUDIES
- A3 The Canadian Labour Movement
- A3 The Theoretical Foundations of the Labour Movement
- A3 Trade Unionism: Organization, Procedures and Practices
- A3 Current Labour Issues

### LATIN
- A6 Beginners' Intensive Latin
- A6 Roman Lyric Poetry
- A6 Latin Reading Practice

### LINGUISTICS
- A6 The Study of Language

### MATHEMATICS
- A6 Calculus
- A6 Linear Algebra
- A6 Applied Analysis
- A6 Applied Analysis
- A6 Introductory Calculus for the Business and Social Sciences
### PART-TIME DEGREE STUDIES

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<td>1M3</td>
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<td>2G3</td>
<td>Intermediate Calculus</td>
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<td>2J6</td>
<td>Linear Algebra and Set Theory</td>
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<td>Calculus for Business and the Social Sciences</td>
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<td>1D6</td>
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<td>2A6</td>
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### PHYSICS

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<td>4E3</td>
<td>Motor Control</td>
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<td>4L3</td>
<td>Comparative Physical Education and Sport (Selected Topics)</td>
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<td>4M3</td>
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### POLITICAL SCIENCE

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<td>An Introduction to the Study of Politics</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>
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<td>4G6</td>
<td>Comparative Politics: Communist Political Systems</td>
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<tr>
<td>4M6</td>
<td>Comparative Foreign Policy</td>
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<tr>
<td>4P3</td>
<td>Political Parties</td>
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### PSYCHOLOGY

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<tr>
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<tbody>
<tr>
<td>1A6</td>
<td>General Psychology</td>
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<tr>
<td>2A3</td>
<td>Theories of Human Development</td>
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<td>2B3</td>
<td>Personality</td>
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<td>2C3</td>
<td>Introduction to Social Psychology</td>
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<tr>
<td>2D6</td>
<td>Sensation and Perception</td>
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<td>2G3</td>
<td>Psychological Statistics</td>
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<td>2H3</td>
<td>Human Learning and Cognition</td>
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<td>2R6</td>
<td>Research Design and Statistics for Psychologists</td>
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<td>2T3</td>
<td>Principles of Conditioning</td>
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<td>2U3</td>
<td>Laboratory in Animal Conditioning</td>
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<td>2B3</td>
<td>Developmental Psychopharmacology</td>
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<td>2C6</td>
<td>Social Psychology Laboratory</td>
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<td>2D3</td>
<td>Selected Topics in Social Psychology</td>
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<td>2E3</td>
<td>Sensory Processes and Perception Laboratory</td>
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<td>2F6</td>
<td>Physiological Psychology</td>
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<td>Psychological Measurement</td>
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<td>Intellectual Development</td>
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<td>Abnormal Psychology</td>
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<td>3T3</td>
<td>Sociobiology</td>
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<td>3U3</td>
<td>Human Memory</td>
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<td>3V3</td>
<td>Laboratory in Human Memory and Cognition</td>
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<td>3W6</td>
<td>Psychophysics and Perception</td>
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<td>Selected Topics in Behaviour Modification</td>
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<td>Selected Topics in Behaviour Theory</td>
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<td>3Z3</td>
<td>Research Methods in Psychology</td>
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<td>4A3</td>
<td>Contemporary Topics in Historical Perspective</td>
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<td>4B3</td>
<td>History of Psychology</td>
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<td>4E7</td>
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### RELIGIOUS STUDIES

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<tr>
<td>1C6</td>
<td>Texts, Traditions, and Thought</td>
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<tr>
<td>1E6</td>
<td>Ideas of Love</td>
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<tr>
<td>1F6</td>
<td>Religion and Contemporary Problems</td>
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<tr>
<td>2B6</td>
<td>Introduction to the Wisdom Philosophies of Asia</td>
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<tr>
<td>2B33</td>
<td>Images of the Divine Feminine</td>
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<td>2C3</td>
<td>Specialists in the Sacred</td>
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<td>2D33</td>
<td>The Five Books of Moses</td>
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<td>2EE3</td>
<td>The Prophets</td>
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<tr>
<td>2F3</td>
<td>The Triumph of Christianity</td>
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<tr>
<td>2FF6</td>
<td>History of Ancient Judaism</td>
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<tr>
<td>2G6</td>
<td>The Beginnings of Christianity</td>
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<td>2H3</td>
<td>Christian Thought in the Patristic Period (100-800)</td>
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<tr>
<td>2J33</td>
<td>Christian Thought in the Middle Ages (800-1500)</td>
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<td>2K33</td>
<td>Christian Thought in the 16th Century</td>
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<td>2L33</td>
<td>Christian Thought after 1600</td>
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<td>2M3</td>
<td>The Social Dimension of Religion</td>
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<td>2M6</td>
<td>East Asian Religions</td>
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<td>2N3</td>
<td>The Social-Psychological Dimension of Religion</td>
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<td>2NN3</td>
<td>Religious Traditions of the West</td>
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<tr>
<td>2OO3</td>
<td>Religious Traditions of the East</td>
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<td>2QQ3</td>
<td>Cults in North America</td>
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<td>2R6</td>
<td>Divine Justice</td>
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<td>2T3</td>
<td>Yoga: Theory and Practice</td>
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<td>2W43</td>
<td>Health, Healing, and Religion</td>
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<td>3B3</td>
<td>Native and Ethnic Religions in Canada</td>
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<td>3BB3</td>
<td>Major Denominations in Canada</td>
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<td>3CC3</td>
<td>The Qur'an</td>
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<td>3F3</td>
<td>Aspects of the Study of Religion</td>
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<td>3J6</td>
<td>Religion and Modern Society</td>
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<td>3K3</td>
<td>Introduction to Hellenistic Judaism</td>
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<td>3M3</td>
<td>Israeli Poetry and Wisdom</td>
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<td>3P3</td>
<td>Indian Philosophy</td>
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<td>The Buddhist Tradition</td>
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<td>Approaches to the Study of Religion</td>
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<td>4GG3</td>
<td>Honours Seminar</td>
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### SCIENCE

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<td>2A3</td>
<td>The Nature of Matter</td>
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<td>2D3</td>
<td>Astronomy</td>
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<tr>
<td>2L3</td>
<td>Earth Resources and the Environment</td>
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### SLAVIC STUDIES

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<tr>
<td>2F6</td>
<td>Introduction to Slavic Linguistics</td>
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### SOCIAL WORK

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<tr>
<td>2B6</td>
<td>Social Welfare: General Introduction</td>
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<td>2C3</td>
<td>Theory for Social Work Practice</td>
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<td>2D3</td>
<td>Interpersonal Communication and Interviewing</td>
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<td>2E3</td>
<td>Social Aspects of Health and Disease</td>
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<td>3D9</td>
<td>The Practice of General Social Work I</td>
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<td>3O3</td>
<td>Human Sexuality</td>
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Courses by Departments

Anthropology

Faculty as of January 15, 1984

David Counts/Chairman

Professors Emeriti

Ruth B.S. Landes/M.S.W. (New York) , Ph.D. (Columbia) 
Richard Slobodin/B.A. , M.S. (City College of New York) , Ph.D. (Columbia) 

Professors

David J. Damas/A.B. (Toledo) , A.M. , Ph.D. (Chicago) 
Edward V. Glenville/B.A. , Ph.D. (Dublin) 
Christopher Hallpike/B. Litt. (Oxford) , D.PhiL. (Oxford) 
William C. Noble/B.A. (Toronto) , Ph.D. (Calgary) 
Richard J. Preston/M.A. , Ph.D. (North Carolina) 
Edward S. Rogers/B.A. (Middlebury College) , M.A. , Ph.D. (New Mexico) /part-time

Associate Professors

Matthew Cooper/B.A. (Brooklyn College) , M.PhiL. , Ph.D. (Yale) 
David R. Counts/B.A. (Texas) , Ph.D. (Southern Illinois) 
Harvey Feit/B.A. (Queens) , M.A. , Ph.D. (McGill) 
Klaus Jaecklein/Ph.D. (Tuebingen) /part-time

Peter G. Ramsden/B.A. (Toronto) , M.A. (Calgary) , Ph.D. (Toronto) 

William L. Rodman/B.A. (Sydney) , M.A. , Ph.D. (Chicago) 
Charles E. Stortroen/A.B. (Luther) , M.A. (Minnesota) 
Emoke J.E. Szathmary/Ph.B. , Ph.D. (Toronto) 

Assistant Professors

Shelley Saunders/B.A. , M.A. , Ph.D. (Toronto) 

Lecturer

Laura Finsten/B.A. (Western) , M.A. (Calgary) , Ph.D. (Purdue)
ANTHROPOLOGY

Prerequisite: Six units of Level I Anthropology; or permission of the instructor. Not open to students receiving credit for Anthropology 2A6.

ANTHROP 2B3 NATIVE PEOPLES OF NORTH AMERICA
A comparative study of selected cultures of this continent, dealing with traditional and modern situations.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 1A3. Not open to students receiving credit for Anthropology 3C6.

ANTHROP 2C3 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.

ANTHROP 2D3 GENETICS AND EVOLUTION
Introduction to basic genetics and the operation of microevolutionary processes on human populations.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2E3; or permission of the instructor. Not open to students receiving credit for Biology 1C3.

ANTHROP 2E3 PHYSICAL ANTHROPOLOGY
An introduction to the study of human evolution, evolutionary mechanisms, and variability in living species of human and non-human primates.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology; or permission of the instructor. (This course is a prerequisite for advanced courses in physical anthropology.)

ANTHROP 2F3 SOCIAL ANTHROPOLOGY
An introduction to the anthropological concepts and theory underlying the comparative study of the social institutions of non-literate peoples.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology; or permission of the instructor.

ANTHROP 2H3 ECOLOGICAL ANTHROPOLOGY
An introduction to the study of the interdependence of human societies and their physical and biological environments in anthropological perspective.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2F3; or permission of the instructor.

ANTHROP 2I3 HISTORY OF ANTHROPOLOGY
Some of the major developments and personalities in the history of anthropology as a discipline, with emphasis upon the English-speaking world.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology; or permission of the instructor.

ANTHROP 2J3 HUMAN GROWTH AND ADAPTATION
Variation in body form and composition examined in the context of growth, evolutionary development and environmental adaptation.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 2D3 or 2E3; or permission of the instructor.
Offered in alternate years.

ANTHROP 2K3 SOCIAL BIOLOGY
Bio-social anthropology. The biological and evolutionary background of human social behaviour.
3 hrs. (lects. and discussion); one term
Prerequisite: Anthropology 123; or permission of the instructor.
Offered in alternate years.

ANTHROP 2L3 PHONETICS
A study of the sounds of language and the articulatory capabilities of man.
3 hrs. (lects.); one term
Prerequisite: Open.
Same as Linguistics 2L3
To be given in Term I of alternate years, beginning in the Fall of 1985

ANTHROP 2M3 PHONOLOGY
A study of the patterns of distinctive sounds in the world’s languages.
3 hrs. (lects.); one term
Prerequisite: Anthropology or Linguistics 2L3; or permission of the instructor.
Same as Linguistics 2M3
To be given in Term II of alternate years, beginning in the Spring of 1986.

ANTHROP 2N3 WORLD PREHISTORY: NEOLITHIC CULTURES
A survey of the development of settled, food-producing human cultures from earliest villages to urban life.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology; or permission of the instructor.

ANTHROP 203 NEW WORLD PREHISTORY
A survey of the prehistory of the Americas, from the first traces of human occupation until the arrival of Europeans.
3 hrs. (lects. and discussion); one term
Prerequisite: Six units of Level I Anthropology, or permission of the instructor.

ANTHROP 2P3 PEOPLES OF THE PACIFIC
An introduction to the ways of life and thought in Pacific island societies. The course will emphasize the material culture, networks of social relations, and systems of belief, of the peoples of Melanesia, Polynesia, and Micronesia.
3 hrs. (lects. and discussion); one term
Prerequisite: Open.

ANTHROP 2Q3 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
Offered in alternate years.

ANTHROP 2R3 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.

ANTHROP 2T3 SELECTED TOPICS IN ANTHROPOLOGICAL LINGUISTICS
An advanced examination of select linguistic techniques employed in the study of culture apart from their usual use in the study of language.
3 hrs. (lects.); one term
Prerequisite: Anthropology 2Q3, or permission of the instructor.
To be given in Term II of alternate years, beginning in the Spring of 1985.

ANTHROP 2U3 ** 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, a total of six units.

ANTHROP 2X3 WARFARE AND AGGRESSION
The aim of the course is to assess the extent to which violence is both controlled 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.

ANTHROP 2Z3 INTRODUCTION TO SOCIAL RESEARCH
This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined.
3 hrs. (lects. and discussion); one term
Prerequisite: Registration in B.A. or Honours Anthropology including credit in Anthropology 1A3; or permission of the instructor.
Same as Sociology 223.
Enrollment is limited.

ANTHROP 3A3 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.

ANTHROP 3B3 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.

ANTHROP 3D3 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.

ANTHROP 3F3 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.

ANTHROP 3G3 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 2C3; or permission of the instructor.

ANTHROP 3H3 ETHNOLOGY: SOUTHEAST ASIA
A comparative ethnological survey of selected societies in Southeast Asia.
ANTHROPOLOGY

3 hrs.(lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology; or permission of the instructor.

ANTHROPOLOGY 313 SYNTAX
A study of the capacity of man to form words into sentences. Emphasis will be upon generative transformational grammar.
3 hrs.(lects.); one term
Prerequisite: Open Same as Linguistics 313
To be given in Term I of alternate years, beginning in the Fall of 1985.

ANTHROPOLOGY 333 ADVANCED SOCIAL ANTHROPOLOGY
Further study of the topics introduced in Anthropology 2F3.
3 hrs.(lects. and discussion); one term
Prerequisite: Registration in Honours Anthropology including credit in Anthropology 2F3, or permission of the instructor.

ANTHROPOLOGY 3J6 PRIMITIVE RELIGION
Same as Religious Studies 3J6.

ANTHROPOLOGY 3K3 ARCHAEOLOGICAL METHODS
Technique and methodology in the investigation of archaeological material.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Level II Archaeology courses, or permission of the instructor.
Enrollment is limited.

ANTHROPOLOGY 3L3 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 or Linguistics 313, or permission of the instructor.

ANTHROPOLOGY 3M3 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 hrs.(lects.); one term
Prerequisite: Anthropology or Linguistics 313, or permission of the instructor.

ANTHROPOLOGY 3N6 HUMAN EVOLUTION
A general consideration of evolutionary trends within the Order Primates. Special emphasis is given to the evolution of the hominids.
3 hrs.(lects. and discussion); two terms
Prerequisite: Anthropology 2D3 or 2E3, or permission of the instructor.

ANTHROPOLOGY 3O6 HUMAN OSTEOLOGY
Identification and analysis of the bones of the human skeleton, with a consideration of disease processes that have affected earlier populations.
3 hrs.(lects. and discussion); two terms
Prerequisite: Anthropology 2D3 or 2E3, or permission of the instructor.

ANTHROPOLOGY 3P3 RESEARCH METHODS IN CULTURAL ANTHROPOLOGY
Methodologies and techniques of research, especially field study, in sociocultural anthropology.
3 hrs.(lects. and discussion); one term
Prerequisite: Registration in Level III Honours Anthropology, or permission of the instructor.

ANTHROPOLOGY 3Q6 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.

ANTHROPOLOGY 3T3 COMPETITION AND CONFLICT
Focus is on the comparative study of political processes and the role which conflict and competition play in social life.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Anthropology.

ANTHROPOLOGY 3U3 CANADIAN PREHISTORY
A study of the development of native Canadian cultures prior to the arrival of Europeans.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Level II Archaeology courses, or permission of the instructor.

ANTHROPOLOGY 3V3 COMPARATIVE ECONOMIC ORGANIZATION
An examination of contrasting types of economic organization, with particular reference to societies with a non-industrial base.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Anthropology; or permission of the instructor.

ANTHROPOLOGY 3W3 SPECIAL TOPICS IN ANTHROPOLOGY
Reading and discussion of selected topics in Anthropology.
One term
Prerequisite: Written permission of the supervising professor. This course may be repeated in Level III, on a different topic, to a total of six units.

ANTHROPOLOGY 3X3 PEOPLE OF INDIA
Discussion of the ethno, 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.

ANTHROPOLOGY 3Y3 HISTORICAL LINGUISTICS
An advanced course covering the techniques for reconstructing ancestral languages. Language families, cognate sets, sound laws, internal and comparative reconstruction, and mechanisms of change will be treated.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology or Linguistics 2L3 and 2M3, or permission of the instructor.

ANTHROPOLOGY 3Z3 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.

ANTHROPOLOGY 4A3 THEORIES OF SOCIAL EVOLUTION
The various theories of social evolution from classical to modern times, but with special attention to Spencer, Marx, sociobiology, and modern anthropological works.
3 hrs.(lects.); one term
Prerequisite: Six units of Level II or Level III Anthropology, including 2F3, or permission of the instructor.
Not offered in 1984.

ANTHROPOLOGY 4B3 CURRENT PROBLEMS IN ANTHROPOLOGY
The topic varies with each instructor (i.e. one class may examine "Urban Anthropology" and another focus on "Recent Advances in Genetics". Consult the department office for topics prior to registration).
3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Anthropology; or permission of the instructor. This course may be taken twice in one term with different instructors.

ANTHROPOLOGY 4E3 ADVANCED REGIONAL ARCHAEOLOGY
A study of the field data, methods, and theoretical problems, in the prehistory of selected areas.
3 hrs.(seminar); one term
Prerequisite: Six units of Level III Archaeology courses, or permission of the instructor.

ANTHROPOLOGY 4F3 ARCHAEOLOGICAL THEORY
A seminar in current topics and issues in archaeology.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Level III Archaeology, or permission of the instructor.

ANTHROPOLOGY 4G3 INDEPENDENT RESEARCH
Independent study of a research problem through published materials and/or field work. Students will be required to write up the results of their inquiry in scholarly form.
3 hrs.(seminar); one term
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.

ANTHROPOLOGY 4I3 CONTEMPORARY ANTHROPOLOGICAL THEORY
Seminar in topic of anthropological theory.
3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Anthropology. This course is required of all students registered in Honours Anthropology.

ANTHROPOLOGY 4K3 ADVANCED TOPICS IN LINGUISTICS
An advanced course covering topics in linguistic theory with particular emphasis upon their application to a language or a set of languages.
3 hrs.(lects.); one term
Prerequisite: Twelve units of Linguistics above Level I, or permission of the instructor. Same as Linguistics 4K3.
To be given in Term II of alternate years, beginning in the Spring of 1985.

ANTHROPOLOGY 4M3 ADVANCED REGIONAL ARCHAEOLOGY II
A study of the field data methods and theoretical problems in the prehistory of selected areas.
3 hrs.(seminar); one term
Prerequisite: Six units of Level III Archaeology courses.

ANTHROPOLOGY 4N3 ANTHROPOLOGY AND EDUCATION
A comparison of the formal and informal ways in which people learn within the 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.

ANTHROPOLOGY 4O3 HUMAN GENETICS
Consideration of some of the major areas in human genetics, including cytogenetics, bio-chemical, behavioural, and population genetics.
ART HIST 2C3 ROMAN ART
The architecture, sculpture, and painting of the Roman world.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2C3.

ART HIST 2G3 THE ART OF THE MEDIEVAL WORLD
A systematic survey of the history of medieval art c. 350 to 1400 A.D.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Not available to students with credit in Art History 2K3 and/or 2L3.

ART HIST 2M3 THE ART AND ARCHITECTURE OF THE ITALIAN RENAISSANCE 1400-1580
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2N3 ITALIAN BAROQUE ART AND ARCHITECTURE
An examination of the major trends in Italian art and architecture from
1550-1780.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 203 THE ORIGINS OF MODERN ART 1780-1880
A study of the origin and development of modern styles from Neo-Classicism through Impressionism.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2P3 MASTERS OF TWENTIETH-CENTURY ART AND ARCHITECTURE
Topics examined will include Post-Impressionism, Fauvism, Cubism, Surrealism, and related developments.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2Q3 BIBLICAL TRADITIONS IN THE VISUAL ARTS
An examination of selected passages from the Bible and related writings and
their treatment in the visual arts of the Middle Ages and Renaissance.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Not available to students with credit in Art History 3A3.

ART HIST 3B3 ASPECTS OF CANADIAN ART
A survey of the visual arts in Canada from the earliest explorations and
settlements to the present.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST 3D3 FRENCH AND FLEMISH PAINTING 1320-1500
An examination of the development of French and Flemish painting at the
end of the Middle Ages.
3 lects.; one term
Prerequisite: Art History 2M3.
Offered in alternate years.

ART HIST 3E3 INNOVATIONS IN ITALIAN BAROQUE PAINTING
A discussion of the formation and character of the Baroque style in Italy in the
17th century. The 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 2N3.
Offered in alternate years.

ART HIST 3G3 LATE ANTIQUE AND EARLY CHRISTIAN ART
The art and architecture of the later Roman Empire, and the birth of
Christian Art (A.D. 200-600).
3 lects.; one term
Prerequisite: Art History 2C3 or 2K3 or Classical Civilization 2C3; or
permission of the Department.
Same as Classical Civilization 3G2.
Alternates with Art History 4L3.

ART HIST 3L3 PAINTING IN VENICE
An examination of the works of major Venetian painters such as Giovanni
Bellini, Giorgione, and Titian.
3 lects.; one term
Prerequisite: Art History 2M3.
Offered in alternate years.

ART HIST 3M3 MODERN ARCHITECTURE
An examination of the new problems facing the architect in the 19th
century, and the Modern Movement in Europe and America in the 20th
century.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 3Q3 MASTER PRINTMAKERS
A study of the work of master printmakers 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 HIST 3R3 AMERICAN PAINTING IN THE TWENTIETH CENTURY
A discussion of major figures and trends in American painting of the twentieth century.
3 lec.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 3S3 ART AND CIVILIZATION AT THE DAWN OF THE ITALIAN RENAISSANCE 1200-1400
A study of Italian art and civilization in the age of transition between the Middle Ages and the Renaissance.
3 lec.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 4P3.
Offered in alternate years.

ART HIST 3T3 MAN AND NATURE
An exploration of the ways in which the visual arts have contributed to our understanding of the environment during the modern period.
3 lec.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 4P3.
Offered in alternate years.

ART HIST 3V3 SUPERVISED READING
Readings in a field of special interest to the student, under the guidance of a Faculty member.
Prerequisite: Registration in Level III of Honours Art History or Level IV Honours Art History and a grade of at least B – in a previous course in the chosen field. Not open to students taking Art 4D3. Not available to students with credit in Art History 4K3.

ART HIST 3W3 THE ART OF PHOTOGRAPHY
An historical and critical discussion of photography and its contribution to modern visual culture.
3 lec.; one term
Prerequisite: Registration in Level III or IV of any programme and permission of the instructor.

ART HIST 4A3 CATHEDRAL AND ABBEY
The origin and development of church architecture from the Carolingian period to the age of the great cathedrals.
3 lec.; one term
Prerequisite: Art History 2G3. Not available to students with credit in Art History 2L3.
Offered in alternate years.

ART HIST 4C3 THE ART OF THE HIGH RENAISSANCE IN ROME
A study of the art and architecture of Raphael, Michelangelo and their contemporaries in Rome in the early 16th century.
3 lec.; one term
Prerequisite: Art History 2M3.
Offered in alternate years.

ART HIST 4T3 TOPICS IN ANCIENT ART AND ARCHAEOLOGY
1985-86: Archalic Greek Art
The birth and development of Greek painting and sculpture, 1000-480 B.C.
Seminar (3 hrs.); one term
Prerequisite: Art History 2B3 and registration in Level III or IV of a programme in Art History or Classical Studies and permission of the instructor. 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 3G3.
Same as Classical Civilization 4L3.

ART HIST 4M3 ASPECTS OF THE ART OF MATISSE AND PICASSO
An examination of selected paintings, sculptures and drawings by Henri Matisse and Pablo Picasso.
3 lec.; one term
Prerequisite: Art History 2P3.

ART HIST 4N3 SEVENTEENTH-CENTURY PAINTING IN FRANCE AND THE LOW COUNTRIES
An examination of painting during the Golden Age of the arts in France, Flanders and Holland.
3 lec.; one term
Prerequisite: Art History 2N3.
Offered in alternate years.

ART HIST 4P6 THESIS
Supervised study of a problem in the history of art of special interest to the student.
Prerequisite: Registration in Level IV of Honours Art History and a grade of at least B – in a previous course in the chosen field, and permission of the Department.

ART HIST 4R3 PAINTING AND SCULPTURE OF FIFTEENTH-CENTURY ITALY
An examination of the representational arts of the early Renaissance with emphasis on the Florentine contribution.
3 lec.; one term
Prerequisite: Art History 2M3.
ART AND ART HISTORY

Enrolment is limited; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.

ART 3D3 IMAGERY AND VISUAL COMMUNICATION
A course to develop the student's ability to make images that communicate definite messages and meanings for purposes other than self-expression. 1 studio practice (3 hrs.); two terms
Prerequisite: Art 2C3 and one of 2A4, 2A6, 2F4.
Enrolment is limited; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.

ART 3E6 INTAGLIO AND RELIEF PRINTMAKING
Studio class in the intaglio and relief methods of printmaking. 2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2F4.
Enrolment is limited; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.

ART 3F6 MINOR STUDIO PROJECT
An investigation of ideas initiated in any of Art 3A6, 3B6, 3E6, 4A6. Supervised by a studio faculty member.
Prerequisite: Registration in Level III Honours Art and a grade of at least B — in the Level II related studio course. Not available to students with credit in Art 4R12 or 4C6.
Students enrolled in Honours Art are required to take 3F6 concurrently with any of Art 3A6, 3B6, 3E6, 4A6.

ART 4A6 LITHOGRAPHY AND SILK-SCREEN PRINTING
Studio course in the techniques of lithography and silk-screen printing. 2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2F4.
Enrolment is limited; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.

ART 4B12 MAJOR STUDIO PROJECT
A summation of investigations into painting, sculpture, printmaking or drawing to be conducted under the supervision of two studio faculty members.
Prerequisite: Registration in Level IV Honours Art and a grade of at least B — in Art 3F6 and its related Level III course.

ART 4D3 MEDIA RESEARCH
Investigation of studio techniques, under the supervision of a studio faculty member.
Prerequisite: Registration in Level IV Honours Art and a grade of at least B — in the previous course in the chosen field; departmental permission slip required. Not available to students with credit in or registered in Art History 3V3.
Students wishing to combine Art 4D3 with Art 4B12 must have a grade of at least A — in a previous course in the chosen field or fields.

ARTS & SCI 1A6 WESTERN THOUGHT I
An examination of central themes, from the time of the Greeks to the present, in Western religious, philosophical, and scientific thought. Students will study the formulation of these themes in such thinkers as Plato, Nietzsche, Rousseau, Augustine, and Descartes. Topics considered will include the legitimacy of the state; the scope and limits of reasoning; and the foundations of morality. Though the problems discussed will be formulated in a contemporary idiom the works will be viewed with respect to their historical context.

ARTS & SCI 1B6 WRITING AND INFORMAL LOGIC
The primary aim of this course is to develop the student's critical and analytical skills in dealing with the written word. Students will examine the structure of selected texts, analyze various types of reasoning, and receive individual attention in expository writing.

ARTS & SCI 2A6 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. Attention will be given to their treatment of such topics as the nature of man, the concept of human rights, the role of government in the economy, the motivation of human action, and the applicability of scientific method to political, economic and psychological problems.

ARTS & SCI 2D6 PHYSICAL SCIENCE
Classical mechanics and special relativity highlighting the discoveries of Newton and Einstein. The chemical evidence for atoms; chemical reactions, valence and 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 & SCI 3A6 LITERATURE
Literary works drawn from a variety of genres and periods will be examined. The course will focus on the ways in which great writers have treated enduring human ethical concerns. It will attempt to show how literary creativity involves the matching of formal and stylistic mastery, on the one hand, with ethical awareness on the other. The course will require frequent brief written assignments.

ARTS & SCI 3B6 TECHNOLOGY AND SOCIETY
The development of technology, and the socio-economic impact of technology, will be considered in historical perspective. Some essential technological concepts concerned with materials, energy and production systems, and design will be explored from a scientific point of view. Consideration will be given to methods for assessing the impact of technological decisions.

ARTS & SCI 3C6 INQUIRY II

ARTS & SCI 3C6 INQUIRY III

ARTS & SCI 3X6 INQUIRY IV (offered in 1984-85 only)
These inquiry seminars build on skills acquired in Inquiry I. They provide an opportunity to explore a wide range of important public issues, and in doing so provide further the art of formulating issues, carrying out research, and presenting the results in oral and written reports.

ARTS & SCI 3D6 CREATIVE ARTS
The nature of the graphic arts and music, and their relation to culture and ideas, is examined. Close attention is paid to the creative process as a way of understanding the nature of the artistic product itself.

ARTS & SCI 4A6 INDIVIDUAL STUDY
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Students intending to register must first consult the Director of the Arts & Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.
Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4A12 INDIVIDUAL STUDY
Same as Arts and Science 4A6.

ARTS & SCI 4C6 THESIS
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Three copies of a completed thesis must be submitted by the end of classes. Students intending to register must first consult the Director of the Arts & Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.
Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4C12 THESIS
Same as Arts and Science 4C6.

Arts and Science
Council of Instructors
Herbert M. Jenkins (Psychology)/Director
Syed Ahmad (Economics)
Alwyn Berland (English)
Sylvia Bowerbank (English)
J.D. Embury (Metallurgy and Materials Science)
Barbara M. Ferrier (Biochemistry)
Peter J. George (Economics)
David A. Goodings (Physics)
Louis Greenspan (Religious Studies)
Roy W. Hornosty (Sociology)
Atif A. Kubursi (Economics)
Alan Mendelson (Religious Studies)
Richard J. Preston (Anthropology)
Michael L. Ross (English)
George W. Wallace (Art and Art History)
William Wallace (Music)

CURRICULUM 1984-86
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. (lects., discussion groups, seminars), except Arts and Science 2D6 which includes occasional labs. All courses are two terms.

Enrolment in Level I of the Arts and Science Programme is limited to approximately 40 students. Enrolment in Arts and Science courses is also limited to approximately 40 students.
Asian Studies

While there is no B.A. Programme in Asian Studies, students interested in concentrating in this area may choose from among the following courses offered by various Departments. Those desiring further information on specific courses should consult the departmental listing in the Calendar.

Students wishing to pursue Asian Studies may obtain further information from Dr. D. Barrett (History) or Dr. G. MacQueen (Religious Studies).

CURRICULUM 1984-1986

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
3CC3 Ancient China
3DD3 Imperial China
3G6 The History of the Indian Sub-Continent
4G6 The Revolutionary Movement in Modern China

Political Science
2M6 Introduction to Far Eastern Political Traditions
3D3 Comparative Politics: Southeast Asian Systems
3MM6 The Politics of Modern and Contemporary China
3Q6 Politics in Japan

Religious Studies
2B6 Introduction to the Wisdom Philosophers of Asia
2M6 East Asian Religions
2O03 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
4A6 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

Economics
3J6 Economic Development

Political Science
2C6 Culture and Politics of Southern Asia and North Africa
4Q6 Developing Political Systems

Religious Studies
1B6 World Religions
1C6 Texts, Traditions, and Thought
1F6 Religion and Contemporary Problems
2A6 Death and Dying
2BB3 Images of the Divine Feminine
2CC3 Specialists in the Sacred
2QQ3 Cults in North America

3. Language Courses

Sanskrit 3A6 Introduction to Sanskrit Grammar
Sanskrit 4B6 Readings in Sanskrit Texts
(Of offered by the Department of Religious Studies)

Biochemistry

Faculty as of January 15, 1984
H.P. Ghosh/Chairman

BIOCHEMISTRY

Professors
Luis A. Branda/B.Sc., D.Sc. (Uruguay)
Derek C. Burke/B.Sc., Ph.D. (Birmingham)/part-time
William W. Chan/M.A., Ph.D. (Cambridge)
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)
Hara P. Ghosh/M.Sc., D.Phil. (Calcutta)
Ross H. Hall/B.A. (British Columbia), M.A. (Toronto), Ph.D. (Cambridge)
Dennis B. McCalla/B.Sc. (Alberta), M.Sc. (Saskatchewan), Ph.D. (California Inst. of Technology), F.C.I.C.
Thomas Neilson/B.Sc., Ph.D. (Glasgow), F.C.I.C.
Evert Nieboer/M.Sc. (McMaster), Ph.D. (Waterloo)

Associate Professor
Gerhard E. Gerber/B.Sc., Ph.D. (Toronto)
Radhey S. Gupta/M.Sc. (New Delhi), Ph.D. (Bombay)

Assistant Professor
A. Bruce Futcher/B.Sc., D.Phil. (Oxford)
Calvin B. Harley/B.Sc., Ph.D. (McMaster)

Associate Members
Stanley T. Bayley/(Biology) B.Sc., Ph.D. (London)
Richard J. Haslam/(Pathology) M.A., D.Phil. (Oxford)
George D. Sweeney/(Medicine) M.B., Ch.B., Ph.D. (Cape Town)

CURRICULUM 1984-86

BIOCHEM 2A3 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 3B3.
3 lects.; one term
Prerequisite: Credit or registration in Chemistry 208 or 258. Not open to students who are registered in or have completed Biochemistry 2AA3 or 2E3.

BIOCHEM 2E3 INTRODUCTORY BIOCHEMISTRY
A treatment of the basic areas of biochemistry, including physiological chemistry. Designed for students who do not intend to pursue biochemistry.
3 lects.; one term
Prerequisite: Credit or registration in one of Chemistry 2D4, 208, 258. Not open to students who are registered in or have completed Biochemistry 2A3 or 2AA3.

BIOCHEM 3B3 PRINCIPLES OF BIOCHEMICAL INVESTIGATION
Experimental approaches for identification and isolation of cellular components, characterization of interactions in vivo, determination of sequential order and spatial organization and extrapolation in vivo.
3 lects.; one term
Prerequisite: Biochemistry 2A3 or 2AA3, and credit or registration in one of Chemistry 2Q5, 274, 275. Not open to students who have completed Biochemistry 3BB3 or 306.

BIOCHEM 3C3 APPROACH TO BIOCHEMICAL PROBLEMS
Experience will be gained in the solution of biochemical problems.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3BB3. Not open to students who have completed Biochemistry 3CC3.

BIOCHEM 306 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.; one term
Prerequisite: Biochemistry 208 or 258. Not open to students who have completed Biochemistry 2A3 or 2AA3, 3BB3, 3C3, 3CC3.

BIOCHEM 3H3 CLINICAL BIOCHEMISTRY
An outline of clinical chemistry; its relation to disease and relevance to health care.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3BB3. Not open to students who have completed Biochemistry 3CC3.

BIOCHEM 314 BIOCHEMISTRY LABORATORY
Illustration of fundamental principles as presented in Biochemistry 3B3.
2 labs.(3); two terms
Prerequisite: Credit or registration in Biochemistry 3B3 or 3BB3.

BIOCHEM 312 BIOCHEMISTRY LABORATORY
Identical to first part of Biochemistry 314.
1 lab (3); two terms
Prerequisite: Credit or registration in Biochemistry 3B3 or 3BB3.
BIOCHEMISTRY

BIOCHEM 4B6 SENIOR THESIS
A thesis based on a project supervised by a member or associate member of the Department of Biochemistry.
3 lects.; two terms
Prerequisite: In general only students registered in Level IV Biochemistry programmes who have a CAA of at least 8.0 in area courses will be admitted. Potential registrants should consult the Chairman before June 1st. Enrolment is limited.

BIOCHEM 4C3 PROBLEMS IN APPLIED BIOCHEMISTRY
Areas of relevance to society are explored from a biochemist's viewpoint. Typical topics are in the areas of nutrition, agriculture, food and pharmaceutical industry and pollution.
3 lects.; one term
Prerequisite: Biochemistry 3C3 or 3CC3 and a CAA of at least 7.0.

BIOCHEM 4D3 BIOTECHNOLOGY AND GENETIC ENGINEERING
Theory, methods and applications in genetic engineering and biotechnology with emphasis on recombinant DNA, hybridomas and engineered organisms.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or one of Biochemistry 3BB3, 3G6.

BIOCHEM 4E3 RECENT DEVELOPMENTS IN MOLECULAR BIOLOGY
Biochemical approaches for studying the possible molecular components and regulatory mechanisms involved in complex biological phenomena, such as cell transformation, carcinogenesis, and differentiation.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or one of Biochemistry 3BB3, 3G6.

BIOCHEM 4G3 BIOTECHNOLOGY AND GENETIC ENGINEERING LABORATORY
This lab is complementary to Biochemistry 4D3. Experiments will involve cloning, engineered mutagenesis, DNA sequencing, expression of cloned gene and fermentation.
2 labs. (4); one term
Prerequisite: Biochemistry 3B3 or 3BB3, 3L2 or 3L4, and a CAA of at least 8.0.

BIOCHEM 413 INORGANIC AND ORGANIC ASPECTS OF BIOLOGICAL CHEMISTRY
A course highlighting the inorganic and organic chemistry involved in enzyme catalysis and in metal-ion dependent biological processes.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or 3BB3, and Chemistry 3D6; or permission of the instructor.

BIOCHEM 4L3 ADVANCED BIOCHEMISTRY LABORATORY
Fundamental principles of experimental biochemistry with emphasis on modern methods in enzymology, membrane biochemistry and molecular biology.
2 labs.(4); one term
Prerequisite: Biochemistry 3L2 or 3L4, and 3B3 or 3BB3. Not open to students who have completed Biochemistry 4G3 or 4L6.

BIOCHEM 4M3 MEMBRANE STRUCTURE AND FUNCTION
Chemical structure and molecular organization of membrane constituents. Molecular basis of the biological activity of membranes.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or one of Biochemistry 3BB3, 3G6.

BIOCHEM 4N3 NUTRITION AND METABOLISM
Relation of diet to metabolism and regulation of metabolism including: nutrition and the immune system; vitamin deficiency and membrane function; physical activity, energy and obesity; drug and nutrient interactions; health implications.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or one of Biochemistry 3BB3, 3G6.

BIOCHEM 403 MOLECULAR BIOPHYSICS
The physical biochemistry of macromolecules, methods for their study including techniques such as sedimentation, X-ray diffraction, nuclear magnetic resonance spectroscopy, and their application to proteins and nucleic acids.
3 lects.; one term
Prerequisite: Registration in Level III or IV Honours Biology or Level IV Biology Major (with credit in one of Biochemistry 3B3, 3BB3, 3G6), or in Level III or IV Honours Biochemistry or Honours Biochemistry and Chemistry, or Level IV Biochemistry Major; or permission of the instructor. Same as Biology 403.

BIOCHEM 4P3 RESEARCH PROJECT
A research project will be supervised by a member or associate member of the Department of Biochemistry.
3 labs.(3); one term
Prerequisite: Students must be registered in a Level IV Biochemistry programme and have a CAA of at least 7.0. Not open to students who have credit or are registered in Biochemistry 4L6 or 4P3.

BIOCHEM 4Q3 BIOCHEMICAL PHARMACOLOGY
Interactions of drugs with living systems. Drug absorption, distribution, mechanism of action, metabolism and elimination will be discussed.
3 lects.; one term
Prerequisite: Biochemistry 3B3 or one of Biochemistry 3BB3, 3G6.

BIOCHEM 4U5 ADVANCED EXPERIMENTATION
Fundamental experimental principles of biochemistry and chemistry including modern instrumental methods. Two units selected from Chemistry 4T4 plus Biochemistry 4P3.
2 labs.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L6, 4P3, Chemistry 4T4.
Same as Chemistry 4U5.

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 1983-84 were as follows:

R. Bloch (Medicine)
J.L. Brash (Chemical Engineering)
H. deBruin (Medicine)
D. Ghista (Medicine)
E. Nieboer (Biochemistry)
L.D. Pengelly (Medicine)

CURRICULUM 1984-86

Selective 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 Adaption in the Biological World
BIOLOGY 1H6 Human Physiology
BIOLOGY 2F3 Fundamentals of Ecology
PSYCHOLOGY 1A6 General Psychology
CHEMISTRY 2D4 Introductory Organic Chemistry
CHEMISTRY 208 Organic Chemistry
BIOCHEMISTRY 2E3 Introductory Biochemistry
ENGINEERING PHYSICS 3X3 Engineering Applications in Medicine and Surgery
CHEMICAL ENGINEERING 4T3 Transport Processes in Biomedical Engineering
ELECTRICAL ENGINEERING 4U4 Biomedical Electronics Instrumentation
ENGINEERING 4X3 Introduction to Biomedical Engineering
ENGINEERING PHYSICS 4Y3 Engineering Physiology

See also the programme options in Biochemistry and Genetic Engineering under the Faculty of Science, Department of Biology, and Department of Biochemistry.

Biology

Faculty as of January 15, 1984

S. Mak/ 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.
Frank L. Graham/(Pathology), M.A., Ph.D. (Toronto)
Kenneth A. Kershaw/B.Sc. (Manchester) , Ph.D. (N. Wales) , D.Sc. (Wales), F.R.S.C.
John N.A. Lott/ B.Sc. (British Columbia) , M.S., Ph.D. (California, Davis)
Stanley Mak/M.Sc. (Saskatchewan), Ph.D. (Toronto)
John J. Miller/B.A., Ph.D. (Toronto)
Richard A. Morton/M.S., Ph.D. (Chicago)
Biology 1A6 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. or 1 lab.(3); two terms
Prerequisite: Registration in Natural Sciences 1 including Chemistry 1A7 or completion of Natural Sciences 1 or Engineering 1. Not open to students with credit in Biology 1B7.

Biology 1G6 INTRODUCTION TO BIOLOGY
Basic concepts in cell biology, animal physiology and genetics. The course covers cell structure, organelle function, metabolism, growth, division, endocrinology, muscle function, circulation, excretion, and immunology.
3 lects., or 2 lects., 1 lab.(3); two terms
Prerequisite: At least a 60% average in two Grade 13 science or mathematics courses; or a grade of at least C+ in Physical Science 2C6. Not open to students registered in the Faculty of Science.

Biology 1H6 HUMAN PHYSIOLOGY
An introduction to the physiological processes of the human body with particular reference to respiration, circulation, digestion, excretion, and muscle, nerve, and endocrine function.
3 lects., or 2 lects., 1 lab.(3); two terms
Prerequisite: Open except to students in Natural Sciences 1. May be taken only as an elective by students registered in a Science programme. Not open to students who are registered, or have credit, in Biology 3Y6 or 4S6.

Biology 1H3 HUMAN PHYSIOLOGY I
Introduction to cell physiology, homeostasis, and nerve, muscle and hormonal systems.
3 lects. or 2 lects., 1 lab.(3); one term
Prerequisite: Registration in Physical Education 1. The same as the first half of Biology 1H6.

Biology 1J3 HUMAN PHYSIOLOGY II
Physiology of respiration, circulation, energy and muscle metabolism and reproduction.
3 lects. or 2 lects., 1 lab.(3); one term
Prerequisite: Registration in Physical Education 1. The same as the second half of Biology 1H6.

Biology 2B3 CELL BIOLOGY
The cell as the fundamental unit of life. The origin of life, evolution of prokaryote and euukaryote cells, development of multicellularity and cell specialization.
3 lects., 1 lab.(3); or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 1A6 or 1B7; or a grade of at least B- in Biology 1G6; and one of Chemistry 1A7, 1B7, 1C8.

Biology 2C3 GENETICS
Structure, function and transmission of genes; chromosomal basis of inheritance; mono- and dihybrid crosses; sequential steps in gene function; linkage maps; sex chromosome inheritance.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 1A6 or 1B7; or a grade of at least B- in Biology 1G6; and one of Chemistry 1A7, 1B7, 1C8.

Biology 2D3 THE PLANT KINGDOM
An introduction to the major groups of green plants. Growth and development of vegetative parts and mechanisms of reproduction will be emphasized.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6 or 1B7; or a grade of at least B- in Biology 1G6.

Biology 2E3 THE ANIMAL KINGDOM
An introduction to the major animal groups, with emphasis on structure and function.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6 or 1B7; or a grade of at least B- in Biology 1G6.

Biology 2F3 FUNDAMENTALS OF ECOLOGY
A broad overview of ecology at the level of organisms, populations and communities.
2 lects., 1 lab.(3); one term
Prerequisite: Completion of Biology 1A6 or 1B7; or a grade of at least B- in Biology 1G6.

Biology 3A6 STRUCTURE, FUNCTION AND DEVELOPMENT OF PLANTS
Ultrastructure, anatomy and development of higher plants in relation to growth conditions and physiological activities.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 and Biology 2D3.

Biology 3C3 MICROBIOLOGY I
Basic energy-yielding mechanisms; biochemical and genetic regulation of morphogenesis; microbial life under extreme conditions.
3 lects.; one term
Prerequisite: Biology 2E3.

Biology 3D3 ANIMAL PARASITOLOGY
Parasites of animals, dealing with life histories, host-parasite relationships, and arthropod vectors.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2E3.

Biology 3E3 MICROBIOLOGY II
2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2C8 or 2D4.

Biology 3F6 COMPARATIVE ANATOMY AND EVOLUTION OF VERTEBRATES
An introduction to the development of structure and function in vertebrates.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3 or permission of the instructor.

Biology 3H6 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 permission of the instructor.

Biology 3I3 CYTOGENETICS
3 lects.; one term
Prerequisite: Biology 2B3 and 2C3.

Biology 3J3 THE GENETIC BASIS OF EVOLUTION
A survey of the conceptual foundations of evolutionary processes.
3 lects. or 2 lects., 1 lab. or 1 lab.(3); one term
Prerequisite: Biology 2C3.

Biology 3K6 ANIMAL HISTOLOGY
The structure, function, and organization of cells, tissues, organs and organ systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3; or a grade of at least B- in Biology 1G6; or permission of the instructor.

Biology 3M6 FORM, FUNCTION, AND LIFE HISTORY OF INVERTEBRATES
Development of specialization in form, function, and life cycle during evolution and during the growth of individuals of certain groups.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E3.
BIOLOGY 3N6 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 a grade of at least B in Biology 1G6; one of Chemistry 1A7, 1B7, 1C8.

BIOLOGY 3O3 MICROBIAL GENETICS
The genetics of bacteria, fungi, and yeasts. Special emphasis will be placed on relationships between microbial genetics and general problems in genetics.
2 lects., 1 tut.; one term
Prerequisite: Biology 2C3.

BIOLOGY 3P3 CELL PHYSIOLOGY
Cell function with emphasis on cell membranes and transport processes. A quantitative physiochemical interpretation of the electrical properties of cells.
2 lects., 1 tut.; one term
Prerequisite: Biology 2B3 and registration, or credit, in Biochemistry 3B3 or 3BB3 or 3G6.

BIOLOGY 3Q3 RADIATION BIOLOGY
The effects of radiation upon biological material at the physical, 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, 1C7, 1C8, or permission of the instructor.

BIOLOGY 356 POPULATION AND COMMUNITY ECOLOGY
Methods of analyzing population and community data; procedures for modelling populations and population processes; intra- and interspecific competition, predator-prey relationships, spatial and temporal patterns in communities.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2D3 and 2F3 and registration, or credit, in Biology 2H3 or Computer Science 1B3 and Statistics 2R6.

BIOLOGY 3V6 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.

BIOLOGY 3Y6 COMPARATIVE PHYSIOLOGY
Environmental physiology of plants and animals: soil and water relations, nitrogen fixation, photosynthesis, circulatory and respiratory mechanisms, ionic and osmotic regulation.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B3 or registration in Level III or IV of a non-science programme, and a grade of at least B in Biology 1G6. Not open to students with credit, or registration, in one of Biology 4B4, 4B6, 456.

BIOLOGY 3Z6 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.

BIOLOGY 4A3 LABORATORY COURSE IN MOLECULAR BIOLOGY
Introduction to basic recombinant DNA techniques: isolation, characterization and expression of genes in E. coli.
2 labs.(3); 1 tut.; one term
Prerequisite: One of Biochemistry 3B3, 3BB3, 3G6. Open to students who have obtained a CAA of at least 9.0 and are registered in Level IV Honours Biology; or permission of the Chairman. Preference will be given to students registered in the Biotechnology and Genetic Engineering Option.
Approval must be given by the Chairman in the preceding Spring term.
Enrolment is limited to a maximum of 12 students.

BIOLOGY 4B6 PLANT PHYSIOLOGY
Principles of physiology and metabolism in plants. Topics include: aspects of photosynthesis, nitrogen assimilation, cell wall biosynthesis, hormone action and biotechnology as related to plants.
2 lects., 1 tut. or 1 lab.(3); two terms
Prerequisite: Registration in, or completion of, Biochemistry 3G6; or completion of Biochemistry 2A3 or 2AA3; or permission of the instructor. Not open to students registered in Biology 3Y6.

BIOLOGY 4B8 PLANT PHYSIOLOGY
The same as Biology 4B6, but without the laboratory or tutorial.
2 lects.; two terms
Prerequisite: Registration in, or completion of, Biochemistry 3G6; or completion of Biochemistry 2A3 or 2AA3; or permission of the instructor. Not open to students registered in Biology 3Y6.

BIOLOGY 4C8 SENIOR THESIS
A thesis based upon a research project carried out under the direction of a member of the Faculty.
Prerequisite: Approval by the Chairman in the preceding spring term. Open to students who have obtained a CAA of at least 10.0 and are registered in Level IV Honours Biology, Honours Biology and Geology, or Honours Biology and Psychology. Not open to students with credit, or registration, in Biology 4F4.

BIOLOGY 4D6 PHYSIOLOGICAL ECOLOGY
Interaction of organisms and microclimate: contrasting strategies of plant and animal physiology in stressful environments. Examples will be chosen from desert, arctic and aquatic systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 3Z6.

BIOLOGY 4E3 POPULATION GENETICS
Experimental and theoretical aspects of the genetic basis of evolutionary changes in populations.
2 lects., 1 tut.; one term
Prerequisite: Biology 3J3 and Biology 2C3 and one of Mathematics 1F6, 1A6.

BIOLOGY 4F4 SENIOR PROJECT
Students may enlarge their background in a field of specialization through an experimental or library project under the direction of a member of the Faculty.
Prerequisite: Approval by the Chairman in the preceding spring term. Open to students registered in a Level IV Biology programme. Not open to students with credit, or registration, in Biology 4C8.

BIOLOGY 4H3 PLANT DEVELOPMENT
An experimental analysis of development in plants: cytological, genetic, and biochemical studies.
3 lects.; one term
Prerequisite: Biology 2D3.

BIOLOGY 4I3 IMMUNOLOGY
An introduction to humoral and cellular immunity. The molecular and cellular basis of immunity, and an introduction to immunological techniques.
2 lects., 1 tut.(2); one term
Prerequisite: Registration, or credit, in one of Biochemistry 3B3, 3BB3, 3G6; or permission of the instructor.

BIOLOGY 4J3 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 in Biology 4D6.

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.
3 lects.; 2 lects., 1 tut., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 303 and 313.

BIOLOGY 4Q3 MOLECULAR BIOPHYSICS
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, X-ray diffraction, and nuclear magnetic resonance spectroscopy and application to proteins and nucleic acids.
3 lects.; one term
Prerequisite: Registration in: Level III or IV Honours Biology; or Level IV Biology Major (with registration, or credit, in one of Biochemistry 3B3, 3BB3 or 3G6); or Level III or IV Honours Biochemistry or Honours Biochemistry and Chemistry; or Level IV Biochemistry Major; or permission of the instructor.

Same as Biochemistry 4Q3

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.(3); two terms
Prerequisite: Biology 303 and one of Biochemistry 3B3, 3BB3, 3G6.

BIOLOGY 4P2 GENE EXPRESSION
Regulation of transcription and mRNA processing in pro- and eukaryotes.
3 lects.; one term
Prerequisite: Biology 303 and Biochemistry 3B3 or 3BB3 or 3G3.

The same as the first two units of Biology 4P6.

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.; or 2 lects., 1 tut. or 1 dem.; one term
Prerequisite: Biology 3J3; or permission of the instructor.

BIOLOGY 4R3 ENTOMOLOGY
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.(3); one term
Prerequisite: Registration, or credit, in Biology 3M6.

Offered in alternate years.

BIOLOGY 4S6 VERTEBRATE PHYSIOLOGY
A theoretical and laboratory examination of cardiovascular physiology,
respiratory gas exchange, acid-base regulation, electrolyte balance and renal function, neural mechanisms, digestion and endocrinology in vertebrate animals.

BIOL 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).

BIOL 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.

BIOL 4W3 MYCOLOGY
Structure and identification of fungi; physiology of their growth and reproduction; their environmental role.

BUSINESS 3X3 BUSINESS LAW
The relevance of law to the Canadian business environment will be the main focus of this course. Basic concepts of the judicial process and legal procedures, contracts, primary sources of law, and other aspects of the relationship between business and law will be examined.

BUSINESS 3Y3 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.

BUSINESS 3Z3 HUMAN RESOURCE MANAGEMENT
An introduction to the basic concepts, theories and practice 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.

Canadian Studies
Canadian Studies Programmes at McMaster University are administered by the Faculties of Humanities and Social Sciences and are co-ordinated and supervised by an interdisciplinary Committee of Instruction.

Students planning to register in a programme in Canadian Studies and another subject are to report to the Associate Dean of Studies responsible for the "other discipline" (e.g., a student registered in Canadian Studies and English must report to the Associate Dean of Humanities Studies; a student in Canadian Studies and Sociology reports to the Associate Dean of Social Sciences). In advance of registering, such students must present written approval of the Chairman of the Committee of Instruction of the Canadian Studies Programme.

Committee of Instruction
H. Turner (History)/Chairman
M. Ahmed (Romance Languages)
H. Aster (Political Science)
C. Ballstadt (English)
C. Bayard (Romance Languages)
C. Cuneo (Sociology)
D. Gagan (History)
L. Gentilcore (Geography)
P. George (Economics)
R. Henderson (Physical Education)
R. Hyman (English)
J. Jones (Social Work)
L. MacDowell (History)
R. Matthews (Sociology)
E. Nardocchio (Romance Languages)
R. Preston (Anthropology)
M. Stein (Political Science)
J. Weaver (History)
M. Webber (Geography)

CURRICULUM 1984-86
CDN ST 1A6 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.

CDN ST 2A3 CANADIAN REGIONAL STUDIES
An interdisciplinary examination of specific regions and provinces in Canada.
CANADIAN STUDIES

Seminar (2 hrs.); one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students with credit in Canadian Studies 3A3.

CDN ST 2B3 CANADIAN SOCIAL AND CULTURAL STUDIES
An interdisciplinary examination of such subjects as cultural heritage and achievement, ethnic and cultural groups, religion and education. Seminar (2 hrs.; one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students with credit in Canadian Studies 3B3.

CDN ST 3B3 CANADIAN INDUSTRIAL AND URBAN STUDIES
An interdisciplinary examination of such subjects as industrialization, class structures and demographic changes, the ecology of post-industrial Canada and problems in urban geography and planning. Seminar (2 hrs.; one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction. Not available to students with credit in Canadian Studies 3C3.

CDN ST 3F3 STUDIES OF CANADIAN INSTITUTIONS AND POLICIES
An interdisciplinary examination of such subjects as government structures and systems, federal and provincial politics, the civil service, external affairs and economic problems and policy. Seminar (2 hrs.; one term
Prerequisite: Registration in a Canadian Studies Programme or permission of the Committee of Instruction.

CDN ST 4E6 INDEPENDENT RESEARCH
In regular consultation with a faculty member from the Committee of Instruction, students will prepare and defend a major research paper on an interdisciplinary subject. There will be a formal oral examination by three instructors from the Committee of Instruction with representation from both Faculties.
Prerequisite: Registration in Level IV of Honours Canadian Studies and another subject. CANADIAN AREA COURSES

Humanities:
ART HISTORY 3B3 Canadian Art and Architecture
DRAMATIC ARTS 3B3 Contemporary Quebec Theatre
ENGLISH 2C3 Contemporary Canadian Fiction
ENGLISH 2G6 Canadian Literature
ENGLISH 3C3 Contemporary Canadian Poetry
FRENCH 2F3 The Civilization of French Canada I
FRENCH 2FF The Civilization of French Canada II
FRENCH 3AA3 The Modern French Canadian Novel
FRENCH 3BB3 Contemporary Quebec Theatre
FRENCH 4U3 Topics in French-Canadian Literature
HISTORY 2J6 The History of Canada
HISTORY 3C3 The Indian in Eastern Canada
HISTORY 3V6 The People of Ontario, 1790-1940: An Introduction to Regional Social History
HISTORY 4N6 Canadian Historiography
MUSIC 3T3 Studies in Canadian Music

Social Sciences:
ANTHROPOLOGY 3A3 Ethnology: The Canadian North
ANTHROPOLOGY 3F3 Contemporary Northern Peoples
ECONOMICS 2K6 Economic History of Canada
ECONOMICS 3C6 Public Finance
ECONOMICS 3F3 Topics in Canadian Economic History
GEOGRAPHY 2E3 Canada
GEOGRAPHY 3D3 Historical Geography of Canada
GEOGRAPHY 4U3 Selected Problems in Urban Planning
GEOGRAPHY 4Z3 Advanced Cultural Geography
POLITICAL SCIENCE 2G6 Politics in Canada
POLITICAL SCIENCE 3D6 Political Parties, Movements and Elites in Canada
POLITICAL SCIENCE 3GG3 Canadian Federalism
POLITICAL SCIENCE 3I6 Canadian Political Ideas
POLITICAL SCIENCE 4S6 Canadian Political Theory
RELIGION'S STUDIES 3B3 Native and Ethnic Religions in Canada
RELIGIOUS STUDIES 3BB3 Major Denominations in Canada
SOCIOLOGY 2H6 A Sociological Analysis of Canadian Society
SOCIOLOGY 3B3 Major Denominations in Canada (same as Religious Studies 3BB3)
SOCIOLOGY 3Q3 Native and Ethnic Religions in Canada (same as Religious Studies 3BB3)
SOCIOLOGY 403 Regionalism and Regional Development in Canada

Chemical Engineering

Faculty as of January 15, 1984

M.H.I. Baird/ 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)
Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)
Alvin E. Hamieelec/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), F.C.I.C., P.Eng./part-time
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
Keith L. Murphy/B.A.Sc. (Toronto), M.Sc., Ph.D. (Wisconsin), P.Eng./part-time
John Vlachopoulos/Dipl. Ch. Eng. (Nat. Tech. Univ. of Athens), M.S., D.Sc. (Washington, St. Louis)
Donald R. Woods/B.Sc. (Queen's), M.Sc., 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)/part-time
Paul A. Taylor/B.Sc., Ph.D. (Univ. of Wales), P.Eng.

Assistant Professors
James M. Dickson/B.A.Sc., M.A.Sc. (Waterloo), Ph.D. (Virginia Tech.)
Philip E. Wood/B.A.Sc. (Waterloo), Ph.D. (California Inst. of Tech.)

CURRICULUM 1984-86

Enrollment in these courses by students in programmes other than Chemical Engineering, Chemical Engineering and Management or Honours Applied Chemistry may be limited.

CHEM ENG 2C2 INFORMATION MANAGEMENT

How to obtain, interpret, store, retrieve, manipulate and communicate information. T.V. taping to improve verbal communication, searching the literature, organization, treatment of data.
CHEM ENG 2D4 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 or Chemical Engineering and Management; or permission of the Department.

CHEM ENG 2G3 PROBLEM SOLVING AND COMPUTER SIMULATION
Developing awareness, strategies, creativity, analysis and interpersonal skills in the context of solving homework problems and projects. Steady state computer simulation, executive systems and their applications.
1 lect., 2 tut.(3); one term
Prerequisite: Engineering 1D3.

CHEM ENG 2H4 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 ENG 2J3 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 multiphase systems and deviations from ideality in the gas and liquid phase.
3 lects.; one term
Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3A4 HEAT TRANSFER
Heat transfer in chemical engineering systems. Steady and unsteady state conduction, natural and forced convection, radiant heat transfer, condensation of vapour and boiling.
3 lects., 1 tut.; one term
Prerequisite: Chemical Engineering 2F4, 2F4 or equivalent, and Chemical Engineering 2C2.

CHEM ENG 3D3 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 multiphase systems and deviations from ideality in the gas and liquid phase.
3 lects.; one term
Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3E3 PROCESS MODEL FORMULATION AND SOLUTION
Formulation of models for various chemical processing units in the steady and unsteady states. Techniques for numerical solution of model equations, including algebraic and ordinary differential equations, both linear and non-linear.
3 lects.; one term
Prerequisite: Chemical Engineering 2F4.

CHEM ENG 3G3 SIMULATION, MODELING AND PROBLEM SOLVING
Computer programming, executive programs modeling heat exchangers, separators and reactors. Creativity, analysis, heuristics and defining open-ended problems.
1 lect., 2 tut.(2); one term
Prerequisite: Chemical Engineering 2G3 or Commerce 3QB3, Chemical Engineering 3A4, 3E3.
Pre- or Co-requisite: Chemical Engineering 3K3, 3M4.

CHEM ENG 3K3 INTRODUCTION TO REACTOR DESIGN
Stoichiometry of multiple reactions, kinetics of homogeneous reactions, interpretation of batch data, design of CSTR and plug flow idealized reactors.
3 lects.; one term
Prerequisite: Chemical Engineering 3D3 or registration in Level III or IV Honours Applied Chemistry.

CHEM ENG 3L2 INTERMEDIATE LABORATORY SKILLS
Experiments and projects in fluid mechanics, heat transfer, thermodynamics and mass transfer.
1 lect., 1 lab.(3); one term
Prerequisite: Chemical Engineering 2O4
Pre- or Co-requisite: Chemical Engineering 3A4, 3D3.

CHEM ENG 3M4 MASS TRANSFER AND STAGEWISE OPERATIONS
Stagewise operations, diffusion, mass transfer coefficients, distillation, differential contacting and absorption.
3 lects., 1 tut.(2); one term
Prerequisite: Chemical Engineering 2F4.
CHEMICAL ENGINEERING

2 project labs.;(3), two terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.

Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4Y4 UNDERGRADUATE RESEARCH PROJECT
Research projects with students working on their own under the direction of a Faculty member.

2 labs.;(3), two terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.

Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management and first-class standing in the previous Winter Session and permission of the Department.

CHEM ENG 423 COLLOIDS, SURFACE PHENOMENA AND UNIT OPERATIONS
The properties of colloids and surfaces and their use in the design of reactors and separators. Includes stability of colloids, double layer phenomena, wetting, flocculation coagulation, surface equations of change, particle size measurements.

3 lects.; one term.

Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

ENGINEER 403 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

Faculty as of January 15, 1984

R.F. Childs/ Chairman

Professors Emeriti
Ronald P. Graham/ M.A. (Queen’s), A.M., Ph.D. (Columbia), F.C.I.C.
Henry G. Thode/ C.C., M.B.E., B.Sc., LL.D. (Regina, Saskatchewan), Ph.D. (Chicago), D.Sc. (Toronto, British Columbia, Acadia, Laval, Royal Military College, McGill, Queen’s, McMaster, York), F.R.S., F.R.S.C., F.C.I.C.

Professors
Russell A. Bell/ M.Sc. (Wellington), M.S. (Wisconsin), Ph.D. (Stanford), F.C.I.C.
Thomas Birchall/ Ph.D. (McMaster), M.R.S.C.(U.K.)
Ronald F. Childs/ B.Sc. (Bath University of Technology), Ph.D. (Nottingham)
Alfio Corsini/ B.Sc., Ph.D. (McMaster), F.C.I.C.
Peter T. Dawson/ B.Sc. (Birmingham), Ph.D. (Cambridge)
Donald R. Eaton/ M.A., D.Phil. (Oxford)
John G. Groedan/ B.A. (Bucknell), Ph.D. (Tufts)
Orville E. Hileman, Jr., B.S.Ed. (Bowling Green State), Ph.D. (Case Institute of Technology)
Herbert L. Holland/ M.Sc. (Warwick), Ph.D. (Queen’s)/part-time
Michael L. Klein/ B.Sc., Ph.D. (Bristol)/ part-time
David B. MacLean/ B.Sc. (Acadia), Ph.D. (McGill), F.C.I.C., F.C.I.C.
Jack J. McCullough/ B.Sc., Ph.D. (Queen’s, Belfast)
Michael J. McGlinchey, Ph.D. (Manchester)
David P. Santry/ B.Sc., Ph.D. (London)
Donald R. Smith/ B.Sc. (McMaster), Ph.D. (Leeds)/part-time
Richard H. Tomlinson/ B.Sc. (Bishop’s), Ph.D. (McGill), F.C.I.C.

John Warkentin/ M.Sc. (Manitoba), Ph.D. (Iowa State), F.C.I.C.
Nick H. Wierstuk/ B.Sc. (Alberta), M.A., Ph.D. (Johns Hopkins), F.C.I.C.

Associate Professors
David A. Humphreys/ B.Sc., M.Sc. (London), Ph.D. (McMaster)
Joseph D. Laposa/ B.Sc. (St. Louis), M.S. (Chicago), Ph.D. (Loyola)
Gary J. Schrobilgen/ B.Sc. (Dubuque, Iowa), M.Sc. (Brock), Ph.D. (McMaster)
Michael A. Williams/ B.Sc., Ph.D. (Birmingham)

Assistant Professors
Donald D. Burgess/ B.Sc. (Waterloo), M.Sc., Ph.D. (McMaster)
Adam P. Hitchcock/ B.Sc. (McMaster), Ph.D. (British Columbia)
William J. Leigh/ M.Sc., Ph.D. (Western)
Kenneth J. Lushington/ M.Sc., Ph.D. (Victoria), Ph.D. (McMaster)
Brian E. McConnell/ B.Sc. (British Columbia), Ph.D. (Stanford)

Associate Members
I. David Brown/ (Physics) B.Sc., Ph.D. (London) F.C.I.C.
Alvin E. Hamieie/ (Chemical Engineering) B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Walter F. Kean/ (Medicine) M.B., Ch.B. (Toronto) F.R.C.P.(C), F.A.C.P.
Thomas Neilson/ (Biochemistry) B.Sc., Ph.D. (Glasgow) F.C.I.C.

CURRICULUM 1984-86

* Course not necessarily offered every session.

CHEM 1A7 GENERAL CHEMISTRY
An introduction to chemistry. The laboratory is designed to illustrate the lecture material, and co-ordinates with it.

3 lects., 1 tut. alternating 1 lab.(3); two terms.

Prerequisite: Grade 13 Chemistry and registration in Natural Sciences I, or Engineering I, or the Arts and Science Programme. Students with Grade 12 Chemistry and an overall Grade 13 average of at least 85% who are registered in Natural Sciences I or Engineering I will also be considered by the Chairman of the Department.

CHEM 1A6 GENERAL CHEMISTRY
An introduction to 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 the Department.

Open only to students in a part-time programme.

CHEM 1B7 GENERAL CHEMISTRY
An introduction to chemistry. A course designed for students who are registered in Faculties other than Science or Engineering.

3 lects., 1 lab.(3) every other week; two terms.

Prerequisite: Grade 13 Chemistry, or Grade 12 Chemistry with an overall Grade 13 average of at least 75%; or permission of the instructor. Not open to students in Natural Sciences I or Engineering I.

CHEM 2A4 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 2T5, which may be taken concurrently, or registration in a programme in which Chemistry 2A4 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2M5, 2N4, 3K3, 3K6

CHEM 2D4 INTRODUCTORY ORGANIC CHEMISTRY
An introduction to the chemistry of monofunctional aliphatic and aromatic compounds.

3 lects., 1 lab.(3); one term.

Prerequisite: One of Chemistry 1A7, 1B7, 1C8.

CHEM 2F4 INORGANIC CHEMISTRY
Atomic, molecular, and crystal structure; valency and chemical bonding; comparative chemistry of the non-transition elements.

3 lects., 1 lab.(3); one term.

Prerequisite: Chemistry 1A7 or 1C8. Not open to students who are registered in, or who have credit in Chemistry 2B8.

CHEM 2F3 INORGANIC CHEMISTRY
Chemistry 2F4 without the associated laboratory work.

3 lects.; one term.

Prerequisite: Chemistry 1A7 or 1C8. Not open to students in a programme in Chemistry.
CHEM 2M5 ANALYTICAL CHEMISTRY
An introduction to classical and modern analytical techniques with emphasis on applications in Engineering.
1 lect., 1 lab.(3); first term; 2 lects., 1 lab.(3); second term
Prerequisite: Registration in a programme in Chemical Engineering. Not open to students who are registered in, or have credit in, any of Chemistry 2A4, 2N4, 2X1, 3K3, 3K6.

CHEM 2N4 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: One of Chemistry 2P4, 2Q5, 2T4 or 2T5, any of which may be taken concurrently. Not open to students who are registered in, or have credit in, any of Chemistry 2A4, 2M5, 2X1, 3K3, 3K6.

CHEM 208 ORGANIC CHEMISTRY
A systematic treatment of aliphatic and aromatic compounds and an introduction to spectroscopic techniques for structure determination.
3 lects., 1 lab.(3); two terms
Prerequisite: One of Chemistry 1A7, 1C8, with a grade of at least C--; or registration in a programme in which Chemistry 208 is required. Not open to students who are registered in, or have credit in Chemistry 2S8.

CHEM 206 ORGANIC CHEMISTRY
A systematic treatment of the chemistry of aliphatic and aromatic compounds.
2 lects., 1 lab.(3); first term; 3 lects., second term
Prerequisite: Chemistry 1A6.
Open only to students in a part-time programme.

CHEM 2P4 PHYSICAL CHEMISTRY
The states of matter: elementary principles of thermodynamics; chemical and physical equilibria; electrochemistry; rates of chemical reactions.
2 lects.; two terms
Prerequisite: One of Chemistry 1A7, 1C8 and Mathematics 1A6. Not open to students who are registered in, or have credit in, any of Chemistry 2Q5, 2T4, 2T5, Physics 2H3.

CHEM 2Q5 PHYSICAL CHEMISTRY
Basics of physical phenomena related to biological systems, including equilibrium, transport and kinetics.
2 lects., 1 lab.(3) or problem session(3) every other week; two terms
Prerequisite: One of Chemistry 1A7, 1C8, and one of Mathematics 1A6, 1G4, 1G6, 1F6. Not open to students who are registered in, or have credit in, any of Chemistry 2P4, 2T4, 2T5, Physics 2H3.

CHEM 2R2 LABORATORY COURSE IN PHYSICAL CHEMISTRY
A series of experiments to illustrate the basic principles of physical chemistry.
1 lab.(3); two terms
Prerequisite: One of Chemistry 1A7, 1C8 and Chemistry 2P4, which may be taken concurrently.

CHEM 2S8 STRUCTURE AND REACTIONS OF THE MAIN GROUP ELEMENTS
Structure, stereochemistry, and reactions of organic and inorganic compounds; introduction to symmetry.
3 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 2S8 is required.

CHEM 2T5 THERMODYNAMICS
An introduction to the basic principles of thermodynamics, with applications to physical and chemical equilibria, including electrochemistry.
2 lects., 1 lab.(3) every other week; two terms
Prerequisite: One of Chemistry 1A7, 1C8 and Mathematics 2G3, which may be taken concurrently. Open only to students registered in a programme in which Chemistry 2T5 is required.

CHEM 2X1 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.

CHEM 3A4 ANALYTICAL CHEMISTRY II
An introduction to modern instrumental methods of analysis.
3 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2A4.

CHEM 3B4 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 who are registered in, or have credit in, Chemistry 2J3 or 2U3.

CHEM 3C4 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 2Y3.
Last time offered in 1985-86.

CHEM 3D6 ORGANIC CHEMISTRY
A mechanism-oriented discussion of mono- and polyfunctional organic compounds with emphasis on applications to synthesis.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 3D6 is required. Not open to students who are registered in, or have credit in, Chemistry 208.

CHEM 3E6 TRANSITION METAL INORGANIC CHEMISTRY
The properties, structures, and reactions of inorganic compounds, with emphasis on transition metal chemistry; introduction to organometallic chemistry.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 3E6 is required.

CHEM 3F4 TRANSITION METAL INORGANIC CHEMISTRY
Chemistry 3F6 without the associated laboratory.
2 lects.; two terms
Prerequisite: Chemistry 2S8 and registration in Honours Biochemistry or Biochemistry Major.

CHEM 3G3 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.

CHEM 3H3 INDUSTRIAL CHEMISTRY
A survey of the chemical industry. Products obtained from petroleum, natural gas, and soda ash. Petrochemicals, synthetic and natural polymers.
3 lects.; one term
Prerequisite: Chemistry 2S8, or 208 and 2F4, or registration in Level IV of a Chemical Engineering programme.

CHEM 3K3 ANALYTICAL CHEMISTRY
An introduction to modern analytical techniques.
2 lects., 1 lab.(3); one term
Prerequisite: One of Chemistry 2P4, 2Q5, 2T4, 2T5, any of which may be taken concurrently, and Chemistry 2A4. Not open to students who are registered in, or have credit in, any of Chemistry 2M5, 2N4, 3A4, 3K6.

CHEM 3K6 ANALYTICAL CHEMISTRY
An introduction to classical and modern analytical techniques.
1 lect., 2 lab.(3); first term
2 lects., 1 lab.(3); second term
Prerequisite: One of Chemistry 2P4, 2Q5, 2T4, 2T5, any of which may be taken concurrently, and Chemistry 2A4. Not open to students who are registered in, or have credit in, any of Chemistry 2M5, 2N4, 3A4, 3K6.

CHEM 3L3 INTRODUCTION TO MOLECULAR SPECTROSCOPY
A course introducing group theory and aspects of molecular spectroscopy.
3 lect.; one term
Prerequisite: Chemistry 3L3. Not open to students who are registered in or have credit for Chemistry 3B4.
First offered 1985-86.

CHEM 3M4 INORGIC CHEMISTRY II
A sequel to Chemistry 2J3 or 2F4. Transition metal complexes; application of physical techniques to inorganic problems.
3 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2F3 or 2F4.

CHEM 3N4 INORGIC CHEMISTRY
Chemistry 3Q4 without the associated laboratory.
3 lects.; one term
Prerequisite: Chemistry 2F3 or 2F4 or registration in Honours Metallurgy and Materials Science or Metallurgy and Materials Science Major or Metallurgical Engineering. Not open to students in a programme in Chemistry.

CHEM 3U3 QUANTUM CHEMISTRY OF ATOMS AND MOLECULES
An introduction to the principles of quantum mechanics and their application to the electronic structure of atoms and molecules.
3 lects.; one term
Prerequisite: One of Chemistry 1A7, 1C8 and Mathematics 2G3 and 203, which may be taken concurrently. Not open to students who are registered in or have credit for Chemistry 3B4 or 2U3.
First offered 1985-86.

CHEM 3V3 STATISTICAL THERMODYNAMICS
An introduction to the principles of statistical thermodynamics and their applications in chemistry.
3 lects.; one term
Prerequisite: One of Chemistry 1A7, 1C8 and Mathematics 2G3 and 203, which may be taken concurrently. Not open to students who are registered in or have credit for Physics 3K3.
Last time offered in 1985-86.

CHEM 3W3 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
CHEMISTRY

Prerequisite: Chemistry 3D6 or 3F3.

CHEM 4B3 · CHEMICAL APPLICATIONS OF SPECTROSCOPY
The applications of spectroscopy to the solution of chemical problems, quantum states and spectra; theory of microwave, infrared, Raman and electronic spectra; gas and tunable lasers.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4C3 · SOLID STATE CHEMISTRY
Structure and properties of crystalline solids. Topics include crystal chemistry and crystal symmetry, introduction to space groups, defects in ionic crystals, nonstoichiometry, electronic structure and properties of semiconductors and metals.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4D3 · THE CHEMISTRY OF NATURAL PRODUCTS
The structural elucidation and synthesis of selected naturally occurring organic compounds.
3 lects.; one term
Prerequisite: Chemistry 3D6 or 3F3.

CHEM 4E4 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.

Last time offered in 1985-86.

CHEM 4F3 · 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: One of Chemistry 2P4, 2Q5, 2T4, 2T5, Chemical Engineering 2D4, 2F4.

Last time offered in 1985-86.

CHEM 4G7 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.

CHEM 4K5 CHEMICAL KINETICS
An introduction to statistical mechanics and the kinetic theory of gases. The rates of chemical reactions in gaseous, condensed and interfacial systems, and the molecular processes by which reactions occur.
2 lect., 1 lab.(3) every other week; two terms
Prerequisite: Chemistry 3B4 or 3U3 and registration in Level IV of an Honours or Major Programme in Chemistry. Not open to students with credit in Chemistry 3C4.

First offered in 1986-87.

CHEM 4P3 · ADVANCED ANALYTICAL CHEMISTRY
A course dealing with modern topics of analytical chemistry.
3 lects.; one term
Prerequisite: One of Chemistry 2M5, 2N4, 3A4, 3K3, 3K6.

CHEM 4Q3 · ADVANCED QUANTUM MECHANICS
Further applications of quantum mechanics to problems of chemical interest.
3 lects.; one term
Prerequisite: Chemistry 2U3 or 3B4 or 3U3, and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4R3 · ADVANCED TRANSITION METAL CHEMISTRY
A selection from the following topics: Mechanisms of reactions involving transition metal ions, homogeneous catalysis, applications of NMR and other physical methods, organometallic chemistry.
3 lects.; one term
Prerequisite: Chemistry 3E6 or 3Q4.

CHEM 4S3 · ADVANCED MAIN GROUP CHEMISTRY
Advanced chemistry of the main group elements including electron-deficient species; theory and application of nuclear and radiation chemistry.
3 lects.; one term
Prerequisite: Chemistry 3E6 or 3Q4.

CHEM 4T4 INSTRUMENTAL ANALYSIS
Advanced instrumental methods of analysis.
1 lect., 1 lab.(4); two terms
Prerequisite: Registration in Level IV Honours Applied Chemistry or Chemistry Major.

CHEM 4U5 ADVANCED EXPERIMENTATION
Fundamental experimental principles of biochemistry and chemistry including of modern instrumental methods. Two units selected from Chemistry 4T4 plus Biochemistry 4P3.
2 labs.(4); two terms
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L6, 4P3, Chemistry 4T4.Same as Biochemistry 4U5.

CHEM 4Y3 · STATISTICAL THERMODYNAMICS
Principles of statistical thermodynamics and their applications in chemistry. 3 lects.; one term
Prerequisite: Chemistry 4K5, which may be taken concurrently. Not open to students with credit in Chemistry 3Y3.
First offered in 1986-87.

For Graduate Courses see Calendar of School of Graduate Studies.

Civil Engineering and Engineering Mechanics

Faculty as of January 15, 1984

R.G. Drysdale / Chairman

Professors
Robert G. Drysdale/B.Sc. (Manitoba) , M.A.Sc., Ph.D. (Toronto) , P.Eng.
Kenneth L. Murphy/B.A.Sc. (Toronto) , M.Sc., Ph.D. (Wisconsin) , P.Eng. /part-time
Hugh Robinson/B.Sc., Ph.D. (Durham) , P.Eng.
Alan A. Smith/B.Sc. (Glasgow) , Ph.D. (Strathclyde) , P.Eng.

Associate Professors
Tarek S. Aziz/B.Sc. (Cairo) , M.S. (Carleton) , D.Sc. (M.I.T.) , P.Eng./part-time
Mark Donald/B.Eng. (McGill) , Ph.D. (British Columbia) /part-time
Frederick L. Hall/A.B. (Amherst) , M.S. (M.I.T.) , Ph.D. (Chicago)
Paul F. Hamblin/B.A.Sc. (Toronto) , M.Sc. (British Columbia) , Ph.D. (Seattle) /part-time
David C. Lam/B.Sc. (Hong Kong) , M.A.Sc. (Waterloo) , Ph.D. (Waterloo) /part-time
Farooque A. Mirza/B.Sc. (Karachi) , B.Eng. (McGill) , M.Eng., Ph.D. (British Columbia)
Gilles Patry/M.A.Sc. (Ottawa) , Ph.D. (California) , Davis) , P.Eng.

Assistant Professors
William J. Snodgrass/B.A.Sc. (Waterloo) , M.S.E.E., Ph.D. (N. Carolina) /part-time
Dieter Stolle/M.Eng., Ph.D. (McMaster)

Lecturer
James MacLeod/B.A.Sc. (Toronto)

Associate Members
Donald R. Woods/B.Sc. (Queen's) , M.Sc., Ph.D. (Wisconsin) , P.Eng.

CURRICULUM 1984-86

CIV ENG 2A2 SURVEYING AND MEASUREMENT
Introduction to measurement and computational techniques of surveying, the theory of measurement and errors, adjustment of observations.
1 lect., 1 lab.(5); one term
Prerequisite: Registration in a programme in Civil Engineering.

CIV ENG 2B2 COMMUNICATIONS AND CIVIL ENGINEERING
Oral and written communication skills, design methodology. A professional liaison programme involving site visits. Concrete mix design and laboratory testing.
CIV ENG 2B2 COMPUTER APPLICATIONS CIVIL ENGINEERING
Use of computers in civil engineering analysis and design; emphasis on problem definition, program design, implementation and testing. Graphics, computer-aided design, and hardware selection, including microcomputers and peripheral devices.
1 lect., 1 lab. (3); one term
Prerequisite: Physics 1D3; registration in or completion of Engineering 2P4 and registration in Civil Engineering and Management.

CIV ENG 2B4 COMPUTING, COMMUNICATIONS AND CIVIL ENGINEERING
This course includes the contents of both: Civil Engineering 2B2 and 2B62.
1 lect., 1 lab. (3) or tut. (2); two terms
Prerequisite: Engineering 1D3, Physics 1D3; Engineering 2P4 and registration in Civil Engineering and Management.

CIV ENG 2C4 STRUCTURAL MECHANICS
Determinate systems, stress resultants and deflection; Castigliano's theorems, shear flow, combined bending, unsymmetrical bending, equivalent stresses; column buckling, beam columns, impact loading, structural proportions.
3 lects., 1 lab. (3); one term
Prerequisite: Engineering 2P4.

CIV ENG 2D3 GEOLOGY FOR ENGINEERS
Composition of the earth, minerals and rocks; weathering; erosion, transportation and deposition; engineering properties of rock, geologic structures; 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 ENG 2D3 FLUID MECHANICS
Hydrostatics; kinematics of fluids; continuity equations. Hydrodynamics; conservation of energy and momentum, Bernoullii equation; turbulence; 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 ENG 3A3 GEOTECHNICAL ENGINEERING I
Composition and characteristics of soils; soil classification systems; site investigation; soil compaction; hydraulic characteristics of soils; flow nets and 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 2D3 or Geology 1A6 or 1B6.

CIV ENG 3B3 GEOTECHNICAL ENGINEERING II
Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field test; earth pressure theory; bearing capacity theory; slope stability and embankment analysis.
2 lects., 1 lab. (3) or 1 tut. (2), every other week; one term
Prerequisite: Civil Engineering 2D3 or Geology 1A6 or 1B6.

CIV ENG 3C4 ENGINEERING SYSTEMS
Mathematical modeling and systems; project comparison; optimization; linear, non-linear and dynamic programming; simulation and computer-aided design.
3 lects., 1 tut. (2) or lab. (3); one term
Prerequisite: Completion of, or registration in, Civil Engineering 3A3, 3B3, 3G4, 3J4, 3K3, 3M4, 3O4. Not open to students with credit in Civil Engineering 4B3.

CIV ENG 3G4 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 ENG 3J4 REINFORCED CONCRETE DESIGN
Introduction to concrete technology; design by working stress and by ultimate strength methods to ensure adequate capacities for bending moment, shear and diagonal tension, axial force, bond and anchorage; practical design requirements; interpretation of building code for behaviour of structures.
3 lects., 1 lab. (3); one term
Prerequisite: Civil Engineering 3C4.

CIV ENG 3K3 INTRODUCTION TO TRANSPORTATION ENGINEERING
Traffic flow characteristics; capacity and control for interrupted and uninterrupted flow roadways; travel demand forecasting.
2 lects., 1 tut. (2); one term
Prerequisite: Engineering 1D3 or equivalent.

CIV ENG 3M4 MUNICIPAL HYDRAULICS
Water quality; water requirements; population forecasting; water demand; intake structures; water treatment; reservoirs; transport and distribution of water; wastewater collection, stormwater, pumping stations; wastewater treatment; water quality modelling in receiving water bodies.
3 lects., 1 lab. (3); one term
Prerequisite: Civil Engineering 2G3 and Mathematics 2M6, and registration in, or completion of, Civil Engineering 3O4 and Mathematics 3J4.

CIV ENG 3O4 CIVIL ENGINEERING HYDRAULICS
Flow resistance equations; open channel flow; gradually varied flow; pipes; water hammer mass-oscillations in conduits; river engineering.
3 lects., 1 lab. (3); one term
Prerequisite: Civil Engineering 2O3, Mathematics 2M6.

CIV ENG 4A4 ENGINEERING HYDROLOGY
Hydrologic cycle; climate; precipitation; hydrologic abstractions; streamflow analysis; unit hydrograph; frequency analysis; hydrologic routing; rainfall-runoff modelling, urban runoff models; design storms; snow and ice hydrology; water quality modelling.
3 lects., 1 lab. (3); one term
Prerequisite: Civil Engineering 3M4.

CIV ENG 4C3 ENVIRONMENTAL PROTECTION
Environmental impact assessment procedures, economic-ecological tradeoff methods, cost-benefit analysis. Energy, hydrological and great elemental cycles on the broad scale. Engineering aspects involving water control; resource management, building systems. Group research projects with Faculty guidance.
2 lects., 1 tut. (2); one term
Prerequisite: Permission of the Department.

CIV ENG 4D4 GEOMETRIC HIGHWAY DESIGN
Design of various types of roads and highways. Theory and practice in design of intersections, interchanges, arterial highways, and freeways, in urban and rural areas.
3 lects., 1 lab. (2); one term
Prerequisite: Civil Engineering 3K3.

CIV ENG 4F3 TRAFFIC ENGINEERING
Selected elements of operation and control of streets and highways. Intersection signalization and timing plans including strategies for area traffic control, highway/ freeway control and surveillance. Measurement and analysis of traffic data.
2 lects., 1 tut. (2); one term
Prerequisite: Civil Engineering 3K3.

CIV ENG 4G3 PAVEMENT MATERIALS DESIGN
Components of highway pavements; ground water and drainage for highway facilities; soil compaction and stabilization; culvert design; aggregates; bituminous and concrete materials, flexible pavement design; concrete pavement design.
2 lects., 1 lab. (3); one term
Prerequisite: Civil Engineering 3A3 and 3B3.

CIV ENG 4H3 LAND USE AND TRANSPORTATION
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.
Same as Geography 4H3.

CIV ENG 4J3 ENGINEERING: ITS HISTORY, PHILOSOPHY AND INFLUENCE ON CIVILIZATION
2 lects., 1 tut. (2); one term
Prerequisite: Registration in a Civil Engineering programme; or permission of the Department.

CIV ENG 4K3 MODERN METHODS OF STRUCTURAL ANALYSIS
2 lects., 1 tut. (2); one term
Prerequisite: Civil Engineering 3G4 and Mathematics 3J4.

CIV ENG 4L4 DESIGN OF STORMWATER SYSTEMS
Investigation, planning and design of elements in a hypothetical development of a real drainage system: flood control, drainage, recreation, municipal and biological aspects of watershed management. Role of conservation authorities and public bodies. Site visits and design sessions using computer programs.
2 lects., 1 tut. (1), 1 lab. (3); one term
Prerequisite: Civil Engineering 3M4 or permission of the instructor.

CIV ENG 4N4 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.
CIVIL ENGINEERING AND ENGINEERING MECHANICS

2 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 4R3 ADVANCED MECHANICS OF MATERIALS
Theory of elasticity; beam on elastic foundation; bending of curved beams; torsion of non-circular sections; analysis of thin-walled sections; cable structures; bending of thin plates; energy methods.
3 lects.; one term
Prerequisite: Civil Engineering 3G4.

CIV ENG 4R4 STRUCTURAL SYNTHESIS
Structural design process, gravity and lateral loading requirements, structural performance criteria, choice of structural systems. Approximate analysis of different structural systems, such as frames and shear walls, suitable for preliminary design. Analysis of actual buildings. Use of package computer programme for alternate design comparison.
3 lects., 1 lab.(3); one term
Prerequisite: Civil Engineering 3G4, 3J4.

CIV ENG 4S4 FOUNDATION ENGINEERING
Principles of foundation design; bearing capacity, settlement and location, footings, deep foundations, piles, pile groups and drilled piers; groundwater control; grouting; geotechnical techniques and case histories.
3 lects.; one term
Prerequisite: Civil Engineering 3B3.

CIV ENG 4V4 ADVANCED REINFORCED AND PRESTRESSED CONCRETE DESIGN
3 lects., 1 lab. and/or tut.(2); one term
Prerequisite: Civil Engineering 3J4.

ENGINEER 4U3 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 Calendar of the School of Graduate Studies.

Classics

Faculty as of January 15, 1984

H. Jones/ Chairman

Professors
Katherine M. D. Dunbabin/B.A., D. Phil. (Oxford)
Thomas F. Hoey/B.A. (Montreal), M.A. (Toronto), Ph.D. (Harvard), S.T.T.L., Ph.D., (Laval University, Montreal)
Howard Jones/B.A. (London), Ph.D. (Indiana)
George M. Paul/M.A. (Oxford), Ph.D. (London)
Donald M. Shepherd/M.A. (Queen's), Ph.D. (Chicago)
William J. Slater/M.A., Ph.D. (St. Andrews)

Associate Professor
Peter Kingston/B.A., Ph.D. (London)

Assistant Professor
Johnson D. Clinard/B.A. (North Carolina), M.A. (Columbia), Ph.D. (North Carolina)

Associate Member
Bryan D. Mangrum/(Art and Art History), B.A. (Swarthmore), M.F.A. (Princeton)

CURRICULUM 1984-86

CLASSICAL CIVILIZATION

No language other than English is required for courses listed under Classical Civilization.

CLAS CIV 1A6 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 CIV 2B3 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.

CLAS CIV 2C3 ROMAN ART
The architecture, sculpture, and painting of the Roman world.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

CLAS CIV 2D3 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.

CLAS CIV 2E3 GREEK AND ROMAN DRAMA
Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

CLAS CIV 2F3 GREEK AND ROMAN SCIENCE AND TECHNOLOGY
A study of the achievements and the theoretical and social implications of science and technology in the Greek and Roman world. The topics surveyed include agriculture, architecture, engineering, medicine, metallurgy, power, surveying and transport.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

CLAS CIV 2G3 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.

CLAS CIV 2H3 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.

CLAS CIV 2I3 SOCIAL 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.

CLAS CIV 2J3 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.

CLAS CIV 2K3 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.

CLAS CIV 2L3 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.

CLAS CIV 3G3 LATE ANTIQUE AND EARLY CHRISTIAN ART
Same as Art History 3G3.
CLAS CIV 313 TOPICS IN THE COMPARATIVE STUDY OF GREEK AND ROMAN LITERATURE IN TRANSLATION
1984-85: Greek and Roman Biography
A study of the development of biography as a genre: readings in Xenophon, Plutarch, Tacitus and Suetonius; the influence of Greek and Roman biography on the European tradition and on biography in England in the 20th century.

1985-86: Fate and Free Will in Classical Literature
A study of human responsibility as represented in Greek and Roman literature with particular attention to epic, tragedy and philosophy. The course will include a consideration of divine intervention in human affairs and a comparison of ancient ideas on divine intervention with Christian theories of divine grace.

3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.

CLAS CIV 313 may be repeated, if on a different topic, to a total of 6 units.
Same as Comparative Literature 313.

CLAS CIV 313 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 CIV 313 THE GREEK CITY: AN ARCHAEOLOGICAL STUDY
A study of the physical growth and development of the cities which became the focal point of society and culture in the Greek world. The chief topics will be the rise and fall of the principal centres of Cretan and Mycenaean culture, the emergence of the mature Greek cities, culminating in Athens in the 5th century B.C., and subsequent urban development and city planning in the time of Alexander the Great and his successors.

3 lects.; one term
Prerequisite: One of Classical Civilization 2B3, 2F3, 2M3, 3S3; or permission of the Department. Not available to students receiving credit for Classical Civilization 2L3.
Alternates with Classical Civilization 3J3.

CLAS CIV 313 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 pattern of urban development in Rome and her Empire. The study is based upon the evidence of monuments and architectural remains in Rome, Pompeii and other surviving cities of the Empire in Europe, Africa and Asia.

3 lects.; one term
Prerequisite: One of Classical Civilization 2C3, 2F3, 2L3, 3R3; or permission of the Department. Not available to students receiving credit for Classical Civilization 2N3.
Alternates with Classical Civilization 3R3.

CLAS CIV 313 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.

1 seminar(2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department.
Same as Comparative Literature 4D3 and English 4A3.
Alternates with Classical Civilization 3C3.

CLAS CIV 4F3 SUPERVISED STUDY
Under the supervision of members of the Department of Classics, students will investigate in detail some area(s) of Classical Studies with a view to bringing together aspects of the work of previous levels.
Prerequisite: Registration in Level IV of Honours Classical Studies or Combined Honours in Classical Studies and another subject; or permission of the Department.

CLAS CIV 4L3 TOPICS IN ANCIENT ART AND ARCHEOLOGY
1985-1986: Archaic Greek Art
The birth and development of Greek painting and sculpture, 1000-480 B.C.
Seminar (3 hrs.); one term
Prerequisite: Classical Civilization 2B3 and registration in Level III or IV of a programme in Classical Studies or Art History, and permission of the instructor.

Classical Civilization 4L3 may be repeated, if on a different topic, to a total of six units. Enrolment is limited; instructor’s permission slip required.

Alternates with Classical Civilization 3G3.
Same as Art History 4L3.

CLAS CIV 4N3 SOCIAL LIFE AND THOUGHT IN AUGUSTAN ROME
A description and analysis of selected aspects of the social life of Rome at the end of the 1st century B.C. based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 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.
Alternates with Classical Civilization 3M3.

The following courses in the field of Classical Studies are offered by the Department of History:

HISTORY 1L6 Ancient States and Empires
HISTORY 2L6 Greece and Rome
HISTORY 3G3 Pre-Historic and Proto-Historic Greece
HISTORY 3L3 The Hellenistic Age
HISTORY 3M3 The Roman Empire
HISTORY 4D6 Special Topics in Greek History
HISTORY 416 Special Topics in Roman History

The following courses in the field of Classical Studies 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 Studies are offered by the Department of Religious Studies:

RELIGIOUS STUDIES 2F6 Introduction to the Study of the New Testament
RELIGIOUS STUDIES 2F3 The Triumph of Christianity
RELIGIOUS STUDIES 2L3 Christian Thought in the Patristic Period (100-800)
RELIGIOUS STUDIES 2R3 Divine Justice
RELIGIOUS STUDIES 3K3 Introduction to Hellenistic Judaism
RELIGIOUS STUDIES 303 The Fourth Gospel
RELIGIOUS STUDIES 3X3 The Letters of Paul

GREEK BEGINNERS’ LANGUAGE COURSE
Students with Grade 13 Greek are eligible for advanced study and should consult the Department of Classics.

GREEK 126 BEGINNERS’ INTENSIVE GREEK
A rapid introduction to the grammar of Ancient Greek. Passages of simple Greek are read in the second term.
5 hrs.(lects. and tuts.); two terms
Prerequisite: Open
This course, with a grade of at least B, is accepted as a prerequisite for admission to Honours Classics or Combined Honours in Greek and another subject.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

GREEK 2C3 XENOPHON
Selected readings from the Anabasis, Cyropaedia and Memorabilia.
3 lects.; one term
Prerequisite: Greek 2Q3; or permission of the Department.
Alternates with Greek 2E3.

GREEK 2E3 HERODOTUS
Selected readings from the Histories.
3 lects.; one term
Prerequisite: Greek 2Q3 or permission of the Department. Alternates with Greek 2C3.

GREEK 2F3 EURIPIDES
Selected readings from the tragedies.
3 lects.; one term
Prerequisite: Greek 2Q3; or permission of the Department.
CLASSICS

GREEK 2Q3 GREEK READING PRACTICE
A study of selected passages from Greek authors designed to develop a student's proficiency in reading Greek. 3 lects.; one term
Prerequisite: Grade 13 Greek or Greek 1Z6; or permission of the Department.

GREEK 2R4 GREEK LANGUAGE
A study of Greek grammar and style based chiefly upon reading selected passages and translation from English to Greek. 2 lects.; two terms
Prerequisite: Greek 1Z6 with a grade of a least B or Greek 2Q3; or permission of the Department.

GREEK 3M3 GREEK COMEDY
Selected readings from the comedies of Aristophanes and Menander. 3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4M3.

GREEK 3N3 GREEK 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; or permission of the Department.
Alternates with Greek 4N3.

GREEK 3Q3 GREEK ORATORS
Selected readings from speeches. 3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4Q3.

GREEK 3R2 ADVANCED GREEK LANGUAGE STUDY I
A study of Greek grammar and style, and practice in Greek composition. 1 lect.; two terms
Prerequisite: Ten units of Level II Greek including Greek 2R4; or permission of the Department.
Alternates with Greek 4R2.

GREEK 4K3 GUIDED READING
Intensive reading of selections from Greek authors under the supervision of members of the Department of Classics. 3 lects.; 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.

GREEK 4L3 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 4L3.

GREEK 4M3 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 4M3.

GREEK 4Q3 THUCYDIDES
Selected readings from the Peloponnesian War. 3 lects.; one term
Prerequisite: Nine units of Level II Greek including Greek 2Q3; or permission of the Department.
Alternates with Greek 4Q3.

GREEK 4R2 ADVANCED GREEK LANGUAGE STUDY II
A study of Greek grammar and style, and practice in Greek composition. 1 lect.; two terms
Prerequisite: Ten units of Level II Greek including Greek 2R4; or permission of the Department.
Alternates with Greek 4R2.

LATIN BEGINNERS' LANGUAGE COURSE
Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.

LATIN 1Z6 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.

LATIN 2B3 ROMAN LYRIC POETRY
Selected readings from the poems of Catullus and the Odes of Horace. 3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.
Alternates with Latin 2G3.

LATIN 2E3 LIVY
Selected readings from the Ab Urbe Condita. 3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.

LATIN 2G3 VERGIL
Selected readings from the Aeneid. 3 lects.; one term
Prerequisite: Latin 2Q3; or permission of the Department.
Alternates with Latin 2B3.

LATIN 2L3 MEDIEVAL LATIN: PROSE AUTHORS
Selected readings from prose works of representative Latin authors of the Middle Ages. 3 lects.; one term
Prerequisite: Latin 1Z6 with a grade of at least B, or Latin 1A6 or 2Q3; or permission of the Department.
Alternates with Latin 2M3.

LATIN 2M3 MEDIEVAL 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 1Z6 with a grade of at least B, or Latin 1A6 or 2Q3; or permission of the Department.
Alternates with Latin 2L3.

LATIN 2Q3 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: Grade 13 Latin or Latin 1A6 or 1Z6; or permission of the Department.

LATIN 2R4 LATIN LANGUAGE
A study of Latin grammar and style based chiefly upon reading selected passages and translation from English to Latin. 2 lects.; two terms
Prerequisite: Latin 1Z6 with a grade of at least B, or Latin 1A6 or 2Q3; or permission of the Department.

LATIN 3D3 ROMAN SATIRE
Selected readings from the satires of Horace and Juvenal. 3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 4A3.

LATIN 3L3 ROMAN PHILOSOPHICAL WRITERS
Selected readings from the philosophical writings of Cicero and Seneca. 3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 4M3.

LATIN 3Q3 CICERO
Selected readings from the speeches. 3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 4Q3.

LATIN 3R2 ADVANCED LATIN LANGUAGE STUDY I
A study of Latin grammar and style, and practice in Latin composition. 1 lect.; two terms
Prerequisite: Ten units of Level II Latin including Latin 2R4; or permission of the Department.
Alternates with Latin 4R2.

LATIN 4A3 ROMAN DRAMA
Selected readings from the comedies of Plautus and Terence and the tragedies of Seneca. 3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission of the Department.
Alternates with Latin 3D3.
LATIN 4K3 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 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.

LATIN 4M3 ROMAN ELEGIAC POETRY

Selected readings from the elegies of Propertius, Tibullus, and Ovid.
3 lects.; one term
Prerequisite: Nine units of Level II Latin including Latin 2Q3; or permission
of the Department.
Alternates with Latin 3Q3.

LATIN 4Q3 TACITUS

Selected reading from the Annales.
1 lect.; two terms
Prerequisite: Ten units of Level II Latin including Latin 2R4; or permission
of the Department.
Alternates with Latin 3R2.

For Graduate Courses see Calendar of School of Graduate Studies.

Associate Professors
R.H. Adams/B.Sc. (Pennsylvania State), M.A., Ph.D. (Wisconsin) —
Industrial Relations
N.C. Agarwal/M.A., M.A. (Delhi), Ph.D. (Minnesota) —
Organizational Behaviour/Chairman of the Personnel and Industrial Relations Area
N.P. Archer/B.Sc. (Alberta), Ph.D. (McMaster), M.S. (New York) —
Management Science/Chairman of the Ph.D. Programme
J.L. Callen/B.A. (York), M.B.A., Ph.D. (Toronto) — Accounting
and Finance
K.R. Deal/B.S., M.B.A., Ph.D. (State University of New York at
Buffalo) — Marketing and Management Science/Chairman of the
Marketing Area/Acting Chairman of the Business Environment and Policy Area.

Finance/Chairman of the Finance and Business Economics Area
A.W. Richardson/B.Sc., Ph.D., M.B.A. (McMaster), R.I.A. —
Accounting
Marketing
J.B. Rose/B.B.A. (Adelphi), M.B.A. (California), Ph.D. (State
University of New York at Buffalo) — Industrial Relations
R.E. Ross/B.A. (Waterloo Lutheran), M.B.A. (Michigan State),
D.B.A. (Indiana) — Marketing/Associate Dean (Professional
Programmes)
A.Z. Szendrovits/M.A., Ph.D. (Kolozsvár) — Production and
Management Science/Dean of the Faculty
G.W. Torrance/B.A.Sc., M.B.A. (Toronto), Ph.D. (State University of
New York at Buffalo), P.Eng. — Management Science
W.G. Truscott/B.Sc. (Princeton), M.B.A. (McMaster), D.B.A.
(Indiana), P.Eng. — Production and Management Science/Associate Dean (Academic Programmes)
G.O. Wesolowsky/B.A.Sc. (Toronto), M.B.A. (Western Ontario),
Ph.D. (Wisconsin) — Management Science/Chairman of the
Management Science and Information Systems Area

Assistant Professors
P.L. Abad/B.Tech. (Indian Institute of Technology), M.S., M.B.A.,
Ph.D. (Cincinnati) — Management Science
C.K. Barl/B.A., M.B.A. (York), Ph.D. (Western Ontario), C.A. —
Business Policy
M.S. Basadur/B.A.Sc. (Toronto), M.B.A. (Xavier), Ph.D. (Cincinnati), P.Eng. — Organizational Behaviour
M.W.L. Chan/B.Sc. (Prince Edward Island), M.A., Ph.D. (McMaster) —
Finance and Business Economics
J.K. Chang/B.Sc. (National Taiwan), M.B.A. (Toronto), M.B.A.
(Chicago), Ph.D (Houston) — Finance
C.S. Cheung/B.S. (Louisiana State), M.S., Ph.D. (Illinois) —
Finance and Business Economics
P.V. Dunmore/B.Sc. (Victoria University, Wellington), P.D.,
M.B.A. (McMaster), R.I.A. — Accounting
University), P.D. (Illinois) — Accounting
E.J. Kleinmehrdt/Grad. Ing. (Staatliche Ingenieurschule, Hannover),
M.B.A., Ph.D. (McGill) — Marketing and International Business
R. Kosenko/B.A. (California State, Fullerton), M.M. (American
Graduate School of International Management) — Marketing
I. Krinsky/B.A., M.A. (Tel Aviv), Ph.D. (McMaster) — Finance and
Business Economics
C.C.Y. Kwan/Dipl. in Math and Science (Hong Kong Baptist
College), Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto),
P.Eng. — 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.
(S.A.) — Accounting
J.G. Miltenburg/B.Eng., M.B.A. (McMaster), M.Eng. (Waterloo),
Ph.D. (Waterloo), P.Eng. — Production and Management Science
H.J. Oppelland/Dipl. Ing. (Berlin), P.Eng. (West Germany), Ph.D.
(Cologne) — Information Systems
L.H.K. Secretan/A.M. (Southern California) — Business Policy
P.L. Shanker/B.E., M.Tech. (Madras), Ph.D. (Florida) — Finance
G. Steiner/M.Sc. (Budapest), Ph.D. (Waterloo) — Production and
Management Science

COMMERCIAL PSYCHOLOGY AND CONSUMER BEHAVIOUR

Lecturers
C.C. Costanza/B.Com., M.B.A. (McMaster), C.A. — Accounting/half-time
E.A. Csordas/B.Sc. (Windsor), M.B.A. (McMaster), R.I.A. — Accounting
A. Kosenko/B.A. (California State), M.S. (Virginia Polytechnic) — Accounting
M.G. Lubelski/B.Math. (Waterloo), M.B.A. (McMaster) — Management Science
P.M. Stillman/B.Sc. (McMaster), LL.B. (Osgoode Hall) — Business Law/half-time

CURRICULUM 1984-86

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. Students who are not eligible for Commerce courses should refer to the Business course listings.

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.

COMMERCES 2AA3 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.

COMMERCES 2BA3 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.

COMMERCES 2FA3 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 1A6 and Commerce 2AA3.

COMMERCES 2MA3 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 1A6.

COMMERCES 2Q33 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 1A3; or equivalent courses in the Engineering and Management programme.

COMMERCES 3AA3 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 2AA3.

COMMERCES 3AB3 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 2AA3.

COMMERCES 3BA3 INDUSTRIAL RELATIONS
Structure and process whereby labour, management and the public interact to produce terms and conditions of employment. Topics include the development of structure and objectives of organized labour, management philosophy and policy in industrial relations and governmental policy. Prerequisite: Commerce 2BA3.

COMMERCES 3BB3 PERSONNEL
An introduction to the administrative and research aspects of the selection, placement, remuneration, training, and promotion of people in organizations. Prerequisite: Commerce 2BA3.

COMMERCES 3FA3 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 2FA3.

COMMERCES 3FB3 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 2FA3.

COMMERCES 3MA3 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 2MA3; and 2QA3 or Statistics 3Y2.

COMMERCES 3MB3 CONSUMER MOTIVATION
An analysis of the motivations underlying consumer choice behaviour such as store patronage, brand loyalty, and new-product adoption. Specifically, the role that will trace the role of perception, learning, attitudes, personality, reference groups, social class and culture in the consumer decision process. Prerequisite: Commerce 2MA3.

COMMERCES 3QA3 DECISION SCIENCE FOR MANAGERS
This course is a study of analytical approaches that assist managerial decision-making; it provides coverage of decision theory and an introduction to optimization methods, computer simulation and the general approach of management science. Prerequisite: Commerce 2QA3.

COMMERCES 3QB3 BUSINESS DATA PROCESSING
An introduction to commercial data processing technology — I/O devices, storage, processors, software, its deployment in transaction/file processing and reporting systems, and the analysis and design of such systems. Prerequisite: Computer Science 1A3; or equivalent course in the Engineering and Management programme.

In most Level IV Commerce courses, section size will be restricted to a maximum of 50 students; students will be admitted on a first-come basis.

COMMERCES 4AA3 COST AND MANAGERIAL ACCOUNTING II
A consideration of more complex topics in management planning and control including cost allocations, performance evaluation, analysis and investigation of variations and cost behaviour determination; and income measurement for management. Prerequisite: Commerce 3AA3.

COMMERCES 4BA3 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 3AB3.

COMMERCES 4AC3 FINANCIAL ACCOUNTING IV
An advanced accounting course considering specific problems of accounting for the corporate entity, such as, business combinations, intercorporate investments, consolidated financial statements, accounting for foreign operations and foreign currency transactions, segment reporting. Prerequisite: Commerce 4AB3.

COMMERCES 4AD3 AUDITING
An examination of the attest function in auditing including ethical, legal, and statutory influences in the development of auditing standards. The nature of control structures and of audit evidence is examined. The nature, scope, and application of auditing procedures are examined through a selective analysis of asset, liability, revenue and expense items. Prerequisite: Commerce 3AB3.

COMMERCES 4AE3 ACCOUNTING INFORMATION SYSTEMS
Consideration of the principles underlying the role of accounting as an information system for planning and controlling business operations. Topics include accounting information and its uses, techniques of designing information systems; problems of internal control; and design, installation, and control, of computer-based information systems. Prerequisite: Commerce 3AA3, 3AB3 and 3QB3.

COMMERCES 4AF3 SEMINAR IN ACCOUNTING THEORY
A review of accounting theory as a background for applying underlying
concepts to current accounting problems. Emphasis is on current literature, with a major term paper required.

Prerequisite: Commerce 4A3.

COMMERCE 4B3A BEHAVIOURAL ISSUES IN MANAGEMENT
Detailed analysis of employee motivation and reward systems; organizational structure; leadership and decision-making; group processes; and management of conflict and change.

Prerequisite: Commerce 2B3A.

COMMERCE 4BB3 PERSONNEL SELECTION
This course considers the strategies and problems in personnel decisions in the context of the Canadian environment. Topics include job analysis and methods of personnel recruitment and selection, human rights legislation in Canada and the U.S., the practice of recruitment and selection in Canada, decision-making strategies in personnel recruitment and selection, and assessment centres.

Prerequisite: Commerce 3BB3.

COMMERCE 4BC3 COLLECTIVE BARGAINING
A survey of the nature, determinants, and impact of collective bargaining in Canada. Both the procedural and substantive aspects of collective bargaining will be studied.

Prerequisite: Commerce 3BA3; or Labour Studies 2A3.

COMMERCE 4BD3 SETTLEMENT OF INDUSTRIAL DISPUTES
The nature and the role of industrial conflict as well as the techniques which have been developed to control the incidence of conflict in union-management situations.

Prerequisite: Commerce 3BA3; or Labour Studies 2A3.

COMMERCE 4BE3 COMPENSATION THEORY AND ADMINISTRATION
The course is designed to provide an understanding of the process, issues, and techniques involved in developing effective compensation systems in organizations. The course draws heavily on economic and behavioural theories and their application to the area of compensation.

Prerequisite: Commerce 3FA3.

COMMERCE 4BF3 FINANCIAL THEORY
A managerial point of view is established by the application of basic financial theory and analysis to actual case situations. Lectures are used to complement case discussions. The course is useful for students interested in general management, as well as for those wishing to attain a degree of specialization in Finance.

Prerequisite: Commerce 3FA3.

COMMERCE 4BG3 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 4B3.

COMMERCE 4BM3 INTERNATIONAL BUSINESS
A survey of theories, concepts, and corporate strategies relevant to the actual conditions and problems of international investment, trade, finance, and other related areas. Topics include balance of payments, foreign exchange, political risk, joint venture, global strategy, international personnel, and international development.

COMMERCE 4MC3 PRODUCT MARKETING
Covers concepts, methods and strategies for both new and existing products. Topics include: the new product process; launch strategies; product policy; portfolio analysis and product positioning.

Prerequisite: Commerce 2MA3.

COMMERCE 4PA3 BUSINESS POLICY
This course builds upon, and integrates, the student's knowledge of the functional areas of business. Various management practices in specific corporate situations are compared, and several theories of management strategy formulation at different stages of corporate development are examined.

COMMERCE 4PB3 TAXATION
The principles of Canadian federal income taxation are examined in considerable detail through a reading of both the statute law and the common law. Emphasis is placed on the application of the law to the situations of individuals and businesses. Topics include: administration, liability for income tax, computation of income, computation of taxable income and computation of tax.

Prerequisite: Commerce 3A3B3 and 3FA3.

COMMERCE 4PC3 ADVANCED CANADIAN INCOME TAXATION
This course continues the study of Canadian federal income taxation with an in-depth coverage of selected provisions of the Income Tax Act pertaining to business activities, particularly the activities of corporations.

Prerequisite: Commerce 4PB3.

COMMERCE 4PD3 COMMERCIAL LAW
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.

Prerequisite: Commerce 3QA3; or registration in the Engineering and Management programme.

COMMERCE 4QA3 PRODUCTION/OPERATIONS
An introduction to the production/operations function with emphasis on the use of quantitative analysis to assist decision-making. Topics include: layout of facilities, aggregate planning, scheduling, inventory control, and quality control.

Prerequisite: Commerce 3QA3; or registration in the Engineering and Management programme.

COMMERCE 4QB3 ANALYSIS OF PRODUCTION/OPERATIONS
Analytical approaches to problems in the field of production/operations. The course will provide in-depth coverage of a limited number of topics. These topics may be selected from among: layout and location of facilities, scheduling, inventory control and materials handling.

Prerequisite: Commerce 4QA3; or Mechanical Engineering 4C3.

COMMERCE 4QC3 QUANTITATIVE ANALYSIS FOR BUSINESS
The techniques of management science and their application to business problems. Topics include: linear programming, integer programming, decision analysis and computer simulation.

Prerequisite: Commerce 3QA3.

Comparative Literature

CURRICULUM 1984-86
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. A core of Comparative Literature courses is co-ordinated and supervised by members of a Committee of Instruction made up of members from individual departments. In addition, several courses that are comparative in nature are cross-listed; these are taught in various departments within the University. The student may choose courses in a number of areas that combine the study of several of the world's literatures and serve as a background to further study. These areas include: major works and forms of the Western literary tradition, particularly those influenced by the Bible and the Classical heritage; more advanced study of literary genres, and the acquiring of critical methods and skills for the more detailed study of literature. Classes are held in English and texts are studied in English translation. Courses often include guest lectures by specialists in the languages of the original texts.

For further information, consult the following:

A. Berland (English)
L. Braswell (English)
T. Cain (English)
G. Chapple (German)/Chairman
A. Cooper (Religious Studies)
A. McKay (Classics)
G. Moyal (Romance Languages)
B. Pocknell (Dramatic Arts)
M. Ross (English)
W. Smyrniw (Slavic Studies)
A. Whiteside (Romance Languages)

COMP LIT 1A6 INTRODUCTION TO THE WESTERN LITERARY TRADITION
An introduction to the origins and continuity of the Western literary tradition from the Bible and classical antiquity through to the modern period, by means of the detailed study of both its human values and its formal patterns, as seen in representative texts from major literatures and languages (in translation). In this course much attention is given to the development of critical skills in reading and writing.

2 lects., 1 tut., 2 terms
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
COMPARATIVE LITERATURE

COMP LIT 2B3 GREEK AND ROMAN DRAMA
Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama. 3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2E3 and Dramatic Arts 2E3.

COMP LIT 2D3 BIBLICAL TRADITIONS IN LITERATURE
A study of the influence of the Bible on Western literatures, especially English. Approaches may include the examination of symbolism, imagery, typology, doctrinal themes and narrative structures. 3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students receiving credit for English 2P3.
Same as English 2D3.

COMP LIT 2G2 BIBLICAL LITERATURE
A survey introduction to biblical literature (Old Testament, New Testament and selected Apocrypha and Pseudepigrapha) and the history of biblical interpretation to meet the particular needs of students of Western literature. 2 lects., 1 tut.; one term
Prerequisite: Open to students in Level II and above.
Same as Religious Studies 2V3.

COMP LIT 3A6 LITERATURE
Literary works drawn from a variety of genres and periods will be examined. The course will focus on the ways in which great writers have treated enduring human ethical concerns. It will attempt to show how literary creativity involves the matching of formal and stylistic mastery, on the one hand, with ethical awareness on the other. The course will require frequent brief written assignments. 3 lects.; two terms
Prerequisite: Registration in the Arts and Science programme; or Comparative Literature 1A6 with a grade of at least B and permission of the instructor.
Same as Arts and Science 3A6.

COMP LIT 3BB6 STUDIES IN SLAVIC LITERATURES
A study in translation of the major 19th- and 20th-century authors in Croatian, Czech, Polish, Russian, Serbian and Ukrainian literature. Students registered in a Slavic Studies programme will be expected to do some reading in the Slavic language(s) of their competence.
2 lects., 1 tut.; two terms
Prerequisite: Open to students in Level II and above; or permission of the Department of Slavic Studies.
Offered in alternate years.
Same as Slavic 3B6.

COMP LIT 3C6 TOPICS IN THE STUDY OF LONGER LITERARY FORMS
1984-85: The Renaissance Epic
In addition to the *Aeneid*, epics from some of the following authors will be studied: Ariosto, Rabelais, Tasso, Spenser, Cervantes and Milton. Non-English texts will be studied in translation.
3 lects.; two terms
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.

COMP LIT 3CC3 TOPICS IN THE STUDY OF SHORTER LITERARY FORMS
1985-86: Shorter Forms of Fiction
Concentration on the 19th and 20th centuries. This course will analyze representative novellas and short stories by major English, German, French and American authors.
3 lects.; one term
Prerequisite: Registration in Level III and above; or permission of the instructor. Comparative Literature 3CC3 may be repeated, if on a different topic, to a total of 6 units.

COMP LIT 3E3 MODERN EUROPEAN DRAMA IN ENGLISH TRANSLATION
A study of representative plays by modern European dramatists from Ibsen to the present.
Seminar (2 hrs.); plus playreadings; one term
Prerequisite: Dramatic Arts 1A6; permission of the instructor. Same as Dramatic Arts 3C3.

COMP LIT 3I3 TOPICS IN THE COMPARATIVE STUDY OF GREEK AND ROMAN LITERATURE IN TRANSLATION
1984-85: Greek and Roman Biography
A study of the development of biography as a genre; readings in Xenophon, Plutarch, Tacitus and Suetonius; the influence of Greek and Roman biography on the European tradition and on biography in England in the 20th century.
1985-86: Fate and Free Will in Classical Literature
A study of human responsibility as represented in Greek and Roman literature with particular attention to epic, tragedy and philosophy. The course will include a consideration of divine intervention in human affairs and a comparison of ancient ideas on divine intervention with Christian theories of divine grace.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department of Classics. Comparative Literature 3I3 may be repeated, if on a different topic, to a total of 6 units.
Same as Classical Civilization 3I3.

COMP LIT 3J3 STUDIES IN 16TH-CENTURY LITERATURE
A study of the prose and poetry of the first phase of the English Renaissance with some emphasis on the work of More and Sidney, and subsidiary reading of continental writers influential in England such as Petrarch, Pico, Erasmus, Castiglione, Machiavelli and Montaigne.
3 lects.; one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department of English.
Same as English 3J3.

COMP LIT 3Q3 THE HISTORY AND THEORY OF CRITICISM
A survey of the main developments in the theory and practice of literary criticism from Plato to the early 20th century.
Seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department of English. Not available to students with credit in English 4C3.
Offered in 1985-86 and in alternate years.
Same as English 3Q3.

COMP LIT 3QQ3 MODERN CRITICAL THEORY
The theory and practice of literary criticism from Eliot to the present.
Seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department of English.
Offered in 1985-86 and in alternate years.
Same as English 3QQ3.

COMP LIT 4A3 INTRODUCTION TO COMPARATIVE LITERARY STUDIES
General and comparative literary theory; a survey of methodological approaches in literary criticism; application of theory and methods to representative texts chosen from various literatures in translation.
2 lects., 1 tut.; one term
Prerequisite: Registration in Level IV of any programme in language or literature; or permission of the instructor.

COMP LIT 4B3 TOPICS IN LITERARY METHODOLOGY
1985-86: Formalism
Aristotle, Russian formalism, American New Criticism, Czech structuralism, and semiotics will be covered. Texts will be studied in translation.
3 lects.; one term
Prerequisite: Registration in Level IV of any programme in language or literature; or permission of the instructor. Comparative Literature 4B3 may be repeated, if on a different topic, to a total of six units.

COMP LIT 4D3 THE CLASSICS AND ENGLISH LITERATURE
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.
1 lect., 1 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department of English.
Alternates with Comparative Literature 3D3. Offered in 1984-85, and in alternate years.
Same as Classical Civilization 4A3 and English 4A3.

Other courses relevant to Comparative Literature:

ART HISTORY 2Q3 Biblical Traditions in the Visual Arts

CLASSICAL CIVILIZATION 2D3 Greek and Roman Mythology

CLASSICAL CIVILIZATION 2X3 Greek and Roman Background to Early Christianity

CLASSICAL CIVILIZATION 2Z3 Greek and Roman Religion

CLASSICAL CIVILIZATION 3C3 Greek and Roman Epic

DRAMATIC ARTS 1A6 Introduction to Drama

DRAMATIC ARTS 2X6 The Art of the Film

DRAMATIC ARTS 3R6 The American Cinema

DRAMATIC ARTS 3Y3 The French Cinema

ENGLISH 2C3 Contemporary Canadian Fiction
ENGLISH 2G6 Canadian Literature
ENGLISH 3B3 Psychoanalytic Approaches to Literary Texts
ENGLISH 3JJ3 Topics in Fiction II
ENGLISH 3KR3 Topics in Critical Approaches
ENGLISH 3XX3 Topics in 20th-Century Literature II
ENGLISH 3ZZ3 Contemporary Canadian Poetry
ENGLISH 4D3 Topics in Medieval and Renaissance Literature.
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 2H3 German Literature in Translation
GERMAN 2J3 German Drama in Translation
GERMAN 2M3 Introduction to Literary Criticism

HUMANITIES 1B6 Themes in Western Civilization

PHILOSOPHY 2H3 Aesthetics

RELIGIOUS STUDIES 2DD3 The Five Books of Moses
RELIGIOUS STUDIES 2EE3 The Prophets
RELIGIOUS STUDIES 2E6 Introduction to the Study of the New Testament
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 2TT6 Introduction to Islam
RELIGIOUS STUDIES 3CC3 The Koran
RELIGIOUS STUDIES 3CC6 Introduction to Islamic Studies

RUSSIAN 2A6 19th-Century Russian Literature in Translation
RUSSIAN 3D3 Russian Drama Since 1800
RUSSIAN 3E3 Studies in the Russian Novel: Dostoevsky
RUSSIAN 3K6 20th-Century Russian Literature in Translation
RUSSIAN 3T3 Studies in the Russian Novel: Tolstoy

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 Honours, Major and B.Sc. programmes in Computer Science. Joint Honours and Major 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.

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 Unit.

Members as of January 15, 1984

E. Nelson/(Mathematical Sciences) Chairman

N.P. Archer, (Management Science)
J.W. Bandler, (Electrical & Computer Engineering)
W.H. Fleming, (Mathematical Sciences)
G.L. Keech, (Mathematical Sciences)
D.J. Kenworthy, (Mathematical Sciences)
K.A. Redish, (Mathematical Sciences)
P.J. Ryan, (Mathematical Sciences)
N. Sohnsect, (Mathematical Sciences)
W.F. Smyth, (Mathematical Sciences)
R.J. Welve, (Management Science)

CURRICULUM 1984-86

The following are suggested Computer Science options available to students not in Computer Science Programmes:

For Science-oriented students: Computer Science 1B3, 1C3, and either 2P3, 3D3, 3P3, 3T3, 4W3 and 2N3.

For Business-oriented students: Computer Science 1A3, 2A3, 2P3, 313, 413.

* Course is not necessarily offered every session; consult the Chairman of the Unit for Computer Science or an Assistant Dean of Science (Studies).

COMP SCI 1A3 INTRODUCTION TO COMPUTING FOR BUSINESS
Organisation 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 Mathematics 1K3 or 1L3, and registration in the Faculty of Business. Not open to students who are registered in, or have received credit in, one of Computer Science 1B3, 1H3, 1K3, 2H3, Engineering 1D3.

COMP SCI 1B3 INTRODUCTION TO COMPUTING FOR SCIENCE
Overview and characteristics of stored program computers; programming in FORTRAN; data representation; program testing; algorithms; application of computers in various scientific disciplines.

3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, 1K3, Engineering 1D3. Not open to students who are registered in, or have received credit for, Electrical Engineering 2H3.

COMP SCI 1H3 INTRODUCTION TO COMPUTING FOR HUMANITIES AND SOCIAL SCIENCE
Organisation and characteristics of stored-program computers; programming in FORTRAN; data representation; program testing; algorithms; computer solution of problems.

3 lects.; one term
Prerequisite: Grade 13 Calculus or, Mathematics 1K3 and another Grade 13 Mathematics course or, Mathematics 1L3 or 1M3. Not open to students who are registered in, or have received credit for, any of Computer Science 1A3, 1H3, 1K3, 2H3, Engineering 1D3.

COMP SCI 2A3 INTRODUCTION TO COBOL PROGRAMMING
Data representation; COBOL; structured programming application to report generation; data editing, and file maintenance with sequential files; sorting and merging techniques; case studies.

3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, 1K3, 2H3, Commerce 2H3.

COMP SCI 2B3 INTRODUCTION TO COMPUTER SCIENCE
Computing, programming, algorithms, data representation, computer organization. The programming language Pascal will be used.

3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, or Engineering 1D3 and, concurrent registration in Computer Science 2L3.

COMP SCI 2L3 INTRODUCTION TO ALGORITHMS AND PROGRAMMING
A second course for students specializing in computing. Skills in problem solving are developed by studying a set of examples suitable for a digital computer, for many of which formal or mathematical models are not immediately obvious.

3 lects.; one term
Prerequisite: Computer Science 2B3 and registration in a Computer Science, Computer Engineering or Computer Engineering and Management programme. Enrollment is limited.

COMP SCI 2N3 ADVANCED FORTRAN
A second course for students who do not intend to specialize in computing. Topics include: structured programming, programming and algorithmic techniques, graphical output, debugging, queues, lists, and trees, utility programmes.

3 lects.; one term
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, and one of Mathematics 1M6, 1M3, 1B4, 1F6, 1G6 or, Engineering 1D3 and Mathematics 1N6. Not open to students in any Honours, Major or B.Sc. programme in Computer Science. Not open to students who have completed or are registered in Computer Science 2P3. Computer Science 2L3, 2N3, and 2P3 are mutually exclusive. Students who have completed or are registered in one may not receive credit in either of the other two, with the following exception: students who have completed Computer Science 2N3 prior to 1983, and who wish to upgrade to Computer Science 2P3 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P3.
COMP SCI 2P3 PASCAL AND PROBLEM SOLVING
Simple and intermediate Pascal programming, data types, control statements, recursion, structural programming, problem solving techniques applied to problems which are amenable to computer solution. Program style. Debugging principles.
Prerequisite: One of Computer Science 1A3, 1B3, 1H3, and one of Mathematics 1A6, 1N3, 1B6, 1F6, 1G6, or Engineering 1D3 and Mathematics 1J6. Not open to students who have completed Computer Science 2L3. Computer Science 2L3, 2N3, and 2P3 are mutually exclusive. Students who have completed or are registered in one may not receive credit in either of the other two, with the following exception: students who have completed Computer Science 2N3 prior to 1983, and who wish to upgrade to Computer Science 2P3 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P3.

COMP SCI 3A3 DATA STRUCTURES
Description of and operations on structured data, strings, lists, trees,plexes. Application from text editing, symbolic differentiation, graphics, programming languages. The Pascal-6000 programming language.
3 lects.; one term
Prerequisite: Computer Science 2L3 and registration in a Computer Science or Computer Engineering degree programme.

COMP SCI 3B3 ORGANIZATION OF PROGRAMMING LANGUAGES
An advanced course in programming-language concepts emphasizing the run-time behaviour of programs. It includes a comparative study of several major programming languages and an introduction to some formal aspects of language definition and analysis.
3 lects.; one term
Prerequisite: Computer Science 3A3 and registration in a Computer Science or Computer Engineering degree programme. Not open to students with credit in Computer Science 4M3.

COMP SCI 3C3 OPERATING SYSTEMS
The purpose of operating systems and their systematic design and implementation; synchronization of concurrent processes, resource sharing, job scheduling, resource protection, privacy and security.
3 lects.; one term
Prerequisite: Computer Science 3A3 and 3D3, or Computer Science 3D3 and registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management and, permission of the instructor.

COMP SCI 3D3 COMPUTER SYSTEMS ARCHITECTURE
The study of a computer system involving both hardware and software components; control, storage, and input/output systems; assemblers, loaders, compilers; operating systems.
3 lects.; one term
Prerequisite: Computer Science 1C3 and one of Computer Science 2L3, 2P3, or registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management.

COMP SCI 3E3 INTRODUCTION TO SOFTWARE ENGINEERING
Problem specification, program design, implementation, and testing to produce maintainable and reliable software. Computer-based software development tools. Coursework will include a group project. Application of these techniques through a term project for medium-sized teams.
2 lects., 1 lab.(2); one term
Prerequisite: Computer Science 2L3 and registration in a Computer Science or Computer Engineering degree programme.

COMP SCI 3I3 BUSINESS SYSTEMS ANALYSIS AND DATA ORGANIZATION
Common algorithms used in business data processing, information organization and storage; concepts of systems analysis; case studies drawn from word processing, office automation, decision support systems management information systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L3, 2P3, or registration in 2A3.

COMP SCI 3P3 SCIENTIFIC DATA PROCESSING
Basic techniques of constructing large scientific data processing systems, file organization, and data base techniques for managing large volumes of data. Graphics, mathematics, data representation and systems design will be discussed.
Prerequisite: Computer Science 2L3, or 2P3.

COMP SCI 3R6 PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Computer Science 2L3 and registration in Level III of the B.Sc. programme in Computer Science.

COMP SCI 3T3 COMPUTER ORGANIZATION AND ASSEMBLER PROGRAMMING
A second course in computer organization with particular emphasis on assembler-language programming.
2 lects., 1 lab.(2); one term
Prerequisite: Computer Science 3D3.

COMP SCI 4E3 COMPILERS
An introduction to formal description of programming languages and the construction of compilers and interpreters for the translation of programs into executable form.
3 lects.; one term
Prerequisite: Completion of Level III of a Computer Science or Computer Engineering programme.

COMP SCI 4F3 SOFTWARE ENGINEERING PROJECT
Students work in large teams on a large-scale project to produce high-quality production software.
3 hrs.; one term
Prerequisite: At least three Level III or IV Computer Science courses, including credit in, or registration in, Computer Science 3E3; and registration in a Computer Engineering or Computer Engineering and Management degree programme.

COMP SCI 4G6 PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Registration in Level IV of a programme in which Computer Science 4G6 is specified and one of Computer Science 3A3, 3B3. Not open to students who are registered in or have completed Computer Science 3R6.

COMP SCI 4I3 MANAGEMENT INFORMATION SYSTEMS
The use of modern computer technology in the information processing and planning processes of small and large organizations. Emphasis will be placed on data design and office automation.
3 lects.; one term
Prerequisite: Computer Science 3I3.

COMP SCI 4J3 INTRODUCTION TO FORMAL LANGUAGE THEORY
The mathematical properties of context-free grammars and languages will be studied.
3 lects.; one term
Prerequisite: Computer Science 3A3 and one of Mathematics 2F4, 2J6.

COMP SCI 4L3 DATABASE MANAGEMENT SYSTEM DESIGN
A first course on database management systems which emphasizes the concepts and structures necessary for their design and implementation. Topics include: data models, data normalization, data description languages, query facilities, file organization, file security, data integrity and reliability, and concurrency.
3 lects.; one term
Prerequisite: Computer Science 2A3 and 3A3 or, registration in Computer Engineering or Computer Engineering and Management.

COMP SCI 4W3 COMPUTER SIMULATION LANGUAGES AND THE SIMULATION OF COMPUTERS
Three languages for the simulation of discrete stochastic systems will be compared: GPSS, Simscript or Simula, and GASP II. Simulation of various operations in computer systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L3, 2N3, 2P3.

COMP SCI 4X3 THE MATHEMATICAL ANALYSIS OF ALGORITHMS
An introduction to the analysis of algorithms dealing with the relative speed of alternate algorithms and related matters.
3 lects.; one term
Prerequisite: Computer Science 3A3, and Mathematics 2F4, 2J6.

Dramatic Arts
Courses and programmes in Dramatic Arts and Film at McMaster University are supervised and co-ordinated by an interdisciplinary Committee of Instruction. Students who plan to register in a programme in Dramatic Arts must consult the Chairman of the Committee before selecting courses.

Committee of Instruction

A. Brennan (English) / Chairman

L. Brennan (English) / Chairperson

J. Braswell (English) / Co-Chairperson

E. Nardocchio (French) / Co-Chairperson

F. Minelli (Spanish) / Co-Chairperson

E. Nardocchio (French) / Co-Chairperson

B. Pocknell (French) / Co-Chairperson

G. Petrie (Film) / Chairperson

T. Shrive (Technical) / Chairperson

R. Van Dusen (German) / Chairperson

R. Vince (English) / Chairperson
DRAM ART 1A6 INTRODUCTION TO DRAMA
An exploration of the theatrical medium through the study of plays from major periods of Western drama, including plays featured in the year's Dramatic Arts productions.
2 lects., 1 tut.; two terms
Prerequisite: Open.

DRAM ART 2A6 AN INTRODUCTION TO THE ACTOR'S CRAFT
Workshops in body movement, dance, mime and mask; voice and speech; explorations in acting methods.
2 studio practices (2/12 hrs.); two terms
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the instructor after audition.

DRAM ART 2B6 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the medieval period to the close of the 18th century (excluding Shakespeare).
3 lects.; two terms
Prerequisite: Registration in a programme in Dramatic Arts or English; or permission of the English Department.

DRAM ART 2C3 PERFORMANCE AND THE IDEA OF THEATRE 900-1700
A survey of staging and performance practice, popular, courtly and religious; theory and practice of stage design and theatre architecture.
3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts, or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 2E3 GREEK AND ROMAN DRAMA
Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2E3 and Comparative Literature 2B3.

DRAM ART 2F3 OPERA
An analysis of selected operatic works in their historical context, with a view to 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 2TF3.

DRAM ART 2F3 STUDIES IN OPERA 1985-86: Giuseppe Verdi
A detailed study of the operatic works of Verdi in their historical and dramatic context. Eight to ten works will be examined in depth.
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 ART 2J3 GERMAN DRAMA IN TRANSLATION
A study of selected plays from the early nineteenth century (Büchner) to the early 1970's (Handke).
3 lects.; one term
Prerequisite: Open. Available, with permission of the Department, as an elective to students registered in a programme in German.
Same as German 2J3.

DRAM ART 2X6 THE ART OF THE FILM
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 ART 3A6 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 permission of the instructor.

DRAM ART 3B3 CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dubé and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3; or permission of the Department of Romance Languages.

DRAM ART 3B3 TOPICS IN THEATRE HISTORY: INDEPENDENT STUDY I
Students who wish to undertake independent study in one of the following areas must consult the Chairman of the Committee on Dramatic Arts prior to registration: Medieval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

1 seminar (2 hrs.), plus playreadings; one term
Prerequisite: Dramatic Arts 1A6; or permission of the instructor.
Same as Comparative Literature 3E3.

DRAM ART 3B3 TECHNICAL ASPECTS OF THE THEATRE
A survey of the theory and practice of all the technical skills involved in a theatrical production: set design, set construction, lighting, sound, carpentry, properties, costumes.
3 hrs. (lects., workshops); one term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 3E3 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. Available as an elective only to students registered in Dramatic Arts programmes.
Same as English 3E3.

DRAM ART 3K6 SHAKESPEARE
An extensive critical reading and discussion of selected plays.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in Dramatic Arts or English; or permission of the English Department.
Same as English 3K6.

DRAM ART 3P3 MODERN DRAMA IN ENGLISH
A representative selection of plays by modern British, Irish, and North American dramatists will be examined in order to study the relationship between drama and society in our age, as well as conventions and experiments in the contemporary theatre.
3 lects.; one term
Prerequisite: Dramatic Arts 1A6 or English 1A6 or 1B6.
Same as English 3P3.

DRAM ART 3Q3 SEVENTEENTH-CENTURY FRENCH DRAMA
A study of selected plays of Corneille, Molière and Racine. 3 lects.; one term
Prerequisite: Dramatic Arts 1A6 and French 1A6 or IB6; or permission of the Department of Romance Languages.

Texts and instruction in French. Students taking this course must be registered in a programme in Dramatic Arts and may offer written work in English.
Same as French 3Q3.

DRAM ART 3R6 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.
Enrolment is limited for 1984-85 only.

DRAM ART 3XX3 TOPICS IN 20TH-CENTURY DRAMA 1984-85: Modern Canadian Drama
A selection of representative plays from various Canadian regions will be studied with attention to their dramatic form and their treatment of regional and national concerns. Theatrical medium through the study of plays from major periods of Western drama, including plays featured in the year's Dramatic Arts productions.
3 lects.; one term
Prerequisite: Drama 3A6; or permission of the instructor.

Same as English 3XX3.

DRAM ART 3Y3 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 Levels II and above.
Same as French 3Y3.

DRAM ART 4A6 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. Participation in lunch-hour productions is mandatory.
Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 3A6; or permission of the instructor.

DRAM ART 4B3 TOPICS IN THEATRE HISTORY: INDEPENDENT STUDY I
Students who wish to undertake independent study in one of the following areas must consult the Chairman of the Committee on Dramatic Arts prior to registration: Medieval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

1 seminar (2 hrs.), plus playreadings; one term
Prerequisite: Dramatic Arts 1A6; or permission of the instructor.
Same as Comparative Literature 3E3.
DRAM ART 4B3 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: Medieval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.

One term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 4D3 SPECIAL STUDIES IN DRAMATIC ARTS
1984-85: Spanish Theatre of the Golden Age
A study of plays of the major Spanish playwrights of the period 1550-1680 in English translation: plays by Cervantes, Lope, Tirso, Calderon, Luis Velez.

1985-86: 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.

1985-86: The Medieval Theatre of England and France
A study of representative plays together with a consideration of medieval 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. Same as English 4D3.

DRAM ART 4E3 THEORY OF DRAMA AND THEATRE
A study of selected theoretical documents, principally from the 20th century; introduction to semiotics of the theatre; fundamentals of performance theory.

3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 4F3 THEATRE HISTORIOGRAPHY
Introduction to the theatre historian's sources and methods; selected topics for research, analysis and discussion.

3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts. Not available to students with credit in Dramatic Arts 3G6.

DRAM ART 4G3 PERSPECTIVES IN DANCE — A CULTURAL SURVEY
A survey of dance in selected cultures, studying its role in ritual, in art and in theatre.

3 hrs. (lect., seminars); one term
Prerequisite: Permission of the instructor. Alternates with Dramatic Arts 4G3.

Same as Physical Education 4G3.

DRAM ART 4J3 PERSPECTIVES IN DANCE — DANCE IN CONTEMPORARY SOCIETY
A study of dance forms in the 20th century. Students will view films, dance performances and participate in dance workshops.

3 hrs. (lect., seminars); one term
Prerequisite: Permission of the instructor. Alternates with Dramatic Arts 4G3.

Same as Physical Education 4J3.

Economics
Faculty as of January 15, 1984

S. Ahmad/ Chairman
B. G. Spencer/ Associate Chairman

Professors Emeriti
R. Craig Mcvior/B.A. (Western), M.A., Ph.D. (Chicago), F.R.S.C.
Robert W. Thompson/B.A. (Toronto), M.A. (Queen's), Ph.D. (London)

Professors
Syed Ahmad/M.A., LL.B. (Aligarh), M.Sc. (Econ.), D.Sc. (Econ.) (London)
Frank T. Denton/M.A. (Toronto)
Peter J. George/B.A., M.A., Ph.D. (Toronto)

James A. Johnson/M.A., Ph.D. (Minnesota)
Atif A. Kubura/B.A., (American University, Beirut), M.A., Ph.D. (Purdue)
Ernest H. Oksanen/A.M. (Michigan), B.A., Ph.D. (Queen's)
William M. Scammell/B. Comm. Sc. (Queen's, Belfast), Ph.D. (Wales)
William M. Scrath/B.A. (Queen's), M.A. (Essex), Ph.D. (Toronto)
Byron G. Spencer/B.A. (Queen's), Ph.D. (Rice)
James R. Williams/M.A., Ph.D. (Minnesota)

Associate Professors
John B. Burbidge/B.A., Ph.D. (McGill)
David W. Butterfield/B.S., M.S. Eng. (Calif. Inst. of Tech.), A.B., M.A., Ph.D. (Berkeley)
Kenneth S. Chan/B.Sc. (Toronto), M.A., Ph.D. (Brown)
Donald A. Dawson/A.M. (Chicago), Ph.D. (Western), N.D.C.
Alan J. Harrison/B.A., M.A., Ph.D. (Essex)
Melvin L. Kliman/B.A. (Manitoba), M.A. (Queen's), Ph.D. (Minnesota)
Stuart Mostelman/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)

Assistant Professors
Martin D. Dooley/B.A. (Indiana), M.S., Ph.D. (Wisconsin-Madison)
John E. Leach/B.A. (Alberta), M.A., Ph.D. (Queen's)
Wayne Lewchuk/M.A. (Toronto), Ph.D. (Cambridge)
Lonnie J. Magee/B.Math. (Waterloo), M.A. (Western)
Peter J. McCabe/A.B. (Boston College), Ph.D. (Northwestern)
D. Rodney Thom/B.Sc. (Queen's, Belfast), Ph.D. (London)
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)
I. Krinsky/(Business) B.A., M.A. (Tel-Aviv), 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 1984-86
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 must have the permission of the instructor.

Registration in all courses marked ** involving selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar in the section Sessional Dates.

ECON 1A6 INTRODUCTORY ECONOMICS
An introduction to the method and theory of economics, and their application to the analysis of contemporary economic problems.

3 hrs.; two terms
Prerequisite: Open.

ECON 2B3 ANALYSIS OF ECONOMIC DATA I
Application of statistical concepts to the analysis of economic data, with attention to Canadian sources. Topics include index numbers and an introduction to regression analysis.

3 hrs.; one term
Prerequisite: Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C- in Economics 1A6. Not open to students with credit or concurrent registration in Economics 306 or other statistics courses (except Statistics 2D4) without permission of the Department. Not open to students who have credit in, or are required to take, Commerce 2QA3.
ECON 2G3 INTERMEDIATE PRICE THEORY
Elements of consumer behaviour; production and cost, price and output determination under various market structures; employment of inputs.
3 hrs.; one term
Prerequisite: Registration in 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.

ECON 2H3 INTERMEDIATE INCOME AND EMPLOYMENT THEORY
Elements of national accounting; basic models of income determination; inflation and unemployment in the Canadian context.
3 hrs.; one term
Prerequisite: Registration in 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.

ECON 2K3 ECONOMIC HISTORY OF CANADA
A survey of the changing structure of the Canadian economy from the colonial period to the present; early significance of primary production for export markets; emerging domestic markets and industrialization; government’s role in promoting the development of the national economy.
3 hrs.; one term
Prerequisite: At least C – in Economics 1A6. Not open to students with credit for Economics 2K6.

ECON 2L6 INTERMEDIATE MICROECONOMICS
Consumer behaviour; production and cost; price and output determination under various market structures; factor pricing and distribution of factor payments; general equilibrium; welfare economics.
3 hrs.; two terms
Prerequisite: Registration in Economics or Commerce; or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C – in Economics 1A6. A student receiving credit for Economics 2G3 may receive only 3 additional units of credit for Economics 2L6.

ECON 2M6 INTERMEDIATE MACROECONOMICS
National income accounting and related topics; models of output and price determination; theories of monetary and fiscal policy applied to the Canadian economy.
3 hrs.; two terms
Prerequisite: Registration in Economics or Commerce; or Economics 1A6 and Mathematics 1K3 and 1L3 with an average of at least 4.0, including at least C – in Economics 1A6. A student receiving credit for Economics 2H3 may receive only 3 additional units of credit for Economics 2M6.

ECON 3A3 ADVANCED ECONOMIC THEORY I
Static optimization and comparative statics in the context of the theory of the firm and consumer.
3 hrs.; one term
Prerequisite: Mathematics 1M3 or equivalent and an average of at least 7.0 in Economics 2L6 and 2M6. Mathematics 2L3 or equivalent is recommend-
ed.

ECON 3A3 ADVANCED ECONOMIC THEORY II
Comparative static and dynamic analysis of macroeconomic models.
3 hrs.; one term
Prerequisite: At least C – in Economics 3A3.

ECON 3B3 PUBLIC FINANCE
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.

ECON 3C6 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.

ECON 3D3 LABOUR ECONOMICS
Introduction to the economics of the labour market; demand for labour by the firm and industry; supply of labour by the individual; investment in human capital.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3E3 TOPICS IN LABOUR ECONOMICS
Topics will vary from year to year. The following are given as examples: economic goals and effects of unions; labour mobility; labour force participation; wage differentials; discrimination; unemployment.
3 hrs.; one term
Prerequisite: Economics 3D3 and Economics 2B3 or 3O6.

ECON 3F3 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 and Economics 2B3 or 3O6, or permission of the instructor.

ECON 3H3 INTERNATIONAL MONETARY ECONOMICS
Balance of payments and economic problems of an open economy with special reference to Canada; the international financial system and proposals for its reform.
3 lects. (lects. and seminars); one term
Prerequisite: Economics 2H3 or 2M6. Not open to students receiving credit for Economics 4B6.

ECON 3H3 INTERNATIONAL TRADE
Real theory of international trade; interregional and international specialization; effects of commercial and industrial policies.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 4B6.

ECON 313 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 lects.; one term
Prerequisite: At least C – in Economics 1A6.

ECON 3J6 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.; two terms
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

ECON 3K6 MONETARY ECONOMICS AND FINANCIAL ORGANIZATION: THEORY AND POLICY
Objectives, organization and operation of the financial sector; financial intermediaries in the capital market; mechanism of international payments; monetary theory and policy concerning Canadian allocative and stability objectives.
3 hrs.; two terms
Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6. A student with credit for Commerce 2FA3 may receive only 3 additional units of credit for Economics 3K6.

ECON 3L3 MARXIAN ECONOMICS
An examination of the foundations of Marxist economic thought; Marxism as a theory of the capitalist system; the place of Marxist doctrine in contemporary economic analysis.
3 lects.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3L3 HISTORY OF ECONOMIC THEORY
Economic thought from earliest times, with emphasis on the major schools from Adam Smith to Alfred Marshall, selected modern trends and controversies.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6. Economics 2H3 or 2M6. Not open to students with credit for Economics 4C6.

ECON 3M3 ECONOMIC HISTORY OF BRITAIN FROM 1750
The development of the British economy; the Industrial Revolution; population; trade unions; business organization; transportation, finance, trade, migration; capital movements; the role of government.
3 hrs.lects. and seminars); one term
Prerequisite: At least C – in Economics 1A6. Not open to students with credit in Economics 3M6.

ECON 3O6 ECONOMIC STATISTICS
Statistical analysis as a basic research technique in economics, emphasizing estimation and statistical inferences, including linear regression models. Applications are drawn from micro and macroeconomics.
3 lects.; two terms
Prerequisite: Registration in a programme in Economics with Mathematics requirements completed. Not open to students with credit or concurrent registration in Statistics 3D6. Starting in 1985-86 students with credit in Economics 2B3 or in other Statistics courses (except Statistics 2D4) may receive only 3 additional units of credit for Economics 3O6.

ECON 3R3 THE INTERNATIONAL ECONOMY SINCE 1945
International finance, commercial policy, changing national and industrial structures and relations between development and the developing countries.
3 hrs.; one term
Prerequisite: At least C – in Economics 1A6.
ECON 333 INDUSTRIAL ORGANIZATION
A study of the structure conduct and performance of industrial markets.
3 lect.; one term
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3N6.

ECON 3T3 TRANSPORT ECONOMICS
Economic theory applied to such questions as the demand for transport, cost analysis, pricing, and government regulation; Canadian transport problems.
3 hrs.; one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3U3 ANALYSIS OF ECONOMIC DATA II
3 hrs.; one term
Prerequisite: Economics 2B3 or an equivalent course in Statistics with permission of the instructor.

ECON 3V3 PUBLIC CHOICE AND BENEFIT-COST ANALYSIS
The economics of social decision-making; the logic of group decision and the political process; welfare economics, theory and application of benefit-cost analysis.
3 hrs. (lects. and seminars); one term
Prerequisite: Economics 2G3 or 2L6.

ECON 3W3 NATURAL RESOURCES
Competitive and socially optimal exhaustion of nonrenewable resources; market failure as illustrated by mineral cartels, fisheries and forestry; Canadian energy policy.
3 hrs. (lects. and seminars); one term
Prerequisite: Economics 2G3 or 2L6, Mathematics 1M3; or permission of the instructor.

ECON 3X3 SELECTED TOPICS I
Topics will vary from year to year depending on student interests and faculty availability. Students should consult the Department on topics to be offered.
3 hrs.; one term
Prerequisite: Permission of the Department.

ECON 3Y3 SELECTED TOPICS II
As for Economics 3X3.
3 hrs.; one term
Prerequisite: Permission of the Department.

ECON 4E3 TOPICS IN MICROECONOMICS
Applications of advanced microeconomic theory.
3 hrs.; one term
Prerequisite: At least C− in Economics 3A3.

ECON 4F3 TOPICS IN MACROECONOMICS
Applications of advanced macroeconomic theory.
3 hrs.; one term
Prerequisite: At least C− in Economics 3A3A3.

ECON 4G3 ECONOMETRICS I
Development of regression models appropriate to economics. Illustrations from micro- and macroeconomics.
3 hrs.; one term
Prerequisite: At least C− in Economics 3O6 or Statistics 3D6 or permission of the instructor.

ECON 4G3ECONOMETRICS II
Special topics in econometrics, including identification in simultaneous equations models in micro- and macroeconomics and topics in the analysis of time series.
3 hrs.; one term
Prerequisite: Economics 4G3

ECON 4H3 LINEAR ECONOMIC MODELS
Application and interpretation in economics of linear programming, game theory, and inter-industry analysis.
3 lects.; one term
Prerequisite: At least C− in each of Mathematics 1L3, 1M3 (or equivalent Mathematics), Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

ECON 4M6 "DIRECTED RESEARCH I"
A reading and/or research programme supervised by a Department member. A major paper is required. Students should consult the Department concerning admission.
Prerequisite: Permission of the Department.

ECON 4N3 "DIRECTED RESEARCH II"
As for Economics 4M6.
Prerequisite: Permission of the Department.

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 Italian Baroque Art and Architecture
ENGLISH 2R3 Topics in Restoration and 18th Century Literature
ENGLISH 4B6 English Literature 1660-1800
ENGLISH 4L3 Romantic Poetry
FRENCH 3K3 Eighteenth-Century French Literature I
FRENCH 3K3K3 Eighteenth-Century French Literature II
FRENCH 3M3 The Eighteenth-Century French Novel
FRENCH 4P3 Topics in Eighteenth-Century French Literature
GERMAN 3A3 Baroque and Enlightenment Literature
HISTORY 2M6 European Society from Absolutism to Democracy
HISTORY 2N6 British History 1500 to the Present
HISTORY 3M6 Revolution and Reaction in Europe, 1763-1848
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
Faculty as of January 15, 1984

N.K. Sinha/ Chairman

Professors Emeriti
Arthur S. Gladwin/D.Sc. (Glasgow), Ph.D. (London)

Professors
Rudi deBuda/Dipl.Eng., Ph.D. (Vienna) / part-time
Simon Haykin/B.Sc., Ph.D., D.Sc. (Birmingham), F.I.E.E.E.
Reuven Kital/M.Sc., D.Sc. (Witwatersrand), F.I.E.E.
Barna Szabados/Dipl.Eng. (Grenoble), M.Eng., Ph.D. (McMaster) /Westinghouse Chair in Energy Technology
Naresh K. Sinha/B.Sc.(Eng.), C.Eng. (Banaras), Ph.D. (Manchester), P.Eng.
Desmond P. Taylor/B.Sc., M.Sc. (Queen's), Ph.D. (McMaster), F.E.I.C., P.Eng.

Associate Professors
Stephen H. Chisholm/B.A.Sc. (Toronto), Ph.D. (London)
Raymond D. Findlay/B.A.Sc., M.Sc., Ph.D. (Toronto), P.Eng.
Chandra M. Kudsia/B.Sc. (Delhi), B.E. (Bangalore), M.Eng. (McMaster), Ph.D. (Concordia), P.Eng./part-time
John Thompson/B.Sc. (Sheffield), Ph.D. (Australian Nat.) /part-time

Assistant Professors
David W. Copson/B.Sc.Eng. (New Brunswick), M.Eng. (McMaster)
Mohamed AfEL-Kady/M.Sc. (Eng.) (Cairo), Ph.D. (McMaster), P.Eng./part-time

Associate Member
Hugh deBruin/M.Eng., Ph.D. (McMaster), P.Eng.
ELECTRICAL AND COMPUTER ENGINEERING

CURRICULUM 1984-86

Enrolment in an Electrical Engineering course may be limited to those students for whom the course is a required course.

ELEC ENG 2B4 ELECTROMAGNETIC SCIENCE
Electrostatics and electromagnetic fields; electric and magnetic circuits; lumped parameter models; loop and nodal methods; circuit theorems; RL/nC circuits; transformers; conducting, insulating and magnetic materials.
3 lects., 1 lab. or tut.; one term
Prerequisite: Mathematics 1H5 and Physics 1E4 and registration in a programme in Computer or Electrical Engineering.

ELEC ENG 2D3 CIRCUITS AND SYSTEMS I
Advanced ac circuits, polyphase circuits; waveforms and Fourier analysis; dynamic behaviour of simple systems; responses to arbitrary waveforms using Laplace transforms; transfer functions.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B4 and Mathematics 2P4.

ELEC ENG 2F3 ELECTRONICS I
Semiconductor physics; device, physical electronics, models and characteristics; diode circuits; bipolar and unipolar transistors; simple amplifier circuits; analog switches.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B4.

ELEC ENG 2H3 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: Registration in a programme in Computer or Electrical Engineering.

ELEC ENG 2K3 COMPUTATIONAL METHODS IN ELECTRICAL ENGINEERING
Introduction to the formulation and solution of problems in fields, circuits and systems. Numerical methods for simulation of electrical models and designs.
2 lects., 1 tut.; one term
Prerequisite: Electrical Engineering 2B4 and Mathematics 2P4.

ELEC ENG 3B4 CIRCUITS AND SYSTEMS II
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3 (and 2K3 in 1985-86).

ELEC ENG 3C4 ELECTROMAGNETIC FIELDS AND WAVES
Scalar and vector potential fields; Maxwell's equations, boundary conditions, electromagnetic energy and Poynting's theorem, transmission lines; waves; field plotting.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3 (and 2K3 in 1985-86).

ELEC ENG 3F4 ELECTRONICS II
Semiconductor device models, single and multi-stage amplifiers, negative feedback, noise, nonlinear distortion, differential and operational amplifiers.
3 lects., 1 lab. or tut.; first term
Prerequisite: Electrical Engineering 2B3 or Engineering 2A5.
Offered for the last time in 1985-86.

ELEC ENG 3G4 ELECTRONICS I
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.
Offered for the last time in 1985-86.

ELEC ENG 3H3 DIGITAL SYSTEMS II
Memory, programmable logic arrays, small computer system organization, register transfer logic, hardware and software, Operation, organization and control of central processing unit.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2H3 or Engineering 3N3.

ELEC ENG 3K4 COMPUTATIONAL METHODS AND DESIGN I
Matrix analysis, steady state and transient analysis, large system and sparse matrix techniques, sensitivity, tolerance analysis, solution of field problems, nonlinear dc circuit analysis, optimization.
3 lects., 1 lab.; one term
Prerequisite: Electrical Engineering 2B4, 3C4 (and 2K3 in 1985-86).
Co-requisite: Mathematics 3K3 or 3K5.

ELEC ENG 3N3 ENERGY CONVERSION I
Fundamentals of electromechanical energy conversion. dc motors and generators, transformers, polyphase circuits and devices, synchronous and induction machines.
2 lects., 1 lab. or tut.; first term
Prerequisite: Electrical Engineering 2D3, Mathematics 2P4, 2Q4.
Co-requisite: Electrical Engineering 3C4.
Offered for the last time in 1984-85.

ELEC ENG 3P4 ENERGY CONVERSION I
Fundamentals of electromechanical energy conversion; dc motors and generators; transformers; polyphase circuits and devices, synchronous and induction machines, computer models.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3, 2K3, 3C4; Mathematics 2Q4.
Offered beginning in 1985-86.

ELEC ENG 3S4 ENERGY CONVERSION II
Analysis and design of energy conversion systems. Electric power generation, rotary industrial drives, linear electric machines; symmetrical components, single phase machines; introduction to electronic power control.
2 lects., 1 lab. or tut.; second term
Prerequisite: Electrical Engineering 3N3 or 3N4; or Engineering 3M3 with permission of the Department.

ELEC ENG 3T4 ELECTRONICS II
Advanced treatment of semiconductor device physical electronics, circuit models and characteristics. Transistor amplifiers, frequency response; feedback, operational amplifier design. Compensation.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D3, 2F3.
Offered beginning in 1985-86.

ELEC ENG 3U4 ELECTRONICS III
Linear and nonlinear operational amplifier circuits; signal generators; active filters; power amplifiers; regulators; digital electronics; A/D and D/A converters, multiplexers, sample and hold, noise.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3T4.
Offered beginning 1985-86.

ELEC ENG 4A4 COMMUNICATIONS SYSTEMS
Representation of signals and systems, random signals and noise, amplitude modulation, angle modulation, noise in cw modulation systems, pulse modulation, optimum receivers.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3B4, Statistics 3X3.

ELEC ENG 4B4 TRANSMISSING AND RADIATING SYSTEMS
Principles of transmission lines, waveguides and antennas, matching, Smith-chart applications, dipole and Yagi antennas, ground wave and sky wave propagation.
3 lects., 1 lab. or tut.(3); one term
Prerequisite: Electrical Engineering 3C4.

ELEC ENG 4C4 CONTROL SYSTEMS
Models for typical components, characteristics of feedback systems, performance and stability analysis, design and compensation, digital control systems, design with state-variable feedback, discrete time systems, nonlinear systems.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3B4, Mathematics 3K5 or 3K3.

ELEC ENG 4E4 DIGITAL SYSTEMS IV
Typical computer systems; memory and CPU organization, throughput, priority techniques, buses, networking. Operating systems and their components.
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 4H4.

ELEC ENG 4F4 POWER ELECTRONICS
Characteristics of power semiconductor devices: rectifier transistor, SCR, GTO-SCR, TRIAC. Heat flow calculations, circuits with power switches, ac voltage controllers, controlled rectifiers, converters and inverters.
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3G4 or 3U4.

ELEC ENG 4G4 DIGITAL COMMUNICATIONS
Concepts and measures of information; Alphabets, words, messages, coding for noisy channels, Shannon's theorem, digital transmission methods, digital conversion impairments, digital PCM, linear predictive coding entropy.
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 4A4 and Mathematics 3K5 or 3K3.

ELEC ENG 4H4 DIGITAL SYSTEMS III
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3G4.

ELEC ENG 4J4 THESIS PROJECT
An experimental investigation or design project to be carried out by the student, to test initiative, grasp of the subject, and capacity for independent work.
2 labs.(3); two terms
Prerequisite: Registration in the graduating session of a programme in Computer or Electrical Engineering and first class standing.
ENGINEERING 2Q4 COMPUTATIONAL METHODS AND DESIGN II
Least pth and minimax approximations to frequency and time-domain specifications. Time-domain sensitivity filter design. Design centering, tolerancing and tuning; statistical and worst-case filter design.
3 lects., 1 lab.; one term
Prerequisite: Electrical Engineering 3K4.

ENGINEERING 2L4 FILTER THEORY AND DESIGN
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3B4.

ENGINEERING 2M4 POWER SYSTEMS
Transmission system load flow; voltage control; economics; balanced and unbalanced fault analysis and stability assessment; simulations. Field trips included.
2 lects., 1 lab., 1 proj. lab.; one term
Prerequisite: Electrical Engineering 3B4, and 3N3 or 3N4.

ENGINEERING 4P4 ELECTRONICS IV
Selected advanced topics in physical electronics of semiconductor devices; integrated circuit fabrication technology; integrated circuit component design; analog integrated circuits.
2 lects. 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3G4 or 3L4.

ENGINEERING 4R3 ANTENNA THEORY AND DESIGN
Small antennas; radiation efficiency, transmission line loading; arrays, wire antennas, travelling wave, half wave, folded dipole and Yagi antennas; aperture antennas; receiving antennas, noise power, measurements.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3C4.

ENGINEERING 4Q4 BIOMEDICAL ELECTRONIC INSTRUMENTATION
Generation and nature of bio-electric potentials; bio-electrodes impedances and transducers, signal, ultrasonics, lasers, telemetry, electrical safety, electronic pacemakers, cardiovascular, pulmonary, gastrointestinal and neuromuscular instrumentation.
3 lects., 1 lab., alternate weeks; one term
Prerequisite: Electrical Engineering 3G4 or 3U4 or Engineering 3N3 or equivalent.

See also the Calendar of the School of Graduate Studies.

**Engineering (General)**

**CURRICULUM 1984-86**

Enrolment in these courses by students in programmes other than Engineering or Engineering and Management may be limited.

**ENGINEER 1A4 INTRODUCTION TO ENGINEERING**
A non-credit course providing guidance and engineering career information.
1 lect.; two terms
Prerequisite: Registration in Engineering I.

**ENGINEER 1C4 ENGINEERING DESIGN**
Graphical communication and problem solving techniques. Introduction to engineering design. Projects on conceptual design in the different engineering disciplines.
1 lect., 1 lab.; two terms
Prerequisite: Registration in Engineering I.

**ENGINEER 1D3 ENGINEERING COMPUTATION**
A first course in programming for engineers, using BASIC and FORTRAN to solve problems in analysis, design and elementary optimization.
3 lects.; one term
Prerequisite: Registration in Engineering I.

**ENGINEER 2C3 ELECTRICAL CIRCUITS AND MEASUREMENTS**
Electrical quantities and circuit elements, 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.

**ENGINEER 2M4 ELECTRICAL SCIENCE**
An introduction to electricity and magnetism covering electростatics, electric currents, magnetism and electromagnetism, with applications in circuits and elementary devices.
3 lects., 1 lab. or tut.; one term
Prerequisite: Physics 1E4 and registration in Mathematics 2M6, or 2P4 and 2Q4.

**ENGINEER 2O3 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 1 Chemistry, Mathematics or Physics. Not open to students who are registered in, or have completed, Materials 1A6 or 1A3 or 1B3.

**ENGINEER 2P4 ENGINEERING MECHANICS 'A'**
3 lects., plus one unit comprised of tutorials or lectures devoted to applications, at the discretion of the instructor; one term
Prerequisite: Mathematics 1H5; Physics 1D3.

**ENGINEER 2Q4 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 comprised of tutorials or lectures devoted to applications, at the discretion of the instructor; one term
Prerequisite: Engineering 2P4.

**ENGINEER 2R4 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 and Physics 1D3.

**ENGINEER 2S3 MECHANICS FOR ELECTRICAL AND COMPUTER ENGINEERING**
Three dimensional statics. Equivalent force systems in statics and dynamics. Three dimensional and planar kinematics. Principles of mechanical momenta, work and energy. Dynamics of particles and planar motion of solid bodies.
3 lects.; one term
Prerequisite: Mathematics 1H5 and Physics 1D3 and registration in Computer or Electrical Engineering.

**ENGINEER 2W4 ENGINEERING THERMODYNAMICS**
An introduction to the principles of thermodynamics and their application to engineering.
3 lects., 1 tut.; one term
Prerequisite: Chemistry 1A7; Mathematics 2M6, or 2P4 and 2Q4, which may be taken concurrently.

**ENGINEER 3M3 ELECTRICAL CIRCUITS AND POWER**
Fundamentals of electromechanical energy conversion. Motors and generators, 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.

**ENGINEER 3N3 ELECTRONICS AND INSTRUMENTATION**
2 lects., 1 tut.(2) or 1 lab.(3); one term
Prerequisite: Engineering 2A5 or 2M4.

**ENGINEER 3P3 MECHANICAL BEHAVIOUR OF MATERIALS**
3 lects.; one term
Prerequisite: Mathematics 2M6 or equivalent, Engineering 2P4 or 2R4, or Physics 2C5 or 2G3.

**ENGINEER 3Q3 ELECTRONIC PROPERTIES OF SOLIDS**
The dielectric, electric and magnetic properties and applications of insulators, 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.

**ENGINEER 3R3 PHYSICAL METALLURGY**
Properties of engineering alloys are related to production and fabrication methods and resultant microstructures. Processing by solidification, deformation, heat treatment, surface treatment and joining.
3 lects.; one term
Prerequisite: Engineering 2O3. Not open to students registered in a
programme administered by the Department of Metallurgy and Materials Science.
Offered in alternate years.

ENGINEER 4A1 ENGINEERING AND MANAGEMENT REPORT
Report on a topic related to career development required of each student in Level IV of an Engineering and Management programme; guidelines and evaluation procedures provided by Programme Co-ordinator.
Prerequisite: Registration in Level IV of an Engineering and Management programme.

ENGINEER 4B3 ENGINEERING ECONOMICS
2 lects., 1 tut.; one term
Prerequisite: Registration in Level IV of an Engineering programme. Not open to students registered in, or having credit for, Chemical Engineering 4N4. Not open to students registered in Engineering and Management programmes.

ENGINEER 4J3 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.

ENGINEER 4U3 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 dewatering and disinfection. The design by the class of a complete water quality control plant.
2 lects., 1 tut.(2); one term
Prerequisite: Chemical Engineering 204 or Civil Engineering 304 or Mechanical Engineering 304; and registration in Level IV of a B.Eng. programme or Level V of a B.Eng.Mgt. programme.

ENGINEER 4X3 INTRODUCTION TO BIOMEDICAL ENGINEERING
Introduction to biomedical engineering and physical science approach to human physiological systems; cardiovascular system, with specific organ circulations, respiratory systems, overall integration and control.
3 lects.; one term
Prerequisite: Completion of at least 30 units beyond Level I of an Honours or Major programme in Science or Engineering.

ENGINEER 5A1 ENGINEERING AND MANAGEMENT REPORT
Report on a topic related to career development required of each student in the Engineering and Management programme; guidelines and evaluation procedures provided by Programme Co-ordinator.
Prerequisite: Registration in Level V of an Engineering and Management Programme; or permission of the Programme Co-ordinator.

Engineering Physics

Faculty as of January 15, 1984

D.A. Thompson / Chairman

Professors
Alfred J. Alcock/B.A.Sc. (Toronto), Ph.D. (Oxford) / part-time
Edward A. Balilik/B.Sc. (Queen's), D.Phil. (Oxford), P.Eng.
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.A.Sc., Ph.D. (Toronto)/part-time
Terence J. Kennett/B.Sc., M.Sc., M.Eng. (McMaster)
John P. Martin/B.Sc. (Budapest), Ph.D. (Western), P.Eng./part-time
Daniel A. Menley/B.E. (Saskatchewan), D.I.C., Ph.D. (London), P.Eng./part-time
David A. Thompson/B.Sc. (Reading)
Oleh A. Trojan/B.A.Sc., M.A., Ph.D. (Toronto), P.Eng./part-time

Associate Professors
Alexander A. Berezin/B.Sc., M.Sc., Ph.D. (Leningrad State University)
John Reid/B.A. (Oxford), M.Sc., Ph.D. (McMaster)

Assistant Professors
Charles W. Gordon/B.A.Sc. (Toronto), M.Eng., Ph.D. (McMaster)
W.F. Skipper Poehlman/B.S. (Niagara), B.Sc. (Brock), M.Sc., Ph.D. (McMaster)/part-time
Paul E. Jessop/B.Sc. (Waterloo), M.A., Ph.D. (Harvard)

CURRICULUM 1984-86

ENG PHYS 2A3 ELECTRICAL SCIENCE I
An introduction to electricity and magnetism for Engineering Physics students.
2 lects., 1 lab. or tut.(3); one term
Prerequisite: Physics 1F4 and registration in Mathematics 2P4.

ENG PHYS 2E4 ELECTRICAL SCIENCE II
Analysis of ac circuits and ac power. Maxwell's equations and electromagnetic theory. Introductory modern physics.
3 lects., 1 lab. or tut.(3); one term
Prerequisite: Engineering Physics 2A3.

ENG PHYS 3D3 PRINCIPLES OF NUCLEAR ENGINEERING
Introduction to nuclear energy encompassing the principles of fission and fusion energy systems. The energetics of nuclear reactions, interactions of radiation with matter, the basic nuclear processes used to produce the fusion and fusion reactors.
2 lects., 1 lab. and term project; one term
Prerequisite: Completion of at least 30 units beyond Level I in a Physics or Engineering programme. Not open to students who have registered in or completed Engineering Physics 403.

ENG PHYS 3E3 FUNDAMENTALS OF PHYSICAL OPTICS
Coherence, interference and diffraction; holoography, reflection and refraction; optical constants of media; simple principles of lasers.
2 lects., 1 tut. or lab.(3); one term
Prerequisite: Engineering Physics 2A3, 2E4 or equivalent.

ENG PHYS 3F3 FUNDAMENTALS OF SOLID STATE ELECTRONICS
Electrons in solids, with emphasis on semiconductors, carrier drift and diffusion; doped semiconductors; non-equilibrium carrier effects; optical properties of semiconductors.
2 lects., 1 lab. or tut.(3); one term
Prerequisite: Engineering Physics 2A3, 2E4 or equivalent.

ENG PHYS 3X3 ENGINEERING APPLICATIONS IN MEDICINE AND SURGERY
Engineering science principles for: analysis of physiological phenomena and mechanisms as a basis for new monitoring and diagnostic methods; design for prosthetic and rehabilitation devices; development of surgical guidelines and techniques.
3 lects.; one term
Prerequisite: Completion of a minimum of 30 units beyond Level I in any Engineering or Natural Sciences program.

ENG PHYS 4A4 THESIS OR DESIGN PROJECT
Supervised design or research problem 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 PHYS 4C2 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 PHYS 4D3 NUCLEAR REACTOR SYSTEMS ANALYSIS
Release and utilization of energy from nuclear process; steady state and dynamic 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: Engineering Physics 303.

ENG PHYS 4E3 SOLID STATE DEVICES I
Electronic properties of semiconductors, contact phenomena; p-n junctions; Schottky diodes, photodiodes, bipolar transistors, field effect transistors.
2 lects. 1 tut.; one term
Prerequisite: engineering Physics 3F3 or Electrical Engineering 3G4 or 304.
ENGG 3F3 SOLID STATE DEVICES II
Physical principles underlying operation of selected devices, and their characteristics; optical devices, avalanche devices, Gumm-Effect devices, Read diodes, charge coupled devices, integrated circuits, Josephson junctions.
2 lects., 1 tut.; one term
Prerequisite: Engineering Physics 4F3

ENGG 4G3 OPTICAL INSTRUMENTATION
Design of optical equipment (including reflective and refractive optical systems, interferometers and spectrometers). Optical sources and power measurements. Detectors (photographic, photoelectric, etc.), including use in the infrared and ultraviolet, and at low intensity levels.
2 lects., 1 tut.; first term
Prerequisite: Physics 3N3 or Engineering Physics 3E5 or 3E3.

ENGG 4H6 SPECIAL STUDIES IN ENGINEERING PHYSICS
A special programme of studies to be arranged by mutual consent of the professor, departmental chairman, and the student. A student elects to work with a professor carrying out literature surveys, experiments, theoretical investigations, etc. A written report is required.
2 tuts., 1 lab.(3); two terms
Prerequisite: Permission of the Department.

ENGG 4K3 OPTICAL COMMUNICATIONS SYSTEMS
Propogation of optical radiation through transmission media. Transmission and detection of information using analogue and digital codes. Signal-to-noise considerations. Optical communication system design.
2 lects., 1 tut.; second term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Engineering or Physics programme.

ENGG 4L3 NUCLEAR REACTOR THERMOLHYDRAULICS I
Introduction to two phase flow and nuclear reactor thermohydraulics systems. Condensation and boiling phenomena and heat transfer mechanisms. Two phase flow apparatus and diagnostics techniques. Modelling of two phase flow by homogeneous and separated phase models.
2 lects., 1 lab.; one term
Prerequisite: Chemical Engineering 204 or Mechanical Engineering 304.

ENGG 4N3 PRINCIPLES OF FUSION ENERGY
Nuclear kinetics; reaction analysis; Coulomb scattering; field effect trajectories; magnetic field configurations; particle transport; energy viability; burn cycles; inertial confinement; muon catalyzed fusion.
3 lects.; one term
Prerequisite: Engineering Physics 3D3.

ENGG 4S4 LASERS AND ELECTRO-OPTICS
2 lects.; two terms
Prerequisite: Physics 3N3 or Engineering Physics 3E5 or 3E3.

ENGG 4U4 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: Registration in Level IV Engineering Physics or Level V Engineering Physics and Management.

ENGG 4W3 ACQUISITION AND ANALYSIS OF EXPERIMENTAL INFORMATION
A system approach to experimental measurement, in which topics such as simulation, modelling, estimation, signal-processing and enhancement, data-reduction techniques, and modern sensing methods are examined.
1 lect., 1 tut.; two terms
Prerequisite: Mathematics 3C6; or permission of the Department.

ENGG 4Y3 ENGINEERING PHYSIOLOGY
Quantitative and biometric engineering analysis of macrosystems. Examination of cardiovascular, respiratory, neurological and digestive systems.
3 lects.; one term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Science or Engineering programme.

PHYSICS 3B6 ELECTRONICS
Network theory and filters, semiconductor devices, amplifier circuits, D.C. power supplies, integrated circuits, operational amplifiers and digital circuits.
2 lects.; both terms; 1 lab.(2); two terms
Prerequisite: Engineering Physics 2A3 and 2E4, or Physics 2B6.

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: Engineering Physics 2A3 and 2E4, or Physics 2B6.

See also the Calendar of the School of Graduate Studies.
ENGLISH 2F3 Studies in American Literature
ENGLISH 2M3 Practical Criticism
ENGLISH 2R3 Topics in Restoration and 18th-Century Literature
ENGLISH 2S3 English Communication: Introductory Linguistics
ENGLISH 2T3 The Development of the English Language
ENGLISH 3A3 Techniques of Expository Writing
ENGLISH 3B3 Psychoanalytic Approaches to Literary Texts
ENGLISH 3E3 Shakespeare: Selected Plays
ENGLISH 3F3 Techniques of Creative Writing
ENGLISH 3G3 Topics in 19th-Century Literature
ENGLISH 3H3 Topics in Poetry
ENGLISH 3I3 Topics in Fiction I
ENGLISH 3JJ3 Topics in Fiction II
ENGLISH 3KK3 Topics in Critical Approaches
ENGLISH 3P3 Modern Drama in English
ENGLISH 3PP3 Topics in World Literature in English
ENGLISH 3X3 Topics in 20th-Century Literature I
ENGLISH 3XX3 Topics in 20th-Century Literature II
ENGLISH 3Z3 Contemporary Canadian Poetry
ENGLISH 4A3 The Classics and English Literature
ENGLISH 4D3 Topics in Medieval and Renaissance Literature

ENGLISH 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.; 2 terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 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.; 2 terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 1A6.
ENGLISH 266 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the medieval period to the close of the 18th century (excluding Shakespeare).
3 lects.; 2 terms
Prerequisite: Registration in a programme in English or Dramatic Arts; or permission of the English Department.
Same as Dramatic Arts 2B6.
ENGLISH 293 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.; 1 term
Prerequisite: English 1A6 or 1B6; or permission of the Department.
ENGLISH 293 BIBLICAL TRADITIONS IN LITERATURE
A study of the influence of the Bible on Western literature, especially English. Approaches may include the examination of symbolism, imagery, typography, doctrinal themes and narrative structures.
3 lects.; 1 term
Prerequisite: Open to students in Level II and above, except to students with credit for English 2P3.
Same as Comparative Literature 2D3.
ENGLISH 2EE ENGLISH LITERATURE
An introduction to the English literary tradition and modern forms of communication, including the film.
3 lects.; 2 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.; 1 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.; 2 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.; 2 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.; 2 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.
Enrolment is limited; departmental permission slip required.
ENGLISH 2R3 TOPICS IN RESTORATION AND 18TH-CENTURY LITERATURE
An examination of substantial portions of Blake's lyric and prophetic poetry with emphasis on the relationship of illustration to text.
3 lects.; 1 term
Prerequisite: English 1A6 or 1B6; or permission of the Department.
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, phonology, morphology and syntax.
3 lects.; 1 term
Prerequisite: English 1A6 or 1B6; or permission of the Department. 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, phonology, morphology and syntax.
3 lects.; 1 term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 2R3 may be repeated, if on a different topic, to a total of six units.
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.; 1 term
Prerequisite: Open to students in Level II and above.

ENGLISH 296 AMERICAN LITERATURE
An introduction to the study of English grammar, with particular reference to syntactic patterns. The following areas will be considered: English phonology, historical linguistics, morphology, transformational-generative grammar, vocabulary and word formation.
3 lects.; 2 terms
Prerequisite: Registration in an English programme; or permission of the Department.
ENGLISH 3A3 TECHNIQUES OF EXPOSITORY WRITING
A course designed to provide practical training in the writing of clear, concise, 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 embroiling the main types of exposition.
2 hrs. (lect.); 1 hr. (tut.); 1 term
Prerequisite: Open to students in Level II and above, except to students registered in an English programme.
Enrolment is limited; departmental permission slip required.
ENGLISH 3B3 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.; 1 term
Prerequisite: Registration in Level II and above. Not available to students with credit for this topic, if taken as English 3K3, or with credit in Sociology 353 or 35S3.
Same as Sociology 23X.
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, supplemented by related prose texts.
3 lects.; 1 term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.
ENGLISH 3D3S BEOWULF
An exploration of the Old English epic Beowulf, supplemented by related poetic and prose texts.
3 lects.; 1 term
Prerequisite: English 3D3; or permission of the Department.
ENGLISH

ENGLISH 3E3 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.

ENGLISH 3FF3 TECHNIQUES OF CREATIVE WRITING
This course will require the composition of verse and prose. Experiments with a variety of forms will be attempted in order to increase the student's mastery of verse and prose techniques.
2 lects.(first term); 1 lect.(second 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.

ENGLISH 3GG3 TOPICS IN 19TH-CENTURY LITERATURE
1985-86: Henry James
Selected novels and short stories of Henry James, with some attention to recent critical re-evaluations of his work and influence.
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.

ENGLISH 3HH3 TOPICS IN POETRY
1984-85: Contemporary British Poetry
A critical study of selected works by four major poets - Philip Larkin, Ted Hughes, Sylvia Plath and Charles Tomlinson - representative of contemporary cross-currents in British poetry.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

1985-86: Women Poets of the Twentieth Century
A study of American and Canadian writers who have established a tradition of poetry by women in this period. Poets discussed will include H.D., Marianne Moore, Edna St. Vincent Millay, Sylvia Plath, Anne Sexton, Dorothy Livesey, Margaret Atwood, P.K. Page and Phyllis Webb.
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.

ENGLISH 3I3 STUDIES IN 16TH-CENTURY LITERATURE
A study of the prose and poetry of the first phase of the English Renaissance, with some emphasis on the work of More and Sidney, and subsidiary reading of continental writers influential in England, such as Petrarch, Ercolan, Castiglione, Machiavelli and Montaigne.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department. Same as Comparative Literature 3I3.

ENGLISH 3I3I TOPICS IN FICTION I
1984-85: James Joyce
An introduction to the literary achievement of James Joyce, with some consideration of his life, background and influence.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

1985-86: William Faulkner
The major novels and short fiction of William Faulkner in the light of recent critical re-evaluations of his work and influence.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. English 3I3I may be repeated, if on a different topic, to a total of six units.

ENGLISH 3I32 TOPICS IN FICTION II
1984-85: Utopian Literature
A study of Utopian works in which such major contributions to the genre as More's Utopia, Morris's News from Nowhere, Bellamy's Looking Backward and Butler's Erewhon will be considered together with modern Utopian novels like Huxley's Brave New World and Orwell's 1984.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department.

1985-86: 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. English 3I32 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3K6 SHAKESPEARE
An extensive critical reading and discussion of selected plays.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English or Dramatic Arts; or permission of the English Department.
Same as Dramatic Arts 3K6.

ENGLISH 3K3 TOPICS IN CRITICAL APPROACHES
1984-85: 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.
English 3K3 may be repeated, if on a different topic, to a total of six units.
Same as Social Science 3J3 and Sociology 3S3. See also Social Science 3C3.

ENGLISH 3P3 MODERN DRAMA IN ENGLISH
A representative selection of plays by modern British, Irish and North American dramatists will be examined in order to study the relationship between drama and society in our age, as well as conventions and experiments in the contemporary theatre.
3 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.
Same as Dramatic Arts 3P3.

ENGLISH 3PP3 TOPICS IN WORLD LITERATURE IN ENGLISH
1985-86: The Modern Indian Novel
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.

ENGLISH 3QQ3 THE HISTORY AND THEORY OF CRITICISM
A survey of the main developments in the theory and practice of literary criticism from Plato to the early 20th century.
4 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department. Not available to students with credit in English 4C3.
Offered in 1985-86 and in alternate years.
Same as Comparative Literature 3QQ3.

ENGLISH 3QQ9 MODERN CRITICAL THEORY
The theory and practice of literary criticism from Eliot to the present.
1 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department. Offered in 1985-86 and in alternate years.
Same as Comparative Literature 3QQ9.

ENGLISH 3TV6 STUDIES IN 17TH-CENTURY LITERATURE
A detailed examination of poets and prose-writers of the period, with emphasis on the poetry of Donne, the "metaphysical school", Jonson and Milton.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 3X3 TOPICS IN 20TH-CENTURY LITERATURE I
1984-85: Evelyn Waugh
An examination of the major fiction of Evelyn Waugh in the context of the English satiric tradition.
3 lects.; one term
Prerequisite: English 1A6 or 1B6; or permission of the Department. Not available to students with credit for this topic taken under English 3I3.

1985-86: Form in Fiction
A 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; or permission of the Department. English 3X3 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3X3X TOPICS IN 20TH-CENTURY LITERATURE II
1984-85: Modern Canadian Drama
Representative plays from various Canadian regions studied with attention to their dramatic form and their treatment of regional as well as general social, historical and political themes.
3 lects.; one term
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.

1985-86: 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. English 3X3X may be repeated, if on a different topic, to a total of six units. Same as Dramatic Arts 3XXX.

ENGLISH 3ZZ 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.
**ENGLISH 4A3 THE CLASSICS AND ENGLISH LITERATURE**
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.
1 seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of any programme in literature; or permission of the Department.
Offered in 1984-85 and in alternate years.
Same as Classical Civilization 4A3 and Comparative Literature 4D3.

**ENGLISH 4B6 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 lectures; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

**ENGLISH 4D3 TOPICS IN MEDIEVAL AND RENAISSANCE LITERATURE**
1984-85: George Herbert
A study of George Herbert's poems in The Temple, using a variety of modern critical techniques.
Seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in literature; or permission of the Department.

A study of representative plays together with a consideration of medieval techniques of staging.
1 lecture, 1 tutorial (2 hrs.); one term
Prerequisite: Open to students in Level II and above.
English 4D3 may be repeated, if on a different topic, to a total of 6 units.
Same as Dramatic Arts 4D3.

**ENGLISH 4L3 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 lectures; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

**ENGLISH 4M3 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 lectures; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

**ENGLISH 4N6 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 psychological contexts of fiction.
2 lectures, 1 lab (2) alternate weeks, 1 tutorial (1) alternate weeks; two terms
Prerequisite: Open.

**ENGLISH 4X3 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 year.
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”)

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**Geography**

Faculty as of January 15, 1984

M.J. Webber / Chairman
Ming-ko Woo / Associate Chairman

Professor Emeritus
Lloyd G. Reeds/M.A., Ph.D (Toronto)

Professors
Brian T. Bunting/M.A. (Sheffield), Ph.D. (London)
Andrew F. Burghardt/A.B. (Harvard), M.A., Ph.D. (Wisconsin)
John A. Davies/B.A. (Bristol), M.Sc. (McGill), Ph.D. (London)
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)
Wayne R. Rouse/B.Sc. (McMaster), M.Sc., Ph.D. (McGill)
Michael J. Webber/B.A., Dipl. Agric. Sci. (Cambridge), Ph.D. (Australian National)
Ming-ko Woo/M.A. (Hong Kong), Ph.D. (British Columbia)
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
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)

Assistant Professors
William P. Anderson/M.A., Ph.D. (Boston)
Ruth Fincher/B.A. (Melbourne), M.A. (McMaster), Ph.D. (Clark)

**CURRICULUM 1984-86**

* Indicates a Science course.

Students are advised that not all courses will be offered in every year.

**GEOG 1A6 PHYSICAL PROCESSES OF LANDFORMS AND ATMOSPHERES**
The physical bases of geomorphology and climatology emphasizing processes on Earth.
2 lectures, 1 lab (2) alternate weeks, 1 tutorial (1) alternate weeks; two terms
Prerequisite: Open.

**GEOG 1B6 LOCATION, LAND USE AND CONFLICT**
Urban development, land use and location theory: application to contemporary North American and Third World cities.
2 lectures, 1 lab (2) alternate weeks, 1 tutorial (1) alternate weeks; two terms
Prerequisite: Open.

**GEOG 1D6 CULTURAL GEOGRAPHY**
The relationships between man and his environment viewed through the emergence and growth of man-made landscapes and cultural regions.
3 lectures; two terms
Prerequisite: Open. This course is not intended for students who expect to enrol in a programme in Honours Geography, although entry is allowed under certain conditions. Students should consult the Chairman of the Department.

**GEOG 2B3 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 lectures; one term
Prerequisite: Geography 1B6, or permission of the instructor.

**GEOG 2D3 THE GEOGRAPHY OF SETTLEMENT**
An examination of the geographical development of settlement, with particular reference to Old World origins and the beginnings of European settlement in North America.
2 lectures, 1 lab (2); one term
GEOGRAPHY

Prerequisite: Open.

GEOG 2E3 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.

GEOG 2F3 * BOUNDARY LAYER CLIMATE
The energy and water balance at the earth’s boundary layer as it applies to natural and man-modified landscapes.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6, or permission of the instructor.

GEOG 2K3 * 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 a Level 1 Science course, or permission of the instructor.

GEOG 2L6 * INTRODUCTION TO QUANTITATIVE ANALYSIS
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.

GEOG 2M3 * PHYSICAL LANDSCAPES OF CANADA
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: Level I Geography or Geology 1A6 or 1B6.

GEOG 2N3 LATIN AMERICA
An introductory survey of current development trends, problems and potentials, at both national and subnational levels.
3 lects.; one term
Prerequisite: Open.

GEOG 2P3 THE UNITED STATES OF AMERICA
The physical and economic geography of the United States.
3 lects.; one term
Prerequisite: Open.

GEOG 2R3 BEHAVIOURAL GEOGRAPHY
An application of theories of individual choice and behaviour to problems of urban geography.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 2T3 * FLUVIAL GEOMORPHOLOGY
Analysis of sediment transport by moving water and of the resulting erosional and depositional features.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6 or Geology 1A6; Mathematics 1A6 or 1F6 or 1M3, or permission of the instructor.

GEOG 2U3 ENERGY, ENVIRONMENT AND SOCIETY
An introduction to the role of energy in contemporary society; a social, economic and geographical perspective on the availability and use of man-made and natural energy.
3 lects.; one term
Prerequisite: Open.

GEOG 2W3 * HYDROLOGY IN CANADA
A discussion of fresh water resources, including both surface and groundwater.
3 lects.; one term
Prerequisite: Geography 1A6 or Geology 1A6.

GEOG 2Y3 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, or permission of the instructor.

GEOG 3B3 EUROPE
The physical, economic, social, and political geography of Europe, past and present.
3 lects.; one term
Prerequisite: Open.

GEOG 3D3 HISTORICAL GEOGRAPHY OF CANADA
Major themes in the historical geography of Canada, with particular reference to settlement changes in the 19th century.
3 lects.; one term
Prerequisite: Geography 2D3 or 2E3 or 2H3; or permission of the instructor.

GEOG 3E3 * FIELD STUDY IN GEOGRAPHY
Introduction to field study design, data collection methods and 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.

GEOG 3F3 * RADIATION CLIMATOLOGY
The physical basis of large scale climate and mechanisms of climatic change.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 2F3, or registration in a programme in the Faculty of Science.

GEOG 3G3 POPULATION GROWTH AND DISTRIBUTION
Facts, theories, and major issues about the growth and distribution of human population.
3 lects.; one term
Prerequisite: Geography 1B6, or permission of the instructor.

GEOG 3H3 AGRICULTURAL GEOGRAPHY
An introduction to the methodology of agricultural geography illustrated by case studies; applied aspects, rural planning, and conservation of land resources.
3 lects.; one term
Prerequisite: Level I Geography, or permission of the instructor.

GEOG 3I3 * PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY
The geology and surface morphology of planets and moons of the Solar System, with particular reference to the rocky bodies. Comparative studies are emphasized.
3 lects.; one term
Prerequisite: Geography 1A6 or 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.

GEOG 3K3 * GEOGRAPHY OF 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.

GEOG 3L3 * MULTIVARIATE ANALYSIS IN GEOGRAPHY
Applications of multivariate techniques, such as principal components analysis, discriminant analysis and canonical correlation analysis, to geographic problems.
4 hrs.lects. and lab.; one term
Prerequisite: Geography 2L6 or permission of the instructor. A course in linear algebra is recommended.

GEOG 3M3 * GLACIAL AND PERIGLACIAL GEOMORPHOLOGY
The nature and development of glacial and periglacial landforms.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 2T3, or permission of the instructor.

GEOG 3N3 * 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.

GEOG 3P3 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.

GEOG 3T3 GEOGRAPHY OF PLANNING
A systematic approach to the study of the planning process, with emphasis on analysis of the social, economic, and political bases of planning.
2 lects., 1 lab.(2); one term
Prerequisite: One of Geography 2A3, 2B3, 2R3 or 2Y3; or permission of the instructor.

GEOG 3V3 * REMOTE SENSING
The physical principles of remote sensing, with emphasis on photographic systems. Visual interpretation procedures and their application in geographical studies.
2 lects., 1 lab.(2); one term
Prerequisite: Level I Geography or Geology 1A6, or permission of the instructor.

GEOG 3W3 * HYDROLOGY
Principles of hydrology and their applications in physical geography.
2 lects., 1 lab.(2); one term
Prerequisite: Geography 1A6 and 2L6, or permission of the instructor.

GEOG 3X3 URBAN MODELS AND POLICY ANALYSIS
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.

GEOG 3Z3 POLITICAL GEOGRAPHY
An introduction to the concepts and methods of political geography, with particular emphasis on the state and its administrative subdivisions.
3 lects.; one term
Prerequisite: Registration in an Honours programme, or permission of the instructor.
GEOG 4A3 * 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.

GEOG 4C6 RESEARCH PAPER
The student will select a study in geography and have it approved by a Faculty Supervisor, normally prior to May 1. The final report of the project is due by April 1 of the following year.
1 seminar (2) alternate weeks; two terms
Prerequisite: Geography 303 and registration in Level IV of an Honours programme in Geography.

GEOG 4D3 * COASTAL GEOMORPHOLOGY
The dynamics and morphologies of the shore zone.
2 lects., 1 lab.; one term
Prerequisite: Geography 3M3, or permission of the instructor.

GEOG 4E3 * FIELD COURSE
Detailed study of a particular aspect of physical geography in the field. Held in the two weeks prior to fall registration; report to be submitted before the end of first term. Various topics and locations: details announced in March.
Prerequisite: Permission of the instructor, which is given only if the appropriate Level II and Level III courses have been passed.

GEOG 4G3 * CONTEMPORARY PROBLEMS IN PHYSICAL GEOGRAPHY
Investigation of current research problems in physical geography, emphasizing the integration of the subfields of the discipline.
2 seminars, one term
Prerequisite: Any three of Geography 3F3, 3K3, 3M3, 3V3, 3W3.

GEOG 4H3 LAND USE AND TRANSPORTATION
An analysis of models of urban land use and urban growth, with particular reference to the interrelationships between transportation systems and land use changes.
3 lects.; one term
Prerequisite: Geography 3N3, or permission of the instructor.
A course in linear algebra is recommended.

GEOG 4I3 ENERGY AND ENVIRONMENTAL MODELLING
Analytical approaches to regional energy and environmental problems with review of models and their applications.
2 lects., 1 lab (2); one term
Prerequisite: Registration in Level III or IV of an Honours programme.

GEOG 4J3 URBAN BEHAVIOURAL GEOGRAPHY
Theoretical and empirical approaches to urban cognition and urban spatial behaviour.
2 lects., 1 lab (2); one term
Prerequisite: Geography 2R3 and 3O3; or permission of the instructor.

GEOG 4K3 * PEDOLOGY AND SOIL MICROMORPHOLOGY
Studies of soil genesis and soil micromorphology, to include field survey and sampling procedures, and the study of soils in thin section.
3 lects.; one term
Prerequisite: Geography 3K3, or permission of the instructor.

GEOG 4M3 DEVELOPMENT GEOGRAPHY OF LATIN AMERICA
An examination of spatial inequalities in levels of economic and social development in Latin America and of the processes which operate to increase or diminish these inequalities. Examples taken mainly from Brazil.
3 lects.; one term
Prerequisite: Geography 2N3 or registration in Level III or IV of a Geography programme; or permission of the instructor.

GEOG 4Q3 * CLIMATES IN HIGH LATITUDES
Aspects of the heat and water balance climatology of terrestrial ecosystems in northern areas, with emphasis on the Canadian sub-arctic and tundra.
3 lects.; one term
Prerequisite: Geography 3F3, or permission of the instructor.

GEOG 4R3 * MODELS IN CLIMATOLOGY
Discussion of global climatic models and their application.
3 lects.; one term
Prerequisite: Geography 3F3 and a course in calculus; or permission of the instructor.

GEOG 4S3 GEOGRAPHY OF HEALTH CARE
The environmental determinants of health and the spatial dimensions of health care delivery.
2 seminars; one term
Prerequisite: Registration in Level IV of an Honours programme or permission of the instructor.
Offered in 1984-85 and in alternate years.

GEOG 4T3 REGIONAL DEVELOPMENT AND PLANNING
Economic theories of regional development; discussion and analysis of state policies for regional development.
2 lects., 1 lab (2); one term
Prerequisite: Geography 2Y3 and 3T3 or permission of the instructor.

GEOG 4U3 SELECTED PROBLEMS IN URBAN PLANNING
An examination of planning as a public decision process, with emphasis on land use conflicts and their resolution in the Hamilton region.
2 seminars (2); one term
Prerequisite: Geography 3T3.

GEOG 4V3 * REMOTE SENSING II
A study of airborne and spaceborne remote sensing systems. The extraction, manipulation and analysis of data acquired by remote sensors, and their application in geographical studies.
2 lects., 1 lab (2); one term
Prerequisite: Geography 3V3.

GEOG 4W3 * HYDROLOGIC MODELLING
Analyses and extension of hydrologic data, with a survey of deterministic and stochastic models in hydrology.
2 lects., 1 lab (2); one term
Prerequisite: Geography 3W3, or permission of the instructor.

GEOG 4X3 URBAN MODELS AND POLICY ANALYSIS II
A survey of modern literature on urban issues. Topics include welfare criteria, externalities, public goods, fiscal policies.
3 lects.; one term
Prerequisite: Geography 2Y3 and 3T3 or permission of the instructor.

GEOG 4Y3 POLITICAL ECONOMY OF URBAN CHANGE
Critical discussion of processes contributing to post World War II urban development. Topics include the role of government policy in urban change and the city as a site of production and consumption.
2 seminars (2); one term
Prerequisite: Geography 2Y3 and 3T3 or permission of the instructor.

GEOG 4Z3 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: Registration in any Level IV Honours programme.

For Graduate Courses see Calendar of School of Graduate Studies.
GEOLOGY

The latter part of Geology 2B6.
2 lects., 1 lab.(2); in parts of both terms
Prerequisite: Open only to students registered in Ceramic Engineering; or permission of instructor.

GEOLOGY 2B6 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 Geology programme; or permission of the Department.

GEOLOGY 2C6 EARTH HISTORY
The principles of continental evolution, as illustrated by North America and the classical geological areas. Field and laboratory demonstrations in earth history and geological maps.
2 lects., 1 lab.(3); two terms
Prerequisite: Geology 1A6 or 1B6; or permission of the instructor.

GEOLOGY 2D5 STRUCTURAL GEOLOGY I
A study of inherent and imposed structures in rocks, their inter-relationships, and their modes and environments of formations.
2 lects., 1 lab.(3), every other week; two terms
Prerequisite: Geology 1A6 or 1B6; or permission of the instructor.

GEOLOGY 2H3 GEOLOGICAL DATA PROCESSING
Nature of geological data; techniques of graphical presentation and data analysis, including use of computers.
3 lects.; one term
Prerequisite: Computer Science 1B3, which may be taken concurrently, or permission of the instructor, and registration in a Geology programme.

GEOLOGY 3A3 APPLIED GEOPHYSICS A
Principles and uses of electrical, magnetic, electromagnetic and radioactivity-based techniques in exploration geophysics; borehole logging methods.
3 lects.; one term
Prerequisite: Level I courses in Calculus and Physics, and any two science courses beyond Level I; or permission of the instructor.
Alternates with Geology 3B3. Offered in 1985-86.

GEOLOGY 3B3 APPLIED GEOPHYSICS B
Gravitational and seismic principles and methods and their use in exploration geophysics.
3 lects.; one term
Prerequisite: Level I courses in Calculus and Physics, and any two science courses beyond Level I; or permission of the instructor.
Alternates with Geology 3A3. Offered in 1984-85.

GEOLOGY 3C6 PETROGRAPHY
A sequel to Geology 2B6. An introductory course in the petrology of igneous, sedimentary, and metamorphic rocks. Laboratory studies on rock suites.
2 lects., 1 lab.(2); two terms
Prerequisite: Geology 2B6.

GEOLOGY 3D6 INTRODUCTORY PALAEOLOGY
Principles of palaeontology; the organization and evolution of life in the past, with emphasis on invertebrate fossils.
2 lects., 1 lab.(3); two terms
Prerequisite: Geology 1A6 or 1B6; and Biology 1A6 or 1B7; or permission of the instructor.

GEOLOGY 3E2 FIELD CAMP
A field camp of about two weeks duration held immediately after the April-May Examinations. Normally taken immediately following Level II by students in all Geology and combined programmes, with the exception of Honours Biology and Geology.
Prerequisite: Permission of the Department.

GEOLOGY 3G4 CRYSTALLOGRAPHY AND MINERALOGY
Topics in X-ray crystallography; an introduction to crystal chemistry and mineralogy; laboratory studies in symmetry and physical and chemical properties of minerals.
3 lects., 1 lab.(3); one term
Prerequisite: Geology 2B6.

GEOLOGY 3I3 PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY
The geology and surface morphology of planets and moons of the Solar System with particular reference to the rocky bodies. Comparative studies are emphasized.
3 lects.; one term
Prerequisite: Geography 1A6 or Geology 1A6 and completion of at least 12 units of Level II (or higher) Science courses.
Same as Geography 3I3.

GEOLOGY 3J3 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.

GEOLOGY 4B6 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.

GEOLOGY 4D3 PALAEOLOGY II
Functional morphology (anatomy) of selected fossil invertebrates.
2 lects., 1 seminar; one term
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

GEOLOGY 4E6 METALLIC MINERAL DEPOSITS
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.

GEOLOGY 4F3 PALAEOLOGY III
A sequel to Geology 4F2. An introductory course in the petrology of igneous, sedimentary, and metamorphic rocks.
2 lects., 1 lab.(2); two terms
Prerequisite: Geology 3D6 or completion of at least 12 units of Level III Biology.

GEOLOGY 4K6 GEOLOGY THESIS
Prerequisite: Open to students in Level IV of a Geology programme subject to the approval of the Department.

GEOLOGY 4M6 SEDIMENTOLOGY
A first course in the principles of chemical and physical sedimentology.
3 lects.; one term
Prerequisite: Completion of, or registration in, Geology 3C6.

GEOLOGY 4N4 STRUCTURAL GEOLOGY II
Principles of rock deformation as inferred from theory and experiment. These principles are applied to the study of actual geological structures on all scales.
2 lects.; two terms
Prerequisite: Geology 2D5 and completion of or registration in, Geology 3C6.
Offered in 1984-85, and in alternate years.

GEOLOGY 4Q4 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 and Geology 3C6, which may be taken concurrently.
Offered in 1984-85, and in alternate years.

GEOLOGY 4S6 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.
Alternates with Geology 4Q4. Offered in 1985-86.

GEOLOGY 4T3 PLATE TECTONICS
Principles of plate tectonics, with application to regional and historical geology.
3 lects.; one term
Prerequisite: Geology 2C6; Geology 3C6, which may be taken concurrently.
For Graduate Courses see Calendar of School of Graduate Studies.

German
Faculty as of January 15, 1984
G. Teuscher / Chairman
Professor
Karl Denner/M.A. (Kentucky), Ph.D. (Johns Hopkins)
James B. Lawson/B.A. (New York State College for Teachers, Albany), M.A. (Johns Hopkins)
Hans H. Schulte/Staatsexamen, Assessor (München), Dr.phil. (Augsburg)
Gerhard Teuscher/Dipl.-Ubersetzer (Mainz Gernsheim), M.A. (Toronto), Ph.D. (State University of New York, Buffalo)
Robert L. Van Dusen/B.A. (Harvard), M.A., Ph.D. (Texas)
Fritz T. Widmaier/B.A. (Waterloo), A.M., Ph.D. (Southern California)

BEGINNERS’ LANGUAGE COURSE
GERMAN 1A6 INTRODUCTION TO GERMAN STUDIES
This course is designed to give students the ability to express themselves reasonably well in German. In addition, they will acquire the basics of German grammar and considerable reading skill. Small tutorial groups will ensure maximum participation by each student. Laboratory practice, conversation, songs and films are an integral part of the course.
4 hrs.; two terms
Prerequisite: Open except to graduates of Grade 12 or Grade 13 German.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES
GERMAN 2A6 MODERN GERMAN PROSE AND POETRY
German prose from Naturalismus to the 1960’s will be emphasized. Selected poems of Liliencren, George, Hofmannsthall, Rilke, Traikl, Heym, Stramm and Kästner will be read and a short introduction will be given to the mechanics and interpretation of lyric poetry.
3 hrs.; one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 2B6 MODERN GERMAN DRAMA FROM NATURALISMUS TO EXPRESSIONISM
The plays will be studied both as individual works and in the context of their historical and intellectual background.
3 hrs.; one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 2C6 GERMAN LANGUAGE PRACTICE
A course designed for non-native speakers with emphasis on vocabulary building.
3 hrs. (including lab. practice); one term
Prerequisite: German 1A6 or 2Y6 and permission of the Department.

GERMAN 2D6 GERMAN LITERATURE IN TRANSLATION
Eight representative pieces of 20th-century drama and prose will be read and discussed. The authors and their works will be studied within the context of German letters and culture from the period framed by the two World Wars. Particular attention will be given to two Nobel Prize winners: Mann and Boïll.
3 hrs.; one term
Prerequisite: Open to students in Level II and above. Available, with permission of the Department, as an elective to students registered in a programme in German.

GERMAN 2E6 GERMAN DRAMA IN TRANSLATION
A study of selected plays from the early nineteenth century (Büchner) to the early 1970’s (Handke).
3 hrs.; one term
Prerequisite: Open to students in Level II and above. Available, with permission of the Department, as an elective to students registered in a programme in German.

CURRICULUM 1984-86

BEGINNERS’ LANGUAGE COURSE
GERMAN 1A6 BEGINNERS’ INTENSIVE GERMAN
This course is designed to give students the ability to express themselves reasonably well in German. In addition, they will acquire the basics of German grammar and considerable reading skill. Small tutorial groups will ensure maximum participation by each student. Laboratory practice, conversation, songs and films are an integral part of the course.
4 hrs.; two terms
Prerequisite: Open except to graduates of Grade 12 or Grade 13 German.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES
GERMAN 1A6 INTRODUCTION TO GERMAN STUDIES
Lectures outline the development of German literature against its cultural background. Tutorials involve grammar, lab practice and class reading of literary texts. Lectures and tutorials in German; written reports in German and English.
5 hrs. (2 lects.; 2 tuts.; lab. practice); two terms
Prerequisite: Grade 12 or Grade 13 German, or German 126 (with a grade of at least A-); or permission of the Department. Not available to students with credit in or registered in German 2Y6.
A required course for those intending to enter Alternative A programmes in German.

GERMAN 2A3 MODERN GERMAN PROSE AND POETRY
German prose from Naturalismus to the 1960’s will be emphasized. Selected poems of Liliencren, George, Hofmannsthall, Rilke, Traikl, Heym, Stramm and Kästner will be read and a short introduction will be given to the mechanics and interpretation of lyric poetry.
3 hrs.; one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 2B3 GERMAN GRAMMAR
A systematic review, including translation and oral practice.
3 hrs. (including lab. practice); one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 2E3 GERMAN GRAMMAR
A systematic review, including translation and oral practice.
3 hrs. (including lab. practice); one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 3A3 BAROQUE AND ENLIGHTENMENT LITERATURE
Discussion of selected texts by major authors within their historical-intellectual context.
3 hrs.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3A4.

GERMAN 3B3 GOETHE
Selected works by Goethe, (all genres) outside the range of German 3B3.
3 hrs.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3B4.

GERMAN 3C3 MODERN GERMAN DRAMA FROM NATURALISMUS TO EXPRESSIONISM
The plays will be studied both as individual works and in the context of their historical and intellectual background.
3 hrs.; one term
Prerequisite: German 1A6 or 2Y6; or permission of the Department.

GERMAN 3D3 THE GERMAN NOVELLA
Analysis and discussion of the genre, based on representative works from major 19th-century literary movements.
3 hrs.; one term
Prerequisite: 9 units of German; or permission of the Department. Not available to students with credit in German 3D4.

GERMAN 3H3 HISTORY OF THE GERMAN LANGUAGE: INTRODUCTION TO MIDDLE HIGH GERMAN
A practical course designed to increase the student’s facility in using German as a means of oral and written communication. Students will be required to express their views on a variety of topics in written assignments and subsequent class discussions. Extensive reading will expand the students’ vocabulary and improve general language ability.
Students interested in German and Austrian History are advised to take and permission of the Department.

**GERMAN 4Z3 ADVANCED ORAL AND WRITTEN LANGUAGE PRACTICE II**

A continuation of the approach used in German 3Z3.

3 lects.; one term
Prerequisite: German 3Z3 with a grade of at least B. Completion of German 3Z23 with a grade of at least A – results in a transcript notation indicating that the student has completed a series of intensive German language courses and has acquired of good working knowledge of spoken and written German.

**GERMAN 443 GERMAN LYRIC POETRY**

An examination of German lyric poetry as it reflects the changing styles and the main trends of literary expression in Germany from the 17th to the 20th century.

3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4A4.

**GERMAN 4C3 ADVANCED LANGUAGE PRACTICE**

Emphasis on composition and oral expression.

3 hrs.; one term
Prerequisite: German 3Z3 or 3Z23; or permission of the Department. Not available to students with credit in German 4C4.

**GERMAN 4C3 TRANSLATION: TECHNIQUES AND PRACTICE**

Practice in the translation of texts of a literary and non-literary nature. (English to German and German to English).

3 hrs.; one term
Prerequisite: German 3Z23; or permission of the Department.

**GERMAN 4F3 TWENTIETH-CENTURY GERMAN LITERATURE**

A critical reading of representative texts showing the development of shorter fiction and poetry from the turn of the century to the present. Where appropriate, the relationship of literature to painting, opera and film will be examined.

3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4F4.

**GERMAN 4G3 THE ROMANTIC MOVEMENT**

The Blaue Blume of the earlier part of the 19th century (Novalis to Heine) and the transition to the Modern Age (Büchner to Fontane).

3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4G4.

**GERMAN 4H3 MEDIEVAL GERMAN LITERATURE**

Selected texts from the major writers of the Middle and Old High German Periods.

3 lects.; one term
Prerequisite: German 3H3 or 3H4. Not available to students with credit in German 4H4.

**GERMAN 4J3 THE MODERN GERMAN NOVEL**

Reading and discussion of three major novelists and selected works: Fontane, Mann, Kafka.

3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4J4.

**GERMAN 4M3 GOTHIC**

An introduction to the Gothic language through close reading of selected texts.

3 lects.; one term
Prerequisite: German 3H3 or 3H4. Not available to students with credit in German 4M4.

**GERMAN 4X3 SPECIAL TOPICS IN GERMAN LITERATURE 1984-85: German Literature in Exile (1933-45)**

Discussion will be of major authors (the brothers Mann, Brecht, Döblin, Zweig, Werfel) of the period and the emigre experience in West and East.

3 lects.; one term
Prerequisite: Permission of the Department. German 4X3 may be repeated, if on a different topic, to a total of 6 units.

**GERMAN 4Z6 SPECIAL TOPICS IN APPLIED LINGUISTICS**

A comparative analysis of the most important grammatical structures of English and German forms the background for discussions of methods and techniques of teaching German to speakers of English. The theoretical part of the course is combined with practical application in simulated teaching situations.

Seminar (2 hrs.); two terms
Prerequisite: Registration in Level IV of any Honours programme in German and permission of the Department.

Students interested in German and Austrian History are advised to take History 346.

For Graduate Courses see Calendar of School of Graduate Studies.

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**Greek**

(See “Classics — Greek”)

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**Health Sciences**

**CURRICULUM 1984-86:**

- denotes Nursing A and B Streams
- " denotes B.H.Sc. core courses

**HTH SCI 1A6 " HUMAN BIOCHEMISTRY**

The biochemistry and nutrition of the human body in health and disease. Term I’s major topic is production of energy from glucose and fat. Obesity, diabetes, heart disease, running and starvation are used as examples to illustrate the metabolism of energy production. Vitamins and minerals related to glucose and fat metabolism are also discussed. Term II covers electrolyte balance, body pH, proteins, enzymes, protein 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 lects.; 3 lects., 1 tut.; two terms
Prerequisite: Admission to the Programme or permission of the instructor.

**HTH SCI 1B7 " HUMAN BIOLOGICAL SCIENCE I**

Term I is an overview of human structure and function, including the metabolic and synthetic processes of cells and the role of chemical mediators on cell function; basic tissues and their development at origins; the organization of the body; and the structure and function of the musculoskeletal system and methods of its care.

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 lects.; 1 lab.; two terms.

**HTH SCI 2B8 " HUMAN BIOLOGICAL SCIENCE II**

The term begins with a study of reproductive anatomy and physiology, with particular emphasis on intrinsic control mechanisms and extrinsic methods of regulation of reproduction. Selected aspects of human growth and aging are presented through the remainder of the course in a tutorial setting. Medical microbiology and principles of pathology are considered in the latter half of the term, including structure and function of infectious agents, control measures and host defenses.

Term II begins with a study of the central and peripheral nervous system, including the special senses and neuroendocrine relationships. Introductory skills in neurological assessment and drug actions on the nervous system are also considered. The latter part of Term II is devoted to a study of the principal diseases of the organ systems.

3 lects.; 2 tuts., alternating with 2 lects., 1 lab., 2 tuts.; two terms
Prerequisite: Normally Health Sciences 1A6 and 1B7, or equivalent.

**HTH SCI 2C3 " HUMAN ANATOMY: PHYSIOLOGY I**

An overview of the structure and function of the musculoskeletal system with emphasis on application of knowledge to clinical problems relevant to occupational therapy and physiotherapy. This course is a companion to Health Sciences 2D3.

5 hrs.: 2 lects., 1 lab., 1 tut.; one term
Prerequisite: Registration in the B.H.Sc. programme.

**HTH SCI 2D3 " HUMAN ANATOMY: PHYSIOLOGY II**

The structure and function of the nervous system is reviewed with specific application to clinical problems of relevance to occupational therapists and physiotherapists. This course is a companion to Health Sciences 2C3.

5 hrs.: 2 lects., 1 lab., 1 tut.; one term
Prerequisite: Registration in the B.H.Sc. programme.

**HTH SCI 3A4 " 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 SCI 3B4 " SCIENCE, HEALTH AND SOCIETY**

This course is the same as Hth. Sci. 4B4. Prerequisite: Registration in Level II Nursing or permission of instructor.

**HTH SCI 3C3 " SELECTED TOPICS IN HEALTH PROFESSIONAL EDUCATION**

This course will introduce the student to principles of adult learning utilized in health sciences with a focus on their application to adult education. Specific concepts include problem-based education, clinical problem-solving, self-directed learning, and small-group process.

2 hr. tut., 4 hrs. self-study biweekly; one term
Prerequisite: Permission of the instructor.
HISTORY

Psychosocial Rehabilitation: This course provides the student with a model/framework of observation/assessment of psychosocial health problems using the behavioural study areas of group, individual, family, community and the organizations; and how these components impact on the individual.

Hebrew
(See "Religious Studies — Hebrew")

History

Faculty as of January 15, 1984
C.J. Jago/ Chairman

Professor Emeritus

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), F.R.H.S.
Paul S. Fritz/B.A. (Queen's), M.A. (Wisconsin), Ph.D. (Cambridge), F.R.H.S.
David P. Gagan/B.A. (Western), Ph.D. (Duke)
Daniel J. Geagan/B.A. (Boston), Ph.D. (Johns Hopkins)
Charles M. Johnston/B.A. (McMaster), M.A., Ph.D. (Pennsylvania)
Harvey A. Levenstein/B.A. (Toronto), M.S., Ph.D. (Wisconsin)
Richard A. Rempel/B.A. (Saskatchewan), M.A., D. Phil. (Oxford)
David J. Russo/B.A. (Massachusetts), M.A. Ph.D. (Yale)

John H. Trueman/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)

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., Ph.D. (Toronto)

Bernice M. Kaczynski/B.A. (Pittsburgh), M.Phil., Ph.D. (Yale)

Bruce L. Kinzer/B.A. (Eastern Michigan), M.A. (Michigan), Ph.D. (Toronto)

Peter G. Lawson/B.A. (McMaster), M.A. (Wisconsin), D.Phil. (Oxford)

Laurel S. MacDowell/B.A. (Toronto), M.Sc.(Econ.) (London School of Economics), Ph.D (Toronto)

Associate Members
Peter J. George/ (Economics), M.A., Ph.D. (Toronto)

George Paul/I( Classics), M.A. (Oxford), Ph.D. (London)

Charles G. Roland/(Family Medicine), B.Sc. (Med.), M.D. (Manitoba)

CURRICULUM 1984-86

The Department of History offers three Level I courses, each of which is designed to introduce the student to the study of History at the university level through the examination of an important aspect of the development of western civilization. Students will be admitted to B.A. or Honours programmes in History only if they have completed the three 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 Ancient, Asian, Canadian, British, and United States History, and
HISTORY

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

Students may take only one Level I course.

HISTORY 1C6 THE MODERN WORLD: THE ERA OF EUROPEAN PRIMACY
A study of the background and development from the French Revolutionary Era to the present, of the principal political, intellectual, and economic factors that have shaped the 20th century world.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open. Students may take only one Level I History course.

HISTORY 1D6 THE CIVILIZATION OF THE WEST
A study of the principal themes and issues in European history from the Fall of the Roman Empire to the twentieth century.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open, except to students with credit in History 1A6 or 1B6. History 1D6 is recommended for those students who anticipate entering a programme in History. Students may take only one Level I History course.

HISTORY 1L6 ANCIENT STATES AND EMPIRES
A survey of the earliest states and of the growth and nature of empires in Western Asia and the Mediterranean, with comparative analysis of other ancient empires. Focus on the process of development, the supporting structures and ideologies, and the contemporary society and culture.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open, except to students receiving credit for History 2L6. Students may take only one Level I History course.

LEVEL II COURSES

HISTORY 2A6 EARLY MODERN EUROPE 1400-1715
A study of the transition from late medieval to early modern civilization, with emphasis upon the breakup of feudal society and the consequent changes in the character of Europe.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2B6 CHINA: FROM THE OPIUM WAR TO THE PRESENT
The history of China in the 19th and 20th centuries. The emphasis will be on internal developments, from the disintegration of the imperial system through the rise of the Communist Party to the building of the People's Republic of today.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above, except to students receiving credit for History 3Q6.

HISTORY 2C6 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.

HISTORY 2H6 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.

HISTORY 2I6 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.

HISTORY 2J6 THE HISTORY OF CANADA
A study of the major social and political forces that have contributed to the development of modern Canada.
3 lects.; two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2K6 THE HISTORY OF SCIENCE
Historical explorations into such issues as ecology vs. industrial progress, nuclear energy, genetic engineering and sociobiology, the creationist/evolutionist debate, Galileo and the Church, Renaissance art and science, and the origins of Western science.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2L6 GREECE AND ROME
Greece from the rise of the city-states to Alexander; Rome from the primitive city through the early Empire. Attention will be given to the development of the political, social and cultural achievements in the light of both literary and archaeological evidence. (No Greek or Latin required).
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2N6 BRITISH HISTORY 1500 TO THE PRESENT
Emphasis will be placed on the main political, religious, economic and social developments.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above. Not available to students receiving credit for History 1N6.

LEVEL III COURSES

HISTORY 3A3 TOPICS IN MODERN ITALIAN HISTORY, 1815 TO THE PRESENT
The Risorgimento, the Roman question, Fascism and contemporary issues of Catholicism and Communism.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3A3 THE RISE AND FALL OF IMPERIAL SPAIN
An examination of the culture, society and politics of Spain from the 15th to the 18th century, with particular emphasis on the spread of the Spanish hegemony over Western Europe and the development of Spanish colonies in the New World.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3B3 THE TOWN IN UNITED STATES HISTORY
A study of a political, economic, social, cultural and intellectual aspects of town life, as well as an examination of the relationship of the town to American society as a whole.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3C3 THE INDIAN IN EASTERN CANADA
A history of the Indian in Ontario, Quebec, and the Maritimes, from the earliest days of Indian-white contact to the 20th century.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3C3 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.

HISTORY 3D3 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.

HISTORY 3E3 HISTORY OF MEDICINE IN CANADA
An examination of the development of medical and health services in Canadian history. Emphasis will be on the interaction between society and medicine, rather than the technical aspects of medicine.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3E3 HISTORY OF MEDICINE IN CANADA
An examination of the development of medical and health services in Canadian history. Emphasis will be on the interaction between society and medicine, rather than the technical aspects of medicine.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3F6 SELECTED TOPICS IN THE RECENT HISTORY OF THE UNITED STATES
American society, politics, and foreign relations from World War I to the present, with considerable emphasis on social history, including the history of women, minorities, labour, and radicalism, as well as the United States' relations with the Communist and Third Worlds.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 2H6; or permission of the Department.

HISTORY 3F6 SELECTED TOPICS IN THE RECENT HISTORY OF THE UNITED STATES
American society, politics, and foreign relations from World War I to the present, with considerable emphasis on social history, including the history of women, minorities, labour, and radicalism, as well as the United States' relations with the Communist and Third Worlds.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: History 2H6; or permission of the Department.

HISTORY 3G3 THE HISTORY OF MEDICINE IN CANADA
An examination of the development of medical and health services in Canadian history. Emphasis will be on the interaction between society and medicine, rather than the technical aspects of medicine.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3G6 THE HISTORY OF SCIENCE
Historical explorations into such issues as ecology vs. industrial progress, nuclear energy, genetic engineering and sociobiology, the creationist/evolutionist debate, Galileo and the Church, Renaissance art and science, and the origins of Western science.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.
well as to such particular themes as marriage, family and death.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: One of History 1A6, 1D6, 216; or permission of the department.

HISTORY 3FF3 MODERN POLAND 1863-1970
An examination of the development of Poland since the failure of the crucial rebellion of 1863-4. Emphasis will be on the struggle for national independence and on social and industrial modernization.

3 hrs. (lects. and discussion); one term
Prerequisite: Any 6-unit course in modern European history; or permission of the department. (Credit in History 3F16 or 3F6, or concurrent registration therein, is recommended.)
Offered in alternate years.

HISTORY 3GG3 PRE-HISTORIC AND PROTO-HISTORIC GREECE
A survey of Greek culture from the earliest evidence of human habitation until the beginning of written history, including Neolithic and Bronze Ages, and the Dark Age. Special emphasis on the problems of documentation and the position of Greece within the wider Mediterranean culture.

3 hrs. (lects. and discussion groups); one term
Prerequisite: Any previous course dealing with ancient civilization or permission of the Department.
Alternates with History 3LL3.

HISTORY 3H6 THE HISTORY OF THE INDIAN SUBCONTINENT
The history of the Indian subcontinent with a focus on Hindu and Muslim religious traditions, the British Raj and the emergence of independent India and Pakistan.

3 lects.; two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3H6 THE HISTORY OF MODERN RUSSIA
A survey of the history of Russia with major emphasis on the 19th and 20th centuries.

3 lects.; two terms
Prerequisite: Registration in any programme in History; or permission of the Department.

HISTORY 3H8 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 hrs. (lects. and discussion groups); one term
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department.
Alternates with History 3MN3.

HISTORY 3I6 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 war and technology during the two World Wars.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3J6 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: Open to students in Level II and above.

HISTORY 3K3 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: Any 6-unit course in modern European history; or registration in any programme in Political Science; or permission of the Department.

HISTORY 3K6 CANADA IN THE TWENTIETH CENTURY
A survey of the major events and themes in Canadian political and social history from the start of the Laurier government to the present.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3L3 THE HELLENISTIC AGE
The successors of Alexander, the world of the monarchies and their absorption into the Roman Empire. Political, cultural and social achievements in the light of modern historical research will be emphasized.

3 hrs. (lects. and discussion groups); one term
Prerequisite: Any previous course dealing with ancient civilization; or permission of the Department. Not available to students with credit in History 3L6.
Alternates with History 3GG3.

HISTORY 3M6 REVOLUTION AND REACTION IN EUROPE, 1763-1848
A study of the Enlightenment, the French Revolution and the Bonapartist tradition. The relationship between liberalism and nationalism.

3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.
HISTORY 4A6 SPECIAL TOPICS IN BRITISH HISTORY (1660-1830)
Seminar(2 hrs.); two terms
Prerequisite: History 2N6 and registration in Level III or IV of any Honours programme in History, or permission of the Department.
Enrolment is limited.

HISTORY 4A6 SPECIAL STUDIES IN THE HISTORY OF STUART ENGLAND
Studies in the political, religious, intellectual and social life of Stuart England.
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
The major emphasis of this course will be on the Victorian Empire.
Seminar(2 hrs.); two terms
Prerequisite: Registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4D6 SPECIAL TOPICS IN GREEK HISTORY
Detailed investigation into the historical problems in interpreting various aspects of Ancient Greek civilization and culture.
Seminar(2 hrs.); two terms
Prerequisite: Six units of work in Ancient Greek civilization, 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 4D6; or permission of the Department.
Enrolment is limited.

HISTORY 4E6 SPECIAL TOPICS IN THE HISTORY OF VICTORIAN BRITAIN
An examination of such themes as the two-party system, the Irish question, working-class life, religious and literary movements, evolving industrialism, imperialism and social reform.
Seminar(2 hrs.); two terms
Prerequisite: History 2N6 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 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 4F6; 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 4H6 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: Six units of work in Roman civilization, 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 4H6; or permission of the Department.
Enrolment is limited.

HISTORY 4J6 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES IN THE 20TH CENTURY
Seminar(2 hrs.); two terms
Prerequisite: History 1K6 or 2H6 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4L6 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, 1D6, 2A6, 3B6, and registration in Level IV of any Honours programme in History with a History average of at least 9.0; or permission of the Department.
Enrolment is limited.

HISTORY 4N6 CANADIAN HISTORIOGRAPHY
A study of the ideas of the major historians of Canada.
Seminar(2 hrs.); two terms
Prerequisite: History 2N6 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
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 MEDIEVAL EUROPE AND BYZANTIUM
Topics will include the consequences of the Barbarian invasions, diplomatic communications between West and East, relations between the Roman and Orthodox Churches, the impact of the Crusades, and the significance of the fall of Constantinople.
Seminar(2 hrs.); two terms
Prerequisite: One of History 1A6, 1D6, 2I6 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4R6 ENGLISH MEDIEVAL HISTORY
Selected themes in the history of Medieval England.
Seminar(2 hrs.); two terms
Prerequisite: One of History 1A6, 1D6, 2I6 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.

HISTORY 4T6 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 4U6 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: Registration in Level III or IV of any Honours programme; or permission of the Department.
Enrolment is limited.

HISTORY 4V6 SOCIETY AND CULTURE IN 17TH-CENTURY EUROPE
An intensive study of the social and economic structure of Europe, 1600-1715, and of the cultural changes associated with this period.
Seminar(2 hrs.); two terms
Prerequisite: Six units of European History and registration in any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4W6 INTRODUCTION TO SOCIAL HISTORY
An introduction to theories of societal analysis and the historiography of the new social history with specific reference to the Canadian social history.
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.

The following courses in the field of History are offered by the Department of Classics.
Classical Civilization 2U3 Social Life and Thought of the Greeks
Classical Civilization 2V3 Social Life and Thought of the Romans
Classical Civilization 3M3 Social Life and Thought in Periclean Athens
Classical Civilization 4N3 Social Life and Thought in Augustan Rome

For Graduate Courses see Calendar of School of Graduate Studies.

Humanities (General)

CURRICULUM 1984-86

HUMAN 1A6 EXPOSITORY WRITING AND CRITICAL THINKING
Basic techniques of expository writing, i.e. prose designed to inform or persuade. Understanding and evaluating arguments and statements. There will be frequent short assignments.
2 lects., 1 tut.; two terms
Prerequisite: Open. Not available to students with credit in or registered in English 3A3, Philosophy 2J3, or Arts and Science 1B6. Not to be used by Humanities I students as an R-group course.
Enrolment is limited.

HUMAN 1B6 THE THEMES OF WESTERN CIVILIZATION
A study of the ideas and issues that define the Western cultural tradition. The course views the concerns of modern artists and thinkers as a response to the two ancient sources of Western civilization, the Greek and the Biblical. It concentrates on four figures in four crucial periods: Socrates in the context of Greek philosophy and drama; St. Paul and the Judeo-Christian tradition; Shakespeare and the birth of a secular age; Wagner and Romantic decadence.
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. Roebuck (English) and Prof. S. Ajzenstat (Philosophy).

HUMAN 2A6 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 program in the Faculty of Humanities.

Italian
(See “Romance Languages — Italian”)

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 consisting of:

R. Adams (Business)
M. Dooley (Economics)
P. George (ex officio)
F. Jones (Sociology)/ Chairman
J. Jones (Social Work)
W. Lewchuk (Labour Studies/Economics)
J. Rose (Business)
R. Storey (Labour Studies/Sociology)

CURRICULUM 1984-86

LABR ST 1A3 THE CANADIAN LABOUR MOVEMENT
An examination of the impact of economic, social, cultural and political factors on the historical evolution, structure and actions of the Canadian working class and labour movement.

Lectures and discussions; one term
Prerequisite: Open.

LABR ST 1B3 THE THEORETICAL FOUNDATIONS OF THE LABOUR MOVEMENT
An examination of political, sociological and economic explanations of labour behaviour in industrial society. The focus will be on attempts to explain why labour has tended to organize as well as the different strategies which labour has pursued to achieve its goals.
Lectures and discussions; one term
Prerequisite: Open.

LABR ST 2A3 TRADE UNIONISM: ORGANIZATION, PROCEDURES AND PRACTICES
An overview of the functioning of contemporary unions within Canada. Areas studied will include: labour legislation; union administration, union policy and the impact of unions on working conditions and on Canadian society.
Lectures and discussions; one term
Prerequisite: Registration in the B.A. Programme in Labour Studies or permission of the instructor.

LABR ST 3A3 CURRENT LABOUR ISSUES
An analysis of contemporary issues such as technology, occupational health and safety, women, income policies and industrial democracy. Each will be discussed with respect to current and proposed public policy.
Lectures and discussion; one term
Prerequisite: Registration in the B.A. Programme in Labour Studies or permission of the instructor.

Latin
(See “Classics — Latin”)

Linguistics

CURRICULUM 1984-86

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.

Advice on the selection of courses in Linguistics may be obtained from the Office of the Associate Dean, Faculty of Social Sciences.

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:

LINGUIST 1A6 THE STUDY OF LANGUAGE
A far-reaching survey intended to acquaint the student with the numerous disciplines that deal with language and many of the crucial concepts and techniques developed within them. The course will enable the student to pursue higher studies in either linguistics or other language-related disciplines.
2 lects., 1 tut.; two terms
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
Same as Anthropology 1B6.

LINGUIST 2L3 PHONETICS
A study of the sounds of language and the articulatory capabilities of man.
3 hrs.(lects.); one term
Prerequisite: Open.
Same as Anthropology 2L3
To be given in Term I of alternate years, beginning in the Fall of 1985.

LINGUIST 2M3 PHONOLOGY
A study of the patterns of distinctive sounds in the world’s languages.
3 hrs.(lects.); one term
Prerequisite: Anthropology or Linguistics 2L3, or permission of the instructor.
Same as Anthropology 2M3
To be given in Term II of alternate years, beginning in the Spring of 1986.

LINGUIST 313 SYNTAX
A study of the capacity of man to form words into sentences. The emphasis will be upon generative transformational grammar.
3 hrs.(lects.); one term
Prerequisite: Open. Same as Anthropology 313.
To be given in Term I of alternate years, beginning in the Fall of 1985.

LINGUIST 3M3 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 hrs.(lects.); one term
Linguistics

Prerequisite: Anthropology or Linguistics 313, or permission of the instructor.
Same as Anthropology 3M3.
To be given in Term II of alternate years, beginning in the Spring of 1986.

1.2. Chorneyko / Faculty as of January 15, 1984

Linguistic 3 Y 3 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 2L3 and 2M3, or permission of the instructor.
Same as Anthropology 3Y3.
Offered in alternate years.

Linguistic 4 K 3 Advanced Topics in Linguistics
An advanced course covering select topics in linguistic theory with particular emphasis upon their application to a language or set of languages. 3 hrs. (lects.); one term
Prerequisite: 12 units of Linguistics above Level I, or permission of the instructor.
Same as Anthropology 4K3.
To be given in Term II of alternate years, beginning in the Spring of 1985.

Other courses in Linguistics:

Anthropology 2Q3 Linguistics and the Study of Culture
English 253 English as Communication
English 2T3 Development of English
English 2V6 The English Language
French 2H3 Introduction to French Linguistics
French 3B3 Semantics
French 3E3 Applied Linguistics and Second-Language Learning
French 3G3 General and Comparative Phonetics
French 313 Sociolinguistics
French 4C3 French Morphology and Syntax
French 4E3 History of the French Language After 1600
French 4X3 Linguistics and Modern French Literary Criticism (From Structuralism to Semiotics)
French 4Z3 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
Latin 1Z6 Beginners’ Intensive Latin
Sanskrit 4A6 Introduction to Sanskrit Grammar
Religious Studies 718 Readings in Sanskrit Texts (permission needed)

Manufacturing Engineering

(See “Mechanical Engineering – Manufacturing Engineering”)

Materials

(See “Metallurgy and Materials Science – Materials”)

Mathematical Sciences

Faculty as of January 15, 1984

B. Banaschewski / 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
Minaketa Behara/B.Sc., M.Sc. (Utkal), Dr. rer. oec. (Saarland)
Claude E. Billigheimer/B.A., B.Sc., M.A. (Melbourne), Ph.D. (Toronto)
Gunter W.A. Bruns/Drer. nat. (Berlin)
John M. Chadam/B.A. (Toronto), S.M., Ph.D (MIT)
Tae Ho Choe/B.S., B.Sc., M.A. (Kyungpook), Ph.D. (Florida)
Joseph Cisima/Dipl. Math. (Eotvos, Budapest), Ph.D. (Toronto)
Thomas M.K. Davison/B.Sc. (Sir George Williams), M.A., Ph.D. (Toronto)
Charles W. Dunnett/M.B.E., B.A. (McMaster), M.A. (Toronto), D.Sc. (Aberdeen), Professor of Clinical Epidemiology and Biostatistics
Gerard Field/B.Sc., Ph.D. (London), Professor of Applied Mathematics
Hans P. Heinig/B.Sc. (McMaster), M.A. (Western), Ph.D. (Toronto)
Taqdir Husain/B.A., M.A. (Aligarh), Ph.D. (Syracuse)
Howard L. Jackson/B.A. (Western), M.A. (Queen’s)
Gerald L. Keech/B.A.Sc. (Toronto), M.Sc., Ph.D. (McMaster)/Director, IPACS
Norman D. Lane/B.A. (Queen’s), M.A., Ph.D. (Toronto)/Graduate Advisor
Rubens G.Lintz/B.A., Ph.D. (Sao Paulo)
Peter D.M. Macdonald/B.Sc., M.Sc. (Toronto), Ph.D. (Oxford)
William J. McCallion/B.A., M.A. (McMaster)
S. Gopal Mohanty/B.A. (Utkal), M.A. (Punjab), Ph.D. (Alberta)
Bruno J.W. Mueller/B.S. (Göttingen), M.S., Ph.D. (Mainz)
Evelyn M. Nelson/B.Sc., M.Sc., Ph.D. (McMaster)
Carl R. Riehm/B.A. (Toronto), Ph.D. (Princeton)
Alexander Rosa/M.S. (Kiev State), Ph.D. (Slovak Acad. Sciences)
Patrick J. Ryan/B.A. (Toronto), Ph.D. (Brown)
Donald W.L. Sprung/B.A. (Toronto), Ph.D., D.Sc. (Birmingham), Professor of Physics
Anatole B. Volkov/B.Sc. (North Carolina), M.S., Ph.D. (Wisconsin), Professor of Physics

Associate Professors
Pulak C. Chakravarti/B.Sc. (Calcutta), M.Sc., Ph.D. (London)
Thor Z. Chorneyko/B.A., M.A. (Saskatchewan), Ph.D. (Alberta)
William H. Fleming/B.Sc., M.Sc., Ph.D. (McMaster)
Ernst O. Gadamer/Diplom Physiker (Frankfurt), M.A., Ph.D. (Toronto)
Ian Hambleton/B.Sc., M.Sc. (Toronto), Ph.D. (Yale)
Derek J. Kenworthy/B.A., M.A., D.Phil. (Oxford)
Zdzislaw V. Kovarik/M.S. (Charles, Prague), Ph.D. (Toronto)
Ernest R. Meld/B.A., M.A., Ph.D. (Western)
Kenneth A. Redish/B.Sc. (London), F.B.C.S.
William F. Smyth/B.A. (Toronto), M.Sc. (Ottawa)
Nicholas Sohnutt/B.Sc., Ph.D. (Sydney)
James D. Stewart/B.Sc. (Toronto), M.S. (Stanford), Ph.D. (Toronto)
Patrick C. Yip/B.Sc. (Memorial), Ph.D. (McMaster)

Assistant Professors
Thomas J. DiCiccio/B.Sc. (McMaster), M.Math., Ph.D. (Waterloo)
Eric T. Sawyer/B.Sc., Ph.D. (McGill)

Curriculum 1984-86

The Department of Mathematical Sciences offers courses in Mathematics and Statistics. The Unit for Computer Science is also affiliated to the Department and the course offerings for Computer Science are listed separately in the section Computer Science.

Mathematics

* Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

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MATH 1A6 CALCULUS I
This is a course in differential and integral calculus with emphasis on the fundamental processes and applications.
3 lects., 1 tut.; two terms
Prerequisite: Grade 13 Calculus.

MATH 1B4 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 1G4 or 1G6.

MATH 1F6 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: Grade 13 Calculus. Not open to students who are registered in, or have credit in, one of Mathematics 1B4, 1G4, 1G6, 1L3.

MATH 1G4 APPLIED ANALYSIS
Mathematics used in science. Topics include application of the calculus and introductions to linear algebra and vectors.
2 lects.; two terms
Prerequisite: Registration or credit in Mathematics 1A6. Not open to students who are registered in, or have credit in, Mathematics 1B4 or 1G6.

MATH 1H5 ENGINEERING MATHEMATICS I
Mathematics used in engineering with emphasis on the solution of problems. Topics include applications of the calculus and introductions to algebra, vectors and numerical methods.
3 lects.; first term; 2 lects.; second term
Prerequisite: Registration in Engineering.

MATH 1K3 INTRODUCTORY CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to differential and integral calculus.
3 lects.; 1 tut.; one term
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have credit in, any of Mathematics 1A6, 1F6, 1M3, 1N6. Normally not open to students who have completed Grade 13 Calculus.

MATH 1L3 LINEAR ALGEBRA AND PROBABILITY FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to vectors, matrices, determinants, probability theory.
3 lects.; 1 tut.; one term
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have credit in, one of Mathematics 1B4, 1F6, 1G4, 1G6.

MATH 1M3 CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
Differential and integral calculus.
3 lects.; 1 tut.; one term
Prerequisite: Mathematics 1K3 or Grade 13 Calculus. Not open to students who are registered or have credit in, any one of Mathematics 1A6, 1F6, 1N6.

MATH 1N6 CALCULUS FOR ENGINEERS
Differential and integral calculus with emphasis on fundamental processes and applications. Introduction to multivariable calculus.
3 lects.; 1 tut.; two terms
Prerequisite: Grade 13 Mathematics, three credits including calculus.

MATH 2A5 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, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2G3.

MATH 2B4 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, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2G3.

MATH 2C4 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 2O3.

MATH 2F4 SETS AND NUMBERS
Elementary operations on sets, relations, functions, cardinal and ordinal 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.

MATH 2G2 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, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2A5.

MATH 2H6 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.

MATH 2J6 LINEAR ALGEBRA AND SET THEORY
Sets, relations, and functions; the Axiom of Choice; the real number system; vector spaces, transformations, matrices and linear equations; eigenvalues and diagonalization of matrices; inner products.
3 lects.; two terms
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2B4 or 2F4.

MATH 2K3 FINANCIAL MATHEMATICS
Nominal and effective rates of interest and discount, forces of interest and discount, compound interest, annuities certain; amortization, sinking funds; bonds, security evaluation, determination of yields.
3 lects.; one term
Prerequisite: One of Mathematics 1A6 or 1F6 or 1M3; or permission of the instructor.

MATH 2L3 INTERMEDIATE CALCULUS AND DIFFERENTIAL EQUATIONS FOR BUSINESS AND THE SOCIAL SCIENCES
Functions of several variables, partial differentiation, chain rule, and extremal problems. First and second order differential equations, difference equations.
3 lects.; one term
Prerequisite: One of Mathematics 1A6, 1M3, and one of Mathematics 113, 1B4, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2A5 or 2G3.

MATH 2M6 ENGINEERING MATHEMATICS II
Vector functions and operators, orthogonal curvilinear coordinates, applications of partial derivatives, multiple integrals, line and surface integrals, integral theorems, ordinary differential equations, Laplace transforms.
3 lects.; two terms
Prerequisite: Mathematics 1A6 or 1F6 or 1M3; or permission of the instructor.

MATH 2O3 DIFFERENTIAL EQUATIONS
Ordinary differential equations with constant co-efficients, series solutions, special methods; Laplace transforms, Fourier series; introduction to partial differential equations.
3 lects.; one term
Prerequisite: Registration in, or credit in, Mathematics 2G3. Not open to students who are registered in, or have credit in, Mathematics 2C2.

MATH 2P4 DIFFERENTIAL EQUATIONS FOR ENGINEERS
Complex numbers, linear differential equations, Fourier series, Fourier and Laplace transforms, partial differential equations.
4 lects. or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N6 and 1H5.

MATH 2Q4 ADVANCED CALCULUS FOR ENGINEERS
Vector algebra, curves, partial differentiation, multiple integrals, Green’s Theorem, line and surface integrals, integral theorems, scalar and vector potentials, numerical solutions of linear systems.
4 lects. or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N6 and 1H5.

MATH 3A6 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.

MATH 3B4 FOUNDATIONS OF GEOMETRY
Introduction of coordinates into affine and projective planes, Desargues and Pappus properties, ordered planes, fundamental theorems.
2 lects.; two terms
Prerequisite: Mathematics 2B4 and 2F4, or 2J6.

MATH 3C6 MATHEMATICAL PHYSICS I
Functions of a complex variable, partial differential equations, Legendre functions, Bessel functions, statistical methods, linear algebra.
3 lects.; two terms
Prerequisite: Mathematics 2A5 and 2C4; or 2G3 and 2O3; or 2P4 and 2Q4, and Physics 2C5 or 2G3. Not open to students who are registered in, or have credit in, Mathematics 3J4, 3K5, 3M6.

MATH 3E4 ALGEBRA I
Selected topics from: monoids, quotient monoids, groups, Sylow Theorems, linear regression, and simple hypothesis testing.
3 lects.; two terms
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G4, 1G6. Not open to students who are registered in, or have credit in, Mathematics 2B4 or 2F4.
MATH 384 * NUMBER THEORY
Selected topics from: congruences and residues, continued fractions, approximation of irrationals, arithmetic in selected quadratic number fields, Diophantine equations, partitions, geometry of numbers, quadratic reciprocity. 2 lec.; 2 term
Prerequisite: Permission of the instructor.

MATH 344 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for civil engineering, including probability and statistics, partial differential equations, numerical analysis; and matrix algebra. 4 hrs.; 1 term
Prerequisite: Mathematics 2M5.

MATH 383 ENGINEERING MATHEMATICS III
Complex variable theory with applications to electrical and computing engineering. 3 lec.; 1 term
Prerequisite: Mathematics 2P4 and 2Q4. Not open to students who have completed Mathematics 3E5.

MATH 385 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for electrical and computer engineering, including complex variable theory, linear algebra and other material. 2 lec.; 1 tut.; 2 term
Prerequisite: Mathematics 2P4 and 2Q4. Last offered 1984-85.

MATH 344 * MATHEMATICAL LOGIC AND BOOLEAN ALGEBRA
Partially ordered sets, lattices, Boolean algebras, subalgebras, homomorphism, congruence relations and ideals, representation theory and connection of Boolean algebras. Elements of classical propositional logic. 2 lec.; 2 term
Prerequisite: Mathematics 2M4 or 2M6; or permission of the instructor.

MATH 306 REAL ANALYSIS
Development of real numbers. Riemann-Stieljes integration; Gauss' and Stokes' theorems; Jacobians, implicit function theorems; Taylor's expansions, pointwise, uniform, mean convergence; orthogonal functions, Fourier series. 3 lec.; 2 term
Prerequisite: Mathematics 2A5 or 2G3.

MATH 3P4 GENERAL TOPOLOGY
Definition of topological spaces, convergence of sequences and filters, product spaces, connectedness, compact and metric spaces. 2 lec.; 2 term
Prerequisite: Mathematics 2P4 or 2J6.

MATH 3Q4 NUMERICAL ANALYSIS I
An introduction to the methods of numerical analysis, including methods for interpolation, numerical differentiation and integration, and the solution of transcendental, differential and matrix equations. 2 lec.; 1 lab (3), every other week; 2 term
Prerequisite: Mathematics 2A5 and 2C4, or 2G3 and 203, or 2P4, 2Q4, Computer Science 1B3 or 1H3 or 2H3.

MATH 3R3 LINEAR PROGRAMMING
The general linear programming problem, simplex procedures, dual problems, degeneracy procedures, parametric linear programming, additional procedures and applications. 3 lec.; 1 term
Prerequisite: Mathematics 1A6 and one of Mathematics 1B4, 1G4, 1G6.

MATH 3S3 OPTIMIZATION
Non-linear programming methods, integer programming, quadratic programming, stochastic programming, and dynamic programming. 3 lec.; 1 term
Prerequisite: Mathematics 2A5 or 2G3, and Mathematics 3R3.

MATH 3T3 COMPLEX ANALYSIS I
Analytic functions, power series, elementary conformal mappings, Cauchy's Theorem, residue calculus. 3 lec.; 1 term
Prerequisite: Mathematics 2A5 or 2G3.
2 lects., 1 lab,(L) every other week; two terms
Prerequisite: Mathematics 3Q4.
MATH 4X4 • SPECIAL FUNCTIONS
Gamma functions of a complex variable; asymptotic expansions; Watson's lemma; Sturmi-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.

MATH 4S4 • FINITE AUTOMATA AND COMPUTABILITY
Finite automata, deterministic automata, regular languages, Turing machines, recursive functions, primitive recursive functions, decidability and undecidability with applications to formal language theory.
2 lects.; two terms
Prerequisite: Mathematics 2F4 or 2J6.

MATH 4T4 • 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 3A6 or 306.

MATH 4U4 • ALGEBRAIC TOPOLOGY
Fundamental properties of polyhedra, simplices and complexes; simplicial homology; Betti numbers and torsion coefficients; barycentric subdivision and simplicial approximation; invariance of homology groups and applications.
2 lects.; two terms
Prerequisite: One of Mathematics 1A6, 1M3, and one of Mathematics 1B4, 1G4, 1G6, 1L3.

STATISTICS
* Course is not necessarily offered every session; consult the Chairman of the Department or Associate Deans of Science (Studies).

STATS 2D4 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.
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.

STATS 2R6 INTRODUCTORY STATISTICS WITH APPLICATIONS
Descriptive statistics, plotting data, computation of measures for data, probability, random variables, hypothesis testing, parameter estimation, analysis of variance, chi-square tests, distribution-free tests.
3 lects.; two terms
Prerequisite: One of Mathematics 1A6, 1F6, 1M3, or 1N6. Not open to students who have completed Statistics 2D4 or 3M3; or Psychology 2R6.

STATS 3D6 MATHEMATICAL STATISTICS I
The multivariate normal distribution, point and interval estimation, sampling distributions, tests of hypotheses, elementary linear regression, and other topics.
3 lects., 1 lab,(L); two terms
Prerequisite: Statistics 2D4; one of Mathematics 2A5, 2G3, 2L3.

STATS 3M3 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.

STATS 3L3 STOCHASTIC PROCESSES
Random walk, Markov chains, discrete and continuous parameter Markov processes, branching processes, birth and death processes, queuing processes.
3 lects.; one term
Prerequisite: Statistics 2D4; one of Mathematics 2A5, 2G3.

STATS 3X3 ENGINEERING STATISTICS IV
Further topics of interest for electrical engineering, emphasizing probability theory.
3 lects.; one term
Prerequisite: Mathematics 2F4, 2Q4.

STATS 3Y2 MULTIPLE REGRESSION AND NON-PARAMETRIC METHODS
Multiple linear regression model, tests on coefficients, interpretation and applications; autoregression models and time series; non-parametric tests such as goodness-of-fit, Wilcoxon tests and others.
2 lects.; one term
Prerequisite: One of Statistics 3M3, 3X3, Mathematics 3J4, 3V6; and registration in an Engineering and Management programme; or permission of the instructor.

STATS 4G3 • 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.

STATS 4J3 • 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.

STATS 4M3 MATHEMATICAL STATISTICS II
Multivariate distributions: Normal, Wishart, \( T^2 \) and others; regression, correlation, factor analysis, general linear hypothesis.
3 lects.; one term
Prerequisite: Statistics 3D6; Mathematics 2B4 or 2J6.

STATS 4R3 • REGRESSION ANALYSIS
Linear and non-linear models; least squares theory; analysis of residuals; stepwise regression; weighted least squares; prediction and calibration; selected topics in regression.
3 lects.; one term
Prerequisite: Statistics 3D6

STATS 4S3 • 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.

STATS 4T3 DESIGN OF EXPERIMENTS
Analysis of variance and covariance; linear models; randomised block designs; Latin squares; factorial experiments. Emphasis on applications.
3 lects.; one term
Prerequisite: Statistics 3D6, or Statistics 2D4 and 3M3; or permission of the instructor.

STATS 4U3 • 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 3D6; or permission of the instructor.

STATS 4V3 • TECHNOMETRICS
Response surface analysis; evolutionary operation; probability-plotting methods; selected topics.
3 lects.; one term
Prerequisite: Statistics 4T3.

STATS 4X3 • 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 3U3.

For Graduate Courses see Calendar of School of Graduate Studies.

Mechanical Engineering

Faculty as of January 15, 1984

J.H.T. Wade / Chairman

Professors
Mohammed A. Dokainish/B.Sc. (Cairo), M.A.Sc., Ph.D. (Toronto)
D. Grant Huber/M.A.Sc. (Toronto), Ph.D. (Iowa), P.Eng./part-time
Ross L. Judd/B.B.Sc. (Western), M.Eng. (McMaster), Ph.D. (Michigan), P.Eng.
Brian Latto/B.Sc. (London), Ph.D. (Glasgow), P.Eng.
MECHANICAL ENGINEERING

David S. Weaver/M.A.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.

Associate 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
Richard A. Hudspith/B.Eng. (McMaster), P.Eng./part-time
Robert C. Hudspith/B.Eng., M.Eng. (McMaster) /part-time

Associate Members
Dhanjoo N. Ghista/Ph.D. (Stanford)
Andrew Z. Szendrovits/M.A., Ph.D. (Kolozsvár)

CURRICULUM 1984-86

Enrolment in Mechanical Engineering courses by students in programmes other than those administered by the Department may be limited.

Manufacturing Engineering

MANUFACT 2C3 ENGINEERING DESIGN 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, 103 and computing, with emphasis on analysis. Individual reports are required with complete assembly and detail drawings.

MANUFACT 3M3 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, measurements and solid mechanics.
2 labs.(4.5); two terms
Prerequisite: Registration in Manufacturing Engineering.

MANUFACT 4A3 COMPUTER AIDED MANUFACTURING
3 lect.; one term
Prerequisite: Mechanical Engineering 3C3.

MANUFACT 4M4 PROJECT
A major project in the area of manufacturing engineering. It may be of a design or experimental nature.
1 lab.(3), first term, 3 labs.(5); second term
Prerequisite: Completion of a minimum of 62 units of Manufacturing Engineering beyond Level I.

MANUFACT 4P2 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, solid mechanics and controls.
1 lab.(3); two terms
Prerequisite: Manufacturing Engineering 3M3.

Mechanical Engineering

MECH ENG 2A3 KINEMATICS OF MECHANISMS
Computations and projects in mechanical engineering. Introduction to the design of mechanisms. Analysis and synthesis of cams, gears and planar mechanisms. Force analysis of machine members.
2 lects., 1 lab.(3); first term, 1 lab.(3); second term
Prerequisite: Mathematics 1H5, 1N6, Physics 1D3.

MECH ENG 2B3 MECHANICAL ENGINEERING MEASUREMENTS
Introduction to the theory and practice of engineering measuring techniques. Theory of measurements, precision shop measurements and optical tooling, 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 1T15, Physics 1D3.

MECH ENG 2C3 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.

MECH ENG 3A3 ENGINEERING MECHANICS
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 2P4.

MECH ENG 3C3 MANUFACTURING ENGINEERING
A general introduction, encompassing the wide field of activities from iron and steel making through casting, rolling, forging, to cold forming, metal cutting, welding, bonding, electrical machining, surface treatment, mechanical handling, assembly, cleaning, packaging.
2 lects., 1 lab.(3); one term
Prerequisite: Registration in a programme in Manufacturing Engineering or Mechanical Engineering.

MECH ENG 3D3 MECHANICAL ENGINEERING THERMODYNAMICS
The thermodynamic laws, as developed in Engineering 2W4, are re-examined. Advanced engineering thermodynamic processes, psychometry, introduction to direct energy conversion and chemical equilibrium, with emphasis on combustion.
3 lects.; one term
Prerequisite: Engineering 2W4.

MECH ENG 3E4 ENGINEERING DESIGN III
Introduction to elements of mechanical analysis. Static and dynamic analyses of machine elements, members and mechanical systems. The laboratory consists of problems and case studies.
3 lects., 1 lab.(3); one term
Prerequisite: Engineering 3C4, 2P4; Mechanical Engineering 3A3.

MECH ENG 3M2 COMPOSITE LABORATORY
Laboratory exercises in fluid mechanics, thermodynamics and solid mechanics.
1 lab.(3); two terms
Prerequisite: Registration in Mechanical Engineering or Mechanical Engineering and Management.

MECH ENG 3P4 FLUID MECHANICS
Fluid properties and statics are introduced. Basic equations of continuity, energy and momentum for internal and external flows are discussed. Similitude, dimensional analysis and compressible and inviscid flows.
3 lects., 2 tuts.; one term
Prerequisite: Mathematics 2M6 or 2P4, 2Q4; and Engineering 2W4.

MECH ENG 3R3 HEAT TRANSFER
3 lects.; one term
Prerequisite: Mathematics 2M6, Engineering 2W4, Mechanical Engineering 304.

MECH ENG 4A3 ADVANCED STRENGTH OF MATERIALS
The application of strength of materials to practical engineering calculations in design and in the working of metals. Plastic deformation and creep. Elastic behaviour and rapid, approximate methods are emphasized more than detailed techniques of numerical analysis.
2 lects., 1 tut.; one term
Prerequisite: Mechanical Engineering 3A3 or equivalent.

MECH ENG 4C3 INDUSTRIAL ENGINEERING
3 lects.; one term
Prerequisite: Mathematics 3V6.

MECH ENG 4D3 MANUFACTURING PROCESSES (METAL REMOVAL)
3 lects.; one term
Prerequisite: Mechanical Engineering 3C3.

MECH ENG 4F3 ENGINEERING ACOUSTICS
3 lects.; one term
Prerequisite: Mechanical Engineering 3D3, 3E4 and 304. Offered in alternate years.

MECH ENG 4G3 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 3V6.

**MECH ENG 4L3 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 ENG 4M4 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 ENG 4P2 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 ENG 4Q3 MECHANICAL VIBRATIONS**

2 lects., 1 lab./tut.; one term. 
Prerequisite: Mathematics 2M6, 3V6, Engineering 2Q4, Mechanical Engineering A33 or equivalent.

**MECH ENG 4R3 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 ENG 4S3 FLUID MECHANICS**

A sequel to Mechanical Engineering 304. Laminar and turbulent flows, boundary layers, unsteady flows, turbomachinery.  
2 lects., 1 lab./tut.; one term. 
Prerequisite: Mechanical Engineering 304 or equivalent.

**MECH ENG 4T3 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 ENG 4U3 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 ENG 4V3 THERMO-FLUIDS SYSTEMS DESIGN AND ANALYSIS**

The analysis and synthesis of realistic thermo-fluidic 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 ENG 4W3 AEROTHERMODYNAMICS**

Aerodynamics and thermodynamics of compressible flow including wave propagation, shock formation and the effect of friction and heat transfer in internal flow. Real gas flow including the flow in nozzles, diffusers, ejectors and curved passages. Two-phase compressible flow effects.  
3 lects.; one term. 
Prerequisite: Engineering 2W4 and Mechanical Engineering 3C4.

**MECH ENG 4X3 MATERIAL PROPERTIES IN DESIGN**

Selection of materials. Canadian standards for structural steel design and internationally accepted material designations; the effects of heat treatment, surface treatment, welding, etc., designing against various modes of failure, including fatigue, stress corrosion cracking, embrittlement and wear.  
3 lects.; one term. 
Prerequisite: Engineering 203, Mechanical Engineering A33 or equivalent.

**MECH ENG 4Y3 ADVANCED KINEMATICS OF MACHINES**

Additional topics on the analysis of mechanisms. Major emphasis on the design and methods of synthesis of mechanism to perform specific motion tasks.  
3 lects.; one term. 
Prerequisite: Engineering 2Q4 and Mechanical Engineering 2A3.

**MECH ENG 4Z3 COMPUTER-AIDED DESIGN**

Use of computer library subroutines, computer graphics in design, advanced programming methods for computer-aided design, interactive programming, design of computer-aided design packages, some numerical methods particularly relevant to computer-aided design, control of machines.  
2 lects., 1 lab.(3); one term. 
Prerequisite: Mechanical Engineering 3E4; Mechanical Engineering 2C2 or Manufacturing Engineering 2C2.

**ENGINEER 4J3 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, 1984*

**J.D. Embury/ Chairman**

**Professors**

Dante Cosa/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 R. Kay/B.Sc., Ph.D. (Glasgow) 
John S. Kirkaldy/M.A.Sc. (British Columbia), Ph.D. (McGill) 
Wei-Kao Lu/B.Sc. (Chen-Kung), Ph.D. (Minnesota) /The Stelco Chair in Metallurgy 
G. Robert Piercy/M.A.Sc. (British Columbia), Ph.D. (Birmingham), P.Eng. 

**Associate Professor**


**Assistant Professor**

Gordon A. Irons/B.A.Sc. (Toronto), Ph.D. (McGill), P.Eng. 

**CURRICULUM 1984-86**

**Ceramics**

**CERAMICS 4A1 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.

**CERAMICS 4K4 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.

**CERAMICS 4L4 GENERAL CERAMIC LABORATORY**

A series of laboratories relevant to glass and ceramics technology. Industrial seminars and design problems in the second term. 
2 labs.(3); two terms. 
Prerequisite: Completion of Ceramics 404 or 4P4, and Materials 3B4, 3D6.

**CERAMICS 4P4 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.*

**CERAMICS 4P4 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.*
CERAMICS 4Q3 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
MATLS 1A3 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 1. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 203.

MATLS 1B3 INTRODUCTION TO PROPERTIES OF MATERIALS
The structure of materials, its control and effect on properties; crystallography, stiffness and strength, plastic flow and fracture, electronic and magnetic properties. The second half of Materials 1A6.
2 lects.; 1 tut.; one term.
Prerequisite: Materials 1A3. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 203.

MATLS 2F3 EXPERIMENTAL METHODS AND COMPUTATION
The basic experimental methods of acquiring, analyzing and presenting data are applied to experiments which demonstrate the properties exhibited by solid materials. Computer methods in the acquisition and processing of experimental data.
1 lab.(3), first term; 2 labs.(3); second term.
Prerequisite: Computer Science 1H3 or Engineering 1D3; Chemistry 1A7 and registration in a programme administered by the Department of Metallurgy and Materials Science.

MATLS 3B4 CRYSTALLOGRAPHY AND MICROSTRUCTURE
A laboratory course, complemented by lectures. Crystal structure and its determination by X-ray diffraction, microstructures of metals, alloys and ceramics and their correlation with phase equilibria.
1 lect., 1 lab.(3); one term.
Prerequisite: Materials 2F3.

MATLS 3D6 THERMODYNAMICS OF MATERIALS
Foundations of thermodynamics from classical, statistical, quantum mechanical and quasichemical points of view.
3 lects.; two terms.
Prerequisite: Chemistry 2P4 or 2T4 or 2T5 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2F4.

MATLS 3D3 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 2T5 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2F4.

MATLS 3E6 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.

MATLS 3H3 THERMODYNAMICS OF MATERIALS II
The second half of Materials 3D6, with emphasis on "atomistic" topics such as statistical mechanics, ordering, interfaces and defects.
3 lects.; one term.
Prerequisite: Chemistry 2P4 or 2T4 or 2T5 or Engineering 2W4 or Physics 2H3 or Chemical Engineering 2D4, 2F4.

MATLS 4D3 CORROSION
The oxidation of metals and alloys; electrochemical principles and methods applied to aqueous corrosion and its control.
3 lects.; one term.
Prerequisite: Chemistry 2P4 or 2T4 or 2T5 or Chemical Engineering 2F4; or permission of the Department.

MATLS 4E3 PHASE TRANSFORMATIONS
The thermodynamics, kinetic and crystallographic aspects of phase transformations, with applications to the preparation and processing of materials. Solidification, recrystallization and heat treatment of steels, aluminum alloys and non-metallic materials.
3 lects.; one term.
Prerequisite: Materials 3D6; or permission of the Department.

MATLS 4M3 DISLOCATION THEORY
3 lects.; one term.
Prerequisite: Engineering 2P4 and Materials 3B4.

Metallurgy
METALL 2C3 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 or 2T5.

METALL 3C3 CHEMICAL METALLURGY I
The application of chemical principles to extractive metallurgy. Mineral processing, hydrometallurgy, electrometallurgy, reduction of iron ore, roasting and smelting of sulphide ores, electrowinning of aluminum and magnesium, halide metallurgy. Heat and mass balance calculations.
2 lects., 1 lab.(3); one term.
Prerequisite: Chemistry 2P4 or 2T4 or 2T5 or Engineering 2W4.

METALL 4A1 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.

METALL 4C4 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.

METALL 4K4 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.

METALL 4L4 GENERAL LABORATORY AND SEMINAR
Major laboratory exercises drawing upon a broad spectrum of material covered in other metallurgical courses; student seminars in the second term.
2 labs.(3), first term; seminar, 1 lab.(3), second term.
Prerequisite: Materials 3B4 and 3D6.

METALL 4N3 KINETICS AND REACTOR ANALYSIS IN METALLURGICAL SYSTEMS
3 lects.; one term.
Prerequisite: Materials 3E6, which may be taken concurrently with the permission of the instructor.

METALL 4Q3 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.
Music

Faculty as of January 15, 1984

F.A. Hall / Chairman

Professors
Marta Hidy/Mus.Mas. (Budapest), F.R.H.C.M. (Hon.)
William Wallace/B.Mus., F.A. Hall/
Alan Walker/B.Mus., D.Mus. (Durham), A.R.C.M., L.G.S.M., F.G.S.M. (Hon.)
Marta Hidy/Mus.Mas.
William Wallace/B.Mus., F.A. Hall/
Alan Walker/B.Mus., D.Mus.
Sharyn Hall/AMus., B.A., M.A.,
Professors
Lee Hepner/AR.C.T., B.Mus.
Zdenek Konicek/Dip.'in Music, M.A.
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)(part-time)
Paul Rapoport/A.B. (Michigan), M.Mus., Ph.D. (Illinois)
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)
William Littler/B.A. (British Columbia) (part-time)
Lecturers (part-time)
Roger Flock
Steven Pettes/B.A.
Ryan Scott/B.Mus.
Siegfried Tepper/A.R.C.T., B.Mus., M.Mus.

Instructors (part-time)
Reginald Bedford/piano
Richard Birney-Smith/harpichord
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., M.A./trumpet
Myrtle Guerrero/piano
Robert Hansen/Mus.Bac./horn
Jim Howard/jazz band
Jean Norman Iadeluca/percussion
Gregory B. Irvine/Mus.Bac./tuba
Gary Kidd/Mus.Bac./clarinet
Mark McCarron/jazz guitar
Jon Peterson/Diploma (Curtis)/oboe
Steven Pettes/brass methods
Ludovic Pollak/double bass
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
Sasha Weinstangel/violin

Artists-in-residence
Mark Childs (viola)
Valerie Tryon (piano)
Sasha Weinstangel (violin)

CURRICULUM 1984-86
MUSIC 1A6 INTRODUCTION TO MUSIC
An historical survey of music from ca. 500 to the present. The development of styles and genres within the major musical periods. Elementary theory. 3 lects.; two terms

Prerequisite: Open. Not available to students registered in Honours Music. No previous musical knowledge required.

MUSIC 1B6 HISTORY OF MUSIC (CA. 500-1750)
A survey of medieval, renaissance, and baroque music. Includes consideration of performance practices, and influences of the other arts and of socio-political developments. 3 lects.; two terms

Prerequisite: Registration in a Music programme; or permission of the Department.

MUSIC 1C2 COUNTERPOINT
An introduction to modal counterpoint in the style of the late renaissance. 1 lect.; two terms

Prerequisite: Registration in a Music programme; or permission of the Department.

MUSIC 1CC2 HARMONY
An introduction to functional harmony. Includes study of music by J.S. Bach and others. 1 lect.; two terms

Prerequisite: Registration in a Music programme; or permission of the Department.

MUSIC 1DD2 KEYBOARD SKILLS
18th-century harmony applied to the keyboard. (Students with a deficiency in keyboard skills will enrol in a special section.) 1 lect.; two terms

Prerequisite: Registration in a Music programme; or permission of the Department.

MUSIC 1E4 PRACTICAL STUDY
The technique and repertoire of any orchestral instrument, the piano, organ, harpsichord, voice, recorder, saxophone, or guitar. 1 half-hour lesson weekly; two terms

Prerequisite: Registration in a Music programme.

MUSIC 1G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis. Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 2A6 HISTORY OF MUSIC
A detailed study of music from ca. 1700 to the present. 3 lects.; one term

Prerequisite: Music 1A6; or permission of the Department. Not available to students registered in Honours Music.

MUSIC 2B6 HISTORY OF MUSIC (CA. 1750-1880)
A survey of classical and romantic music. 3 lects.; one term

Prerequisite: Music 1B6 and registration in a Music programme, or permission of the Department.

MUSIC 2BB3 HISTORY OF MUSIC (CA.1880 TO THE PRESENT)
A survey of post-romantic and 20th-century music. 3 lects.; one term

Prerequisite: Music 2B3 and registration in a Music programme, or permission of the Department.

MUSIC 2CC2 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 and registration in a Music programme, or permission of the Department.

MUSIC 2C22 HARMONY
A continuation of Music 1CC2. Chromatic harmony and the completed major-minor system. 1 lect.; two terms

Prerequisite: Music 1CC2 and registration in a Music programme, or permission of the Department.

MUSIC 2DD2 KEYBOARD SKILLS
A continuation of Music 1DD2. Includes transposing at sight and score reading. 1 lect.; two terms

Prerequisite: Music 1DD2 and registration in a Music programme, or permission of the Department.
MUSIC

MUSIC 2E4 PRACTICAL STUDY
A continuation of Music 1E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 1E4 and registration in a Music programme.

MUSIC 2G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 2H4 ANALYSIS
The traditional forms of music as found in works by composers such as Bach, Mozart, Beethoven, and Brahms.
3 lects.; two terms
Prerequisite: Music 1CC2 and registration in a Music programme, or permission of the Department.

MUSIC 3A3 MUSIC EDUCATION I
A survey of choral techniques and music appreciation, and of the rudiments of music for classroom use.
3 lects.; one term
Prerequisite: Music 1A6 or 2A6 or permission of the Department. Not available to students registered in Honours Music. Not available to students with credit in Music 3A6.

MUSIC 3A3 MUSIC EDUCATION II
A survey of the Kodály and Orff methods of music education.
3 lects.; one term
Prerequisite: Music 1A6, 2A6, 3A3, or registration in a Music programme, or permission of the Department. Not available to students with credit in Music 3A6.

MUSIC 3B3 TOPICS IN MUSIC HISTORY: EARLY MUSIC (MEDIEVAL TO BAROQUE)
1984-85: The Choral Music Of Bach and Handel
Seminar(2 hrs.); one term
Prerequisite: Music 2B3 and registration in a Music programme. Music 3B3 may be repeated, if on a different topic, to a total of 6 units.
Alternates with Music 3B3.

MUSIC 3B3 TOPICS IN MUSIC HISTORY: MUSIC OF THE ROMANTIC ERA
1985-86: 19th-Century Piano Music
Seminar(2 hrs.); one term
Prerequisite: Music 2B3 and registration in a Music programme. Music 3B3 may be repeated, if on a different topic, to a total of 6 units.
Alternates with Music 3B3.

MUSIC 3C4 HARMONY AND COUNTERPOINT
Advanced studies in baroque music. Invention and fugue.
2 lects.; two terms
Prerequisite: Music 2C2 and 2CC2 and registration in a Music programme.

MUSIC 3E4 PRACTICAL STUDY
A continuation of Music 2E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 2E4 and registration in a Music programme.

MUSIC 3G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 3H4 ANALYSIS
Techniques of analysis applied to selected works of the 20th century.
2 lects.; two terms
Prerequisite: Music 2BB3, 2H4 and 2CC2 and registration in a Music programme.

MUSIC 3J4 ORCHESTRATION
A study of the instruments of the orchestra. The scoring of music for symphony orchestra and for concert band.
2 lects.; two terms
Prerequisite: Music 2CC2 and 2DD2 and registration in a Music programme.

MUSIC 3K3 BRASS METHODS
A study of the basic techniques of playing brass instruments. Brass literature for various educational levels. No previous study of brass required. 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.

MUSIC 3L3 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.

MUSIC 3M4 STRING METHODS
A study of the basic techniques of playing string instruments. String literature for various educational levels. No previous study of strings required. Each student will concentrate on one instrument and gain a working knowledge of the others.
2 lects.; two terms
Prerequisite: Registration in a Music programme.

MUSIC 3N3 VOCAL METHODS
A study of the basic techniques of singing. The organization, conducting, and rehearsing of a choir. Choral literature for various educational levels. No previous study of voice required.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSIC 303 CONDUCTING
Fundamental conducting techniques applied to works selected from the standard repertoire.
1 lect.; two terms
Prerequisite: Registration in a Music programme.

MUSIC 3R3 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 and registration in a Music programme.

MUSIC 3T3 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.

MUSIC 3U3 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 Music 1CC2 or permission of the Department.
Offered in alternate years.

MUSIC 4B3 TOPICS IN MUSIC HISTORY: MUSIC OF THE CLASSICAL ERA
1984-85: Opera
Seminar(2 hrs.); one term
Prerequisite: Music 2B3 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 4B3.

MUSIC 4BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE 20TH CENTURY
1985-86: The Evolution of the Avant-Garde
Seminar(2 hrs.); one term
Prerequisite: Music 2B3 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.

MUSIC 4C4 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.

MUSIC 4E4 PRACTICAL STUDY
A continuation of Music 3E4.
1 half-hour lesson weekly; two terms
Prerequisite: Music 3E4 and registration in a Music programme.

MUSIC 4G2 ENSEMBLE
Orchestra, choir, concert band, jazz ensemble, or any other ensemble approved by the Department. Work is evaluated on a Pass/Fail basis.
Prerequisite: Successful audition. Academic credit available only to students registered in a Music programme.

MUSIC 4H3 ANALYSIS
Advanced studies in analysis.
Seminar(2 hrs.); one term
Prerequisite: Music 2B3, 2H4 and 2CC2 and registration in a Music programme.
Offered in alternate years.

MUSIC 4I3 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.
Offered in alternate years.

MUSIC 4K3 BRASS METHODS
A continuation of Music 3K3.
1 lect.; two terms
Prerequisite: Music 3K3 and registration in a Music programme.
NURSING

CURRICULUM 1984-86: Basic (A) Stream

NURSING 1F7 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 laboratorv experiences are offered in institutional and community settings for beginning nursing practice.
3 hrs.(clinical lab); 3 hrs.(lect./problem-based tut.); two terms

NURSING 2M5 NURSING CONCEPTS IN HEALTH AND ILLNESS I
Integration of biologival, 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.

NURSING 2L6 GUIDED NURSING PRACTICE I
Growth and development of the individual are studied within the context of the family and the community. Concepts basic to nursing are examined as they relate to maturational and situational stress. By using a variety of clinical and laboratory settings, experiences are provided with children of various age groups, young adults in the childbearing phase of family development and adults of all ages, some of whom have been hospitalized for surgery. Each student works in hospital, community and home settings each term.
9 hrs.(clin. lab.); two terms
Prerequisite: Nursing 1F7, or equivalent.

NURSING 2H4 GUIDED NURSING PRACTICE II
Students utilize knowledge and skills studied in Levels I and II by assessing, planning, implementing, and evaluating the nursing care of patients in one of a variety of clinical settings.
24 hrs.(clin. lab., including tuts.) per week for 4 wks; third term
Prerequisite: Nursing 2L6, 2M5, or equivalent.

NURSING 358 NURSING CONCEPTS IN HEALTH AND ILLNESS II
Models of nursing intervention using a variety of theoretical bases are applied to health care situations through problem-based learning. Recurring themes such as crisis, loss, anxiety, identification, and pain are studied in a framework related to the promotion of health, prevention of illness, early diagnosis and treatment, rehabilitation, and maintenance.
4 hrs.(lect./problem-based tut.); two terms

NURSING 3X7 GUIDED NURSING PRACTICE III
Planned and guided practice experiences are provided in a variety of settings (e.g. 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
Prerequisite: Normally taken concurrently with Nursing 358.

NURSING 3Y7 GUIDED NURSING PRACTICE IV
A continuation of Nursing 3X7.
21 hrs.(clin. lab. including tuts.); 13 weeks
Prerequisite: Normally taken concurrently with Nursing 358.

NURSING 4A2 CURRENT TRENDS AND ISSUES IN NURSING
Issues facing the profession, and the implications of current changes in the health field for future nursing practice.
2 hrs. every other week; two terms

NURSING 4E6 CONCEPTS IN HEALTH AND ILLNESS III
A problem based tutorial course in which students integrate theories and concepts related to patient care and leadership with their clinical experience. Student participation includes selecting appropriate clinical situations for study and leading the problem solving.
3 hrs.(lect./problem-based tut.) per week; two terms

NURSING 4J7 GUIDED NURSING PRACTICE V
This course focuses on the application of theory and concepts to clinical practice, including the introduction to the leader/steward role in patient care. Students are individually placed in a variety of health care settings.
24 hrs.(clin. lab./including tut.); 12 weeks
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 4K7 GUIDED NURSING PRACTICE VI
A continuation of Nursing 4J7.
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

CURRICULUM 1984-86: Diploma Registered Nursing (B) Stream
In addition to Nursing 3S8, 4A2, 4E6, the following courses are required:

NURSING 3L5 GUIDED NURSING PRACTICE I
Planned and guided practice experiences in primary health care settings. Major emphasis is given to the assessment, problem-solving, interpersonal, ministering and teaching behaviour necessary to implement and evaluate nursing care in ambulatory community settings. Nursing of individuals and families throughout the life cycle and along the health-illness continuum is stressed.
15 hrs.(clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 3S8.

NURSING 3M5 GUIDED NURSING PRACTICE II
A continuation of Nursing 3L5.
15 hrs.(clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 3S8.

NURSING 3N8 GUIDED NURSING PRACTICE III
Concentrated planned experience in one setting with a major emphasis on the development of expanded role skills in a reality situation which allows for the development and demonstration of independent decision-making.
40 hrs.(clin. lab., including tut.); 6 to 8 weeks (normally offered in May - June).

NURSING 4S5 GUIDED NURSING PRACTICE IV
An applied nursing practice course in which the focus is on the integration theory and concepts in a variety of interdependent health care settings.
15 hrs. (clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 4T5 GUIDED NURSING PRACTICE V
A continuation of Nursing 4S5.
15 hrs. (clin. lab., including tut.); 13 weeks
Prerequisite: Normally to be taken concurrently with Nursing 4E6.

NURSING 4Z8 GUIDED NURSING PRACTICE VI
A concentrated planned experience in a clinical area of the student's choice which builds on the knowledge, skills and attitudes previously developed in order to allow the development of independent decision-making capacity in an area of special interest.
40 hrs.(clin. lab., including tut.); 6 to 8 weeks (normally offered in May - June).
PHILOSOPHY

Philosophy

Faculty as of January 15, 1984

S.M. Najm/Acting 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)

Associate Professors
Samuel Ajzenstat/M.A. (Toronto)
Constantine Georgiadis/M.A. (Warsaw), Ph.D. (London)
Nicholas J. Griffin/B.A. (Leicester), Ph.D. (Australia)
David L. Hitchcock/B.A. (McMaster), Ph.D. (Claremont)
Sami M. Najin/A.A. (Beirut), B.A. (Weslayan), M.A., Ph.D. (Yale)
Michael Radner/B.A. (Carleton College, Minn.), M.A., Ph.D. (Minn.)

Assistant Professors
Catherine Beattie/B.A. (McMaster), M.A. (Guelph), Ph.D. (London)
John R.M. Bristol/M.A., Ph.D. (Toronto)/part-time
Spiro Panagiotou/B.Sc., M.A. (Guelph), Ph.D. (St. Andrews)

CURRICULUM 1984-86

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, namely History of Philosophy, Logic, Theory of Knowledge, Ethics and Theory of Value, and Methodology. Students are advised to include courses from each of these areas in their programmes.

PHILOSOPHY 1B6 PHILOSOPHY AND SOCIETY
An introduction to philosophy, through the social-political thought of 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.

PHILOSOPHY 1D6 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.

PHILOSOPHY 2A6 ANCIENT GREEK PHILOSOPHY
A study of Western philosophical thought from its earliest beginnings to the triumph of Christianity in the Roman Empire, with emphasis on Plato and Aristotle.

3 lects.; two terms
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2B3 INTRODUCTORY LOGIC
Sentential and quantification logics are introduced and applied to arguments in English.

3 lects.; one term
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2C6 PHILOSOPHY DURING THE SCIENTIFIC REVOLUTION
A study of 17th- and 18th-Century European and British philosophy, dealing with the major philosophical issues raised by the 17th-Century scientific revolution.

3 lects.; two terms
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2D3 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 to students in Level II and above.

PHILOSOPHY 2F6 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, Whitty ....

1 lect. (2 hrs.), 1 tut.; two terms
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2G3 SOCIAL AND POLITICAL ISSUES
A philosophical examination of some contemporary issues in public policy, including, environmental problems and the question of a just distribution of society's goods and services.

2 lects., 1 tut.; one term
Prerequisite: Open to students in Level II and above.

PHILOSOPHY 2H3 AESTHETICS
An introduction to some main theories of the nature of art, criticism, and the place of art in life and society.

3 lects.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOSOPHY 2I3 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.

PHILOSOPHY 2K3 REASONING
An introduction to important types of reasoning, with emphasis on concepts rather than techniques. Possible topics: arguments, deductive validity, the logical structure of sentences, testing hypotheses, making decisions, reasoning about value questions.

2 lects., 1 tut.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Philosophy 2I3. Students who wish to take a more elementary course in improving their critical skills should take Humanities 1A6.

PHILOSOPHY 2M6 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. (2/3 hrs.); two terms
Prerequisite: Philosophy 2C6 and registration in Level III or IV of any programme; or permission of the Department.

PHILOSOPHY 2N3 PHILOSOPHIES OF EXISTENCE
An examination of the 19th-century forerunners of contemporary existential philosophy, concentrating principally on the thought of Kierkegaard and Nietzsche.

1 lect. (2/3 hrs.); one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOSOPHY 3C3 ADVANCED BIOETHICS
An advanced study of the application of ethical theory to selected problems in health care relating to the problem of the sanctity versus the quality of life.

3 lects.; one term
Prerequisite: A grade of at least B+ in Philosophy 2D3.

PHILOSOPHY 3E3 PLATO
A critical examination of Plato's writings, with reference to selected central philosophical issues.

1 lect., 1 seminar (2 hrs.); one term
Prerequisite: Philosophy 2A6 and registration in Level III or IV of any programme; or permission of the Department.

Offered in alternate years.

PHILOSOPHY 3F3 SYMBOLIC LOGIC
This course covers major results in the proof theory and model theory of predicate logic and formal arithmetic including, Church's Theorem, the Löwenheim-Skolem Theorems and Godel's Theorem.

3 lects.; one term
Prerequisite: Philosophy 2B3; or permission of the Department.

Offered in alternate years.

PHILOSOPHY 3G3 ETHICS
An introduction to the major types of ethical theory and the problem of their justification.

3 lects.; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOSOPHY 3H3 PHILOSOPHY OF RELIGION
A discussion of the nature of religious belief and of some arguments for and against the existence of God.

3 lects.; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.
PHILOS 3J3 ARISTOTLE
A systematic study of Aristotle's major doctrines.
1 seminar(2 1/2 hrs.); one term.
Prerequisite: Philosophy 2A6 and registration in Level III or IV of any programme; or permission of the Department.
Offered in alternate years.

PHILOS 3K3 PHILOSOPHY OF EDUCATION
An introduction to the philosophy of education and its role in dealing with contemporary educational issues such as equality of educational opportunity and students' rights.
2 lect.; 1 tut.; one term.
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3L3 INDUCTIVE INFERENCE
Concepts and controversies of probabilistic and statistical reasoning, including different notions of probability and competing systems of inductive logic.
3 lects.; one term.
Prerequisite: Philosophy 2B3 or a course in Statistics; or permission of the Department.
Offered in alternate years.

PHILOS 3N6 POLITICAL PHILOSOPHY
A study of the main political perspectives — conservatism, liberalism, and radicalism — and their ideas of liberty, equality, justice, and revolution.
3 lects.; two terms.
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 303 THEORY OF KNOWLEDGE
An examination of the justification of human beliefs and the role of sensory experience in knowledge.
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.

PHILOS 3R3 BERTRAND 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.

PHILOS 3S3 SCIENTIFIC METHOD
An introduction to principles of theory structure and justification in the sciences, with an analysis of reasoning in pseudosciences (e.g. theories of paranormal or "psv" phenomena).
3 lects.; one term.
Prerequisite: Open to students in Level II and above. Not open to students with credit in Philosophy 4S3.

PHILOS 4W3 READING COURSE
Topics to be arranged between individual students and instructors.
Prerequisite: Open to students in Level III or IV of a programme in Philosophy, subject to permission of the Department. A written proposal must be submitted to the Department prior to the term in which the course is to be taken. (This requirement does not apply to students in a programme combining Philosophy and Biology.) Not available to students in Philosophy 426.

PHILOS 4Z6 THESIS
Reading and research under the supervision of at least two members of the Department. A major paper is required as well as a formal oral examination.
Prerequisite: Registration in Level IV of any Honours programme in Philosophy, with a weighted average of at least 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.

PHILOS 413 METAPHYSICS
An investigation of metaphysical concepts, such as substance, individuation, identity, essence, quality, process, mind, time and causality. Some contemporary criticisms of metaphysics will be discussed.
Seminar(2 1/2 hrs.); one term.
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or permission of the Department.

PHILOS 423 MEDIEVAL PHILOSOPHY
A discussion of the philosophical doctrines of Augustine, Thomas Aquinas, and William of Occam.
Seminar(2 1/2 hrs.); one term.
Prerequisite: Philosophy 2A6 or 3E3 or 3J3 and registration in Level III or IV of any programme; or permission of the Department.
Offered in alternate years.

PHILOS 433 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(3 hrs.); one term.
Prerequisite: Philosophy 3A6, or permission of the Department.

PHILOS 443 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.

PHILOS 4W3 READING COURSE
Topics and times to be arranged between individual students and instructors.
Prerequisite: Registration in Level IV of an Honours programme in Philosophy, subject to permission of the Department. A written proposal must be submitted to the Department prior to the term in which the course is to be taken. (This requirement does not apply to students in a programme combining Philosophy and Biology.) Not available to students in Philosophy 426.

PHILOS 446 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

Faculty as of January 15, 1984

J.L. Starkes/Chairman

Professor Emeritus
Allan J. Smith/B.S.A., M.Ed. (Toronto), D.Ed. (SUNY, Buffalo)

Professors
Frank J. Hayden/B.A. (Western), M.A., Ph.D. (Illinois)
J. Duncan MacDougall/B.A., B.P.H.E. (Queen's), M.S. (Oregon), Ph.D. (Wisconsin)

Associate Professors
William H. Fowler/B.A. (Western), M.P.E. (Springfield)
Barbara A. Gowitzke/B.S. (Boston), M.Ed. (North Carolina), Ph.D. (Wisconsin)
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)
Mary E. Keyes/B.A., M.A. (Western), Ph.D. (Ohio State), Director, School of Physical Education and Athletics
Fredrick A. Moyes/Dip. P.E. (Jordanhill), M.Ed. (Leicester)
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)
PHYSICAL EDUCATION

Assistant Professors
Peter Donnelly/Dip.Ed. (City of Birmingham College), B.A. (Hunter College, N.Y.), M.S., Ph.D. (Massachusetts) J. Digby Elliott/B.Sc., M.Sc., Ph.D. (Waterloo)

Lecturers
Judy A. Alaszkiewicz/B.A., M.A. (Western) Michael Cain/B.A. (York)
Joanne M. Kennedy/B.A., M.A. (Western) Andrew M. Mann/B.A., B.P.E. (McMaster), M.Sc. (Dalhousie)

Instructors
Barry M. Phillips/B.Sc., B.Ed. (Acadia) G. Stratten/B.P.H.E. (Toronto)
Sue Summers/B.P.E. (McMaster), M.A. (Western)

Associate Member
Oded Bar-Or/Pediatrics/M.D. (Hebrew Un., Jerusalem)

CURRICULUM 1984-86

Physical Education courses are open only to students registered in the four-level Bachelor of Physical Education programme.

The following courses may be taken as electives for B.A. credit by undergraduates not in Physical Education: 3J3, 3P3, 3Q3, 3R3, 3U3, 3V3, 3W3, 3X3, 3Y3, 3Z3. Elective offerings include: 3B3, 3C3, 3D3, 3E3, 3F3, 3G3, 3H3, 3I3, 3J3, 3K3, 3L3, 3M3, 3N3, 3O3, 3P3, 3Q3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W3, 3X3, 3Y3, 3Z3. Elective offerings include: 3B3, 3C3, 3D3, 3E3, 3F3, 3G3, 3H3, 3I3, 3J3, 3K3, 3L3, 3M3, 3N3, 3O3, 3P3, 3Q3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W3, 3X3, 3Y3, 3Z3.

Required courses are as follows: 1A3, 1B3, 1C3, 1D3, 1E3, 1F3, 1G3, 1H3, 1I3, 1J3, 1K3, 1L3, 1M3, 1N3, 1O3, 1P3, 1Q3, 1R3, 1S3, 1T3, 1U3, 1V3, 1W3, 1X3, 1Y3, 1Z3. Elective offerings include: 3B3, 3C3, 3D3, 3E3, 3F3, 3G3, 3H3, 3I3, 3J3, 3K3, 3L3, 3M3, 3N3, 3O3, 3P3, 3Q3, 3R3, 3S3, 3T3, 3U3, 3V3, 3W3, 3X3, 3Y3, 3Z3.

Registration in all courses marked " involving selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

PHYS ED 1A6 HUMAN ANATOMY
Macroscopic and microscopic anatomy, with particular reference to the locomotor, nervous, cardiovascular, respiratory, muscular, digestive, endocrine, and urogenital systems. 3 hrs. (lects., labs.), two terms

PHYS ED 1B3 SOCIETY OF SPORT
Critical examination of contemporary issues and problems of sport in Canadian society. 3 hrs. (lects. and discussion); one term

PHYS ED 1E3 MOTOR DEVELOPMENT
Physical growth patterns and the development of perceptual-motor abilities. Age-appropriate motor behaviour, from infancy to old age, is investigated. 3 hrs. (lects., labs.); one term

PHYS ED 1F3 KINESIOLOGY I
An introduction to basic mechanical principles and concepts as applied to physical activity. 3 hrs. (lects., labs.); one term

PHYS ED 2A3 KINESIOLOGY II
Motor skills analyzed in terms of elementary mechanical principles. 1 lect., 2 labs.; one term

PHYS ED 2B3 PSYCHO-MOTOR ASPECTS OF PHYSICAL ACTIVITY
Motor learning principles and performance determinants are investigated, together with other relevant psychological determinants of gross motor behaviour. 2 lects., 1 lab.; one term

PHYS ED 2C6 PHYSIOLOGY OF EXERCISE
The effects of exercise on the physiological systems, and the application of physiological principles to human exercise performance. 2 lects., 1 lab.; two terms

PHYS ED 2D3 PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT
Critical examination of the concepts, slogans, and assumptions, associated with physical education and sport, and a delineation of one's personal philosophy. 3 hrs. (lects. and discussion); one term

PHYS ED 2F3 HISTORY OF PHYSICAL EDUCATION AND SPORT IN CANADA
The origins and development of modern physical education and sport in Canada, including individual leaders and contributing cultural factors. 3 hrs. (lects. and seminars); one term

PHYS ED 3B3 ADAPTED PHYSICAL ACTIVITY AND MOVEMENT
Physical activity and movement designed to meet the needs, interests, and abilities of individuals referable to special physical activity programmes. 3 lects.; one term

PHYS ED 3C3 MEASUREMENT AND EVALUATION I
Introduction to research design and scientific method; elementary statistics. 3 hrs. (lects., lab.); one term

PHYS ED 3D3 MEASUREMENT AND EVALUATION II
Measurement and research methods; statistics. 3 hrs. (lects., lab.); one term

Prerequisite: Physical Education 3C3 and permission of the instructor.

PHYS ED 3F3 SPORT AND PHYSICAL EDUCATION ADMINISTRATION I
The structure and function of various sport organizations. Units include: planning, budgeting, facilities, event coordination and other selected topics. Lects., seminars; one term

PHYS ED 3G3 BEHAVIOURAL ASPECTS OF PLAY AND GAME INVOLVEMENT
Behavioural and developmental patterns of play from infancy through adulthood are examined in light of selected theories and contemporary practices in physical education and recreation. 3 hrs. (lects.); one term

PHYS ED 3H3 HISTORICAL INTERPRETATIONS OF PHYSICAL ACTIVITY
A survey of physical education and sport, beginning with ancient Greece, and with special emphasis on recent developments in Europe and North America. 2 lects., 1 seminar; one term

PHYS ED 3J3 AESTHETICS OF SPORT AND DANCE
An inquiry into involvement in sport and dance and the search for meaning and reality in these non-verbal forms of expression and communication. 3 hrs. (lects., seminars); one term

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 1984-85 only.

PHYS ED 3K3 SPORTS INJURIES
Methods of dealing with injuries under following headings: prevention; preliminary assessment and response; first aid; basic CPR, and post-medical care. 1 lect., 1 tut., 1 lab.; one term

Prerequisite: Assignment of instructor.

PHYS ED 3L3 SPORT AND PHYSICAL EDUCATION ADMINISTRATION II (BEHAVIOURAL CONCEPTS)
Principles and concepts that attempt to interpret the performance of individuals and groups in organizations. Using the case study method, these are related directly to the field of physical education and sport. 3 hrs. (lects., seminars); one term

Prerequisite: 3F3 is not a prerequisite.

PHYS ED 3M3 THEORY AND PRACTICE OF COACHING
Practical application of physical education theory to coaching. Feedback on field experience will be the central focus. 3 hrs.; two terms

Prerequisite: Permission of the instructor.

Enrolment is limited.

PHYS ED 3P3 SPORT AND SOCIAL PROCESSES
Macro-analysis of sport in society; investigation of the relationship between sport and other social institutions. 3 hrs. (lects. and discussion); one term

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 Sociology 3D3

PHYS ED 3Q3 SPORT AND SMALL GROUP DYNAMICS
Micro-analysis of sport in small social systems; investigation of the dynamics of involvement in sport encounters, the team as a small group, and sport subcultures. 3 hrs. (lects. and discussion); one term

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 ED 3A6 BIOMECHANICS OF HUMAN MOVEMENT
In-depth study of the mechanics of human movement with application to specific position and movement problems; relationship of the mechanics to selected neurophysiological mechanisms. 3 hrs. (lects., labs.); two terms

Prerequisite: Physics 2M3 and permission of instructor.
PHYS ED 4B3 PHYSICAL ACTIVITY AND CORONARY HEART DISEASE

An examination of the role of physical activity in the prevention and rehabilitation of coronary heart disease.

3 hrs.; one term
Prerequisite: Physical Education 3B3 and permission of the instructor.

PHYS ED 4C6 HUMAN PERFORMANCE PHYSIOLOGY

Factors affecting human physical performance, with emphasis upon procedures for maximizing sport performance.

2 hrs., 1 lab.; two terms
Prerequisite: Permission of instructor; open to Level IV B.P.E. students.

PHYS ED 4E3 MOTOR CONTROL

Neuromuscular control mechanisms underlying motor skill performance. Topics include basic neuroanatomy, mechanisms of sensation and regulation of voluntary movement.

2 hrs., 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 ED 4F3 SELECTED TOPICS IN PHYSICAL EDUCATION

Topics include; employee fitness programmes and outdoor education...

3 hrs.lects., seminars); one term

PHYS ED 4G3 PERSPECTIVES IN DANCE — A CULTURAL SURVEY

Dance in selected cultures, its role in ritual, 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 4G3.
Offered Summer 1984 only.

PHYS ED 4J3 PERSPECTIVES IN DANCE — DANCE IN CONTEMPORARY SOCIETY

Dance forms in the 20th century. Students view films, dance performances and participate in dance workshops.

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 1985-86 only.

PHYS ED 4L3 COMPARATIVE PHYSICAL EDUCATION AND SPORT (SELECTED TOPICS)

Contemporary physical education in selected countries, with special attention given to international sports competition.

2 hrs., 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 ED 4M3 PSYCHO-SOCIAL ASPECTS OF SKILL

Perceptual and social-psychological principles applied to specific problems in skill development. Research on motivation, arousal perception, personality and competition is discussed.

2 hrs., 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 ED 4O3 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 ED 4P3 HEALTH SCIENCE: BEHAVIOURAL

Development of an understanding of those health topics based 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 ED 4R3 * INDIVIDUAL STUDY PROJECT

Investigation of a selected theoretical or applied problem mutually accepted to instructor and student.

Prerequisite: Permission of the Chairman and supervising instructor. Open to Level IV B.P.E. students.

PHYS ED 4S3 ADAPTED PHYSICAL ACTIVITY

To equip students to design and conduct activity programmes. Focus on mental retardation but also application of principles to a variety of populations.

Lects., seminars, labs., fieldwork; one term
Prerequisite: Physical Education 3B3 and permission of the instructor.

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.

2 units Level I normally Aquatics and Gymnastics
4 units Level II normally Track and Field, Games, Dance
4 units Level III normally four units of practicum
4 units Level IV normally four units of practicum

In Levels III and IV a variety of basic and advanced courses are offered. See the Practicum Calendar for specific course offerings.

General Regulations
1. In order for a student to attend an advanced course, e.g., Advanced Hockey, the permission of the appropriate instructor must be obtained.
2. Students requiring direct entry into an advanced course without meeting the requirements of the appropriate preceding basic course(s), must satisfy the instructor, both practically and theoretically. The prerequisite standard for advanced level courses does not give credit for, nor does it count as, one of the 14 units required by the Department.
3. 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. Level I students are required to withdraw unless they complete PR01 Basic Aquatics and PR02 Basic Gymnastics with a minimum grade of D—in each course.
   Level II students are required to complete PR03 Track and Field, PR04 Games, PR05 Dance and one unit of elective practicum with a minimum grade of D—in each course.
   In Levels III and IV four units of practicum must be completed with a minimum grade of D—in each course.

Outdoor Activity Courses
Courses in outdoor activities, e.g., canoeing, orienteering, 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, 1984

C.V. Stager/ Chairman
D.W. Taylor/ Associate Chairman

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)
Bertram K. Bhaduri/M.Sc. (Calcutta), Ph.D. (McMaster)
Rajat K. Bhaduri/M.Sc. (Calcutta), Ph.D. (McMaster)
Dennis G. Burke/B.E., M.Sc. (Saskatchewan), Ph.D. (McMaster)
John A. Cameron/B.A. (Toronto), Ph.D. (McMaster)
Jules P. Carbotte/B.Sc. (Manitoba), M.Sc., Ph.D. (McGill), F.R.S.C.
W. Brian Clarke/B.A. (Dublin), Ph.D. (McMaster)
Malcolm F. Collins/M.A., Ph.D. (Cambridge)
Rajat K. Bhaduri/M.Sc. (Calcutta), Ph.D. (McMaster), Ph.D. (Wisconsin), F.R.S.C.
W. Ross Davies/M.Sc. (McMaster), Ph.D. (Toronto), part-time
Brian K. Garside/B.A., D.Phil. (Oxford)

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PHYSICS

David A. Goodings/B.A. (Toronto), Ph.D. (Cambridge)
Terence J. Kennett/M.Sc., Ph.D. (McMaster)
John A. Kuehne/B.Sc. (Bishop's), M.A. (Queen's), Ph.D. (Liverpool), F.R.S.C.
Carman C. McMullen/M.Sc., Ph.D. (McMaster)
Yukihisa Nogami/B.Sc., D.Sc. (Kyoto)
William V. Prestwich/B.Sc., Ph.D. (McMaster)
Donald W. L. Prestwich/B.A. (Toronto), Ph.D., D.Sc. (Birmingham), F.R.S.C.
Carl V. Stager/B.Sc. (McMaster), Ph.D. (M.I.T.)
Robert G. Summers-Gill/M.A. (Saskatchewan), Ph.D. (California)
Peter G. Sutherland/B.Sc. (McGill), M.S., Ph.D. (Illinois)
David W. Taylor/B.A., Ph.D. (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)

Assistant Professors
Anton M. Jopko/M.Sc., Ph.D. (McMaster) / part-time

Associate Member
David A. Thompson(Engineering Physics), B.Sc., Ph.D. (Reading)

Senior Demonstrator
J. Everett Cairns/B.Eng., M.Sc. (McMaster)

CURRICULUM 1984-86

PHYSICS 1A7 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. Primarily intended for students proceeding in the physical sciences.
3 lects., 1 lab.(3) every other week; two terms
Prerequisite: At least 60% in Grade 13 Physics and registration in Mathematics 1A6 and one of Mathematics 1G4 or 1B4.

PHYSICS 1B7 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 1A7. 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 1F6.

PHYSICS 1C7 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.

PHYSICS 1D3 MECHANICS
A course for Engineering students. Topics will include statics, kinematics, Newtonian dynamics, energy and momentum.
3 lects.; one term
Prerequisite: Registration in Level I Engineering.

PHYSICS 1E4 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.

PHYSICS 2A3 GENERAL PHYSICS II
A sequel to Physics 1B7. Electricity and magnetism. Intended primarily for students proceeding in the life sciences.
3 lects.; one term
Prerequisite: One of Physics 1A7, 1B7, 1C7, 1C8; Mathematics 1A6, 1F6.

PHYSICS 2B6 ELECTRICITY AND MAGNETISM
Electrostatics, D.C. and A.C. circuits, the magnetic field; Faraday's law of induction; Maxwell's equations.
3 lects., first term; 2 lects., second term; 1 lab.(3) every other week; two terms
Prerequisite: One of Physics 1A7, 1B7, 1C7, 1C8 and concurrent registration in Mathematics 2G3 and 2O3, or 2A5 and 2C4.

PHYSICS 2C5 MECHANICS
Dynamics of a particle, central field problem, many-particle systems, 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.

PHYSICS 2E6 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.
3 lects.; two terms
Prerequisite: One of Physics 1A7, 1B7, 1C7, 1C8; one of Mathematics 1A6, 1F6.

PHYSICS 2G3 MECHANICS OF A PARTICLE
Vectorial treatment of the mechanics of a particle in three dimensions.
2 lects., 1 tut.; one term
Prerequisite: One of Physics 1A7, 1B7, 1C7, 1C8; one of Mathematics 1G6, 1G4, or registration in Mathematics 2G3. Not open to students who are registered in, or have received credit for, Physics 2C5.

PHYSICS 2H3 THERMAL PHYSICS
Introduction to heat and the theory of gases.
2 lects., 1 lab.(3); one term
Prerequisite: One of Physics 1A7, 1B7, 1C7, 1C8, and Mathematics 1A6. Not open to students who are registered in, or have received credit for, any of Chemistry 2P4, 2Q5, 2T4, 2T5.

PHYSICS 2J3 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.

PHYSICS 2M3 MECHANICS
An introduction to mechanics with applications primarily based in kinematics; dynamics; rotational dynamics.
3 lects.; one term
Prerequisite: Registration in Level II, III or IV of a Physical Education programme. Knowledge of Grade 12 mathematics is required.

PHYSICS 3A3 RELATIVITY
An introduction to general relativity.
3 lects.; one term
Prerequisite: Physics 2C5 and registration in an Honours programme in Science or Engineering, or permission of the instructor. Offered in 1984-85 and in alternate years.

PHYSICS 3B6 ELECTRONICS
Network theory and filters, semiconductor devices, amplifier circuits, D.C. power supplies, integrated circuits, operational amplifiers, and digital circuits.
2 lects., both terms; 1 lab.(2); two terms
Prerequisite: Physics 2B6 or Engineering Physics 2A3 and 2E4.

PHYSICS 3G3 SEISMOLOGY
Methods of seismic exploration; earthquakes; studies of the earth's interior.
3 lects.; one term
Prerequisite: Physics 2C5 or 2G3. Mathematics 2G3 and 2O3, or 2A5 and 2C4. Offered in 1984-85 and in alternate years.

PHYSICS 3H4 INTERMEDIATE LABORATORY
Experiments in atomic and neutron physics, optics and spectroscopy, mechanics.
1 lect., one term; 1 lab.(3) two terms
Prerequisite: Physics 2B6.

PHYSICS 3K4 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; Mathematics 2G3 and 2O3, or 2A5 and 2C4. Not open to students with credit in Chemistry 3Y3.

PHYSICS 3M6 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 2A3 and 2E4, and concurrent registration in Mathematics 3C6.

PHYSICS 3N3 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: One of Physics 1A7, 1B7, 1C7, 1C8 and concurrent registration in Mathematics 2G3 and 2O3, or 2A5 and 2C4.
PHYSICS 3P3 ATOMIC AND NUCLEAR PHYSICS
Topics in atomic structure, nuclear physics and special relativity.
3 lects.; one term.

PHYSICS 3T3 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, radiology, and geology.
3 lects.; one term.
Prerequisite: Physics 2A3 or 2B6.

PHYSICS 3X3 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 2B6 or, Engineering Physics 2A3 and 2E4, and one of Physics 2C5, 2G3.
Offered in 1985-86, alternating with Physics 3Y3.

PHYSICS 3Y3 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 2A3 and 2E4, and one of Physics 2C5, 2G3.
Offered in 1984-85, alternating with Physics 3X3.

PHYSICS 3Z3 ENERGY SOURCES AND THE PHYSICS OF ENERGY CONVERSION
The 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 I including one of Physics 1A7, 1B7, 1C8, 1C7. Some knowledge of electricity and thermodynamics beyond Level I will be assumed. This is an open elective which cannot be chosen to satisfy a Physics requirement.
Offered in 1985-86 and in alternate years.

MATH 3C6 MATHEMATIC PHYSICS I
Functions of a complex variable, partial differential equations, eigenvalue problems in 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, or permission of the instructor.

PHYSICS 4A2 SPECIAL TOPICS
Independent study of the scientific literature, including the preparation of seminars on assigned topics.
2 lects. or seminars; two terms.
Prerequisite: Registration in a programme in which Physics 4A2 is required or is a specified option.

PHYSICS 4B4 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 2A3 and 2E4; Mathematics 3C4.

PHYSICS 4C4 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 4D6 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 2A3 and 2E4.

PHYSICS 4F3 QUANTUM MECHANICS
A sequel to Physics 3M6, including general structure of quantum mechanics, matrix mechanics, perturbation theory, and the variational method.
3 lects.; one term.
Prerequisite: Physics 3M6 or Mathematics 3C6.

PHYSICS 4J4 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.; two terms.
Prerequisite: Registration in a programme in which Physics 4J4 is required or is a specified option; or permission of Chairman of Department.

PHYSICS 4K3 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 4P3 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; one of Mathematics 2G3 and 203, or 2A5 and 2C4, or permission of the instructor.
Offered in 1985-86, and in alternate years.

PHYSICS 4Q4 RESEARCH PROJECT
An experimental or theoretical project to be carried out under the supervision of a professor. A report will be required. Normally limited to students with a C.A.A. of at least 10.0, or those enrolled in a Health and Radiation Physics Programme.
lab.(6); two terms.
Prerequisite: Registration in Level IV of a Physics programme and permission of the Department.

PHYSICS 4R3 RADIATION AND RADIOISOTOPE METHODOLOGY
Lectures and laboratory work in the techniques and theory of the measurement of radiation. Topics include radioactivity and radioactive decay, solid state detectors, principles of active detectors, counting statistics and data reduction, advanced multidetector systems.
1 lect., 1 lab.(3) every other week; two terms.
Prerequisite: Physics 2B6 or, Engineering Physics 2A3 and 2E4 and permission of the instructor.
Enrolment is limited.

PHYSICS 4S3 PHYSICS OF THE EARTH
Special topics in physics applied to earth sciences. Structure of the earth’s interior, geomagnetism, global tectonics, nuclear techniques in geophysics.
3 lects.; one term.
Prerequisite: Physics 2B6 or Engineering Physics 2A3 and 2E4, Mathematics 2G3 and 203, or 2A5 and 2C4, or permission of the instructor.

PHYSICS 4T3 TOPICS IN RADIOLGICAL PHYSICS
Analysis of current techniques in radiation protection, medical imaging and therapy.
3 lects.; one term.
Prerequisite: Physics 3T3 or Engineering Physics 3D3, Mathematics 2G3 and 203 or 2A5 and 2C4.

MATH 4D4 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.

Polish
(See “Slavic Studies — Polish”)

Political Science

Faculty as of January 15, 1984
Henry J. Jacek/ Chairman
Professor Emeritus
Thomas C. Truman/B.A. (Melbourne), M.A. (Queensland)
POLITICAL SCIENCE

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)
Darryl Novak/B.A. (Toronto)
Peter J. Potichnyj/B.A. (Temple), M.A., Ph.D. (Columbia)
Klaus H. Pringsheim/B.A. (California, Los Angeles), M.A. (Columbia)
Mark Sproule-Jones/B.Sc. (London), M.A., Ph.D., (Indiana)/V.K.

Associate Professors
Howard Aster/B.A. (McGill), M.A. (Yale), Ph.D. (London)
Michael M. Atkinson/B.A. (Alberta), M.A., Ph.D. (Carleton)
William M. Breckenridge/M.A. (Glasgow and Duke), Ph.D. (Duke)
William James 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)
Kim Richard Nossal/B.A., M.A., Ph.D. (Toronto)

Assistant Professors
William D. Coleman/B.A. (Carleton), A.M., Ph.D. (Chicago)
Stefania S. Miller/M.A. (McMaster), 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 1984-86

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, 1984-85 and 1985-86. 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.

Registration in all courses marked " involving selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

POL SCI 1A6 AN INTRODUCTION TO THE STUDY OF POLITICS
An introduction to various aspects of political science which 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 SCI 2B6 POLITICS IN THE U.S.A.
A study of the development, nature, and functioning of the political system of the U.S.A.
3 hrs.(lects.); two terms
Prerequisite: Open.

POL SCI 2C6 CULTURE AND POLITICS OF SOUTHERN ASIA AND NORTH AFRICA
An introduction to the civilizations of Islam and Hinduism and a survey of social movements and contemporary political trends across North Africa and Southern Asia.
3 hrs.(lects.); two terms
Prerequisite: One previous course in Political Science.

POL SCI 2E6 INTERNATIONAL POLITICS
A study of the institutions and processes of the international political system.
3 hrs.(lects. and tuts.); two terms
Prerequisite: Political Science 1A6.

POL SCI 2F6 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 SCI 2G6 POLITICS IN CANADA
A study of the development, nature and functioning of the political system of Canada.
3 hrs.(lects. and tuts.); two terms
Prerequisite: Open.

POL SCI 2K6 POLITICS IN THE U.S.S.R.
An analysis of the political ideology, institutions, and practices of the U.S.S.R.
3 lects.; two terms
Prerequisite: Open.

POL SCI 2M6 INTRODUCTION TO FAR EASTERN POLITICAL TRADITIONS
A general introduction to the traditional political ideas and institutions of China and several other countries in Northeast Asia.
3 hrs.(lects.); two terms
Prerequisite: Open.

POL SCI 2P6 POLITICAL SCIENCE IN WESTERN EUROPE
An introduction to comparative political analysis with an emphasis on the politics of France, West Germany, Italy, and Great Britain.
3 hrs.(lects.); two terms
Prerequisite: Open, except to students registered in Political Science 3P3, 3Q3, or 3R3.

POL SCI 3A6 HISTORY OF POLITICAL IDEAS
A study of the political ideas of some eminent thinkers from classical times to the 19th century.
3 lects.; two terms
Prerequisite: A previous course in Social Science or Philosophy.

POL SCI 3A6 INTERNATIONAL POLITICS IN THE POST WAR PERIOD
A survey of international relations since the end of the Second World War, focusing on the Cold War, and its impact on the international system.
3 hrs.(lects. and seminars); two terms
Prerequisite: Political Science 2E6.

POL SCI 3B6 SOCIOECONOMIC DEVELOPMENT IN AFRICA
Selected topics in politics and social structure in sub-Saharan Africa.
3 hrs. (lects. and seminars); two terms
Prerequisite: A Level II course in Political Science
Same as Sociology 3C6 in 1984-86.

POL SCI 3B33 APPROACHES TO THE STUDY OF INTERNATIONAL POLITICS
An examination of the theoretical approaches to the study of international relations.
3 hrs.(lects. and seminars); one term
Prerequisite: Political Science 2E6.

POL SCI 3CC3 INTERNATIONAL ORGANIZATIONS
An analysis of the origins and development of the United Nations and selected regional organizations.
3 hrs.(lects. and seminars); one term
Prerequisite: Political Science 2E6.

POL SCI 3D3 COMPARATIVE POLITICS: SOUTHEAST ASIAN SYSTEMS
A comparative analysis of political processes in Southeast Asian states in the post-colonial era.
3 hrs.(lects. and seminars); one term
Prerequisite: A previous course in Political Science or Asian Studies.

POL SCI 3DD6 POLITICAL 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.

POL SCI 3EE3 THE FOREIGN POLICY PROCESS IN CANADA
An examination of the influences on foreign policy decision-making in Canada and the elements of Canadian foreign policy.
POL SCI 3F3 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 2F6 or 2G6.

POL SCI 3G3 INTRODUCTION TO INDUCTIVE STATISTICS
An outline of levels of measurement and descriptive statistics, and a study of the logic of statistical inference and its applications.
3 hrs. (lects. and labs.); one term
Prerequisite: Political Science 2G6; or permission of the instructor.

POL SCI 3GG3 CANADIAN FEDERALISM
An analysis of the constitutional framework, historical background and evolution of federalism in Canada, emphasizing post-World War II issues.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SCI 3H3 STATISTICAL APPLICATIONS
This course builds upon the concepts taught in Political Science 3G3, and examines how statistical techniques can be used to analyze political problems.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2F6; or permission of the instructor.

POL SCI 3H3 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 SCI 3I6 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 SCI 3I3 ELECTIONS AND ELECTORAL BEHAVIOUR IN CANADA
A study of the development, nature and functioning of the electoral process in Canada and the basis of voters' decisions.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G6.

POL SCI 3J3 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 SCI 3K6 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 SCI 3K6 MARX’S 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 or Philosophy or Political Science 2G6.

POL SCI 3L6 THEORIES OF MASS SOCIETY
A careful study of a few books by writers who have looked at the possible tension between equality and liberty in the modern world and at the problem posed for constitutional democracy by “mass” cultural and political phenomena.
3 hrs. (lects. and seminars); two terms
Prerequisite: One course in political or social theory and permission of the instructor.
Same as Sociology 3J6.

POL SCI 3M6 COMPARATIVE POLITICS: EASTERN EUROPEAN SYSTEMS
An analysis of the political ideologies, institutions, and practices of selected states of Eastern Europe (excluding the U.S.S.R.).
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SCI 3M6 THE POLITICS OF MODERN AND CONTEMPORARY CHINA
An introduction to the political ideas, institutions and practices of mainland China and Taiwan in the period from 1911 to the present.
3 lects.; two terms
Prerequisite: Permission of the instructor.

POL SCI 3N6 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.

POL SCI 3O6 MODERN POLITICAL THOUGHT
A critical analysis of modern political ideas, from the early nineteenth century to the present time, with special emphasis on the theories of modern conservatism, liberalism, socialism, fascism, and democracy.
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Social Science or Philosophy.

POL SCI 3PP3 POLITICS IN GERMANY
A study of the development of the German political system, including analysis of political culture, ideological traditions, parties and elites and the policy process.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students concurrently enrolled in Political Science 2P6. Not open to students who have taken Political Science 3V6.

POL SCI 3Q6 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 SCI 3QQ3 POLITICS IN FRANCE
A study of the development and functioning of the French political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students concurrently enrolled in Political Science 2P6. Not open to students who have taken Political Science 3V6.

POL SCI 3R6 DEMOCRACY AND POLITICAL CHANGE
An examination of the logical and historical connections between the idea of equality and both liberal and non-liberal forms of democracy.
2 lects.; two terms
Prerequisite: A previous course in Political Theory.

POL SCI 3R3 POLITICS IN ITALY
A study of the development and functioning of the Italian political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students enrolled concurrently in Political Science 2P6.

POL SCI 3S3 RESEARCH TECHNIQUES
A practical examination of topics in research design, including questionnaire construction and interviewing procedures.
3 hrs. (lects.); one term
Prerequisite: Political Science 2F6. Not open to students who have taken Political Science 3V6.

POL SCI 3W6 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.
Offered in alternate years.

POL SCI 3X6 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 SCI 3Y6 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 SCI 3Z6 PUBLIC ADMINISTRATION
An examination of the role of public administration in seeking collective solutions to common problems at all levels of government in Canada.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2G6 and one other Political Science course.

POL SCI 4A6 PRESSURE GROUP POLITICS
An analysis of research designed to explain the origins and nature of group influence upon the political process. Original research projects.
3 hrs. (seminars); two terms
Prerequisite: A previous course in Political Science. Political Science 2F6, 2G6, 2P6, 3X6, and 3Z6 are recommended.

POL SCI 4AA6 PROBLEMS IN AMERICAN POLITICS
An examination in depth of one of the important dimensions of the American political system.
3 hrs. (seminars); two terms
POLITICAL SCIENCE

Prerequisite: Political Science 2B6; or permission of the instructor.
Offered 1984-85 and alternate years.

POL SCI 4B6 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. (seminar); two terms
Prerequisite: Political Science 3A6; or permission of the instructor.

POL SCI 4C3 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 SCI 4D6 COMPARATIVE STUDIES IN ETHNICITY AND POLITICS
A study of the impingement of the ethnic and racial factors upon the political process in comparative contexts, but focussing principally on South Africa.
3 hrs. (seminars); one term
Prerequisite: Previous course in Political Science.
Same as Sociology 4V6 in 1984-86.

POL SCI 4DD6 CRITIQUES OF MARX’S THOUGHT
Specific topics in Marx’s thought, such as class struggle, imperialism, crisis theory, the role of the state and others, will be evaluated in the light of contemporary criticism.
2 hrs. (seminar); two terms
Prerequisite: Political Science 3K6, or a comparable course in either Sociology or Philosophy, or permission of the instructor.

POL SCI 4E6 LIBERAL-DEMOCRATIC THEORY AND MARKET SOCIETY
This 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 SCI 4I6 "DIRECTED READINGS AND INDEPENDENT RESEARCH FOR HONOURS STUDENTS"
Directed reading assignments and independent study of a research problem through published materials and/or field inquiry. Students will be required to formulate the result of their inquiry in scholarly fashion. The subject matter is to be different from that covered in 416 if the student is enrolled in both courses.
Two terms
Prerequisite: Registration in Level IV Honours Political Science. Students must obtain permission of the instructor concerned prior to registering in this course.

POL SCI 4T6 MODELS FOR POLITICAL ANALYSIS
A close examination of the way in which various “models” or modes of explanation are employed in contemporary political analysis.
2 hrs. (seminar); two terms
Prerequisite: A previous course in Political Theory is recommended. Open only to Level IV students.

POL SCI 4U6 PROBLEMS OF POLITICAL PHILOSOPHY
A study in detail and in depth of writings by a limited number of political thinkers, focussing upon one of the central problems of political philosophy.
2 hrs. (seminars); two terms
Prerequisite: A previous course in Political Theory.

POL SCI 4V6 INTERNATIONAL COMMUNIST MOVEMENT
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 2E6 and another course in Political Science beyond Level I.

POL SCI 4X6 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, 2P6, 3C6, 3K6, 3M6, 3G3, and 3H3 are recommended.

POL SCI 426 "HONOURS ESSAY"
A major piece of scholarly writing designed to cap the undergraduate Honours programme in Political Science. The subject matter is to be different from that covered in 416, if the student is enrolled in both courses.
Two terms
Prerequisite: Registration in Level IV Honours Political Science and written permission of the Course Coordinator.

Psychology

Faculty as of January 15, 1984

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 Carmien/B.A. (Saskatchewan), M.A., Ph.D. (Toronto)
Martin Daly/B.A. (Toronto), M.A. (McGill), Ph.D. (Toronto)
Bennett G. Galeil/A.B. (Princeotel), M.A., Ph.D. (Pennsylvania)
Bernard R.W. Heron/M.A., Ph.D. (McGill)
Larry L. Jacoby/B.A. (Washburn), M.A., Ph.D. (Southern Illinois)
Herbert M. Jenkins/A.B. (Oberlin), Ph.D. (Harvard)
Alfred B. Kristofferson/B.S., M.A., Ph.D. (Michigan)
Betty A. Levy/B.A. (Dalhouse), M.A., Ph.D. (Toronto)
Stephen W. Link/B.A. (Colorado), Ph.D. (Stanford)
G. Rolfe Morrison/B.Sc., M.S. (McGill), Ph.D. (Brown)
P. Lynn Newbigging/B.A. (Saskatchewan), M.A. (Toronto), Ph.D. (London)
John R. Platt/B.A. (Kansas), Ph.D. (Texas)
Roy M. Pritchard/B.Sc., Ph.D. (Reading)
Ronald J. Racine/B.Sc. (Oregon), M.Sc., Ph.D. (McGill)
Larry E. Roberts/B.A., Ph.D. (Minnesota)
Shepard Siegel/A.B. (New York), M.S., Ph.D. (Yale)
Grant K. Smith/B.Sc., Ph.D. (McGill)

Associate Professors
Richard Y. Bouchis/B.Sc. (McGill), M.A., Ph.D. (Bristol)
Daphne M. Maurer/B.A. (Swarthmore), M.A. (Pennsylvania), Ph.D. (Minnesota)

Assistant Professors
Richard B. Day/B.A. (Massachusetts), M.A. (Iowa), Ph.D. (McMaster)
Dansys de Catanzaro/B.A., M.A. (Carleton), Ph.D. (British Columbia)
Donna Lamping/B.A. (Waterloo), Ph.D. (Harvard)
Harvey Weingarten/B.Sc. (McGill), M.S., M.Phil., Ph.D. (Yale)
PSYCH 1A6 GENERAL PSYCHOLOGY
A broad survey of the subject matter of psychology. Topics covered include physiological psychology, perception, learning, animal behaviour, development, cognition, psychopathology, and social psychology.
Prerequisite: Open.

PSYCH 2A3 THEORIES OF HUMAN DEVELOPMENT
An overview of research and theory in five approaches to personality: developmental, biological, trait, behavioural and humanistic.
Prerequisite: Psychology 1A6.

PSYCH 2C3 INTRODUCTION TO SOCIAL PSYCHOLOGY
An introduction to research and theory in areas such as social perception, attitude and attitude change, social influence, interpersonal attraction, altruism, aggression, small group processes.
Prerequisite: Psychology 1A6.

PSYCH 2D6 SENSATION AND PERCEPTION
An intensive study of sensory and perceptual processes. The emphasis is on experimental findings, theoretical explanations, and methods employed in the study of these processes.
Prerequisite: Psychology 1A6.

PSYCH 2G3 PSYCHOLOGICAL STATISTICS
An introduction to descriptive statistics and to the logic of statistical inference. This course is intended to provide an understanding of statistical procedures commonly found in the psychological literature.
Prerequisite: Mathematics 1L3 or any other 3 units of Mathematics and Registration in B.A. Psychology or Mathematics 1A6 and registration in B.Sc. Psychology. Not open to students who are registered in, or have received credit for, Mathematics 1F6, or Psychology 2R6, or Statistics 2R6, or equivalent. Grade 13 Mathematics is recommended.

PSYCH 2H3 HUMAN LEARNING AND COGNITION
The psychological study of knowledge and how people use it. Topics include pattern recognition, remembering and reasoning.
Prerequisite: Psychology 1A6.

PSYCH 2R6 RESEARCH DESIGN AND STATISTICS FOR PSYCHOLOGISTS
Statistical principles in the design and analysis of experiments in psychology. Parametric and non-parametric techniques for single sample, two sample and multi-sample designs.
Prerequisite: One of Mathematics 1A6, 1F6, 1M3, 1N6 and registration in a Psychology programme. Not open to students who have completed Statistics 2D4, 2R6 or 3M3.

PSYCH 2T3 PRINCIPLES OF CONDITIONING
An experimental survey of conditioning processes based on the study of animal behaviour.
Prerequisite: Psychology 1A6.

PSYCH 2U3 LABORATORY IN ANIMAL CONDITIONING
Students undertake experimental exercises intended to demonstrate principles of simple learning. Experiments are conducted at times of the students' choosing within normal hours of operation.
Prerequisite: Psychology 2T3.

PSYCH 2W6 NEUROPSYCHOLOGY
Neural organization and the relationship between human brain function and behaviour.
Prerequisite: Psychology 1A6. Not open to students receiving credit for Psychology 3F6, or to students registered in Honours Biology or Honours Biochemistry.

PSYCH 3B3 DEVELOPMENTAL PSYCHOPATHOLOGY
A study of the etiology of abnormal human behaviour, including a survey of behavioural abnormalities and adjustment problems specific to children.
Prerequisite: Completion of, or concurrent registration in, Psychology 3N6; or permission of the instructor.

PSYCH 3C6 SOCIAL PSYCHOLOGY LABORATORY
Students collect, analyze and interpret data, and in the second term carry out a research project of their own design.
Prerequisite: Psychology 2C3; Psychology 2R6 or Statistics 2R6; or permission of the instructor.

PSYCH 3D3 SELECTED TOPICS IN SOCIAL PSYCHOLOGY
Topics will include interpersonal and cross-cultural communication, equity and social exchange, inter-group relations. Topics may change year to year.
Prerequisite: Psychology 2C3.

PSYCH 3F6 PHYSIOLOGICAL PSYCHOLOGY I
Topics include membrane physiology, neurochemistry, sensory and motor functions, and the physiology of motivation, learning, and memory. Designed particularly for students in the Faculty of Science.
Prerequisite: Psychology 2D6 or completion of, or concurrent registration in Psychology 3W6; Psychology 2R6 or Statistics 2R6; or permission of the instructor.

PSYCH 3K3 PSYCHOLOGICAL MEASUREMENT
Theory of psychological testing and measurement. Topics include the statistical bases and assumptions of measurement, test validity and reliability and the measurement of human characteristics.
Prerequisite: Psychology 1A6 and Psychology 2G3, or 2R6 or Statistics 2R6; or permission of the instructor.

PSYCH 3M6 INTELLECTUAL 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.
Prerequisite: Psychology 1A6 and registration, or credit, in Psychology 2G3 or 2R6 or Statistics 2R6; or permission of the instructor.

PSYCH 3N6 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.
Prerequisite: Credit, or registration, in one of Psychology 2T3, 2W6, or 3F6; or registration in Level III or IV of Nursing; or permission of the instructor.

PSYCH 3P3 PSYCHOLOGICAL TOPICS IN THINKING
Areas to be covered include human inference, decision making, and creative problem solving.
Prerequisite: Psychology 2H3.

PSYCH 3Q3 INDIVIDUAL STUDY I
A library project that may extend over both terms. Students intending to register must first consult a faculty member and the course co-ordinator.
PSYCHOLOGY

Prerequisite: Permission of the course co-ordinator.
Not open to students who are registered in, or who have received credit for, Psychology 3Q3.

PSYCH 3Q3 " INDIVIDUAL LAB STUDY I
A laboratory project that may extend over both terms. Students intending to register must first consult with a faculty member and the course coordinator.
Prerequisite: Permission of the course coordinator.
Not open to students who are registered in, or who have received credit for, Psychology 3Q3.

PSYCH 3R3 INTRODUCTION TO ANIMAL BEHAVIOUR
The development, stimulus control, and function of behaviour as seen in an evolutionary perspective. Instinctive behaviours, learned behaviours, and their interactions.
3 lects.; one term
Prerequisite: Registration in a Psychology program, or in a four-level program in Biochemistry or Biology; or permission of the instructor.

PSYCH 333 ANIMAL BEHAVIOUR LABORATORY
Experiments involving a wide variety of animal species, both vertebrate and invertebrate.
1 lab.(3); one term
Prerequisite: Psychology 3R3 and Psychology 2R6 or Statistics 2R6, and permission of the instructor.

PSYCH 3T3 SOCIOBIOLOGY
Social behaviour of people and other animals from the perspective of evolutionary theory. Topics include aggression, altruism, kinship, parent-offspring interaction, sex and reproduction.
3 lects.; one term
Prerequisite: One of Anthropology 2D3, 2E3, Biology 2C3, 3J3, Psychology 3R3.

PSYCH 3U3 HUMAN MEMORY
Cognitive processes involved in encoding, storage and retrieval will be discussed in terms of current theories of memory and information processing.
3 lects.; one term
Prerequisite: Psychology 2H3 and registration in Level III or IV of a Psychology program, or permission of the instructor.

PSYCH 3V3 LABORATORY IN HUMAN MEMORY AND COGNITION
Experiments illustrating important issues in human memory and cognition. Problems in the design, analysis, and reporting of experiments will be emphasized. Individual projects required.
1 lab.(3); one term
Prerequisite: Psychology 3U3 and registration in, or completion of, Psychology 2R6 or Statistics 2R6.

PSYCH 3W6 PSYCHOPHYSICS AND PERCEPTION
Theories, methods, and data of psychophysics are presented and used in the analysis of sensation, perception, and cognition. Quantitative theories and data are stressed, but phenomenology is considered.
3 lects.; two terms
Prerequisite: Registration, or credit, in Psychology 2G3 or 2R6, or Statistics 2R6; or permission of the instructor. Not open to students receiving credit for Psychology 2D6.

PSYCH 3X3 SELECTED TOPICS IN BEHAVIOUR MODIFICATION
Major issues and controversies in contemporary behaviour modification. Consideration is given to rival theoretical accounts, and to experimental bases for such techniques as systematic desensitization, aversion therapy, and punishment.
3 lects.; one term
Prerequisite: Psychology 2T3 and registration in a Psychology program; or permission of the instructor.

PSYCH 3Y3 SELECTED TOPICS IN BEHAVIOUR THEORY
Issues of contemporary interest in animal learning and behaviour will be examined in depth.
3 lects.; one term
Prerequisite: Psychology 2T3 and registration in a Psychology program.
Not offered in 1985/86.

PSYCH 3Z3 RESERCH METHODS IN PSYCHOLOGY
An advanced course examining the principles and techniques of research and data analysis in psychology.
3 lects.; one term
Prerequisite: Psychology 2R6 and registration in Honours Psychology.

PSYCH 4A3 CONTEMPORARY TOPICS IN HISTORICAL PERSPECTIVE
Discussion of the background and current status of several issues of contemporary interest.
3 hrs.(lects. and seminar); one term
Prerequisite: Registration in Level IV Honours Psychology; or permission of the instructor.

PSYCH 4B3 HISTORY OF PSYCHOLOGY
An historical account of the main lines of development of psychology.
3 lects.; one term
Prerequisite: Registration in Level IV Honours Psychology; or permission of the instructor.

PSYCH 4D6 PSYCHOLOGY THESIS
Students conduct research projects with individual faculty members. Three copies of a completed thesis must be submitted by the end of classes.
Prerequisite: Registration in Level IV Honours Psychology and permission of the course co-ordinator. If Psychology 3Q3, 3QQ3, 3Q3, or 4QQ3 is taken concurrently with Psychology 4D6, a different faculty member must supervise each course.

PSYCH 4E7 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 3F6. A biological or biochemical background is strongly recommended.

PSYCH 4Q3 " INDIVIDUAL LAB STUDY II
A 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 the course co-ordinator. Open only to students in Level IV of an Honours Psychology program. Not open to students who are registered in, or who have received credit for, Psychology 4QQ3.

PSYCH 4QQ3 INDIVIDUAL LAB STUDY II
A laboratory project that may extend over both terms. Students intending to register must first consult with a faculty member and the course coordinator.
Prerequisite: Permission of the course coordinator. Open only to students in Level IV of an Honours Psychology program. Not open to students who are registered in, or who have received credit for, Psychology 4QQ3.

For Graduate Courses see Calendar of School of Graduate Studies.

Religious Studies

Faculty as of January 15, 1984

G. Vallée / Chairman

Professors
John G. Araurapa/B.A. (Serpampore 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)
Paul Younger/A.B. (LaFayette), M.A. (Banaras), B.D. (Serpampore), Th.M., M.A., Ph.D. (Princeton)

Associate Professors
Albert I. Baumgarten/A.B. (Columbia), B.H.L. (Jewish Theological Seminary), M.A., Ph.D. (Columbia)
Alan M. Cooper/A.B. (Columbia), M.Phi., Ph.D. (Yale)
Phyllis Granoff/B.A. (Radcliffe College), Ph.D. (Harvard)
Louis I. Greenspan/M.A. (Dalhousie), Ph.D. (Brandeis)
David R. Kinsey/B.A. (Drew), B.D. (Union Theological Seminary), M.A., Ph.D. (Chicago)
Koichi Shinhara/B.L., M.L. (Tokyo), Ph.D. (Columbia)
Gérard Vallée/B.A. (Laval), M.A. (Montreal), Ph.D. (Münster)

Assistant Professors
Alan Mendelson/A.B. (Kenyon College), M.A. (Brandeis), Ph.D. (Chicago)
Ian G. Weeks/M.A., Ph.D. (Melbourne)
Wayne K. Whillier/B.A. (Sir George Williams), Ph.D. (McMaster)

CURRICULUM 1984-86
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.
LEVEL I COURSES

RELG ST 1B6 WORLD RELIGIONS
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.

RELG ST 1C6 TEXTS, TRADITIONS, AND THOUGHT
The study of selected scriptural texts, their place in religious tradition, and their contribution to human thought and life. Attention is given to the development of critical skills in reading and writing.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELG ST 1D6 THE FOUNDATIONS OF JUDAISM AND CHRISTIANITY
An introduction to Biblical Studies, concentrating on the period 200 BCE - 200 CE and focusing on the theme of the covenant. Attention is given to the development of critical skills in reading and writing.
2 lects., 1 tut.; two terms
Prerequisite: Open but enrolment is limited to 50.
Offered in 1984-85.

RELG ST 1E6 IDEAS OF LOVE
A conceptual and historical study of the ideas of love that have shaped Western thought, experience and belief.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELG ST 1F6 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.

LEVEL II AREA COURSES

RELG ST 2B6 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.

RELG ST 2D3 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 2D3, 2EE3, 3M3 are recommended.

RELG ST 2EE3 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.

RELG ST 2E6 INTRODUCTION TO THE STUDY OF THE NEW TESTAMENT
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. Students with a credit in Religious Studies 2G6 may not take this course for credit.

RELG ST 2G6 THE BEGINNINGS OF CHRISTIANITY
A survey of the history and literature of the early church during its first 100 years. Attention is given to the contemporary Jewish and Hellenistic worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2E6 may not take this course for credit.
Offered in 1985-86.

RELG ST 2I3 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. Students with credit in Religious Studies 2HH6 may not take this course for credit.
Offered in 1984-85.

RELG ST 2I3 LA PENSEE CHRETIENNE A L'EPOQUE PATRIistique (1O0 - 800)
La rencontre du christianisme avec la culture hellénistique vue à travers les écrits des Pères de l'Eglise. Attention spéciale sera accordée à l'oeuvre de s. Augustin.
3 lects.; one term

Prerequisite: Open
Offered in 1984-85.
Same as Relig St 213.

RELG ST 2J3 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 mediæval religion and its expression in theology and cult.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3KK3 may not take this course for credit.
Offered in 1984-85.

RELG ST 2K3 CHRISTIAN THOUGHT IN THE 16TH CENTURY
The Protestant Reformation and the Catholic Reform, focussing 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. Students with credit in Religious Studies 3Q3 may not take this course for credit.
Offered in 1985-86.

RELG ST 2L3 CHRISTIAN THOUGHT AFTER 1600
The development of Christian thought (Protestant and Catholic) in the 17th - 20th centuries, as it responds to distinctively modern problems. e.g. science, historical consciousness and pluralism.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1985-86.

RELG ST 2M6 EAST ASIAN RELIGIONS
An introduction to Chinese religion and philosophy from early periods to the present. The course will treat Confucianism, Taoism, Buddhism, and Western influences on China.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2O6 may not take this course for credit.
Offered in 1985-86.

RELG ST 2M3 THE SOCIAL DIMENSION OF RELIGION
An exploration of major issues in the social-scientific study of religion through an examination of Max Weber's analyses of Protestantism and Chinese religions.
2 lects., 1 tut.; one term
Prerequisite: Open.
Same as Sociology 2MN3.

RELG ST 2N3 THE SOCIAL-PSYCHOLOGICAL DIMENSION OF RELIGION
A study of 'resentment', 'asceticism' and related concepts in social-psychological interpretations of religion. Primary materials include works of Nietzsche, Freud, and Weber.
2 lects., 1 tut.; one term
Prerequisite: Open.
Offered in 1985-86.
Same as Sociology 2NN3.

RELG ST 2N4 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.

RELG ST 2O3 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.

RELG ST 2R6 DIVINE JUSTICE
A study of the concept of the just God and the problem of evil with primary attention given to the contemporary Jewish and Hellenistic worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2R3 may not take this course for credit.

LEVEL II ELECTIVE COURSES

RELG ST 2A6 DEATH AND DYING IN HUMAN EXPERIENCE
A reflection on death as a problem and a mystery in light of both contemporary knowledge and selected religious literature.
2 lects., 1 tut.; two terms
Prerequisite: Open.
Offered in 1984-85.

RELG ST 2B83 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.

RELG ST 2B66 RELIGIOUS EDUCATION IN THE WEST
A study of the role of religious education in the modern world, especially in the Christian tradition.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2CM6 RELIGIOUS EDUCATION IN THE EAST
A study of religious education in the major religions of the East, especially in the Buddhist and Hindu traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2DD3 THE FIVE BOOKS OF PROPHETS
A study of the prophetic books of the Bible, with an emphasis on their historical and literary contexts.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2EE3 THE PROPHETS
A study of the prophetic books of the Bible, with an emphasis on their historical and literary contexts.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2EE3 THE PROPHETS
A study of the prophetic books of the Bible, with an emphasis on their historical and literary contexts.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2FF3 RELIGIOUS EDUCATION IN THE WEST
A study of the role of religious education in the modern world, especially in the Christian tradition.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2GG3 RELIGIOUS EDUCATION IN THE EAST
A study of religious education in the major religions of the East, especially in the Buddhist and Hindu traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2HH6 THE BEGINNINGS OF CHRISTIANITY
A survey of the history and literature of the early church during its first 100 years. Attention is given to the contemporary Jewish and Hellenistic worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2G6 may not take this course for credit.

RELG ST 303 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.

RELG ST 3R3 RELIGIOUS EDUCATION IN THE WEST
A study of the role of religious education in the modern world, especially in the Christian tradition.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 3R6 DIVINE JUSTICE
A study of the concept of the just God and the problem of evil with primary attention given to the contemporary Jewish and Hellenistic worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 3R3 may not take this course for credit.

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RELIG 2C3 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 tute.; one term
Prerequisite: Open.

Same as Philosophy 2D3.
RELIG 2CC3 SPECIALISTS IN THE SACRED
A study of certain religious topics: shamanism, mystics, priests, and saints, and an attempt to discern their distinctive characteristics.
2 lects.; 1 tute.; one term
Prerequisite: Open.

RELIG 2F3 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 tute.; one term
Prerequisite: Open. Students with credit in Religious Studies 3H3H may not take this course for credit.
Offered in 1985-86.
RELIG 2FF6 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 tute.; two terms
Prerequisite: Open.
Offered in 1984-85.
RELIG 2PP5 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 tute.; one term
Prerequisite: Open.
Offered in 1984-85.
RELIG 2QQ3 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 the deprogramming controversy.
2 lects.; 1 tute.; one term
Prerequisite: Open.

RELIG 2RR5 RELIGIOUS THOUGHT IN THE NOVELS OF TOLSTOY AND DOSTOEVSKY
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.
Same as Russian 2RR3.

RELIG 2T6 INTRODUCTION TO ISLAM
An introduction to the major themes of Islamic religion. The beginnings of Islam, and the growth and elaboration of the main aspects of Islamic tradition: scripture, prophetic tradition, law, theology, and mysticism.
3 lects.; two terms
Prerequisite: Open.

RELIG 2T3 YOGA, THEORY AND PRACTICE
A study of both the theoretical and practical sides of Yoga, beginning with the famous aphorisms of Patanjali; its importance and relevance for today.
2 lects.; 1 tute.; one term
Prerequisite: Open. Students with credit in Religious Studies 3WW3 may not take this course for credit.
Offered in 1984-85.

RELIG 2V3 INDIAN ART AND RELIGION
Indian art in relation to its religious background; the problem of the relationship between art and religion.
2 lects.; 1 tute.; one term
Prerequisite: Open. Students with credit in Religious Studies 3V3 may not take this course for credit.
Offered in 1985-86.

RELIG 2V3 BIBLICAL LITERATURE
A survey introduction to biblical literature (Old Testament, New Testament, and selected Apocrypha and Pseudepigrapha) and the history of biblical interpretation to meet the particular needs of students of Western literature.
2 lects.; 1 tute.; one term
Prerequisite: Open.
Offered in 1985-86.

Same as Comparative Literature 2G3.

RELIG 2WW3 HEALTH, HEALING, AND RELIGION
The relation between ideas about health and views of the world (cosmologies). The ways in which views of health and healing are bound up with religious views with reference to shamanism, traditional Chinese and classical Indian medicine, and some aspects of modern medical practice.
2 lects.; 1 tute.; one term
Prerequisite: Open.

RELIG 2X3 GREEK AND ROMAN BACKGROUND TO EARLY CHRISTIANITY
A description and analysis of selected Greek and Roman social and political institutions which helped to form the background to the life of early Christians and the New Testament writers. The topics surveyed include: the spread of the Greek language and culture, Roman provincial government and the Roman army, travel by land and sea, the life of major cities, education and literature.
3 lects.; one term
Prerequisite: Open.
Same as Classical Civilization 2X3.

RELIG 2Y6 PSYCHOLOGY AND RELIGION
A critical examination of major western psychological theories of religion and interpretations of religious experiences in light of these theories.
2 lects.; 1 tute.; two terms
Prerequisite: Open to students in Level II and above.

RELIG 2Z3 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 Classical Civilization 2Z3.

LEVEL III AREA COURSES

RELIG 3AA3 POPULAR RELIGION IN INDIA
The Music, Dance and Festivals of Indian Temples will be analyzed in terms of their social, psychological and political implications.
2 lects.; 1 tute.; one term
Prerequisite: Religious Studies 2003, or permission of the instructor.
Offered in 1985-86.

RELIG 3BB3 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 tute.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Sociology 3B3.

RELIG 3BB5 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 tute.; one term
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Sociology 3BB3.

RELIG 3CC3 THE QUR'AN
A consideration of scripture in the Islamic tradition, including a detailed study of selections from the Qur'an, traditional and modern commentaries and scholarship on the Qur'an.
2 lects.; 1 tute.; one term
Prerequisite: Religious Studies 2TT6, or permission of the instructor.
Offered in 1985-86.

RELIG 3DD6 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 tute.; two terms
Prerequisite: Religious Studies 2NN3, or permission of the instructor.
Offered in 1985-86.

RELIG 3EE6 HELLENISTIC PHILOSOPHIES, CULTS AND HERESIES
An examination of the various spiritual options open to Hellenistic man with emphasis on the non-traditional religious expressions.
2 lects.; 1 tute.; two terms
Prerequisite: Open.
Offered in 1985-86.

RELIG 3FF3 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 tute.; one term
Prerequisite: At least 12 units of Level II or III Religious Studies; or permission of the instructor.

RELIG 3GG6 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 tute.; two terms
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies or Sociology.
Same as Sociology 3GG6.

RELIG 3HH6 PRIMITIVE RELIGIONS
A critical examination of major anthropological and psychological theories of primitive religion and primitive modes of classification.
RELIG ST 3X3 INTRODUCTION TO HELLENISTIC JUDAISM
An examination of the mutual interaction of Judaism and Hellenism: the impact of Greek thought on Judaism and the contribution of Hellenistic Jewish philosophy.
2 lects., 1 tut.; one term
Prerequisite: Any of Religious Studies 2NN3, 2E6, 2FF6, 2G6, 2X3, 223; or permission of the instructor.

RELIG ST 3M3 ISRAELITE POETRY AND WISDOM
An exploration of the relation between literary art and religious expression through a consideration of biblical poetry and wisdom literature. Special attention to the book of Job.
2 lects., 1 tut.; one term
Prerequisite: Religious Studies 2NN3, or permission of the instructor.

RELIG ST 303 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: Any of Religious Studies 2NN3, 2E6, 2G6, 2R6, or permission of the instructor.

RELIG ST 3P6 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 286; or permission of the instructor.

RELIG ST 3Q6 THE BUDDHIST TRADITION
An historical and philosophical study of Buddhism in India, China and Japan.
2 lects., 1 tut.; two terms
Prerequisite: Religious Studies 2003 or 206 or 2MM6 or 286; or permission of the instructor.

RELIG ST 3R3 RELIGION AND IDENTITY
An examination of the roles or functions of religion in the development of personal and group identities, using both empirical and theoretical materials.
2 lects. 1 tut.; one term
Prerequisite: Open. Same as Sociology 3R3

RELIG ST 3T3 MODERN RESEARCH IN THE LIFE AND TEACHINGS OF JESUS
An examination of the views of representative modern scholars with an analysis of the texts on which their views rest, along with a consideration of the problem of the relationship between faith and historical events.
2 lects., 1 tut.; one term
Prerequisite: Any one of Religious Studies 2NN3, 2E6, 2G6, 2R6, or permission of the instructor.

RELIG ST 3U6 ATHEISM, SCEPTICISM AND RELIGIOUS FAITH
The question of God and the struggle for meaning and hope in the modern world. Readings in Dewey and Tennant; Shaw, Chesterton, and Lewis; Rubinstein and Fackenheim; Bloch and Moltmann; and S. Weil.
2 lects., 1 tut.; one term
Prerequisite: One Level II course in Religious Studies or Philosophy. Students with credit in Religious Studies 2Q6 may not take this course for credit.

RELIG ST 3W3 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 286; or permission of instructor.

RELIG ST 3X3 THE LETTERS OF PAUL
An examination of the principal themes in Paul's letters, with special emphasis on his Christology, anthropology, and soteriology. Modern scholarly views will be considered.
2 lects., 1 tut.; one term
Prerequisite: Any of Religious Studies 2NN3, 2E6, 2G6, 2R6, or permission of the instructor.

RELIG ST 3Y3 BIBLICAL INTERPRETATION: TRADITIONAL AND MODERN
A seminar on critical issues in the history of biblical interpretation.
1/2 hr. seminar; one term
Prerequisite: Religious Studies 2NN3 or 2DD3 or 2EE3, or permission of the instructor. Students with credit in Religious Studies 3YY6 may not take this course for credit.

REQUIRED LEVEL IV COURSES FOR HONOURS STUDENTS

RELIG ST 4FF3 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.

RELIG ST 4GG3 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.
10 hrs.; 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, 4G6, 4H6, 4Y3). 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.

Registration in all courses marked with 'open' involves selected topics, independent research, individual readings and hours essays requires written permission of the Department. Registration with appropriate permission must be completed at least 6 weeks prior to the last day for registration as stated in this Calendar under Sessional Dates.

RELIG ST 4AA6
Advanced Study in Hindu Religious History
RELIG ST 4BB6
Advanced Study in Buddhist and East Asian Religious History
RELIG ST 4EE6
Advanced Study in Indian Philosophy
RELIG ST 4GG6
Advanced Study in Hebrew Bible and Interpretation
RELIG ST 4CC6
Advanced Study in Early Jewish and Christian Sources
RELIG ST 4DD6
Advanced Study in Hindu Religious History
RELIG ST 4EE6
Advanced Study in Buddhist and East Asian Religious History
RELIG ST 4GG6
Advanced Study in Indian Philosophy

SANSKRIT

SANSKRIT 3A6 INTRODUCTION TO SANSKRIT GRAMMAR
Basic course in the elements of Sanskrit grammar. No previous knowledge of Sanskrit is required.
3 lects.; two terms
Prerequisite: Open.

SANSKRIT 4B6 READINGS IN SANSKRIT TEXTS
Intermediate course with readings in selected texts.
3 lects.; two terms
Prerequisite: Sanskrit 3A6 or Equivalent.

HEBREW

HEBREW 2A6 HEBREW
The inductive study of the Hebrew language, leading to mastery of the general principles of grammar and syntax. Prose work throughout the year.
3 lects.; two terms
Prerequisite: Open.

HEBREW 3A6 INTERMEDIATE HEBREW
Extensive readings in Biblical prose (selections from some or all of the following: Pentateuch, Former Prophets, Ruth and Esther); and some readings in the second term in Rabbinic literature (Mishna and Tosefta).
2 terms
Prerequisite: Hebrew 2A6 or Equivalent.
Enrolment is limited.  

**French**

**COURSES**

**BEGINNERS' LANGUAGE COURSE**

**FRENCH 126 BEGINNERS' INTENSIVE FRENCH**

An intensive audio-visual course for developing the four language skills (listening, speaking, reading and writing) with emphasis on the first two.  The normal sequel to this course is French 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**

**FRENCH 1A6 INTRODUCTION TO FRENCH STUDIES: ADVANCED LEVEL**

Review of grammar, oral and written practice, and introduction to literary analysis by the reading of selected French and 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 available to students with credit in or registered in French 1B6.

**FRENCH 1B6 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 available to students with credit in or registered in French 1A6.

**FRENCH 2A3 FRENCH LANGUAGE PRACTICE**

2 tuts.; two terms  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2C3 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.

**FRENCH 2F3 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 tuts.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2FF3 THE CIVILIZATION OF FRENCH CANADA II**

The study of the socio-political, cultural and linguistic evolution of contemporary French Canada and the reflection of these factors in French-Canadian literature, journalism, music and cinema.  

3 tuts.; one term  

Prerequisite: French 1A6 or 1B6; or permission of the Department.

**FRENCH 2G3 FRENCH LANGUAGE PRACTICE: ELEMENTARY TRANSLATION**

An introduction to translation techniques (French to English and English to French) and to the use of pertinent reference material.  

3 tuts.; one term  

Prerequisite: A grade of at least B- in French 1A6 or a grade of at least B in French 1B6; or permission of the Department.  

Enrolment is limited; departmental permission slip required.

**FRENCH 2H3 INTRODUCTION TO FRENCH LINGUISTICS**

An introduction to the descriptive analysis of language (phonology, morphology, syntax, semantics) with special reference to French.  

3 tuts.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2J3 NINETEENTH-CENTURY FRENCH LITERATURE**

Selected novels, plays and poems representative of the main currents of 19th-century French literature.  

3 tuts.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2K3 NINETEENTH-CENTURY FRENCH LITERATURE II**

Selected themes appearing in the works of the major French writers of the 19th century.  

3 tuts.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2L3 TWENTIETH-CENTURY FRENCH LITERATURE I**

Aspects of the development of 20th-century literature to the end of the Second World War.  

3 lects.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 2LL3 TWENTIETH-CENTURY FRENCH LITERATURE II**

Aspects of the development of 20th-century literature since the Second World War.  

3 lects.; one term  

Prerequisite: French 1A6 or 1B6.

**FRENCH 3AA3 THE MODERN FRENCH-CANADIAN NOVEL**

Representative novels by contemporary authors with emphasis upon the relationship between language and meaning.  

3 lects.; one term  

Prerequisite: French 2F3 or 2FF3; or permission of the Department.

**FRENCH 3B3 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: French 2H3 and one of French 2A4, 2E4, 2A3; or permission of the Department.
FRENCH 3BB3 CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dubé and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F3 or 2FF3; or permission of the Department.

Same as Dramatic Arts 3BB3

FRENCH 3C3 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.

FRENCH 3CC3 FRENCH LANGUAGE PRACTICE: INTERMEDIATE TRANSLATION
A course designed for the systematic comparison of French and English, including comparative stylistics, with special reference to problems in the translation of texts of a general nature.
3 tuts.; one term
Prerequisite: French 2G3; French 2A3 or 2A4; or permission of the Department.
Enrolment is limited; departmental permission slip required.

FRENCH 3D3 APPLIED LINGUISTICS AND SECOND-LANGUAGE LEARNING
An examination of various aspects of second language acquisition as applied to the teaching of French, with special emphasis on psycholinguistic factors.
3 lects.; one term
Prerequisite: French 2H3 and registration in a programme in French. Alternates with French 3I3.

FRENCH 3F3 FRENCH LANGUAGE PRACTICE: ORAL
This course includes discussion of modern French institutions and culture.
2 tuts.; two terms
Prerequisite: French 2C3 and registration in a programme in French; or permission of the Department.
Enrolment is limited; departmental permission slip required.

FRENCH 3G3 GENERAL AND COMPARATIVE PHONETICS
Elementary questions of phonetic theory (physiological basis, speech sounds in isolation and in sequence, the syllable, the phoneme, prosodic features, graphemics); followed by a comparison of the modern French and English systems of sounds.
3 lects.; one term
Prerequisite: French 1A6 or 1B6; or permission of the Department.

FRENCH 3I3 SOCIOLINGUISTICS
The study of linguistic variations within French-speaking communities with special reference to the Canadian situation.
3 lects.; one term
Prerequisite: French 2H3 and registration in a programme in French. Alternates with French 3J3.

FRENCH 3K3 EIGHTEENTH-CENTURY FRENCH LITERATURE I
The early 18th century with emphasis on Montesquieu, Mirabeau 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.

FRENCH 3KK3 EIGHTEENTH-CENTURY FRENCH LITERATURE II
Texts representing the main aspects of Enlightenment thought and literature from the publication of the preliminary discourse of the Encyclopédie to the Revolution.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3M3 THE EIGHTEENTH-CENTURY FRENCH NOVEL
A study of the genesis and themes of representative 18th-century novels.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. Offered in 1984-85.

FRENCH 3Q3 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. Same as Dramatic Arts 3Q3.

FRENCH 3QQ3 SEVENTEENTH-CENTURY FRENCH LITERATURE II
A consideration of selected themes as they appear in the works of major French writers of the 17th century.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3R3 MEDIEVAL FRENCH LANGUAGE AND LITERATURE
An introduction to the Old French language and a study of selected medieval texts.
3 lects.; one term
Prerequisite: Registration in a programme in French; or permission of the Department.

FRENCH 3V3 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.
1 lect.; 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 3V3.

FRENCH 3Z3 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 2Z3.

FRENCH 4A3 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.

FRENCH 4B3 FRENCH LANGUAGE PRACTICE: ADVANCED TRANSLATION
Practice in the translation into English of texts of a specialized nature (e.g., administration, business, politics).
3 tuts.; one term
Prerequisite: French 3CC3; or permission of the Department. Enrolment is limited; departmental permission slip required.

FRENCH 4BB3 FRENCH LANGUAGE PRACTICE: ADVANCED TRANSLATION
Practice in the translation into French of texts of a specialized nature (e.g., administration, business, politics).
3 tuts.; one term
Prerequisite: French 3CC3; or permission of the Department. Enrolment is limited; departmental permission slip required. Offered in 1985-86.

FRENCH 4C3 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 including French 2H3 and registration in a programme in French; or permission of the Department. Not available to students with credit in French 3L3. Alternates with French 3BB3. Offered in 1985-86.

FRENCH 4E3 HISTORY OF THE FRENCH LANGUAGE AFTER 1600
Among the topics discussed will be: vocabulary growth, loan words, slang, popular, literary and regional language; syntax and phonetic changes.
3 lects.; one term
Prerequisite: Registration in a programme in French; or permission of the Department. Offered in 1984-85.

FRENCH 4F3 TOPICS IN EIGHTEENTH-CENTURY FRENCH LITERATURE
1994-85: Voltaire
Specific texts related to the works of other writers of the time. Not open to students receiving credit for French 4V3.
1985-86: Eighteenth-Century French Thought
A study of the thought of the period as seen through the writings of selected authors.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 3K3 or 3KK3 and registration in a programme in French; or permission of the Department. French 4F3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4I3 TOPICS IN MODERN FRENCH POETRY
1994-85: Poets and Humour
Games poets play with words, rhymes, forms, satire and parodies from 16th-century vertical puzzle poems to 20th-century concrete poetry and picture poems.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including French 3K3 or 3KK3 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.

FRENCH 4J3 FRENCH LITERATURE OF THE RENAISSANCE
Characteristic themes of Renaissance humanism as they appear in the works of Rabelais, Montaigne, and selected poets.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 4L3 TOPICS IN FRENCH AFRICAN AND CARIBBEAN LITERATURE
1985-86: The novels and short stories of the Senegalese writer Sembene Ousmane
Seminar(2 hrs.); one term
ROMANCE LANGUAGES

Prerequisite: 18 units of French, including 223 or 323, and registration in a programme in French, or permission of the Department. French 4LL3 may be repeated, if on a different topic, to a total of six units. Offered in alternate years.

FRENCH 4N3 TOPICS IN THE FRENCH NOVEL
1985-86: Zola
A close reading of selected novels of Emile Zola and an appraisal of recent critical studies of his work.
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.

FRENCH 4Q3 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.

FRENCH 4Q3 TOPICS IN SEVENTEENTH-CENTURY FRENCH LITERATURE
1985-86: 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.

FRENCH 4R3 STUDIES IN MEDIEVAL FRENCH LITERATURE
A survey of medieval French literature: songs and poetry of the troubadours and trouvères; selections from the Chanson de Roland, Crétien de Troyes' romances and other narrative works (lais, Roman de la Rose, Roman de Renart; fabliaux), and from secular theatre. Modernized French versions will be used. Selected texts in Old French will be analyzed.
Seminar(2 hrs.); one term
Prerequisite: French 3R3 and registration in a programme in French; or permission of the Department.

FRENCH 4T3 INDEPENDENT STUDY
The student will prepare under the supervision of a faculty member a research paper involving independent research in an area of study in which the student has already demonstrated a high level of basic knowledge.
Prerequisite: Registration in Level IV of an Honours programme in French and permission of the French 4T3 Committee.

FRENCH 4U3 TOPICS IN FRENCH-CANADIAN LITERATURE
1984-85: Antoine Mailllet's Acadia
A study of the major works of Antoine Mailllet and their relation to Acadia's socio-political and cultural past, present and future.
1985-86: Quebec Poetry
An analysis of selected writings of modern Québécois poets, emphasizing poetic techniques and the socio-cultural context of Quebec. Not available to students with credit in French 4H3.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French, including 2F3 or 2FF3 and registration in a programme in French; or permission of the Department. French 4U3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4X3 LINGUISTICS AND MODERN FRENCH LITERARY CRITICISM (FROM STRUCTURALISM 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. Offered in 1985-86.

FRENCH 4Y3 TOPICS IN TWENTIETH-CENTURY FRENCH LITERATURE
1984-85: The Unconscious and Twentieth-Century Fiction
A comparison of the theoretical Freudian text and the fictional text.
Seminar(2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. French 4Y3 may be repeated, if on a different topic, to a total of six units.

FRENCH 4Z3 THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (French, Italian and Spanish). The course will trace the evolution of sound systems (phonology), forms (morphology) and sentence structures (syntax) through a study of representative texts.
3 lects.; one term
Prerequisite: Completion of 60 or more units and registration in a French programme. Offered in alternate years. Same as Italian 4Z3 and Spanish 4Z3.

ITALIAN CURRICULUM 1984-86

COURSE TAUGHT IN ENGLISH AND OPEN AS AN ELECTIVE TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME

ITALIAN 216 Italian Literature in Translation

BEGINNERS' LANGUAGE COURSES

ITALIAN 126 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 1ZZ6. 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.
Enrolment is limited.

ITALIAN 1ZZ6 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 1Z6. Students with Grade 12 Italian will be required to take a placement test during registration week.
Enrolment is limited.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

ITALIAN 1A6 INTERMEDIATE ITALIAN
An intensive review of the grammatical structures of Italian and an introduction to composition, together with oral practice.
4 hrs.; two terms
Prerequisite: Grade 13 Italian; or permission of the Department. Not available to students with credit in or registered in Italian 2Z6.

ITALIAN 2A3 INTENSIVE ORAL PRACTICE IN ITALIAN
A conversation course designed to improve oral and aural proficiency in Italian.
2 hrs.; two terms
Prerequisite: Italian 1Z6, Italian 12Z6; or permission of the Department. For students registered in a programme in Italian, this course may be used as an elective only.

ITALIAN 2D6 ADVANCED ITALIAN
This course studies the basics of Italian syntax in order to improve the student's written and oral proficiency in the language.
3 hrs.; two terms
Prerequisite: Italian 1A6 or 2Z6; or permission of the Department.

ITALIAN 2E6 INTRODUCTION TO ITALIAN LITERATURE
A study of the development of Italian literature from its beginnings to the 20th century. Special emphasis will be placed on major authors and works.
3 lects.; two terms
Prerequisite: Italian 1A6 or 2Z6 and registration in a programme in Italian; or permission of the Department.

ITALIAN 216 ITALIAN LITERATURE IN TRANSLATION
A survey course exploring the major Italian writers from Dante to the present. Texts will be read in English translation. A reading knowledge of Italian is not required.
3 lects.; two terms
Prerequisite: Italian 1Z6 or 1 ZZ6; or permission of the Department.

ITALIAN 226 ITALIAN GRAMMAR PRACTICE
An intensive review of the grammatical structures of Italian and an introduction to composition, together with oral practice.
4 hrs.; two terms
Prerequisite: Italian 1Z6 or Italian 12Z; or permission of the Department. Not available to students registered in or with credit in Italian 1A6.

ITALIAN 3A3 NINETEENTH-CENTURY ITALIAN NOVEL
A study of the prose literature of the 19th century with special emphasis on the works of Manzoni and Verga.
3 lects.; one term
ITALIAN 3D4  ITALIAN STYLISTICS & ORAL PRACTICE
An introduction to the study of Italian stylistics for the purpose of
developing a sense of style in the written language.
2 hrs.; two terms
Prerequisite: Italian 2D6; or permission of the Department.

ITALIAN 3G3  ITALIAN ROMANTIC POETRY
A study of the poetry of the Romantic Era with special emphasis on the
works of Foscolo, Manzoni, Leopardi.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of the Department.
Alternates with Italian 3A3.

ITALIAN 3L3  ITALIAN HUMANISM
An analytical and comparative study of the scientific and literary ideas of
the 14th, 15th and 16th centuries.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 3O3.

ITALIAN 3M3  TWENTIETH-CENTURY ITALIAN NOVEL
A study of the major Italian novelists of the 20th century with emphasis
placed on neorealism and its influence on contemporary Italian culture.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.

ITALIAN 3O3  ITALIAN RENAISSANCE LITERATURE
An introduction to the study of the Italian epic with special emphasis on the
works of Ariosto and Tasso.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 3Q3.

ITALIAN 3Q3  ITALIAN THEATRE FROM THE 16TH TO THE 18TH CENTURIES
A study of Italian Theatre from the 16th to the 18th century.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 3P3.

ITALIAN 3R6  THE ITALIAN "TRECENTO"
The historical background of the 14th century. A study of the major works
of Dante, Petrarch and Boccaccio.
3 lects.; two terms
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.

ITALIAN 4A3  ITALIAN CRITICISM
A study of the major trends in Italian literary criticism from De Sanctis to the
present day.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 4C3 and 4J3.

ITALIAN 4C3  THE LITERATURE OF THE "RISORGIMENTO"
A study of the period of 1816-1873 in Italian literature through selected
texts, with reference to the political and social background.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 4A3 and 4J3.

ITALIAN 4G3  CONTEMPORARY ITALIAN POETRY
A study of the major Italian poets of the 20th century with special emphasis on
Saba, Montale, Ungaretti, Quasimodo.
3 lects.; one term
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.
Alternates with Italian 4A3 and 4C3.

ITALIAN 4L4  INTRODUCTION TO ITALIAN LINGUISTICS
An introduction to the study of synchronic and diachronic Italian linguistics,
the problem of dialect fragmentation, to the "Questione della Lingua", and to early
documents of Italian.
2 lects.; two terms
Prerequisite: Italian 1A6 or 226; Italian 2E6; or permission of Department.

ITALIAN 4M4  INTENSIVE COMPOSITION, STYLISTICS AND ORAL PRACTICE IN ITALIAN
An advanced language study course designed to develop the student's skills in
composition, stylistics and conversation. Practice materials will be drawn from
20th-century literary works for the purpose of language study.
2 tuts.; two terms
Prerequisite: Registration in Level IV of an Italian programme; or permission
of the Department.
ROMANCE LANGUAGES

Prerequisite: Spanish 2E6.
Spanish 4B3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4C3 GOLDEN AGE PROSE
1984-85: The Picar tragic Novel
A study of the prose of the 16th and 17th centuries, with special emphasis on the picar tragic mode.

1985-86: El Quijote
An analytical study of Cervantes’ masterpiece with some consideration of the interpretations and viewpoints of major critics.
3 lects.; one term
Prerequisite: Spanish 2E6.
Spanish 4C3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4E3 MODERN SPANISH AMERICAN NOVEL
1984-85: 19th Century
A study of the development of the Spanish American novel from Isais to Azuela. Other authors included will be Icaza, Alcides Arguedas, Gallegos, and Rivera.
3 lects.; one term
Prerequisite: Spanish 2E6.
Spanish 4E3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4I3 MODERN SPANISH NOVEL
1984-85: 20th Century
Critical analysis of major 20th-century novels, including works by Baroja, Cela, Goytisolo, Ferloso, Laforet, and Delbes.

1985-86: 19th Century
A study of the novel of the second half of the 19th century in the context of the stylistic trends and intellectual history of the period.
3 lects.; one term
Prerequisite: Spanish 2E6.
Spanish 4I3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4J3 HISPANIC POETRY
1984-85: Modern Spanish Poetry
Major developments in this century, with emphasis on the poetry of Juan Ramón Jiménez, Machado, and Lorca.

1985-86: Spanish American Poetry
A study of the major trends. Such poets as Ruben Darío, Vallejo and Neruda will be included.
3 lects., one term
Prerequisite: Spanish 2E6.
Spanish 4J3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4K3 TOPICS IN SPANISH LITERATURE
1984-85: Medieval
A survey of the major themes present in writings of the period 1100 to 1500. Early love poetry; the Poema de mio Cid; the Libro de Buen Amor; and the Celestina will be studied. Modern versions of the earlier works will be used.

1985-86: The 18th Century
A study of Spain’s major writers of the period 1728-1830, their confrontations with the intellectual and social problems of their times, and the solutions they offered.
3 lects.; one term
Prerequisite: Spanish 2E6.
Spanish 4K3 may be repeated, if on a different topic, to a total of six units.

SPANISH 4L3 TRANSLATION TECHNIQUES
A course designed to develop linguistic skills and to prepare students interested in doing post-graduate work at a school for translators.
2 tuts.; two terms
Prerequisite: Spanish 3A4. Offered in 1985-86.

SPANISH 4C3 THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (Spanish, French, and Italian). The course will trace the evolution of sound systems (phonology), 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 Spanish programme.
Offered in alternate years.
Same as French 423 and Italian 423.

For Graduate courses see Calendar of School of Graduate Studies.

Russian
(See “Slavic Studies — Russian”)

Sanskrit
(See “Religious Studies — Sanskrit”)

Science

CURRICULUM 1984-86
These Science courses are primarily designed for students in the Humanities and Social Sciences, to give an appreciation of important areas of modern science. These courses do not assume any specific background in science. 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 offered by Department. They are:
Biochemistry 2E3: Introductory Biochemistry
Biology 1G6: Introduction to Biology
Biology 1H6: Human Physiology
Chemistry 1B7: General Chemistry
Chemistry 2D4: Introductory Organic Chemistry
Geography 1A6: Physical Geography
Geology 2B2: Optical Crystallography
Mathematics 1F6: Calculus and Statistics
Mathematics 2H6: Ideas in Mathematics
Physics 2J3: Physics of Musical Sound
Physics 2M3: Mechanics

SCIENCE 2A3 THE NATURE OF MATTER
Contemporary ideas about the structure of atoms and molecules; the collective behaviour of large numbers of atoms in solids, liquids, and gases and the technological implications of such behaviour.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme.
No mathematics is required.

SCIENCE 2C3 CONTINENTAL DRIFT AND PLATE TECTONICS
A review of modern ideas of crustal movement, the origin of volcanoes and earthquakes and the construction of mountain belts, as portions of the crust drift and collide.
2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme; not open to students who are registered in or have received credit for Geology 1A6 or 1B6.

SCIENCE 2D3 ASTRONOMY
A survey of modern ideas and historical concepts in astronomy. Light and the telescope; distance measurement in space; the structure and evolution of stars, galaxies, cosmology.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme.
Grade 12 Mathematics required.

SCIENCE 2G3 MAN’S SUPPLY OF FOOD
Man’s food requirement; how food is produced; alternative approaches to alleviating world hunger.
3 lects. or 2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV, of any programme.

SCIENCE 2H3 THE MOLECULAR BASIS OF LIFE
A survey of the molecular basis of life; the current revolution in biology caused by recombinant DNA technology and its implications for the future.
3 lects. or 2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme.

SCIENCE 2J3 PHYSICS AND THE ENERGY PROBLEM
Kinetic and potential energy; renewable and non-renewable sources of power and their distribution; entropy production. Conservation, storage and efficient use of energy waste.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme.

SCIENCE 2K3 HEREDITY, EVOLUTION AND THE ENVIRONMENT
Introduction to the principles of human genetics and evolutionary biology, the adaptation of organisms to their environment, biological diversity and integrated ecosystems.
3 lects. or 2 lects. and 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme.

SCIENCE 2L3 EARTH RESOURCES AND THE ENVIRONMENT
Origin and exploration of ore deposits and fossil fuels. Water resources and their pollution; radioactive waste disposal.
2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV, of a non-science programme; not open to students who are registered in or have received credit for Geology 1A6 or 1B6.

**Slavic Studies**

Faculty as of January 15, 1984

W. Smyrniv / Chairman

Professor Emeritus

Louis J. Shein/B.A. (Dubuque) , M.A., Ph.D. (Toronto) , D.D. (Honoris Causa), Knox College (Toronto)

Professor

Samuel D. Cioran/B.A. (McMaster) , Ph.D. (Toronto)

Associate Professors

Nina S. Kolesnikoff/M.A. (Moscow State) , Ph.D. (Alberta)

Walter Smyrniv/B.A. (McMaster) , M.A., Ph.D. (Toronto)

George Thomas/B.A., Ph.D. (London)

**CURRICULUM 1984-86**

**COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME**

RUSSIAN 2A6 Nineteenth-Century Russian Literature in Translation

RUSSIAN 2RR3 Religious Thought in the Novels of Tolstoy and Dostoevsky

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

SLAVIC 3B6 Studies in Slavic Literatures

**POLISH**

POLISH 1Z6 BEGINNERS' POLISH

An introduction to basic conversational and written Polish, teaching the skills of listening, speaking, reading, and writing.

3 hrs. (lects. and labs. practice); two terms

Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take Polish 2Z6.

POLISH 226 INTERMEDIATE POLISH

A course designed to further the student's command of oral and written Polish. It will concentrate on developing conversational skills as well as studying basic grammatical structures and rules of composition.

3 hrs.; two terms

Prerequisite: Polish 1Z6 or permission of the Department.

**RUSSIAN**

BEGINNERS' LANGUAGE COURSE

RUSSIAN 1Z6 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. Students with prior knowledge of the language as determined by a placement test may be required to take Russian 2C6.

INTERMEDIATE AND ADVANCED LANGUAGE, LITERATURE AND CIVILIZATION COURSES

RUSSIAN 2A6 NINETEENTH-CENTURY RUSSIAN LITERATURE IN TRANSLATION

A survey with special concentration on Gogol, Turgenev, Tolstoy, and Dostoevsky.

2 lects., 1 tut.; two terms

Prerequisite: Open to students in Level II and above; or permission of the Department.

Offered in alternate years.

RUSSIAN 2C6 INTERMEDIATE LANGUAGE STUDY

3 lects., 1 lab.; two terms

Prerequisite: Grade 13 Russian, or Russian 1Z6; or permission of the Department.

RUSSIAN 2RR3 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 2RR3.

Offered in alternate years.

RUSSIAN 3C6 ADVANCED LANGUAGE STUDY

3 lects., 1 lab.; two terms

Prerequisite: Russian 2C6.

RUSSIAN 3D3 RUSSIAN DRAMA SINCE 1800

An introduction in translation to the major works of Russian theatre.

2 lects., 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.

Offered in alternate years.

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.

Offered in alternate years.

RUSSIAN 3T3 STUDIES IN THE RUSSIAN NOVEL: TOLSTOY

A detailed study of the major novels of Lev Tolstoy in translation, with particular emphasis on the literary, philosophical and religious problems encountered in his work.

2 lects.; 1 tut.; one term

Prerequisite: Open to students in Level II and above.

Offered in alternate years.

RUSSIAN 4A3 TOPICS IN SOVIET PROSE

Soviet Science Fiction

Readings in original.

1 lect., 1 tut.; one term

Prerequisite: Russian 2C6. Russian 4A3 may be repeated, if on a different topic, to a total of six units.

Offered in alternate years.

RUSSIAN 4B3 TOPICS IN RUSSIAN DRAMA

Soviet plays of the 1920's

Readings in original.

1 lect., 1 tut.; one term

Prerequisite: Russian 2C6. Russian 4B3 may be repeated, if on a different topic, to a total of six units.

Offered in alternate years.

RUSSIAN 4C6 CONVERSATION AND ADVANCED COMPOSITION

3 lects.; two terms

Prerequisite: Russian 3C6.

RUSSIAN 4D3 TOPICS IN RUSSIAN LANGUAGE

The Russian Language in Soviet Society

Topic includes changes since 1917, with special emphasis on developments caused by societal factors, and on dialects and sub-standard usage, colloquial language and officialise.

3 lects.; one term

Prerequisite: Russian 2C6; or permission of the Department.

Offered in alternate years.

RUSSIAN 4F3 TOPICS IN RUSSIAN POETRY

Vladimir Mayakovsky

Readings in original.

1 lect., 1 tut.; one term

Prerequisite: Russian 2C6. Russian 4F3 may be repeated, if on a different topic, to a total of six units.

Offered in alternate years.

SERBO-CROATIAN

SERBO CR 1Z6 INTRODUCTION TO SERBO-CROATIAN

An introduction to basic conversational and written Serbo-Croatian. The essential grammar of the language will be taught. Readings will be in both the Cyrillic and Latin scripts.

3 hrs. (lects. and lab. practice); two terms

Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take Serbo-Croatian 2Z6.
SLAVIC STUDIES

SERBO CR 226 INTERMEDIATE SERBO-CROATIAN
Review of grammar, oral practice and compositions; readings in the original of representative authors of both Cyrillic and Latin scripts and in ekavian and jekavian variants of the literary language.
3 hrs.; two terms
Prerequisite: Serbo-Croatian 126 or permission of the Department.

SLAVIC STUDIES

SLAVIC 266 INTRODUCTION TO SLAVIC LINGUISTICS
An introduction to the Slavic languages emphasizing their historical development from a common source and including material about their structure and development as literary languages.
3 lects.; two terms
Prerequisite: Linguistics 1A6; or permission of the instructor.
Offered in alternate years.

SLAVIC 3A6 A SURVEY OF SLAVIC CULTURE
An introduction in English to the Slav peoples, their cultures and civilizations. The course will deal with such topics as prehistory, migration, folklore, mythology, pan-Slavism, the cultural awakening and the contribution of the Slavs to world culture.
3 lects.; two terms
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

SLAVIC 3B6 STUDIES IN SLAVIC LITERATURES
A study in translation of the major 19th- and 20th-century authors in Croatian, Czech, Polish, Russian, Serbian, and Ukrainian literature. Students registered in a Slavic Studies program will be expected to do some reading in the Slavic language(s) of their competence.
2 lects., 1 tut.; two terms
Prerequisite: Open to students in Level II and above or permission of the Department.
Offered in alternate years. Same as Comparative Literature 3BB6.

SLAVIC 4H6 INDEPENDENT RESEARCH
A reading and research course under the supervision of a member of the Department. A major paper is required together with a formal oral examination by three faculty members.
Prerequisite: Open to Level IV students with a weighted average of at least 8.0 and 24 units of previous work in Russian or Slavic Studies beyond Level 1 and permission of the Chairman of the Department.

UKRAINIAN

UKRAIN 126 INTRODUCTION TO UKRAINIAN
An introduction to conversational and written Ukrainian, basic elements of grammar, elementary composition, selected readings.
4 hrs.(including lab.); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take Ukrainian 2A6.

UKRAIN 2A6 INTERMEDIATE UKRAINIAN
Review of grammar, oral practice, and compositions; readings in the original from representative authors.
4 hrs.(including lab.); two terms
Prerequisite: Ukrainian 126; or permission of the Department.

UKRAIN 3A6 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.

Social Work

Faculty as of January 15, 1984

J. McEwan Macintyre, Director

Professors
Cyril Greenland, M.Sc. (North Wales)
Harry L. Penny, Dip. Theo., (Union College, British Columbia), B.A., M.S.W. (British Columbia)

Associate Professors
Jean M. Jones, B.A. (Western), M.S.W. (McGill)
Kalervo I. Kinnan, 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 Mathra, B.Sc., Ph.D. (London)
David J. Tucker, B.A. (New Brunswick), M.S.W. (McGill), D.S.W. (Toronto)

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)
Sally Palmer, B.A. (Western), B.S.W., Ph.D. (Toronto)
Muriel Santilli, B.A. (Hunter College), M.A. (Columbia), M.S.W. (SUNY, Buffalo)
Boris Stein, B.A., M.S.W. (McGill)

Lecturer
Ralph A. Brown, B.A., M.S.W. (Waterloo)

Associate Members
J.A. Byles, B.A. (Western), M.S.W. (Toronto), D.S.W. (Washington, Dept. of Psychiatry)
M.J. Deaf, B.A. (Birmingham), M.Ph. (London), M.A., Ph.D. (Pennsylvania), Dept. of Geography
A.L. Robb, B.A., M.A. (British Columbia), Ph.D. (Essex)

CURRICULUM 1984-86

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.
Registration in all courses marked as involving selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

**SOC WORK**

**SOC WORK 2B6 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
This course may be taken for B.A. credit by undergraduates registered in the Labour Studies programme.

**SOC WORK 2C3 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 WORK 2D3 INTERPERSONAL COMMUNICATION AND INTERVIEWING**
Theories of interpersonal communication. Basic skills in interpersonal communication and interviewing.

Lectures, discussions, exercises; one term
Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 3C3 SOCIAL ASPECTS OF HEALTH AND DISEASE**
Exploration of the meaning of health and sickness in our society. Organization and delivery of health care. Consideration of ethical and other issues.

Lectures, discussions 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. Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 3D9 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 equivalent to 10 hours per week; two terms (option of equivalent summer block placement)
Prerequisite: Social Work 2B6, 2C3, 2D3.
Enrolment is limited.

**SOC WORK 3G3 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 3H3 JUSTICE AND SOCIAL WELFARE**
Human rights and role of law in enhancing civil liberties in Canada. Social work, law and social change. Study of selected issues and review of administrative discretion.

Seminars; one term
This course may be taken by undergraduates registered in the Labour Studies programme and the Bachelor of Health Sciences programme. Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 3J3 TECHNOLOGY AND SOCIAL WELFARE**
Problems of social policy posed by the impact of technology in such areas as work and leisure, income maintenance, participation in decision making and social planning.

Seminars; one term
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 3K3 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 3M3 FAMILY IN SOCIAL WORK PRACTICE**
Examination of relevant aspects of family theory for social work practice; models of family intervention and therapy.

Seminars; one term
Prerequisite: Registration, or credit, in Social Work 3D9; or permission of the instructor.
Enrolment is limited.

**SOC WORK 3O3 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 3P3 CONCENTRATED STUDIES IN SOCIAL WORK PRACTICE**
Completion of a major project focusing on a selected social work problem or issue.

Tuts.; two terms
Prerequisite: Permission of the supervising instructor.

**SOC WORK 4D12 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.

Seminars, group supervision, field practice; two terms. Option of equivalent block placement.
Prerequisite: Social Work 3D9.
Enrolment is limited.

**SOC WORK 4G3 SELECTED SOCIAL ISSUES AND SOCIAL WORK**
Critical examination of social work practice or social welfare policy in respect to selected social issues. Topics will vary from year to year and the School should be consulted for details for any particular year.

Seminars; one term
Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 4H3 HUMAN SERVICE ORGANIZATIONS: STRUCTURES AND PROCESSES**
Relationships of structures and processes to patterns of service delivery. Knowledge and skills necessary for organizational diagnosis; empirical study of an organization is required.

Seminars; one term

**SOC WORK 4J3 SOCIAL CHANGE AND SOCIAL WELFARE**
Critical examination of the meaning of social change as a concept and event. Review of strategies of social change and of attempts to effect social change.

Seminars; one term
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 4K3 CONCENTRATED STUDIES IN SOCIAL WELFARE POLICY**
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.

**SOC WORK 4M3 INTERNATIONAL AND COMPARATIVE SOCIAL WELFARE**
Comparative perspective on problems of social structures in shaping social welfare institutions. Scope and limits of international collaboration.

Seminars; one term
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work. Permission of the School of Social Work is required.
Enrolment is limited.

**SOC WORK 4N3 SELECTED THEORIES OF SOCIAL WORK INTERVENTION**
Examination and analysis of strategies of intervention in working with individuals and groups in social work.

Seminars; one term

**SOC WORK 4O3 COMMUNITY WORK**
Analysis of major community work strategies, historical antecedents, current developments and future potential in Canada. Student participation in the analysis of a community project expected.

Seminars; one term
Prerequisite: Registration, or credit, in Social Work 3D9, or permission of the instructor.

**SOC WORK 4P3 PROFESSIONAL ISSUES**
Seminar focused upon the status, roles and values of the professional social worker in contemporary society.

Seminars; one term
Prerequisite: Enrolment in or credit in Social Work 4D12.

**SOC WORK 4Q3 DATA ANALYSIS AND RESEARCH DESIGN**
Application of statistical concepts and techniques to the analysis and presentation of social policy data and the design of policy related studies.

Seminars; one term
Prerequisite: A course in statistics; permission of the instructor for all students. This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

**SOC WORK 4T3 SOCIAL WORK PRACTICE WITH WOMEN**
Study of feminist and non-feminist social work practice (individuals, groups and in the community) and implications for women of selected social policies.

Seminars; one term

**SOC WORK 4V3 SOCIAL WORK PRACTICE WITH THE AGED**
A critical analysis of the social context in which the aged live, and an examination of social work methods as they apply to the aged.

Seminars; one term
SOCIOL 1A6 AN INTRODUCTION TO SOCIOLOGY
A survey of the areas of research which interest the sociologist. Interpretation of human action from the standpoint of the group. Emphasis is given to contemporary culture and society, although there is reference to primitive cultures and societies.
2 lec., 1 tut., 2 terms
Prerequisite: Open.

SOCIAL 1A6 SOCIOLOGICAL INQUIRY
Sociological literature is examined as a source of unsolved research questions, rather than as a reservoir of information. Emphasis is placed upon the development of classic problems and the discovery and formation of new issues in various areas of the discipline.
3 hrs.(lects. and discussion); two terms
Prerequisite: Registration in Level II Honours Sociology; or permission of the instructor.

SOCIAL 2C6 DEVIANT BEHAVIOUR
An examination of deviant behaviour and conformity in relation to social structure and processes, and a discussion of problems of control within the social system.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrollment in this course may be limited.

SOCIAL 2D6 THE HUMAN GROUP
An examination of the individual in social interaction, with emphasis upon relationships between these and social structures.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2E6 RACIAL AND ETHNIC GROUP RELATIONS
The course will deal primarily with the study of racial and ethnic group relations in Canada and the United States.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2H6 A SOCIOLOGICAL ANALYSIS OF CANADIAN SOCIETY
The application of sociological concepts to the character and social structure of Canada, with particular emphasis on its major social class, regional, and ethnic divisions.
3 hrs.(lects. and discussion); two terms
Prerequisite: Open.

SOCIAL 2I3 THE SOCIOLOGY OF ORGANIZATIONS
A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6, or permission of the instructor.
Not open to those students with credit in Sociology 3P3 prior to 1973-74.

SOCIAL 2J3 CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS
Selected problems in contemporary sociology. Topics will vary and the Department should be consulted for details for any particular year.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2K3 CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS
Same as Sociology 2J3.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2M6 INDUSTRIALIZATION AND DEVELOPMENT
Introduction to theories of modernization and underdevelopment with comparative empirical content.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2M3 THE SOCIAL DIMENSION OF RELIGION
Same as Religious Studies 2M3.

SOCIAL 2N3 THE SOCIAL-PSYCHOLOGICAL DIMENSION OF RELIGION
Same as Religious Studies 2N3.

SOCIAL 206 SOCIAL STRATIFICATION
A broad comparative study of social class and social mobility.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIAL 2P6 THE SOCIOLOGY OF EDUCATION
A comprehensive analysis of educational institutions in modern society.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrollment in this course may be limited.

SOCIAL 2Q6 SOCIOLOGY OF WOMEN
An analysis of the status and objective condition of women in Canada (including theories of socialization and of stratification).
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Enrollment in this course may be limited.

SOCIAL 2S6 INTRODUCTION TO SOCIOLOGICAL THEORY
An introduction to the foundations, rise and development of sociological theory.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor. Not open to students with credit in Sociology 2B3 or 3A6.

**SOCIO 206 SOCIOLOGY OF THE FAMILY**
An analysis of kinship and family units in comparative, historical, and contemporary perspective. 3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor. Enrolment in this course may be limited.

**SOCIO 265 OCCUPATIONAL OPPOSITIONS AND OCCUPATIONS**
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 3Q3 taken prior to 1980-82.

**SOCIO 2X3 PSYCHOANALYTIC APPROACHES TO LITERARY TEXTS**
The basic assumptions and methods of psychoanalytic criticism will be studied with reference to selected texts in drama, fiction and poetry from Shakespeare to the present.
One term
Prerequisite: Not open to students receiving credit for Sociology 3S3 or 3SS3.
Same as English 3B3.

**SOCIO 333 INTRODUCTION TO QUANTITATIVE STUDIES**
The course is designed to develop those skills necessary to understand and evaluate research studies in sociology using quantitative methods. Descriptive statistics and basic inferential techniques will be examined.
3 hrs. (lects. and discussion); one term
Prerequisite: Registration in Honours or B.A. Sociology; or Honours Anthropology; or Social Work; or permission of the instructor. Not open to students who are registered in, or have received credit for, a statistics course.
Enrolment in this course may be limited.

**SOCIO 223 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 223.

**SOCIO 333 EUROPEAN SOCIOLOGICAL THEORY**
An advanced examination of classical and contemporary European sociological theory.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 2S3 or 2S6; or permission of instructor. Not open to students with credit in Sociology 3A6.

**SOCIO 3A3 THE SOCIOLOGY OF MASS MEDIA**
The development of the mass media (the press, magazines, radio, television), with particular attention to their social organization, how information and news are produced, and their effects upon social attitudes and behaviour.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of instructor.

**SOCIO 3B3 SELECTED TOPICS IN THE SOCIOLOGY OF EDUCATION**
An examination of selected topics in the sociology of education.
3 hrs. (lects. & discussion); one term
Prerequisite: At least 18 units of Sociology, or permission of instructor.
Enrolment in this course may be limited.

**SOCIO 3BB3 MAJOR DENOMINATIONS IN CANADA**
Same as Religious Studies 3BB3.

**SOCIO 3CC SOCIO-ECONOMIC DEVELOPMENT**
Selected topics in the sociology of underdeveloped countries, including social stratification, revolution, the place of women, and processes of social change. In 1984-86, the course will focus on Africa.
3 hrs. (lects. and seminars); two terms
Prerequisite: At least 18 units of Sociology, or any Level II course in Political Science, or permission of instructor.
Same as Political Science 3B6.

**SOCIO 3CC3 SOCIAL MOBILITY**
An examination of the determinants and consequences of movements up and down the social scale. Such movements will be considered in comparative and historical perspective. Students should have a quantitative background.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 2Y3 or 223 or equivalent; or permission of instructor.

**SOCIO 3D3 SPECIAL TOPICS IN THE SOCIOLOGY OF THE FAMILY**
An advanced course allowing detailed study of selected topics in the Sociology of the Family.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor. Enrolment in this course may be limited.

**SOCIO 3D3 SPORT AND SOCIAL PROCESSES**
Macro-analysis of sport in society: investigation of the relationship between sport and other social institutions.
3 hrs. (lects. and discussion); one term
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 Physical Education 3J3.

**SOCIO 3EE3 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.
Same as Physical Education 3J3.

**SOCIO 3F6 POLITICAL SOCIOLoGY**
A survey of social and state institutions, focussing on current debates in the field.
3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 3G3 SOCIOLOGY OF HEALTH CARE**
The social determinants of illness and of the organization of the health care sector.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor. Enrolment in this course may be limited.

**SOCIO 3H3 RESEARCH TECHNIQUES AND DATA ANALYSIS**
A comprehensive introduction to the principles of research methods and data analysis in the social sciences.
3 hrs. (lects. and labs.); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 3J3 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS II**
An examination of selected topics of contemporary interest to sociologists. Students should consult the Department concerning the topics to be examined.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 3K3 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS III**
Same as Sociology 3J3.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 3L3 SELECTED TOPICS IN OCCUPATIONAL SOCIOLOGY**
An advanced course allowing detailed study of one or more topics of special interest.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.
Offered in alternate years.

**SOCIO 3M6 RELIGION AND MODERN SOCIETY**
An analysis of the relation between religions and society.
3 hrs. (lects. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.
Same as Religious Studies 3M6.

**SOCIO 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. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 303 ADVANCED SOCIOLOGICAL RESEARCH**
This course will provide a detailed study of selected qualitative methods in Sociology.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

**SOCIO 3P3 NORTH AMERICAN SOCIOLOGICAL THEORY**
An advanced examination of classical and contemporary North American sociological theory.
3 hrs. (lects. and discussion); one term
Prerequisite: Sociology 253 or 256; or permission of the instructor. Not open to students with credit in Sociology 3A6.

**SOCIO 3Q3 NATIVE AND ETHNIC RELIGIONS IN CANADA**
Same as Religious Studies 3Q3.

**SOCIO 3R3 RELIGION AND IDENTITY**
Same as Religious Studies 3R3.

**SOCIO 3S3 CREATIVITY AND HUMAN INTERACTION: PART I**
Same as Social Science 3B3 and English 3K3 in 1984-86.
Prerequisite: Open but interview with the instructor prior to registration is highly recommended. Not open to students with credit in Sociology 2B3 or 2X3, or if this topic was taken as English 3K3K.
SOCIOLOGY

SOCIO 3533 CREATIVITY AND HUMAN INTERACTION; PART II
Same as Social Science 3C3. Prerequisite: Social Science 3B3 or English 3K3. Prerequisite: Sociology 2B3 or 2X3 or if this topic was taken as English 3K3.

SOCIO 3TS THE SOCIOLOGY OF URBAN AREAS
Sociological analysis of urban structure and development, and the social consequences of urbanization. 3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIO 3UG 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. and discussion); two terms
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIO 3UG COMPARATIVE INDUSTRIAL SOCIETIES
The similarities and differences of various modern industrial societies will be examined through discussion of various postulated determinants of the structure and processes of such societies. 3 hrs.(lects. and discussion); two terms
Prerequisite: At least 18 units of Sociology; or permission of the instructor.

SOCIO 3W3 HISTORICAL METHODS IN SOCIOLOGY
An examination of methods for incorporating historical data and archival sources into sociological argument. 3 hrs.(seminar); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIO 3X3 SOCIOLOGICAL METHODS
This course deals with changing population structure, economic support of the aged, family of later life, the sociology of retirement, widowhood, death, bereavement, and institutionalization. 3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6; or permission of the instructor.

SOCIO 3Y3 THE SOCIOLOGY OF ORGANIZATIONS II
An advanced course which allows detailed examination of relevant theories and research, including those to which the student was introduced in Sociology 213. 3 hrs.(lect. and discussion); one term
Prerequisite: Sociology 213; or permission of the instructor.

SOCIO 3Z3 ETHNIC RELATIONS
An analysis of political, social and economic change in selected locales. 3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A6, or permission of instructor.

SOCIOL 3A3 FIELD STUDY METHODOLOGY
This course provides students with 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.

SOCIO 4C6 SELECTED PROBLEMS IN SOCIOLOGICAL RESEARCH
Students will undertake a class project which involves quantitative materials. 3 hrs.(seminar); two terms
Prerequisite: Sociology 3F6.

SOCIO 4D3 CRITIQUES OF SOCIOLOGICAL THEORY
A discussion of various sociological and non-sociological critiques of sociological theory. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 2S3 or 2S6; or permission of the instructor.

SOCIO 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 3F6; or permission of the instructor.

SOCIO 4F3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH I
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.

SOCIO 4H3 SELECTED TOPICS IN THE SOCIOLOGY OF ORGANIZATIONS
An advanced course allowing detailed study of aspects of organizational analysis of special interest. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology and Sociology 213; or permission of the instructor.

SOCIO 4I3 SPECIAL TOPICS IN SOCIOLOGICAL THEORY
An advanced critical analysis of special topics/issues in sociological literature. The content of this course will vary from year to year; please consult the departmental handbook. 3 hrs.(seminar); one term
Prerequisite: Sociology 2S3 or 2S6 and registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4J3 SELECTED TOPICS IN SOCIOLOGY I
Topics of contemporary interest to sociologists, with emphasis upon current theory and research. Students should consult the Department concerning the topics to be examined. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIO 4K3 SELECTED TOPICS IN SOCIOLOGY II
Same as Sociology 4J3. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIO 4L3 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH II
Same as Sociology 4J3. 3 hrs.(seminar); one term
Offered in alternate years.

SOCIO 4M3 SELECTED RESEARCH I FOR HONOURS STUDENTS
Directed study of a research problem through published materials and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form. One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIO 4N3 SELECTED RESEARCH II FOR HONOURS STUDENTS
Same as Sociology 4M3. One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIO 4O3 REGIONALISM AND REGIONAL DEVELOPMENT IN CANADA
An examination of regional divisions and disparities in Canada as a social, cultural and economic phenomenon. Emphasis will be placed on the causes of uneven development in Canada, and the impact of regional development policy on the society and economy of Canada's regions. 3 hrs.(seminar); one term
Prerequisite: Credit in Sociology 216; or permission of the instructor.

SOCIO 4P3 INDIVIDUAL AND SOCIETY I
An intensive examination of selected problems involving the relationship of individuals to social structures. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4R3 INDIVIDUAL AND SOCIETY II
An intensive examination of selected problems involving the relationship of individuals to social structures. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4S3 SPECIAL TOPICS IN CANADIAN SOCIETY I
An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4T3 SPECIAL TOPICS IN CANADIAN SOCIETY II
An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years. 3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIO 4U3 SPECIAL TOPICS IN RACIAL AND ETHNIC RELATIONS
A study of the influence of ethnic and racial factors in various societies. In 1984-86 the course will focus primarily on South Africa. 3 hrs.(seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

Same a Political Science 4D6.
Spanish
(See "Romance Languages — Spanish")

Ukrainian
(See "Slavic Studies — Ukrainian")

Undergraduate Academic Awards

The University Senate, acting on behalf of its generous benefactors and donors, bestows academic awards on entering, in-course and graduating students in order to encourage and recognize high levels 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.

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 four-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 as 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) 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 9.5 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 University during each successive 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.
UNDERGRADUATE ACADEMIC AWARDS

The McMaster Scholars Programme
Each year up to five students who are Canadians or landed immigrants and entering from a secondary school may be awarded the title "McMaster Scholar". At any time there may be no more than 16 McMaster Scholars registered in undergraduate programmes. Applications are required and must be submitted not later than March 31. Applicants will be asked to provide a resume, an essay, 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 following awards:

THE GEORGE AND NORA ELWIN SCHOLARSHIPS
Established in 1979 by bequest of George and Nora Elwin of Hamilton.
Value: two scholarships, each up to four years' academic fees.

THE LILLIAN AND LEROY PAGE SCHOLARSHIP
Established in 1982 by donation of the Lillian and Leroy Page Foundation for a student from the Hamilton area entering the Faculty of Science.
Value: up to four years' academic fees.

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: Value $750.

THE CAVESCO CLUB SCHOLARSHIPS
Established in 1961. 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 CHANCELLORS' SCHOLARSHIPS
A variable number will be awarded to students entering a full-time programme of study.
Value: one year's academic fees.

THE HELEN M. CURREY SCHOLARSHIP
Established in 1941 by bequest of Helen Maud Currey of Drumbo, Ontario.
Value: up to four years' academic fees. To be awarded every four years, the eleventh award to be made in 1984.

THE DOWFASCO 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: $6,800 ($1,700 a year for up to four years).

THE DUNDAS SCHOLARSHIPS
Established in 1984 from funds donated anonymously. A variable number of scholarships will be awarded to students from Dundas and surrounding area entering full-time programmes of study.
Value: one year's academic fees.

THE EATON FOUNDATION SCHOLARSHIP
Established in 1962 by The Eaton Foundation. To be awarded to a student entering the Faculty of Business.
Value: up to four years' academic fees.

THE H.P. FRID SCHOLARSHIP
Established in 1982 by the family of H.P. Frid in his memory. To be awarded to a promising student entering a full-time programme of study.
Value: one year's academic fees.

THE MERRILL FRANCIS GAGE ENTRANCE SCHOLARSHIP
Established in 1982 from the estate of Merrill Francis Gage of Hamilton. To be awarded to a keyboard student entering Music 1 who, in the judgment of the Department of Music, has attained outstanding musical proficiency.
Value: $1,000.

THE GOVERNORS' SCHOLARSHIPS
A variable number will be awarded to students entering a full-time programme of study.
Value: up to four years' academic fees.

THE NELLIE P. HOGG SCHOLARSHIPS
Established in 1965 by bequest of Nellie P. Hogg of Hamilton. Two scholarships will be awarded to women students entering a full-time programme of study.
Value: up to four years' academic fees.

THE DR. HARRY LYM 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: $6,800 ($1,700 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 1941 by bequest of J.H. Jury of Bowmanville, Ontario. To be awarded to a student from a Bowmanville High School, preference to be given to students enrolling in Humanities or Social Sciences.
Value: up to four years' academic fees.

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 AMELIA MORDEN, PAARDEBURG CHAPTER, I.O.D.E., SCHOLARSHIP
Established in 1917. Grade 13 subjects to be included are French and either German or Spanish.
Value: up to four years' academic fees.

THE ISABELLA CAMPBELL MCNEE SCHOLARSHIP 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 MOUTON COLLEGE ENTRANCE SCHOLARSHIP
Established in 1980 from funds originally subscribed by the Alumni of Mouton College during the years 1946 to 1949. To be awarded to a woman student entering a full-time programme of study.
Value: up to four years' academic fees.

THE ALVIN I. OGLIVIE SCHOLARSHIPS
Established in 1962 by bequest of Alvin I. Ogilvie of Hamilton. Five scholarships will be awarded to students entering full-time programmes of study.
Value: one year's academic fees.

THE SPECTATOR SCHOLARSHIP
Established in 1955 by The Hamilton Spectator. To be awarded to a student from Hamilton and district.
Value: $6,800 ($1,700 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 THOROFSON MEMORIAL SCHOLARSHIP
Established in 1978 in memory of Professor Frank Thorofson, first Chairman of the Department of Music. One or two scholarships to be awarded to students entering Music 1 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 McMasters Merit Awards

Made available from time to time by authorization of the Board of Governors of the University. Value: forty awards of $800 each.

THE LESLIE A. PRINCE MERIT AWARDS

Established in 1979 in honour of Leslie A. Prince, Dean of Students, by his friends and colleagues upon the occasion of his retirement and in recognition of his outstanding contribution to the University community. Value: two awards of $800 each.

3. Academic Awards 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 thereupon.

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 CANADA INC. SCHOLARSHIP

Established in 1983. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Commerce and who attains the highest Sessional Average (at least 9.5). Value: -$1,000.

THE AMERICAN FOUNDREY’S SOCIETY PRIZE

Established in 1963 by the Ontario Chapter. To be awarded to the student who has completed at least 35, but not more than 85, units beyond Level I of the Metallurgical Engineering programme with a high Sessional Average. Value: $250.

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 30, but not more than 85, units beyond Level I of Honours Metallurgy and Materials Science or Metallurgical Engineering. Value: $900.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS UNDERGRADUATE SCHOLARSHIPS

Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to students with the highest Sessional Average in engineering programmes after the completion of each of (a) Engineering I; (b) at least 35, but not more than 55, units beyond Level I; and (c) at least 70, but not more than 90, units beyond Level I. Value: $375 each (three awards).

THE A.H. ATKINSON PRIZE

Established in 1980 by Atkinson Engineering Consultants Limited. To be awarded to the student in a Civil Engineering programme who achieves the highest average in Civil Engineering 3G4 and 3J4, taken in one Session. Value: $200.

THE J. DOUGLAS BANKIER MEMORIAL SCHOLARSHIP

Established in 1979 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 Statistics 3D6. Value: $400.

THE M. BANKER BATES SCHOLARSHIP

Established in 1975 by Dr. M. Banker Bates and augmented in 1978 in his memory by his family, friends and colleagues. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of a programme in Commerce and who attains the highest Sessional Average. Value: $375.

THE LOUISE E. BETTGER SCHOLARSHIPS IN MUSIC

Established in 1982 in memory of Louise E. Bettger of New Hamburg, Ontario, by her nieces and nephews. Three scholarships to be awarded to student(s) in a programme in Honours Music who, in the judgment of the Department of Music, are outstanding: (a) one to the area of choral or vocal music to a student who has completed Music I or at least 30, but not more than 75, units beyond Level I; (b) one to a keyboard student who has completed at least 30, but not more than 75, units beyond Level I; and (c) one to a student who has completed Music I and who has demonstrated overall musical excellence. Value: $550 each.

THE J.P. BICKELL SCHOLARSHIPS

Established in 1955 by the J.P. Bickell Foundation to encourage interest in the study of geology and metallurgy. Two scholarships to be awarded, normally one to the student entering Level II of Honours Geology, Honours Chemistry and Geology, or Honours 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 9.5. A scholarship is tenable for three years provided the recipient maintains a Cumulative Area Average or Cumulative Engineering Average of at least 10.0. Value: $3,000 each ($1,000 each year).

THE BRIAN BLAKEY MEMORIAL SCHOLARSHIP

Established in 1979 in memory of Dr. Brian Blakey, Professor of French, by his friends, colleagues and former students, on behalf of his wife, Dorothy. To be awarded to the student who attains the highest Sessional Average on completion of at least 60, but not more than 75, units beyond Level I of an Honours programme in Dramatic Arts, French, Italian, Spanish, Classics, English, German or Russian. Students in all programmes except Dramatic Arts must have taken at some point Linguistics 1A6 or Anthropology 1B6 and achieved it in a grade of at least B. Value: $600.

THE BRAMPTON BRICK LIMITED CERAMIC SCHOLARSHIP

Established in 1980. To be awarded to the student who has completed at least 35, but not more than 50, units beyond Level I of Ceramic Engineering with the highest Sessional Average, which must be at least 9.5. Value: $1,000.

THE BRIEN SCHOLARSHIP IN PHILOSOPHY

Established in 1944 by Dr. J. W. Brien of Windsor. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Philosophy and who has the highest Cumulative Area Average. Value: $550.

THE JOSEPHINE STAPLES BRIEN SCHOLARSHIP

Established in 1936 by Dr. J.W. Brien of Windsor. To be awarded to a woman student who is entering her graduating Session and who qualifies on the basis of academic standing and interest in undergraduate activities. Value: $375.

THE DR. AND MRS. F.R. BRITTON SCHOLARSHIP IN MATHEMATICS

Established in 1962 by Dr. and Mrs. F. R. Britton and augmented by Mrs. Britton’s bequest in 1982. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Mathematical Sciences who attains the highest Cumulative Area Average and is not the holder of an award of greater monetary value than this scholarship. Tenable in Levels III and IV provided that the recipient maintains satisfactory standing in an Honours programme in which mathematics, pure or applied, is the major subject of study. Value: $1,500 ($750 each year).
THE CRISPIN CALVO PRIZE
Established in 1978 in memory of Professor C. Calvo by his family and friends. To be awarded to a student who has completed at least 60 units beyond Level I of an Honours programme in Chemistry and who, in the judgment of the Department, shows particular promise in thermodynamics.
Value $225.

THE ELLA HALSTEAD CAMPBELL PRIZE
Established in 1978 by Mrs. Verna Caskey and Miss June Caskey in memory of Ella Halstead Campbell. To be awarded to a keyboard student registered in Music 1E4, 2E4, 3E4 or 4E4 who is outstanding in the judgment of the Department of Music.
Value $200.

THE CANADIAN REFRACTORIES SCHOLARSHIPS
Established in 1975 by the Canadian Refractories Division, Dresser Industries Canada, Limited. Two scholarships to be awarded to students who have completed at least 35 units beyond Level I of a programme in Honours Music and who, in the judgment of the Department of Music, has demonstrated musical excellence.
Value $100 each.

THE NORMAN N. CASKEY MEMORIAL PRIZE
Established in 1983 by Mrs. Verna Caskey and Miss June Caskey in memory of husband and father. To be awarded to a student who has completed Music I or at least 30, but not more than 75, units beyond Level I of a programme in Honours Music and who, in the judgment of the Department of Music, has demonstrated musical excellence.
Value $100.

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION PRIZE
Established in 1983 by the Hamilton Chapter of the Certified General Accountants Association of Ontario. To be awarded to a student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Commerce and who, in the judgment of the Faculty of Business, has achieved an outstanding Sessional Average and a high standing (i.e. grade of at least A – ) in Commerce 2AA3.
Value $150.

THE CHEMICAL INSTITUTE OF CANADA (HAMILTON SECTION) PRIZES
Established in 1984 by the Hamilton Section. To be awarded to students who have completed at least 30, but not more than 50, units beyond Level I: (a) one to a student in an Honours programme in Chemistry who, in the judgment of the Department, shows particular promise in Chemistry; and (b) one to a student in a programme in Chemical Engineering who, in the judgment of the Department, shows particular promise in Chemical Engineering.
Value $50 each.

THE CHEMICAL INSTITUTE OF CANADA PRIZES
Established in 1947 by the Chemical Institute of Canada. To be awarded to students who have completed at least 30, 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 and Computer Science with the highest Sessional Average.
Value 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 DIGITAL EQUIPMENT OF CANADA LIMITED AWARD OF MERIT
Established in 1984. To be awarded to a student who has completed at least 35, but not more than 50, units beyond Level I in a programme in Computer Engineering with a high Cumulative Engineering Average.
Value $100 and medal.

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 Ceramic Engineering with the highest Cumulative Engineering Average.
Value $900.

THE DOW CHEMICAL OF CANADA LIMITED SCHOLARSHIP
Established in 1976. To be awarded to the student who has completed at least 70, but not more than 85, units beyond Level I of the Chemical Engineering programme, has achieved notable academic standing, has demonstrated leadership in extracurricular activities, and is not a holder of another scholarship.
Value $900.

THE HORACE A. DULMAGE PRIZE IN PHILOSOPHY
Established in 1976 in honour of Professor Horace A. Dulmage by his colleagues and friends upon the occasion of his retirement from McMaster University. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in Philosophy and who, in the judgment of the Department of Philosophy, has achieved the most notable standing.
Value $200.

THE I.F. EULL PRIZE
Established in 1980 by Group Eight Engineering Limited. To be awarded to the student in an Electrical Engineering programme who achieves the highest average in Electrical Engineering 3N3 and 3P3, taken in one Session.
Value $200.

THE HAROLD AND GERTRUDE FREEMAN SCHOLARSHIP IN FRENCH
Established in 1981 by members of the Class of '43 as a grateful tribute to Professor Harold A. Freeman, long-time teacher of French at the University and honorary president of the Class in its junior year, and his wife, Gertrude. To be awarded to the student returned from completing Level III abroad as part of the Third Year Elsewhere Programme and entering the final Session of an Honours programme in French who, in the judgment of the French Section of the Department of Romance Languages, has achieved the highest level of accomplishment in knowledge of French language, literature and culture. The recipient must obtain a University Average of at least 8.0 and no F grades in the review at the end of the Winter Session immediately prior to entering the Third Year Elsewhere Programme.
Value $800.

THE KLAUS FRITZE 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 MERRILL FRANCIS GAGE SCHOLARSHIP
Established in 1982 from the estate of Merrill Francis Gage of Hamilton. To be awarded to a student who has completed at least 30, but not more than 75, units beyond Level I of a programme in Honours Music and who, in the judgment of the Department, has demonstrated excellence in performance on a keyboard or orchestral instrument.
Value $550.

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 in an Honours programme in Geology and who, in the judgment of the Department, attains high standing in geology.
Value $50, for books.

THE J.L.W. GILL SCHOLARSHIPS
Established in 1944 by bequest of J.L.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, H.B. Greening. To be awarded to the recommenda-
tion 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 RUTH AND JACK HALL SCHOLARSHIP
Established in 1963 by Jackie MacDonald in memory of her parents. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of an Honours or Major programme in Computer Science, or at least 70, but not more than 90, units beyond Level I of a Computer Engineering programme, and who attains the highest Cumulative Area Average or Cumulative Engineering Average. Value $300.

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 Economic Development Commission 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 1936 by bequest of Mrs. A. 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 $1,000 or greater. Each year quotes are established for each Faculty and other academic units in proportion to the number of full-time undergraduate students who obtain a Sessional Average of 9.5 or greater. Currently, approximately 130 scholarships are available annually. Value $1,150 each.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (HAMILTON SECTION) PRIZES
Established in 1961. To be awarded to the two students who have completed at least 70, but not more than 90, units beyond Level I of Electrical Engineering who attain the highest and second highest Cumulative Engineering Averages. Value $100 and plaque, and $75.

THE INTERMETCO LIMITED SCHOLARSHIP
Established in 1975, by the bequest of Mr. and Mrs. D.N. Cusick, a member of the St. John's-Paris family, who were for many years prominent in the Canadian mining industry. Value $750.

THE ITCA COMMUNITY INVOLVEMENT PRIZE
Established in 1982 by Italian Canadian Community Involvement Incorporat-
ed. 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 a 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. Ivey, the parents of Mrs. French. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of Honours Music and who, in the judgment of the Department of Music, has attained notable standing. Value $125.

THE A.I. JOHNSON SCHOLARSHIP
Established in 1977 in memory of Dr. A.I. Johnson by his friends and former colleagues. To be awarded to a student who has completed at least 110, but not more than 130, units beyond Level I of an Engineering and Management programme. Award to be based on distinguished academic performance during the student's undergraduate career. Consideration will also be given to noteworthy contribution in extracurricular activities. Value $650 and plaque.

THE KATHLEEN MARY JOHNSTON MEMORIAL PRIZE
Established in 1963 by Lawrence D. Johnston in memory of his wife. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Religious Studies and who attains the highest Cumulative Area Average. Value $125.

THE 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 $150.

THE STANDARD N. KATAMBALA GEOLOGY PRIZE
Established in 1983 by Laarakker Photography Inc. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in Honours Geology and who attains high standing in geology. Value $75.

THE GEORGE P. AND LEATHA M. KEYS SCHOLARSHIPS
Established in 1982 by Mrs. Leatha Keys. Three scholarships to be awarded to students who, in the judgment of the Department of Mathematical Sciences, have demonstrated outstanding achievement in Honours and Major programmes in the Department: (a) one to a student who has completed at least 30, but not more than 75, units beyond Level I of the Computer Science programme; (b) one to a student who has completed at least 60, but not more than 75, units beyond Level I of a Mathematics programme; and (c) one to a student who has completed at least 60, but not more than 75, units beyond Level I of a Statistics programme. Value $500 each.

THE KIT MEMORIAL SCHOLARSHIP
Established in 1936 by the Hamilton Branch of the Canadian Women's Press Club (now the Media Club of Canada, Hamilton Branch) in memory of the brilliant journalist and writer, the first president of the Canadian Women's Press Club, Kathleen Blake Coleman, widely known on this continent as "Kit". To be awarded to a woman student either on completion of at least 30 units beyond Level I on the basis of journalistic ability or, on completion of at least 60, but not more than 75, units beyond Level I of an Honours programme in English, on the basis of Cumulative Area Average. Value $225.

THE GERRY LAARAKKER SCHOLARSHIP IN PHILOSOPHY
Established in 1983 by Laarakker Photography Inc. To be awarded to a student who has completed at least 30 units beyond Level I of a programme in Philosophy and who, in the judgment of the Department, has made the most notable contributions to the Department's activities. Value $500.

THE 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 9.5. The scholarship is tenable for three years provided the recipient maintains a Cumulative Engineering Average of at least 8.0. Value $3,000 ($1,000 each year).

THE RAY LAWSON SCHOLARSHIPS
Established in 1978 by the Honourable Ray Lawson, O.B.E., D.C.L., D.Cn.L., LL.D., K.G.M., Lieutenant-Governor of Ontario from 1946 to 1952. Two scholarships to be awarded for the highest Cumulative Engineer-
ing Averages in an Engineering and Management programme: one to a student who has completed at least 70, but not more than 90, units beyond Level I, and one to a student who has completed at least 110 units beyond Level I. Value $500 each.

THE MACKIE SCHOLARSHIP
Established in 1982 by Linda L. Gadsby ('64) in memory of her Mother. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Mathematical Sciences and who attains the highest Sessional Average. Value $500.

THE BETTY MACMILLAN SCHOLARSHIP
Established in 1960 by her classmates in memory of Elizabeth Johnstone
UNDERGRADUATE ACADEMIC AWARDS

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-BURR MEMORIAL SCHOLARSHIP
Established in 1910 by the Class of 1912 in Arts, in memory of their classmates, Percy Neil McGregor, Lee Wilson Smith and George William Burr. Nominations were accepted up to 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 $500.

THE BOYD MCLAY PRIZE IN PHYSICS
Established in 1977 to commemorate the contributions of Dr. A. Boyd McIay (22) to teaching and research in optics and spectroscopy at McMaster University from 1930 to 1954. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I of 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 50, units beyond Level I of a Civil Engineering programme. Awards are based on scholarship and evidence of practical engineering experience and background.

Value $650 each.

THE 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 Armced Forces on the basis of Sessional Average.

Value $350.

THE MOUTON COLLEGE SCHOLARSHIPS
Established in 1957 from funds originally subscribed by the Alumnae of Mouton College during the years 1946 to 1949 for the expansion of Mouton College. Two scholarships to be awarded to the women students of Mouton Hall with the highest Sessional Averages: one after completion of at least 30, but not more than 45, units beyond Level I, and one after completion of at least 60, but not more than 75, units beyond Level I.

Value $800 each.

THE MURATA ERIE NORTH AMERICA, INC. SCHOLARSHIPS IN CERAMICS AND ELECTRONICS
Established in 1982. Two scholarships to be awarded on the basis of scholarship, general technical awareness and participation in university and community activities: one to a student who attains the highest Sessional Average on completion of at least 70, but not more than 85, units beyond Level I of Ceramic Engineering and who in that Session attains a grade of at least A in Materials 3B4; (b) one to a student who attains the highest Sessional Average on completion of at least 70, but not more than 95, units beyond Level I of Electrical Engineering and who in that Session attains an average of at least 10.0 in Electrical Engineering 3B4 and 3F4.

Value $600 each.

THE NIEMIEIER SCHOLARSHIP
Established in 1938 and augmented in 1952 by Dr. O.W. Niemieier. 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 $300.

THE FREDRIC P. OLSEN BOOK PRIZE
Established in 1974 in memory of Professor F.P. Olsen by his family, friends and former colleagues. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in an Honours or Major programme in Chemistry and who, in the judgment of the Department of Chemistry, shows particular promise as an experimental scientist.

Value $150, for books.

THE PAIKIN SCHOLARSHIP
Established in 1957 in memory of Barney David Paikin (33), by Mrs. Barney David Paikin and Morris Paikin. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I and who attains the highest Cumulative Area Average in the Honours History programme.

Value $400.

THE GLADYS BALLYANTYNE PARKER PRIZE
Established in 1953 in memory of Gladys Ballyantyne Parker by her father, Harry Ballyantyne. 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 110, but not more than 130, units beyond Level I of Civil Engineering and Management. Award is based on scholarship (Sessional Average of at least 9.5) and evidence of leadership, self-motivation, and practical aptitude appropriate for a future in the construction industry.

Value $1,500.

THE PETRO-CANADA SCHOLARSHIPS
Established in 1976 by the BP Canada and continued by Petro-Canada. 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 130, but not more than 150, units beyond Level I of Chemical Engineering and Management, and who has achieved notable standing and is otherwise deemed meritorious.

Value $500 each.

THE PRICE WATERHOUSE AND CO. SCHOLARSHIP
Established in 1959 by Price Waterhouse and Co. To be awarded to the outstanding student on the basis of qualifications and academic record after completion of at least 60, but not more than 75, units beyond Level I of a Commerce programme. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.

Value $350.

THE DR. JOHN A. PLYPIUK SCHOLARSHIP
Established in 1967 in memory of Dr. John A. Plypiuk and in recognition of Canadian Engineers Centennial. 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 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 ELLA JULIA REYNOLDS SCHOLARSHIPS
Established in 1984 by bequest of Ella Julia Reynolds of Hamilton. Two scholarships to be awarded on the basis of scholarship and character to students who have completed at least 30, but not more than 75, units beyond Level I of the Honours or Major programme in Physics with a high Sessional Average. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.

Value $1,250 each.

THE HERBERT A. RICKER SCHOLARSHIPS
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 to 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 9.5, 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 9.5. 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 BEN SAUER SCHOLARSHIP
Established in 1986 by Mr. Ben Sauer. To be awarded to a student entering Level II of a Commerce programme on completion of at least 30, but not more than 45, units of the Business I programme with an outstanding Sessional Average. The recipient must not be a holder of another scholarship.

Value $700.

THE SHEILA SCOTT SCHOLARSHIP IN ENGLISH
Established in 1983 by graduates of McMaster University and friends in honour of Sheila Scott, Dean of Women from 1965 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of the Honours English programme, and who has achieved the highest Cumulative Area Average.

Value $450.

THE SHELL CANADA SCHOLARSHIPS IN ENGINEERING AND MANAGEMENT
Established in 1983. Four scholarships to be awarded on the basis of scholarship (Sessional Average of at least 9.5) and demonstration of independent creative effort in Engineering 4A1 or 5A1 project reports.
to students who have completed at least 70, but not more than 90, units beyond Level I, and to two students who have completed at least 110 units beyond Level I of an Engineering and Management programme. Value $1,000 each (four awards).

THE SHENSTONE PRIZE
Established in 1903 by J.N. Shenstone of Toronto, and continued by members of his family. To be awarded to the student in Natural Sciences who attains the highest standing in one of the two Level I courses in chemistry, physics and biology. Value $175.

THE GERALD AND VERN A SIMPSON MEMORIAL SCHOLARSHIP
Established in 1957 by the children in memory of their parents. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I in Honours Physics or Honours Chemistry and Physics with a high Cumulative Area Average. Value $300.

THE SME MANUFACTURING ENGINEERING FOUNDATION SCHOLARSHIPS
Established in 1981. Two scholarships to be awarded to students in the Manufacturing Engineering programme on the basis of the Sessional Average, which must be at least 9.5. Value $1,000 each.

THE C. GORDON SMITH SCHOLARSHIPS
Established in 1973 by the Board of Directors of the CUNA Mutual and the CUMIS Insurance Societies in memory of C. Gordon Smith, who was their first Vice President and Chief Agent in Canada. Two scholarships to be awarded to the 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 SCHOLARSHIPS
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) programmes, 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 SOCIETY OF MANAGEMENT ACCOUNTANTS OF ONTARIO SCHOLARSHIP
Established in 1983. 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 obtains the highest Sessional Average and in that Session attains a grade of at least A+ in Commerce 3AA3. Value $300.

THE SONS OF ITALY OF ONTARIO SCHOLARSHIP
Established in 1971 by the Order Sons of Italy of Ontario. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I and who, in the judgment of the Department of Romance Languages, has achieved the most notable standing in an Honours programme in Italian. Value $300.

THE 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 30, 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 1AB, 1BA, 1BG, 1GH, 1HG, 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 I who attains the highest Sessional Average. Value $200.

THE MABEL STOAKEYL SCHOLARSHIP
Established in 1956 by the Young Women's Canadian Club of Toronto (now the Career Women's Canadian Club of Toronto). To be awarded to a woman student who has completed at least 30, but not more than 45, units beyond Level I, and who gives evidence of outstanding academic achievement and leadership. Value $350.

THE JUANITA LEBARRE SYMINGTON SCHOLARSHIP
Established in 1981 by The Women's Art Association of Hamilton in memory of Juanita LeBarre Symington. To be awarded to the student entering the graduating Session of the Honours Art programme with the highest Cumulative Area Average. The recipient must be from the Hamilton Wentworth Region. Value $300.

THE T.H.B. SYMONS SCHOLARSHIP IN CANADIAN STUDIES
Established in 1978. To be awarded to the student who attains the highest Cumulative Area Average in Canadian Studies after completion of at least 60, but not more than 75, units beyond Level I in a programme in Canadian Studies. Value $250.

THE HUGH R. THOMPSON MEMORIAL PRIZE
Established in 1960 in memory of Dr. Hugh R. Thompson. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of Honours Geography or Honours Geography and Geology with the highest Sessional Average. Value $200.

THE DR. R.A. THOMPSON SCHOLARSHIP IN MATHEMATICS
Established in 1954, by bequest of Dr. William Bethune, in memory of R.A. Thompson, B.A., L.L.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 Petitt, 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 $350.

THE TOUCHÉ ROSS AND CO. SCHOLARSHIP
Established in 1962. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I of a Commerce programme and who attains 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 woman 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 woman student who has completed at least 70, but not more than 90, units beyond Level I of a programme in Engineering with the highest Cumulative Engineering Average. Value $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 has completed at least 60, but not more than 75, units beyond Level I of an Honours programme in Biology, shows an innovative approach to the study of ecology. Value $250.

THE WEIZS FAMILY FOUNDATION SCHOLARSHIP
Established in 1982. To be awarded to the student in the Honours Commerce programme with the highest Sessional Average (at least 9.5) on completion of at least 60, but not more than 75, units beyond Level I. Value $1,500.

THE EMANUEL WILLIAMS SCHOLARSHIP IN PHYSICS
Established in 1948 by Arabel M. Williams of Port Colborne as a memorial to her brother. To be awarded to the student who has completed at least 30, but not more than 45, units beyond Level I of an Honours programme in Physics with the highest Cumulative Area Average and a Sessional Average of at least 9.5. Value $1,000.
UNDERGRADUATE ACADEMIC AWARDS

THE JANICE WILSON MEMORIAL PRIZE
Established in 1961 in memory of Janice Mary Wilson of Stoney Creek. To be awarded to the woman student who has completed at least 30, but not more than 45, units beyond Level I of the Honours History programme and attained the highest Cumulative Area Average. Value $50.

THE WOMEN'S ART ASSOCIATION SCHOLARSHIPS
Established in 1969. Two awards to be made, one to a student entering Level II and the other to a student who has completed at least 30, but not more than 45, units beyond Level I of a programme in Honours Art or Honours Art History with the highest Sessional Average. The recipients must be from the Hamilton-Wentworth Region. Value $200 each.

THE WOMEN'S CANADIAN CLUB OF HAMILTON SCHOLARSHIP IN CANADIAN STUDIES
Established in 1982 by the Women's Canadian Club of Hamilton. To be awarded to the student with the highest Sessional Average after completion of at least 30, but not more than 45, units beyond Level I in a programme in Canadian Studies. Value $500.

THE IVOR WYNNE MEMORIAL PRIZE
Established in 1971 in memory of Ivor Wynne, Dean of Students. To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level I in the Physical Education programme for outstanding achievement in the programme. Value $250.

Residence Scholarships
Nine scholarships were established in 1982 by the University for students in residence at the University. Three were named in honour of Sheila Scott, Dean of Women from 1965 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service.

In addition to meeting the conditions noted in Section 3 (above), the recipients must express intent to live in residence in the following academic year. The monetary benefits will be credited to residence fees in January.

The following scholarships are awarded to the student in each residence with the highest Sessional Average (at least 9.5) in an undergraduate programme, with the exception of those in their graduating Session:

Sheila Scott Scholarships for Brandon Hall (2 awards)
Sheila Scott Scholarship for Wallingford Hall
Bates Residence Scholarship
Edwards Hall Residence Scholarship
Matthews Hall Residence Scholarship
McKay Hall Residence Scholarship
Whidden Hall Residence Scholarship
Woodstock Hall Residence Scholarship

In 1984, 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 9.5 in addition to meeting the conditions noted in Section 3, above.

In 1984, the value of a Senate Scholarship is $575.

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 1966 by bequest of his wife, Edith M. Ashall.

THE EDWIN MARWIN DALLEY MEMORIAL SCHOLARSHIPS
Established in 1960 by bequest of Edwin Marwin Dalley of Hamilton.

THE HAMILTON INDUSTRIAL SCHOLARSHIPS
Established in 1958.

THE BERTRAM OSMER HOOPER SCHOLARSHIP
Established in 1957 by bequest of Isobel F. Hooper. To be awarded in Arts.

THE NINA LOUISE HOOPER SCHOLARSHIP
Established in 1959 by bequest of Bertram O. Hooper.

THE TONY PICKARD MEMORIAL SCHOLARSHIP
Established in 1973 by his wife and family, in honour of Captain Antony F. Pickard, O.B.E., C.D., R.C.N. (Ret'd).

THE HILDA SAVAGE MEMORIAL SCHOLARSHIP
Established in 1960 by bequest of Bertha Savage.

THE SOMERVILLE SCHOLARSHIPS
Established in 1966 by bequest of William L. Somerville, architect of the McMaster University buildings of 1930.

THE STOBO SCHOLARSHIP
Established in 1957 by bequest of William Q. Stobo.

THE UNIVERSITY SCHOLARSHIPS
Made available from time to time by authorization of the Board of Governors of the University.

THE MAGUERITE 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 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), LL.D (159) 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 WILKINS MEMORIAL SCHOLARSHIP
Established in 1963 by bequest of Mrs. T. Russell Wilkins (B.A. '18 Brandon, M.A. '32), daughter of former Chancellor Howard P. Whidden, in memory of her husband, Dr. T. Russell Wilkins ('11). To be awarded to a student who has completed at least 60, but not more than 75, units beyond Level 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 must, in addition, have demonstrated a lively interest in the humanities and 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 AMBASSADOR OF SPAIN BOOK PRIZES
Established in 1982. To be awarded to in-course students for excellence in Spanish studies.
THE AMERICAN-STANDARD PRIZE
Established in 1978. To be awarded to the student in the Ceramic Engineering programme who attains the highest grade in Geology 2B4.
Value $100.

THE SIDNEY L. BLUM SCHOLARSHIP
Established in 1969 by friends and associates in memory of Sidney L. Blum. To be awarded to a student in the Social Work programme who submits the most significant research paper, essay or report of a major project in the field of social justice.
Value $300.

THE 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 1956 by the Canadian Club of Hamilton. To be awarded to the student who attains the highest standing in one of History 3C3, 3V6 or 3Z6.
Value $150.

THE CANADIAN UKRAINIAN WOMEN'S COMMITTEE (HAMILTON BRANCH) PRIZES
Established in 1972. To be awarded to (a) the student who attains the highest standing in Ukrainian 126; (b) the student who attains the highest standing in Ukrainian 2A6; and (c) the student with second highest standing in Ukrainian 2A6.
Value (a) and (b) $100 each, (c) Book.

THE JAMES ROBERTSON CARRUTHERS MEMORIAL PRIZE
Established in 1984 in memory of James Robertson Carruthers ('74) by his family and friends. To be awarded to the student who attains the highest standing in History 2H6 (American history).
Value $100.

THE CLASSICS BOOK PRIZES
Two prizes established by Professor A.G. McKay in 1963. To be awarded to (a) the student who attains the highest average in Classical Civilization 2B3 and 2C3 or Art History 2B3 and 2C3, taken in one Session; and (b) the student with the highest standing in Latin 2C3.

THE CONSUL GENERAL OF ITALY BOOK PRIZE
Established in 1982. To be awarded each year to in-course students for excellence in Italian studies.

THE BEATRICE CORRIGAN MEMORIAL BOOK PRIZE
Established in 1989 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 303.
Value $75.

THE CRANSTON PRIZES
Established in 1958 by William H. Cranston of Midland in honour of his parents, J. Herbert Cranston ('05) 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 GREEK COMMUNITY OF BURLINGTON AND DISTRICT SCHOLARSHIP
Established in 1983. To be awarded to the student who obtains the highest standing in Greek 126.
Value $250.

THE MUNICIPAL CHAPTER OF HAMILTON, I.O.D.E., PRIZE
Established in 1944 by the Municipal Chapter of Hamilton, Imperial Order Daughters of the Empire. To be awarded to the student who attains the highest standing in a Level I History course.
Value $175.

THE INTER NATIONES (BONN) 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 MACGIBBON SCHOLARSHIP
Established in 1970 by bequest of Professor-Duncan A. MacGibbon ('08). To be awarded to the student in an Honours programme in Economics who, in the judgment of the Department of Economics, stands highest in economic history.
Value $400.

THE WILLIAM MACKENZIE MEMORIAL PRIZE
Established in 1977 in memory of Professor William MacKenzie by his friends and colleagues. To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in Economics 3J6 (Economic Development) or, in exceptional circumstances, for work in a related area.
Value $200.

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 4D4 or 4P4.
Value $50.

THE DERRY NOVAK PRIZE
Established in 1984 by the Political Science alumni and colleagues in honour of Professor Derry Novak. To be awarded to the student in a Political Science programme who, in the judgment of the Department, has achieved high standing in Level III courses in political theory or political philosophy.
Value $250.

THE PHYSICAL EDUCATION PRIZES
Established in 1982. Two prizes to be awarded: (a) one to the student on completion of the courses in Level III of the Physical Education programme who, in the judgment of the School of Physical Education and Athletics, has submitted an outstanding paper/project, and (b) one to the student on completion of the courses in Level III of the Physical Education programme who, in the judgment of the School of Physical Education and Athletics, has demonstrated outstanding improvement in academic standing throughout the programme.
Value $50 each.

THE PROCOR LIMITED SCHOLARSHIP
Established in 1962. To be awarded to the student registered in a programme with concentration in Russian studies who attains the highest standing in Russian 2A6.
Value $150.

THE RAND MEMORIAL PRIZE OF CLASS '98
Established by the Class of '98 in Arts, on the occasion of the 25th anniversary of graduation, 1923, in memory of Chancellor Theodore Harding Rand, to encourage original literary work. To be awarded to the student who has completed at least 60, but not more than 75, units beyond Level I and who, in the judgment of the Department of English, has made the most notable original contribution to student publications.
Value $250.

THE LARRY SAYERS PRIZE IN CHINESE HISTORY
Established in 1983 in memory of Larry P. Sayers ('82) by his friends. To be awarded to the student who, in the judgment of the Department of History, has demonstrated outstanding achievement in at least six units of course work in Chinese history.
Value $100.

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...
UNDERGRADUATE ACADEMIC AWARDS

attained the highest grade in Social Work 2B6, and (b) the student who has attained the highest grade in Social Work 3D9.

Value $50 each.
THE ANNE STEIN MEMORIAL PRIZE
Established in 1971 by friends and colleagues of Anne Stein. To be awarded to a student in the programme in Social Work who submits a significant statement pertaining to some philosophical issue or dilemma faced by the social worker in contemporary society.

Value $100.

THE SWISS MINISTER TO CANADA BOOK PRIZES
Established in 1950 and awarded from time to time to in-course students for proficiency in French, German, or Italian.

THE KENNETH W. TAYLOR BOOK PRIZE
Established in 1976 by his children in memory of Dr. Kenneth W. Taylor (’21), L.L.D. (’50). To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses within the area(s) of monetary economics and financial institutions and of public finance.

Value $125.

THE MICHAEL THOMSON MEMORIAL BOOK PRIZES
Established in 1975 by the members of the Departments of German and Russian in memory of Michael Thomson, Supervisor of the McMaster University language laboratories from 1961 to 1975. Two prizes, one to be awarded to the student who attains the highest standing in German 126, and the other to the student who attains the highest standing in Russian 2C6.

Value $50 each.

THE JOHN TOTH MEMORIAL PRIZE
Established in 1983 in memory of John Toth by his friends. To be awarded to the student who attains the highest standing in Latin 126.

Value $100.

THE UNIVERSITY PRIZES FOR SPECIAL ACHIEVEMENT
Established in 1973. Two prizes to be awarded in each Faculty and other academic units to students who exhibit exceptional skill and originality in a creative project (such as an essay, poem, sculpture, mathematical or scientific problem, engineering design) or a related series of such projects.

Value $150 each.

THE R.M. WILES MEMORIAL BOOK PRIZE
Established in 1975 in memory of Professor Roy McKeen Wiles by his friends and colleagues. To be awarded to the student who, in the judgment of the Department of English, has written the best essay on a topic relating to English literature of the period 1660-1800.

Value $225, for books.

5. ACADEMIC AWARDS 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 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 TED ALLEN BOOK PRIZE
Established in 1984 in memory of Frederick J. Allen, an employee and part-time student at McMaster University. To be awarded to the part-time student who attains the highest standing in English 296 (American literature).

Value $50, for books.

THE ALUMNI ASSOCIATION SCHOLARSHIPS
Established in 1974 by the McMaster University Alumni Association and later augmented by bequest of Harold E. Amy. Two scholarships to be awarded in the Fall to part-time students with the highest University Average at the most recent review.

Value $450 each.

THE SIDIY 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 $250 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 their former Hamilton partner, E.H. Ambrose, member of the University’s Board of Governors from 1957 to 1967 and its Chairman, 1965 to 1967. To be awarded to the student in the graduating class of a Commerce programme who, on the basis of scholarship and leadership, is judged to be the outstanding member of the class.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS GOLD MEDAL
Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to the graduand in Engineering having the highest Graduation Average.

THE BASU MEDAL
Established in 1984 in memory of Professor Sanjoy Basu by friends, colleagues and accounting organizations. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has displayed outstanding achievement in accounting and has attained an average of at least 10.0 in any four of Commerce 4AA3, 4AB3, 4AC3, 4AD3, 4AE3, 4AF3.

THE 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 class of Social Sciences graduands, and who has completed the program primarily on a part-time basis.

THE HUMANITIES MEDALS FOR SPECIAL ACHIEVEMENT
Established by the University in 1982. Up to five medals to be awarded to graduating students in the Faculty of Humanities in recognition of outstanding achievement in scholarship and contributions to the cultural and intellectual life of the University including such areas as the creative and performing arts and faculty government.

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 graduands.

Ring

THE BURKE MEMORIAL RING
Presented by science graduates of the University in memory of Dean C.E. Burke. To be awarded to a graduate of a B.Sc. programme who is named to the Deans’ Honour List and who has made the most outstanding contribution to undergraduate activities.

Scholarships and Prizes

THE CAMERON D. ALLEN BOOK PRIZE
Established in 1978 in memory of Cameron D. Allen. To be awarded to a student graduating from an Honours programme in Geography who, in the judgment of the Department, shows outstanding achievement in studies in climatology.

Value $50, for books.

THE ANTHROPOLOGY PRIZE
Established in 1982. To be awarded to the graduating student who has completed a programme in Anthropology primarily on a part-time basis and who, in the judgment of the Department, has demonstrated outstanding academic achievement.

Value $50.
THE WILLIAM AND LIDA BARNES MEMORIAL PRIZE IN HISTOY
Established in 1969 by their son, William D. Barns, of Morgantown, West Virginia. To be awarded to the graduand who, in the judgment of the Department of History, has attained the most notable standing in Honours History.
Value $200.

THE MARION BATES BOOK PRIZE
Established in 1967, Centennial Year, by the Alumnas members of the McMaster Alumni Association in honour of Marion Bates, Dean of Women, from 1946 to 1964. To be awarded to a student at graduation for high standing in the Canadian history of an Honours programme in History.
Value $100, for books.

THE ABE BLACK MEMORIAL PRIZES
Established in 1982 by friends and colleagues of Dr. A.H. Black in memory of a distinguished member of the Department of Psychology from 1958 to 1978. Four prizes to be awarded to: (a) the student who attain the highest Graduation Average in an Honours B.A. programme in Psychology; (b) the student who attains the highest Graduation Average in the Honours B.Sc. programme in Psychology; (c) the student who attains the highest Graduation Average in Honours Biology and Psychology (Life Sciences); (d) the student who, in the judgment of the Department of Psychology, demonstrated outstanding achievement in Psychology 1D6 (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 Mr. and Mrs. E. 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 3A3A, 3A3B, 4A4A and 4A4B.
Value $150.

THE DENTON COATES MEMORIAL SCHOLARSHIP
Established in 1982 in memory of Denton E. Coates (70) by his friends. To be awarded to the graduand who, in the judgment of the Department of 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 COM DEV MICROWAVE SCHOLARSHIP
Established in 1983 by Com Dev Ltd. To be awarded to a student graduating from a programme in Computer Engineering or Electrical Engineering who has attained the highest average in Electrical Engineering 4L3, and 4A4 or 4B4.
Value $350.

THE FINANCIAL EXECUTIVES INSTITUTE PRIZE
Established in 1983 by the Hamilton Chapter of the Financial Executives Institute. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has demonstrated outstanding achievement in courses in finance.
Value $200 and certificate.

THE IROQUOIS TROPHY
Established in 1970 by the Department of Mechanical Engineering. Presented to a graduating mechanical engineering student 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 B.A. 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 the student graduating in a three-Level B.A. programme in English who has attained notable standing in scholarship and has shown qualities of leadership.
Value $200.

THE PILAR MARTINEZ PRIZE
Established in 1983 by Dr. Pilar Martinez. To be awarded to the graduating student who, in the judgment of the Spanish Section of the Department of Romance Languages, has demonstrated excellence in Spanish. The Prize is a pottery plate depicting Don Quixote.

THE ESTHER McCANDLESS MEMORIAL PRIZE
Established in 1984 by friends and colleagues in memory of Professor E. L. McCandless, a humanitarian and distinguished member of the Department of Biology from 1964 to 1983. To be awarded to a student who achieves an outstanding Graduation Average in an Honours programme in Biology.
Value $100.

THE WALTER SCOTT MCLAY SCHOLARSHIP
Established in 1938 in honour of Dean McLay, by his daughter, Mrs. R.R. McLaughlin (Marjorie McLay ’25) and further enlarged in 1950 by A.H. Wilson of Woodstock. To be awarded to the student who attains the highest Graduation Average in an Honours programme in English.
Value $300.

THE E.S. MOORE PRIZE IN GEOLOGY
Established in 1956 by bequest of E.S. Moore, Ltd. (’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; (b) one to a student in a B.A. programme in Psychology who has completed the programme primarily on a part-time basis; (c) one to a full-time student in the three-Level B.Sc. programme in Psychology; and (d) one to a student in a B.Sc. programme in Psychology who has completed the programme primarily on a part-time basis.
Value $50 each.

THE 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.

THE POLITICAL SCIENCE PRIZES
Established in 1982. Two prizes to be awarded to graduating students who, in the judgment of the Department of Political Science, have demonstrated outstanding academic achievement: (a) one to a full-time student in an Honours programme in Political Science, and (b) one to a student who has completed a programme in Political Science primarily on a part-time basis.
Value $50 each.

THE POLITICAL SCIENCE HONOURS ESSAY PRIZE
Established in 1982. To be awarded to the student who, in the judgment of the Department of Political Science, has demonstrated outstanding achievement in Political Science 426.
Value $50.

THE LLOYD REEDS PRIZES
Established in 1983 in recognition of Dr. Lloyd G. Reeds for his outstanding contribution to the Department of Geography during 35 years of service. Four prizes to be awarded: (a) one to the student who attains the highest Graduation Average in an Honours B.A. programme in Geography; (b) one to the student who attains the highest Graduation Average in an Honours B.Sc. programme in Geography; (c) one to the student who attains the highest Graduation Average in a three-Level B.A. or B.Sc. programme in Geography; and (d) one to the student who, in the judgment of the Department of Geography, has demonstrated outstanding achievement in Geography 4C6.
Value $50 each.

THE RELIGIOUS STUDIES PRIZES
Established in 1982. Two prizes to be awarded to students with the highest Graduation Average in a three or four-Level programme in Religious Studies: (a) one to a student who has completed the programme on a full-time basis, and (b) one to a student who has completed the programme primarily on a part-time basis.
Value $50 each.
Supplementary Student Financial Aid

BURSARIES

Unless otherwise specified, application should be made to the Director of Student Financial Aid, Divinity College, Room 229.

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 ATKINSON CHARITABLE FOUNDATION BURSARIES
A fund has been made available for the assistance of able students attending the University of Toronto. 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 BURSARIES
The J.P. Bickell Foundation provides a sum of money for the assistance of students specializing in geology. Application should be made to the Department of Geology.

THE DORIS PARTRIDGE COLE BURSARY
Established in 1981. To be awarded to a worthy student in memory of Doris Partridge Cole (‘48). 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 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.

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Established in 1981. To be awarded to a worthy student in memory of Doris Partridge Cole (‘48). 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 BURSARIES
Established in 1961 by the Wallingford Hall Committee of which Emma Fox was treasurer from 1918 to 1998. To assist female students in any programme.

THE EDWIN W. HILBORN BURSARY
Established in 1965 by bequest of Edwin W. Hilborn. To be awarded to a student in any programme.

THE MARY A. HILL BURSARY
Established in 1976 by bequest of Mary A. Hill. To be awarded to a female student in any programme, preference to be given to one who has graduated from a secondary school in Hamilton.

THE MCMASTER 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 students of war veterans.

THE RAMSEY C. LABARGE MEMORIAL BURSARIES
Established in 1973 by friends and associates in memory of Raymond C. Labarge (‘36) of Ottawa. Four bursaries are available, one in each of: (a) Level II and III of a programme in Commerce, (b) Honours Bursary.

THE LIANNE MARKS BURSARY
Established by her family in 1980, in memory of Lianne Marks, a student at McMaster University, to assist students who are Canadian citizens or permanent residents of Canada. Preference is to be given to students majoring in Sociology. After graduation, recipients will be expected to reimburse the fund to the extent of their award so that the fund can assist increasing numbers of students.

THE MCMASTER 1990 BURSARIES
Established in 1990 by the University to assist undergraduate students in any programme.

THE MCMASTER STUDENTS' UNION BURSARIES
Established in 1982 by the McMaster Students’ Union. To assist those undergraduate MSU members who demonstrate financial need.

THE PROCTOR AND GAMBLE BURSARIES
Established in 1957 by the Proctor and Gamble Company of Canada, Limited. A sum of $2,500 is provided annually to assist students in any programme. Recipients must expect to maintain permanent residence in Canada. It is hoped by the Company that any student who is awarded a bursary will later contribute to the general bursary funds of the University when in a financial position to do so.
THE JAMES AND ELIZABETH ROBERTS BURSARIES
Established in 1957 by R.H. Roberts in memory of his parents to assist any male student of good academic standing.

THE 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. Application should be made to the Department of Geology.

THE SAM SMURLICK BURSARY
Established in 1978 by the Smurlick family in memory of Sam Smurlick ('35). To be awarded to a student 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 female students in any programme.

BURSARIES FOR UNDERGRADUATE VISA STUDENTS
Established in 1982 by the University to assist visa students in any programme.

THE YATES BURSARIES

SHORT-TERM EMERGENCY LOANS

Unless otherwise specified, application should be made to the Director of Student Financial Aid, Divinity College, Room 229.

THE A.H. ATKINSON LOAN FUND
Established in 1967 by A.H. Atkinson to assist engineering students.

THE DEAN OF WOMEN'S EMERGENCY FUND
Established and continued by the McMaster alumnas and individual benefactors to assist female students. This fund is now administered by the Director of Student Financial Aid.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) LOAN FUND
Established by the Hamilton Section of the Engineering Institute of Canada to assist engineering students.

THE HAMILTON AUTOMOBILE CLUB PAST PRESIDENTS MEMORIAL LOAN FUND
Established in 1963 by the Hamilton Automobile Club as a tribute to its deceased past presidents. To be used to assist engineering students.

THE LOUISE HOLMES MEMORIAL LOAN FUND
Established in 1958 by her parents in memory of Louise Holmes, B.A. ('48). To assist female students in any programme.

THE I.O.D.E. LOAN FUNDS
Through the generosity of a number of the local Chapters, Imperial Order Daughters of the Empire, funds are provided to assist female students in any programme or as specified.
D. Muriel Clark Riddell Loan Fund. Established in 1964 by the Right Honourable Stanley Baldwin Chapter, I.O.D.E.
G. Margaret B. Sutterby Memorial Fund. Established in 1956 by the 67th University Battery Chapter, I.O.D.E.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS LOAN FUND
Established in 1968 by the Hamilton Section of the Institute of Electrical and Electronics Engineers. To assist students in a programme in Engineering.

THE RUSSELL E. LOVE MEMORIAL LOAN FUND
Established in 1961 by bequest through the Optimist Club of Hamilton. To assist male students in the penultimate or final level of an Arts programme.

THE MCMILROY LOAN FUND
Established in 1956 by the University Women's Club of Hamilton. To assist female students in the final level of any programme.

THE McMASTER ENGINEERING SOCIETY LOAN FUND
Established in 1971 by the McMaster Engineering Society for the provision of loans to engineering students.

THE PI BETA PHI FRATERNITY LOAN FUND
Established in 1958 by the local alumnas of Pi Beta Phi. To assist female students in any Level IV Honours Arts or Science programme.

THE PROFESSIONAL ENGINEERS' WIVES' ASSOCIATION LOAN FUND
Established in 1972 by the Professional Engineers' Wives' Association to provide loans for engineering students.

THE SOCIETY OF AUTOMOTIVE ENGINEERS (ONTARIO SECTION) LOAN FUND
Established in 1962 by the Ontario Section of the Society of Automotive Engineers. To assist students in a programme in Engineering.

THE IVOR WYNNE MEMORIAL LOAN FUND
Established in 1971 in memory of Ivor Wynne, Dean of Students. To assist students in any programme.

THE UNIVERSITY LOAN FUNDS
Small short-term emergency loans from the University funds are available to assist students in any programme.
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 materials, the H.G. Thode Library of Science and Engineering, the Lloyd Reeds Map Library located in the Burke Science Building and the Health Sciences Library housed in the Health Sciences Centre. Union catalogues covering all libraries are available and stacks are open to all library users.

The collection in 1983 contained over 1,231,000 volumes, about 908,000 microform items, 155,000 non-print items and 1,800 linear metres of archival material. There is a substantial collection of government publications and current periodical titles number over 13,000.

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 materials are the papers of Vera Brittain, Marian Engle, 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. Canadian social and political interests are documented in papers from the Canadian Union of Students, the Canadian Youth Congress, the Quebec Radical Archives, and other related collections. There are holdings of the records of a number of labour unions including U.S.W.A. Local 1005, U.S.W.A. District 6, United Glass and Ceramic Workers (Canada), and the Hamilton and District Labour Council.

Publications

McMaster University Library Research News
Russell, the Journal of the Bertrand Russell Archives
Monographs with the imprint of the McMaster University Library Press.

Staff

Andredes, Carmo, B.A.(Brazil), M.L.S.(McGill)/Librarian, Cataloguing, Health Sciences Library
Baker, Lynda, B.A. (Univ. of California (Berkley)), M.L.S.(Toronto)/Librarian, Reference Services
Ball, Kathryn, B.A.(Laurentian), M.L.S.(Western)/Librarian, Reference Services
Blackwell, Kenneth Milton, B.A.(Victoria), M.L.S.(Western), M.A.(McMaster), Ph.D.(Guelph)/Russell Archivist
Branton, Sharon, L., B.A., B.L.S.(Toronto)/Cataloguing Librarian, Health Sciences
Chan, Ruby M., B.S.S.(Ottawa), B.L.S.(Toronto)/Librarian, Processing Services
Cook, David E., B.A., M.L.S.(Toronto)/Documents Librarian
Donkin, Kate, B.A.(Toronto), M.A.(McMaster)/Map Curator, Lloyd Reeds Map Library
Findlay, Peggy Eleanor, B.A.(York), M.L.S.(Dalhousie)/Information Services Librarian, Science & Engineering
Fitzgerald, Dorothy A., B.A. (Mt. St. Vincent), M.L.S.(Dalhousie)/Librarian, Health Sciences
Fosdick, Emma, B.Sc.(Dalhousie), B.L.S.(U.B.C.)/Librarian, Reference Services
Freeze, Barbara, B.A., B.L.S.(British Columbia)/Interlibrary Loan Librarian
Hayton, Elizabeth Elise, 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
Juozapavicius, Danguole, B.A., M.L.S./Toronto/Librarian, Reference Services
Koger, Merike, B.A.(McMaster), M.L.S.(Toronto)/Order Librarian, Collections Development
Kraav, Marija, B.A.(McMaster), M.S.(Columbia)/Associate University Librarian for Systems Development
Lawrence, Arthur, A.I.B./Associate Director, Library Administration
Leggs, Margaret Liddell, M.A.(Glasgow), A.L.A./Associate University Librarian, Reader Services
Mazur, Carol Mary, B.A.(McMaster), B.L.S.(Toronto)/Librarian, Reference Services
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)/Librarian, Business Library
Pickett, Beatrice Marion, B.A.(McMaster), B.L.S.(Toronto)/Librarian, Processing Services
Pottier, Anne, B.A.(Principia College, M.L.S.(Toronto)/Librarian, Reference Services
Racheter, Carol, B.A., B.L.S., M.L.S.(Toronto)/Director of Processing Services
Siroonian, Harold A., M.S. (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
Ulerky, 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 Collections

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 1,800 Canadian and European art works with a specialized collection of over 140 German Expressionist prints.

The Gallery is open daily except Mondays and Saturdays. Call Local 4685 for further information.

Residences
B. Harrison, Director of Residence Life
B.A. Stewart, Manager of Residence Administration

The University owns and operates nine on-campus residences accommodating 2370 students. The eight traditional-style residences consist of two women's residences (750), three men's residences (620) and two co-educational residences (500). These residences are for single undergraduate students and are provided with staple articles of furniture including desks, chairs, beds, mattresses, pillows and bedding. Students provide their own towels and are responsible for the cleanliness of their individual rooms although a linen change is available weekly.

Sixty per cent of the traditional spaces are reserved for freshmen students and admission is based on academic standing. All students in these eight residences are required to take the food plan which provides for lunch and dinner (Monday to Friday) for the full academic year.

In addition, an apartment-style residence (Bates Residence) accommodates five hundred (500) men and women students. This residence is unfurnished (except for a stove, refrigerator, carpeting and drapes) and is set aside for upperclass students including a limited number of graduate and transfer students and special cases. The food plan is optional.

The University does not provide any on-campus facilities for married students. Students in this category may wish to use the services of the Off-Campus Housing Office.

On-campus housing is the responsibility of the Residence Officer who is headed by a Director of Residence Life and a Manager of Residence Administration both reporting to the Dean of Student Affairs.

The Director of Residence Life is responsible for working with residence student government and appointed Hallmasters in all nine buildings to fashion a mature residence community in which self-discipline is maximized and the need for University-imposed sanctions is minimal. The Hallmasters work with the Hall Council and students on collective programs and individual personal concerns.

The Manager of Residence Administration is responsible for admission systems, withdrawals, waiting lists and administrative support for residence life staff. Enquiries for residence information should be directed to this office.

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
The School of Physical Education and Athletics offers a variety of programmes so that all students have the opportunity to keep fit, compete in athletics at their own level, and enjoy sports of their choosing.

For those 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, ACS
Fleming, William H., M.Sc., Ph.D., Associate Director, Special Systems, Academic
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/Area Administrator, IPACS
Matson, Richard P., Operations Supervisor, ACS
O'Day, Patrick J., Manager, Operations and Technical Services, IPS
Redish, Kenneth A., B.Sc., Computing Consultant
Shepard, Robert K., Manager, Regional Academic Computing
Stadelman, Barbara, Supervisor, Data Control, IPS
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 170/730 dual processor system, a Cyber 170/815 system, an IBM model 3031 computer, two Vax 11/780 and one Vax 11/750, as well as several smaller computers. Student time-sharing terminal areas are located in the Burke Science Building, Rooms 240-245, The John Hodgins Engineering Building, Room 234A, Senior Sciences Building, Room 131 and in Kenneth Taylor Hall, Room B110.

User Assistant 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 Science 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 Department 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
Mrs. Cathy Moulder, Documentaryist

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 20,000 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
GENERAL INFORMATION

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 UDC publishes a monthly listing of new acquisitions.

The Urban Documentation Centre is located in the General Sciences Building, Room 415, telephone ext. 4278.

Office on Aging
Professor K. Kinanen, 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.

McMaster Nuclear Reactor (MNR)
Butler, Michael Paul, B.Eng., M.Eng., P.Eng., Chief Reactor Supervisor
Copley, John R. D., M.A., Ph.D., Professional Scientist and Associate Professor (part-time) of Physics
Ernst, Peter I.C., B.Eng., M.Sc., Reactor Manager
Harvey, John W., B.Sc., Ph.D., Senior Health Physicist
Landsberger, Sheldon, B.Sc., M.Sc., Ph.D., Professional Scientist
LoPresti, Christopher S., B.Eng., Reactor Supervisor
Marshall, Kenneth, Assistant Supervisor
Smith, Donald R., B.Sc., Ph.D., Director, MNR, and Professor (part-time) of Chemistry and Engineering Physics

The McMaster Nuclear Reactor (MNR), which has been operating on the McMaster campus since 1959, is the only medium power nuclear reactor in Canada. MNR is also the only reactor at a Canadian university with adequate power to enable scientists and engineers to explore the many types of research requiring neutron or gamma radiation: nuclear science, applications of nuclear methods, neutron scattering, neutron radiography, high flux activation analysis, isotope production, applications of radioisotopes, and many other areas.

MNR is a MTR open pool-type research reactor producing neutron fluxes up to $1 \times 10^{14}$ neutrons/cm$^2$/second when operating at a power output of 5 megawatts (thermal). It utilizes plate-type enriched uranium to 93% in $^{235}U$ and is moderated and cooled with light water. The open pool concept provides easy access to the reactor core and its experimental facilities, making it a very flexible research reactor. Special facilities are continually being developed to accomodate new research requirements.

The reactor building is strategically located relative to the Science, Engineering, and Health Science Faculties, and is available to all departments for both educational and research activities, and in the establishment of new fields of investigation resulting in a far-reaching effect on education and research at McMaster University. The reactor is also used in commercial, industrial and health applications and by researchers from other major universities and from industry.

Institute for Materials Research
J.A. Morrison, M.Sc., Ph.D., F.R.S.C., F.C.I.C., Director

Research in the chemistry, engineering, metallurgy and physics of solid materials is supplemented through a multidisciplinary Institute for Materials Research. Forty-seven faculty members from nine academic departments in the faculties of science and engineering, as well as graduate students and research fellows associated with them, share research space and facilities in the John Hodgins Engineering and Senior Sciences Buildings. The principal areas of research include: lattice dynamics; kinetics and diffusion; mechanical properties; microelectronic and optical devices; optical materials; phase transformations; thermodynamics; radiation damage; structure determination; surface science.

Services to the Students
Dean of Student Affairs
Larry R. Kurtz, B.A., M.A., Ph.D.

The Dean of Student Affairs heads a variety of specialized student service offices, all of which are described either below or elsewhere in this calendar. The Dean is happy to meet with individuals and representatives of student organizations with grievances, problems, questions or suggestions on any matter concerned with student life and services on campus. The Dean’s office is located in the Commons Building, Room 101A, telephone ext. 4649.

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. In addition to the daily chapel service, there is a weekly communion in the Chapel on Thursdays at 12:30 p.m. followed by a lunch at 1:00 p.m. The Chapel is open for private devotions each weekday from 8:15 a.m. to approximately 10 p.m. After 5 p.m. it may be necessary to enter the chapel through the Divinity College building.

University Chaplains
Catholic and Protestant chaplains on campus provide a wide range of student services in worship, discussion groups, pastoral counseling, and social action. At least one of the chaplains is available during the day in the office, and students can always call the chaplain’s residences for appointments at other times. The chaplains support many student activities as well as caring for personal and religious needs. Their office is in Hamilton Hall, Room 312; telephone ext. 4207, 4208.

Student Counselling Service
R. Heinzi, Director
P. Heron, Counselling Psychologist
A.C. Jean, Career Counsellor
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, family, and peer relationships, and feelings about themselves which interfere with their academic and personal effectiveness. Many students seek help in defining their interests and abilities in order to make important decisions about their academic programmes and careers. Others experience difficulties with their studies, or wish to maximize their efficiency in studying, or want 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 career and education information 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**

Pat. J. Fernando, Advisor

The office is available to all foreign students for consultation, advice and direction in numerous areas of concern, providing information regarding immigration matters, accommodation, orientation, etc. The office is located in Hamilton Hall Room 401, telephone ext. 4748.

**Student Health Service**

Health services are available for the use of undergraduate students throughout the academic term. A physician holds office hours from 9:30 a.m. to 5:00 p.m. weekdays.

Registered nurses are on duty from 8:30 a.m. until 5:30 p.m. The facility is located in McKay Hall Residence on the ground floor, south end, telephone number 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 and free phones for local calling. The Off-Campus Housing Service is located in the Commons Building, Room 101A, extension 4649.

**Student Placement Service**

The Student Placement Office (Canada Employment Centre) operates on a year-round basis to facilitate hiring of graduates, undergraduates, and recent alumni of all disciplines into permanent, temporary and part-time employment. Located in Hamilton Hall, Room 409, office hours are 8:30 a.m. to 4:30 p.m., Monday to Friday, telephone 525-9140, extension 4253.

Major national employers conduct on-campus interviews from October to March for career and summer employment. Coordinating this recruitment program, the Student Placement Office posts announcements on its own and departmental bulletin boards; provides the standardized University and College Placement Association application forms, and forwards them for pre-screening; maintains related job and employer reference material; schedules employment interviews. Students should register at the Placement Office in September to prepare for this program.

A direct referral service to more immediate part-time and career jobs also operates throughout the calendar year. Bulletin boards should be checked regularly.

In addition, Student Placement maintains a library of reference material on a large number of potential private and public sector employers.

Staff are available to meet students on an individual basis to offer job referral assistance and to discuss career-related concerns such as resume development, preparing for interviews and conducting an effective job search.

**Food 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 in residence may purchase plans from the Food Services Department in the Commons Building. Coffee shops are strategically located on the campus, in Senior Sciences Building, Togo Salmon Hall, Kenneth Taylor Hall, and the Rathskellar. Check with the Food Services Department for hours of operation. Food service is also available in a student-operated facility in Wentworth House, and in the cafeteria in McMaster University Medical Centre. Supplementing these facilities are vending machines at many locations about the campus.

**Bookstore**

The University Bookstore, owned and operated by the University, is located in the lower level of Gilmour Hall. A Health Sciences Branch is located in the McMaster University Medical Centre. In addition to course books, the Bookstore maintains a wide range of supplementary reading materials, both academic and general. Stationery supplies and other items are also stocked. Charge accounts may be opened after registration, and students, faculty and staff of McMaster are allowed a 10% discount on textbooks and 5% on general 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 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 are to be 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 affecting the student body.

Under the direction of the Student Representative Assembly, four standing committees have been established 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.

As well, several commissions have been established to organize and run certain events under the direction of the Program Director and the Club Administrator.

The Offices of the Ombudsman and the Researcher are also available to help students with problems they have internal and external to the University and to do research into student concerns. A wide range of entertainment, service, social and informational facilities is organized under the auspices of the MSU. These are all described in the MSU Handbook, available at Hamilton Hall, through the Information Office, Room 226, telephone 528-9887.

Undergraduates are urged to visit Hamilton Hall and to participate in the many student 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.
McMaster Association of Part-time Students (MAPS)

MAPS exists to look after the special interests of part-time students, who have a different educational experience than full-time students. University fees for these students include an assessment to support the Association.

Your Association’s lounge and office are open all year from 10:00 am - 9:30 pm Monday to Thursday, 10:00 am to 2:00 pm Friday. MAPS Executive Assistant, Ms. Judy Worsley, is available to help students. If you have a question pertaining to university procedure or a problem of any kind, Judy can either supply the answer or put you in touch with someone who can.

The part-time student newsletter, LINK, is published on a regular basis, and will be sent to your professor for distribution to you. If you do not receive a copy, call or drop by the office.

MAPS provides the opportunities and methods for part-time students to communicate their needs and ideas to university officials, by ensuring representation on university governing bodies and committees, and by the Association’s direct contact with university administrators on matters such as course availability, evening services and tuition fees.

COPUS, the Canadian Organization of Part-time University Students, works at the provincial and national levels to improve programme 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 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 general law, including the Highway Traffic Act, the Trespass to Property Act and the City of Hamilton Private Parking By-law No. 75-155.

McMaster University Alumni Association

Giving and receiving. These are the twin facets of the role of members of the McMaster University Alumni Association, which seeks to serve its members, and seeks ways and means for its members to serve their University. Founded in 1895, just eight years after McMaster was incorporated, the association now includes more than 45,000 alumni.

The affairs of the association are managed by its council, which includes elected officers and representatives, branch presidents, committee chairpersons, and the alumni representatives on McMaster’s Board of Governors and Senate. Between the five regular meetings of this council each year, the association is directed by an executive committee which includes the officers and selected councilors.

At the grass roots level, several geographic branches operate; most active are those in Hamilton, Brantford 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 access to many University facilities and functions, 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 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 Faculty of Education, Lakehead University, Thunder Bay, Ontario.
Calendar of the School of Education, University of Ottawa, 1245 Kilborn Avenue, Ottawa, 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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Addendum
1984 - 86 Undergraduate Calendar
Office of the Registrar
McMaster University

August 1984

The 1984-86 Undergraduate Calendar cannot be considered complete without the material contained in this Addendum.

ADMISSION REQUIREMENTS

Subject Requirements for Specific Level I Programmes

Changes in subject requirements for the following specific Level I programmes will be effective for students entering McMaster in 1986.

Arts and Science I (Special Programme)
Admission is by selection and candidates may be interviewed.
Required:
1. One Grade 13 credit in English.
2. Another Grade 13 language (if you have not met this requirement, you may be admitted but you must pass a Level I language course other than English in your first 18 units of work);
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum average of 70.0 percent. At least three of the additional Grade 13 credits must be selected from English, Francais, other languages, Relations and Functions, Algebra, Biology, Chemistry, Physics, Geography, History, and Music.
Candidates without these qualifications who nevertheless provide evidence of equivalent promise will be considered.

Business I
Enrolment in Business I is limited and admission is by selection. The following are the minimum requirements for consideration:
1. One Grade 13 credit in Algebra, or Calculus, or Relations and Functions (preferably Calculus).
2. One Grade 13 credit in English.
3. At least three additional Grade 13 credits from among English, Francais, other languages, Calculus, Relations and Functions, Algebra, Biology, Chemistry, Physics, Geography, History, and Economics.
4. Qualification for a Secondary School Honour Graduation Diploma with a minimum average of 70.0 percent over six Grade 13 credits, including those used to satisfy requirements 1, 2, and 3.

Since Business I enrolment is limited, the minimum average of 70.0 percent will not guarantee admission. An average of approximately 75 percent could be required.

Humanities I
Enrolment in Humanities I may be limited and admission is by selection.
Required:
1. One Grade 13 credit in English, with a grade of at least 60 percent.
2. Another Grade 13 language (if you have not met this requirement, you may be admitted but you must pass a Level I language course other than English in your first 18 units of work);
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall weighted average of 65.0 percent. At least three of the additional Grade 13 credits must be selected from the following Humanities subjects, English, Francais, other languages, History, one of the Arts (Drama, Music, Visual Arts); and from the following non-Humanities core courses, Biology, Chemistry, Geography, Mathematics, and Physics.

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

Note: These requirements apply also for Music I for which there is the additional requirement of an audition.

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

If a Grade 13 credit in Mathematics has not been presented, candidates must have Grade 12 credit (advanced stream) in Mathematics.

Other Level I Programmes
There are no changes at this time for Engineering I, Natural Sciences I, Physical Education I, or Social Sciences I.

ACADEMIC REGULATIONS

Second Undergraduate Degrees
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Note: These requirements apply also for Music I for which there is the additional requirement of an audition.

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

If a Grade 13 credit in Mathematics has not been presented, candidates must have Grade 12 credit (advanced stream) in Mathematics.

Other Level I Programmes
There are no changes at this time for Engineering I, Natural Sciences I, Physical Education I, or Social Sciences I.

Second Undergraduate Degrees
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Title changed from Second Undergraduate Degrees to Second Bachelor's Degree Programmes and add the following provision:

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

Students who are allowed to qualify for admission on the basis of further work taken as continuing students at McMaster University may, with the permission of the department and the appropriate Dean, have this course work applied toward the fulfillment of the requirements for the second degree. Faculties wishing this provision to apply only to second degree programmes in another subject may make that restriction in the Faculty regulations.

The Faculty of Science has so indicated.

Deans' Honour List.
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This section should be replaced as follows:
Each year outstanding students are recognized by their being named to the Deans' Honour List for which a minimum average of 9.5 is required. In the case of full-time students, they must have completed in a Winter Session at least 30 units or 36 in the case of Engineering. The Deans have the power to exercise discretion where the full load for a particular level of a programme is less than 30 or 36 in Engineering (e.g. civil Engineering and Engineering Mechanics, Level IV, 34 to 36 units). In the case of a full-time student the minimum average of 9.5 must have been obtained on the University Average. For those who have studied part-time on a continuous basis, the assessment will be made at the reviewing period where 30, 60, and 90 units have been completed and at graduation.
The following method will be used to calculate the Graduation Average:
The Graduation Average for the B. Arts Sc. (Honours) degree will be computed on Arts and Science 2A6 and 206 and all area courses with the level designation of 2 or above taken by students in Levels III and IV.

School of Nursing Admission Policy and Procedure Pages 35 & 36
B. Applicants to the Basic Stream with Other Qualifications:
1. Mature Applicants. Replace point 5 as follows:
   5. have completed or plan to have completed successfully Grade 13 Chemistry and English or equivalents prior to enrolment in the programme.
2. University Students. Replace point 3 as follows:
   3. have completed or plan to have successfully completed grade 13 Chemistry and English or equivalents prior to enrolment in the programme.
3. College Students. Replace point 3 as follows:
   3. have completed or plan to have successfully completed Grade 13 Chemistry and English or equivalent prior to enrolment in the programme.

Honours Russian Studies Area Courses: Delete Political Science 3P6.

Honours Biology and Philosophy Page 56
Level II
   R Replace Philosophy 213 with Philosophy 2R3.
Level IV
   R Replace Philosophy 4C3 with Philosophy 3S3.

Honours Geography (B.Sc.) Page 59
Level II
   R English 1A6 or 1B6 or Humanities 1A6.

B.Sc. in Geography
Level II
   R English 1A6 or 1B6 or Humanities 1A6.

Honours Metallurgy and Materials Science Major Page 64
Level II
   R Engineering 203 (unless materials 1A6 or 1A3 and 1B3 completed)
ARTS AND SCIENCES PROGRAMME

Combined Honours Arts and Science and
Computer Science or Mathematics

Area Courses in All Arts and Sciences courses completed... With All courses completed...

THE FACULTY OF ENGINEERING

Liberal Studies Electives

Add the following: A total of 18 units of liberal studies electives are required in all B.Eng. programmes. Of these, 8 units must be English literature courses and six other units selected from courses that are designated as being above Level I.

Required Programmes

Add

B.Eng. Programmes - Level II

Chemical Eng. and Mgt. - Level II

Chemical Eng. and Mgt. - Level III

Chemical Engineering and Physics and Mgt. - Level III

Chemical Engineering with six units of approved Engineering courses.

Computer Eng. and Mgt.

Level III

B.Eng. English with six units of approved English literature course.

Mechanical Eng. and Mgt.

Level II

B.Eng. English with six units of approved English literature course.

B.Eng. Mechanical Engineering with 603.4.

THE FACULTY OF HEALTH SCIENCES

School of Nursing

Admission Policy and Procedure

Page 35 and 36

B. Applicant to the Basic Stream with Other Qualifications.

- Relevant applicants, English point 5 as follows:
  1. have completed or plan to have completed successfully Grade 13 Chemistry and English or equivalents prior to enrolment in the programme.
  2. have completed or plan to have successfully completed Grade 13 English and other units selected from approved English literature courses.
  3. have completed or plan to have successfully completed Grade 13 Chemistry and English or equivalents prior to enrolment in the programme.
  4. have completed or plan to have successfully completed Grade 13 Chemistry and English or equivalents prior to enrolment in the programme.

HUMANITIES

Enrolment

Humanities I may be limited and admission is by selection.

Required:

1. One Grade 13 credit in English, with a grade of at least 60 percent.
2. One Grade 13 credit in French, Latin, or Greek, with a grade of at least 60 percent.
3. One Grade 13 credit in History, with a grade of at least 60 percent.

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

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 applicants who offer high academic standing are selected.

Required:

1. One Grade 13 credit in English.
2. One Grade 13 credit in French, Latin, or Greek.
3. One Grade 13 credit in Mathematics, Biology, or Physics.
4. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma. At least two of the additional Grade 13 credits must be selected from English, French, Latin or Greek, History, Mathematics, Accounting and Economics, or Geography.

If a Grade 13 credit in Mathematics has not been completed, candidates must have Grade 12 credit (advanced stream) in Mathematics.

ADMISSION REQUIREMENTS
Alternates with American Add to prerequisite: A grade of the instructor.

GarciA Marquez, Prerequisite: Open Seminar

Seminar

Enrolment is limited. Prerequisite: Basic knowledge of Italian. The course gives the student an Italian background or understand an Italian dialect of beginners' course designed for students who come from

instructor.

This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers. Lectures, discussions, skills development: one term. Prerequisite: All of Social Work 2B6, 2C3 and 2D3.

Spanish See Romance Languages above.

Psychology 203 Psychological Statistics

Page 145 Prerequisite: A grade of Mathematics 1A5 and registration in B.Sc. Psychology.

Psychology 208 Research Design and Statistics for Psychologists

For students entering Level II in 1985-86, add: A student receiving credit for Psychology 208 may receive only three additional units credit for Psychology 283.

Psychology 283 Social Behavior Laboratory

Page 146 Replace prerequisite with: Psychology 283 and registration in a 3-year program in Psychology or Biology or permission of the instructor.

Social Work 283 Human Growth and Development

This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers. Lectures, discussions, skills development: one term. Prerequisite: All of Social Work 2B6, 2C3 and 2D3.

Social Work 309 Practice of General SW I

Page 157 For students intending to take SW 309 in 1986/87, add to the prerequisites: Social Work 283 (New Course).

Social Work 383 Social Work with Groups

This course will provide a theoretical knowledge of group practice models for social work within a historical and didactic social work framework. One term. Enrolment is limited.

Social Work 483 Child Welfare

New Course

This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers. Lectures, discussions, skills development: one term. Prerequisite: All of Social Work 2B6, 2C3 and 2D3.

Spanish See Romance Languages above.
HOW TO GET TO THE UNIVERSITY
FROM TORONTO: From Hwy. 403, take the Main St. West exit, turn left at the top of the ramp, then immediately turn right onto Newton St. Proceed along Newton, crossing King St., and turn left onto Sterling St. and on to the Campus.

FROM BRANTFORD: Take Hwy. 403 to the Aberdeen exit. Turn left at the top of the ramp onto Longwood Rd. to King St. Turn left at King to the second traffic lights. Right onto Sterling St. and on to the campus.