UNDERGRADUATE CALENDAR
1987-88

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

Undergraduate Calendar
1987-1988

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

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

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Using the Calendar

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

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

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

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

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

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

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

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

During 1987, McMaster University proudly celebrates one hundred years of active life in post secondary education, during which it has grown to be one of the leading universities in Canada.

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

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

The Faculty of Humanities offers programmes in Art, Art History, Classics (Greek, Latin and Classical Civilization), Dramatic Arts, English, French, German, History, Humanities, Italian, Music, Philosophy, Russian, and Spanish leading to B.A degrees, as well as Bachelor of Music degree both in Education, and in Theory and History. Students pursuing Honours degree programmes in Modern Languages (French, German, Italian, Spanish), may complete and receive credit for the third level of the programme in study at a university in a country whose language is being studied.

The Faculty of Social Sciences offers B.A 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, and the School of Physical Education and Athletics the B.P.E. degree.

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

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

The Faculty of Business offers the Honours B.Com., Honours B.Com. & Arts, and B.Com. degrees, which include work in the following academic areas: accounting, business policy, finance, management science and information systems, marketing and international business, and personnel and industrial relations.

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

Students may register in the Faculty of Engineering to take the five-level Engineering and Management programme which is offered jointly by the Faculties of Business and Engineering.

Most of the over 1000 members of the University faculty hold doctoral degrees in the areas of their specialization. Faculty members are expected to teach both graduate and undergraduate courses and may be involved in the academic counselling of students. The Instructional Development Centre which is assisted by student donations offers workshops in the instructional process, and provides resource material and diagnostic assistance.

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

The athletics programme offers 25 different sports in which over 3,000 men and women participate. The Intercollegiate Athletic Programme provides 17 sports for men and 17 for women. The athletic facilities include a 50-metre pool, a newly-surfaced 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 2,040 students and includes men's and women's residences as well as co-educational facilities.

Access to downtown Hamilton and the activities that a major city has to offer is easy. As part of the extensive downtown redevelopment, new facilities, which support cultural life of the city, have been constructed in recent years. These include an Art Gallery, a Convention Centre, Hamilton Place, an auditorium which seats over 2,0400 persons and includes a studio theatre, and most recently a major arena, the Copps Coliseum. The public library includes teaching facilities, and a Downtown Information Centre operated jointly by McMaster University and Mohawk College.
Sessional Dates

For the purpose of teaching, the academic year is divided into sessions as shown on the chart below. The Winter Session, from September to April, is the session in which most undergraduate students register and classes are offered in both the day and the evening. In 1988, the February to July (Evening) Session will be introduced, with courses being offered at various times during the six-month period. Summer (Day) Session starts at the beginning of July and ends in mid-August.

All application deadlines appear in the next section of this Calendar under Application Procedures.

The 1987-88 Academic Year Divided by Session and Term

The number in the bottom left corner of each block is the start date for that term.
The number in the bottom right corner of each block is the end date of that term, including the examination period.

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<td>WINTER (Day and Evening)</td>
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<td>FEBRUARY to JULY (Evening)</td>
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<td>SUMMER (Day) SESSION</td>
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COURSE SCHEDULE BY TERM
(Other than Winter Session)

February to July (Evening) Session
Term A: 6-unit courses, 1 night per week
Term B: 3-unit courses, 1 night per week
Term C: 6-unit courses, 2 nights per week, and 3-unit courses, 1 night per week
Term D: 3-unit courses, 2 nights per week
Term E: 3-unit courses, 2 nights per week

Summer (Day) Session
Term 1 and Term 2: 3-unit courses, 3 hrs. of instruction, everyday
Term 3: 6-unit courses, 3 hrs. of instruction, everyday

McMASTER TEST OF WRITING COMPETENCE
The McMaster Test of Writing Competence will be held on the following dates.
Friday August 14 and Saturday August 15, 1987
Saturday September 12, 1987
Saturday December 12, 1987
Monday April 11, 1988

CONVOCATIONS
Last day to file a Graduation Information Card for Autumn 1987 Convocation
Friday September 11
Autumn 1987 Convocation (all Faculties)
Friday November 13
Last day for changing Programme for Spring Convocations
Friday February 12
Last day to file a Graduation Information Card for Spring Convocation
Friday March 4
Health Sciences Convocation
Friday May 13
Spring Convocations
Thursday May 26 to Saturday May 28
Last day to file a Graduation Information Card for Autumn 1988 Convocation
Friday September 9
Autumn 1988 Convocation (all Faculties)
Friday November 11
Winter Session 1987-88

The following schedule applies to both full- and part-time students.

REGISTRATION AND CHANGING REGISTRATION

Level 1 Early Registration
Registration (all Levels) as per schedule published annually.
Last day for registration and changing registration in Terms 1 and 3 courses.
Last day for changing registration in Term 2 courses.
Term 2 courses registration in some Faculties.

CLASS SCHEDULE (Day and Evening)
Term 1 classes begin/end
Term 2 classes begin/end
Term 3 classes begin/end

EXAMINATION PERIODS

Final examinations in Term 1 courses and mid-session Level 1 tests.
Final examinations in Term 2 and Term 3 courses.

DEFERRED EXAMINATIONS

Deferred Examinations arising from 1987 April examinations.
Last day to confirm intent to write Deferred Examinations from December 1987 examinations.
Deferred Examinations arising from December 1987 examinations.
Last day to confirm intent to write Deferred Examinations arising from April 1988 examinations.

EXAMINATION SCHEDULE

Winter Session 1987-88

REGISTRATION AND CHANGING REGISTRATION

Level 1 Early Registration
Registration (all Levels) as per schedule published annually.
Last day for registration and changing registration in Terms 1 and 3 courses.
Last day for changing registration in Term 2 courses.
Term 2 courses registration in some Faculties.

CLASS SCHEDULE (Day and Evening)
Term 1 classes begin/end
Term 2 classes begin/end
Term 3 classes begin/end

EXAMINATION PERIODS

Final examinations in Term 1 courses and mid-session Level 1 tests.
Final examinations in Term 2 and Term 3 courses.

DEFERRED EXAMINATIONS

Deferred Examinations arising from 1987 April examinations.
Last day to confirm intent to write Deferred Examinations from December 1987 examinations.
Deferred Examinations arising from December 1987 examinations.
Last day to confirm intent to write Deferred Examinations arising from April 1988 examinations.

FEb. to July (Evening) Session 1988

REGISTRATION AND CHANGING REGISTRATION

The last day for registering and changing registration, by term, are:
Term A and Term B
Term C and Term D
Term E

CLASS SCHEDULE

Term A begins/ends
Term B begins/ends
Term C begins/ends
Term D begins/ends
Term E begins/ends

Mid-term Recess
Good Friday - No classes
Victoria Day - No classes
Canada Day - No classes

WITHDRAWING FROM A COURSE

Last days for withdrawing from a course, by term:
Term A and Term D
Term B
Term C and Term E

EXAMINATIONS

Examinations for Terms A, C, E
Examinations for Term B
Examinations for Term D

DEFERRED EXAMINATIONS

Last day to confirm intent to write Term B Deferred Examinations
Deferred Examinations from Term B
Last day to confirm intent to write Terms A, C, D, and E Deferred Examinations
Deferred Examinations from Terms A, C, D, and E

Summer (Day) Session 1988

REGISTRATION AND CHANGING REGISTRATION

Last day for registration and changing registration in Terms 1 and 3 courses.
Last day for registration and changing registration in Term 2 courses.

CLASS AND EXAMINATION SCHEDULE

Term 1 and Term 3 classes begin
Term 1 classes end (examinations on last day or as arranged by instructor)
Term 2 classes begin
Term 2 and Term 3 classes end (examinations on last day, August 16, or as arranged by instructor)
Civic Holiday - No classes

COURSE WITHDRAWAL

Last day for withdrawing from a Term 1 course
Last day for withdrawing from a Term 2 or Term 3 course

DEFERRED EXAMINATIONS

Last day to confirm intent to write Deferred Examinations arising from 1987 Summer Session examinations
Deferred Examinations arising from 1987 Summer Session examinations
Last day for confirmation of intent to write Deferred Examinations arising from 1988 Summer (Day) Session
Deferred Examinations from 1988 Summer (Day) Session
Application Procedures

DEADLINES
Applicants for admission must have submitted complete applications by the dates given below. A complete application comprises: an application form; all relevant transcripts; and any other documentation stipulated in the Admission Requirements section and the specific Faculty sections of this Calendar, or in letters from the appropriate Faculty or the Registrar's Office.

Most of the programmes have limited admission and may be full before the deadlines given below. The University reserves the right, therefore, not to accept applications submitted after a programme is full and you are advised to submit your application well in advance of the deadlines given below.

- Winter Session - September Entry
  - Medicine: November 1
  - Nursing (other than Grade 13): February 15
  - Social Work: March 1
  - Occupational Therapy/Physiotherapy: April 1
  - Gerontology*: April 15
  - Nursing (Grade 13): May 1
  - All other undergraduate programmes: August 15

- Winter Session - January Entry
  - All eligible programmes: November 30

- February to July Session
  - February entry: January 10
  - May entry: May 31

- Summer Day Session
  - All eligible programmes: May 31
  * Pending approval by Ontario Council on University Affairs.

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 may direct specific queries.

FORMER MCMASTER STUDENTS
If you have previously registered at McMaster, but did not attend last year, you should communicate with the Associate Dean (Studies) of the appropriate Faculty. You may be required to write a letter in order 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 (416) 525-9140 extension 4796). Your application will be considered by the appropriate Faculty committee.

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

Applicants with disabilities are encouraged to contact the Systems Development and Calendar Officer (Office of the Registrar, Gilmour Hall Room 1088, telephone (416) 525-9140 extension 4339) who will discuss their programmes of study and other aspects of university life, and will identify the faculty advisers to whom they should speak.

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

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

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

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

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

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

1. Do you wish to receive grades in the courses you take? NO
   FOLLOW PROCEDURE E
2. Do you wish to study as a part-time student (i.e. take less than 24 units)?
   YES
   FOLLOW PROCEDURE D
3. NO
   FOLLOW PROCEDURE D
4. Do you wish to study for an undergraduate (bachelor's) degree?
   NO
   FOLLOW PROCEDURE D
5. YES
   FOLLOW PROCEDURE D
6. Do you already have an undergraduate degree?
   NO
   FOLLOW PROCEDURE C
7. Are you seeking to enter Level I?
   YES
   FOLLOW PROCEDURE B
8. Are you now taking one or more Ontario Grade 13 subjects?
   NO
   FOLLOW PROCEDURE A

FOLLOW PROCEDURE B
PROCESSION 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>
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<tbody>
<tr>
<td>Arts and Science I</td>
<td>MX</td>
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<tr>
<td>Business I</td>
<td>MB</td>
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<tr>
<td>Engineering I</td>
<td>ME</td>
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<tr>
<td>Humanities I</td>
<td>MH</td>
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<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>
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<tr>
<td>Physical Education</td>
<td>MR</td>
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<tr>
<td>Social Sciences I</td>
<td>ML</td>
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</table>

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

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

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

Obtain an application form (OUAC 105) from the Admissions Office (Gilmour Hall, Room 120, or telephone locally (416) 525-9140, extension 4796; in Ontario, Quebec and Atlantic Canada, call toll-free, 1-800-263-2150; and in Western Canada, call collect, 0-416-525-9555). You should choose one of the following programmes and complete the form:

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<tr>
<th>PROGRAMME</th>
<th>OUAC PROGRAMME CODE</th>
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<td>Arts and Science I</td>
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<td>Business I</td>
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<tr>
<td>Engineering I</td>
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<td>Humanities I</td>
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<td>Music I</td>
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<tr>
<td>Natural Sciences I</td>
<td>MS</td>
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<td>Nursing I</td>
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<td>Physical Education</td>
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<td>Social Sciences I</td>
<td>ML</td>
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Send the form and the application fee to the Application Centre. You should provide transcripts of marks and/or certificates from any secondary school or post-secondary institution you have attended.

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

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

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 Office, Gilmour Hall, Room 120, or telephone. (The numbers are given in Procedure B above.)

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

PROCEDURE D:
This procedure applies to applicants who wish to enter as:
1. part-time students; or
2. non-degree students (Occasional, Continuing, or Post-Degree); 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, or telephone. (The numbers are given in Procedure B above.) You will be provided with more information on application procedures at that time.

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

In order to register as a Listener, write, visit or telephone the Centre for Continuing Education, Commons Building, Room 116, (416) 525-9140, extension 4757.

PROGRAMMES ENTERED ABOVE LEVEL I

Medicine and Nursing (for holders of the Diploma R.N.): If you wish to apply to any of these programmes, refer to the Faculty of Health Sciences section of this Calendar. You should obtain the appropriate application form and make any enquiries at the Health Sciences Registry, McMaster University Medical Centre, Room 1B7, or telephone (416) 525-9140, extension 2114.

Medicine commences after three years of undergraduate study.

Occupational Therapy and Physiotherapy: Entry is at Level IV for those who have completed a diploma programme at Mohawk College, or its equivalent. You should obtain an application form from the Admissions Office, Gilmour Hall, Room 120, or telephone. (The numbers are given in Procedure B above.)

Social Work: The level of entry for Social Work Level II. Admission to the Combined B.A. and Social Work Programme is by selection of the applicants who have completed, or are completing, 30 units of work including Psychology 1A06 and Sociology 1A06 and normally with a University Average of at least 6.0.

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

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

The University reserves the right to change any information contained in this section at any time without notice.

The University Senate has limited enrolment in most programmes so that admission is by selection. This means, therefore, that possession of the minimum admission requirements does not guarantee admission.

Admission from Ontario Secondary Schools

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

EARLY ADMISSION FROM ONTARIO SECONDARY SCHOOLS

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

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

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

REGULAR ADMISSION FROM ONTARIO SECONDARY SCHOOLS

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

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

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

The ‘weighted average’ is computed as in the example below. (Credit values are assigned by the Ministry of Education; we have used fractional credits to demonstrate what a ‘weighted average’ is.)

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

‘Weighted average’ = 416 / 6 = 69.3%

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

ADMISSION FROM LEVEL 4 (GRADE 12)

(This category of admission is under review in light of the changes in the secondary school curriculum.)

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

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

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

Subject Requirements for Specific Level I Programmes

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

ARTS AND SCIENCE I (Special programme)

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

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

In recent years, all students offered admission to the Arts and Science Programme had a grade 13 admission average of 80% or higher.

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

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

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

BUSINESS I

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

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

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

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

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

**ENGINEERING I**

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

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

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

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

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

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

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

**HUMANITIES I**

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

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

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

**Art 1F6:** If you intend to take Art 1F6, you will be required to submit a portfolio, by the end of April, and to have an interview with the Chairman of the Department of Art and Art History. The portfolio should contain a variety of original works in different media including works derived from both first hand observation and the imagination. During the interview students may be asked to do some drawing as an additional means of demonstrating their skills and interests.

Late applications may be considered if places are available in the class.

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

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

**MUSIC I (General)**

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

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

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

**MUSIC I (Performance)**

(The offering of this programme is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.) The academic requirements are the same as for **Humanities I**. In addition, applicants must successfully complete a music audition/examination in which they give evidence of outstanding performing ability on the piano or on a standard orchestral woodwind, brass, or string instrument. The entire audition consists of the following:

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

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

**NATURAL SCIENCES I**

Admission to Natural Sciences I is by selection, and the specific percentage required for admission varies from year to year. Students with weighted Grade 13 averages of 75.0% or better have a good chance of success in science programmes and will be given priority. The following are the minimum requirements for consideration.

1. Grade 13 Calculus.
2. Grade 13 Physics or a second Grade 13 Mathematics credit.
3. One Grade 13 credit in Biology, or Chemistry, or another Mathematics.
4. A weighted average acceptable to the Faculty in Calculus and the two additional credits specified above. (In the last five years, an average of at least 70.0% has been required.)
5. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

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

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

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

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

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

NURSING I
Admission is by selection. Possession of the minimum requirements does not guarantee admission. Normally there are ten times as many applicants as there are places in the programmes. Only those applicants who offer high academic standing are selected. Required:
1. Grade 12 Mathematics (advanced level).
2. One Grade 13 credit in Chemistry and in English.
3. One Grade 13 credit in Mathematics or Biology or Physics.
4. Additional Grade 13 work (within two years prior to application) to qualify for a Secondary School Honour Graduation Diploma. At least two of the additional Grade 13 credits must be selected from English, français, other languages, Calculus, Functions and Relations, Algebra, Biology, Physics, Geography, History and Music.

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

Deadlines: Grade 13 applications must be postmarked no later than May 1 in the year in which study is to commence. Non-grade 13 applications (as described in the Section Faculty of Health Sciences, School of Nursing) must be postmarked no later than February 15 in the year in which study is to commence.

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

PHYSICAL EDUCATION I
Admission to this programme is by selection; the minimum requirements will not guarantee admission. A minimum average of 70.0% (to be computed on the basis of the six highest marks achieved in Grade 13 subjects) will probably be required. Required:
1. One Grade 13 credit in English.
2. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations.
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

It is strongly recommended that one of Biology, Chemistry, or Physics be included by potential applicants in their Grade 13 programmes.

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

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

SOCIAL SCIENCES I
Admission to Social Sciences I is by selection and a minimum average of 70.0% (to be computed on the basis of the six highest marks achieved in Grade 13 subjects) will probably be required. Required:
1. One Grade 13 credit in English.
2. One Grade 13 credit in Algebra, or Calculus, or Functions and Relations.
3. Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma.

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

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

School of Social Work
Admission to the School of Social Work in Level II requires successful completion of any Level I programme, including Psychology IA6 and Sociology IA6. Criteria include an average of at least 6.0 at the end of Level I, and personal suitability.

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

Admission With Other Qualifications

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

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

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

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

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

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

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

D. ADMISSION FROM OTHER CANADIAN PROVINCES
We welcome applications from students from other Canadian provinces. They must meet the following minimum requirements and present subjects appropriate for the programmes as described above under Subject Requirements for Specific Level I Programmes. For clarification, applicants are invited to contact the office of Student Liaison.

Province Qualifications Required
Alberta .................................................. Grade 12
British Columbia ..................................... Grade 12
Manitoba .............................................. Grade 12
New Brunswick ...................................... Year 1 Memorial University of Newfoundland
Newfoundland ........................................ Year 1 Memorial University of Newfoundland
Newwest Territories .................................. Grade 12
Nova Scotia .......................................... Grade 12
Prince Edward Island ................................ Year 1 University of Prince Edward Island
Quebec .................................................. Year 1 CEGEP (General Course)\nSaskatchewan ....................................... Grade 12

E. ADMISSION FROM OTHER COUNTRIES
We have, for convenience, indicated our admission requirements for applicants from selected countries.

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

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

Applicants from Great Britain and the West Indies require:
1. five G.C.E. subjects at least two of which must be at the Advanced Level;
2. Advanced Level subjects appropriate for the programme desired, (refer above to Subject Requirements for Specific Level 1 Programmes);
3. an average of at least 'C' in the two Advanced Level subjects for non-limited enrolment programmes.

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

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

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

Full-time Study: If you do not meet the normal admission requirements described above in Admission from Ontario Secondary Schools, you may be admitted on university probation to full-time study provided you satisfy all of the following three conditions:
1. you are at least 21 years old or will be in the calendar year in which you propose to start; 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 or professional designation at McMaster University or the equivalent (see also K. Graduates of McMaster Certificate Programmes below). Information concerning the date of final application and other details may be obtained from the Associate Registrar (Admissions and Awards).

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

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

If you are admitted, you may register as a Special Student and may take up to six units of work course per session; the Winter Session extends from September to April and the Summer Session from May to August. Normally, these first courses will be Level 1 courses.

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

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

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

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

H. GRADUATES APPLYING FOR A SECOND BACHELOR'S DEGREE
Admission is by selection.

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

If you wish to enter a Second Bachelor's Degree in a subject area from the Faculty of Science, you should note the additional regulations for such a programme in the section Faculty of Science, Second Bachelor's Degree Programmes.

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

I. CONTINUING AND POST-DEGREE STUDENTS:
(Graduates not proceeding to a second degree or an advanced degree)
A Continuing Student is a university graduate who is not proceeding to an advanced degree, but wishes to take one or more undergraduate classes.

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

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

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

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

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

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

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

J. OCCASIONAL STUDENTS:
(Non-graduates attending undergraduate classes for other than degree credit)

Occasional students are those who:
1. do not hold a University degree; and
2. wish to take undergraduate courses; and
3. are or will be at least 21 in the calendar year in which they plan to take university courses.

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

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

K. GRADUATES OF McMaster CERTIFICATE PROGRAMMES

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

L. ENRICHMENT PROGRAMME

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

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

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

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

In limited enrolment programmes up to 5% of places available in Level I may be filled by Visa students.

N. ADVANCED CREDIT

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

In special situations, where a student has acquired the knowledge at another kind of institution or in a different manner such that the qualifications are difficult to assess, the University may require an examination of the student. In such a case, the Associate Dean (Studies) of the Faculty will request the appropriate academic department to assess the feasibility of such an examination. When such an examination is deemed feasible, the department involved will be responsible for deciding the appropriate method of evaluation and for administering the examination, which may consist of a variety of possible modes of evaluation, both written and oral. The examinations must be arranged by the last date for registration in the student's initial term at the University and may not be repeated. Any credit granted as the result of such an examination will be shown on the transcript in the normal manner used for advanced credit.
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. Major programmes are offered in the Faculty of Science only. The general regulations governing these programmes appear in this section of the Calendar. The regulations governing programmes in Business, Engineering, Engineering and Management, Medicine, Nursing, Occupational Therapy and Physiotherapy, Social Work, and Physical Education appear in the appropriate Faculty sections. In the event there is a conflict between the programme regulations for these eight programmes and the general regulations in this chapter, the programme regulations take precedence.

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

General Regulations

RESIDENCE REQUIREMENTS

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

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

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

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

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

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

REGISTRATION

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

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

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

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

Load in Summer Session: No more than 12 units in total may be attempted in the Summer Evening and Day Sessions. Of these, no more than 6 units may be taken during the Summer Day Session, and no more than 3 units during each term of the Summer Day. (This regulation is currently under review.)

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

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

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

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

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

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

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

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

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

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

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

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

MCMASTER TEST OF WRITING COMPETENCE
All undergraduates entering baccalaurate degree programmes must write a test of writing competence which is held in August, September, December, and April.

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

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

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

EXAMINATIONS
Final examinations are held in December and April for the Winter Session, and in August for the Summer Session. The section Sessional Dates will be consulted for the dates of the final examinations of the February to July (Evening) session. Mid-session tests for full-year Winter Session Level I courses are held in December.

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

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

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

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

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

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

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

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

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

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

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

The University makes every effort to ensure that examinations are complete when students receive them. However, it is the student’s responsibility to ensure that the examination is complete, and to draw attention to any discrepancies in the paper.

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

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

No conversation or any form of communication between candidates is permitted in the examination room. No books, papers or instruments may be taken into any examination room unless specifically prescribed on the examination paper. No examination books or supplies are to be removed from the examination room. Smoking is not permitted in any examination room. Handbags must be left beneath the chairs, not on the desks. The University can assume no responsibility for lost articles.

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

Examinations are not rescheduled for purposes of travel.

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

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

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Standing</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>12</td>
<td>first class</td>
</tr>
<tr>
<td>A</td>
<td>11</td>
<td>first class</td>
</tr>
<tr>
<td>A-</td>
<td>10</td>
<td>second class</td>
</tr>
<tr>
<td>B+</td>
<td>9</td>
<td>second class</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>second class</td>
</tr>
<tr>
<td>B-</td>
<td>7</td>
<td>second class</td>
</tr>
<tr>
<td>C+</td>
<td>6</td>
<td>third class</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>third class</td>
</tr>
<tr>
<td>C-</td>
<td>4</td>
<td>third class</td>
</tr>
<tr>
<td>D+</td>
<td>3</td>
<td>third class</td>
</tr>
</tbody>
</table>
**Terminology**

This glossary of terminology is arranged in alphabetic sequence. **Area Courses** (‘A’ courses) are those courses in which the grades are used in computing the Cumulative Area Average (CAA) and the Graduation Average (GA). These courses are listed in the programme requirements.

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

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

For students re-admitted to the University after obtaining a University degree, or who, 3. for any other reason, are required to continue at a previous level, 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 order. Since the student has taken 27 units, the average will be computed on the basis of the best 21.6 units (80% of 27 = 21.6). Thus, only 0.6 units of the course in which the student obtained the D+ have been included.

**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.

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

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

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

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

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

**Reviewing Period** is the time between two reviews for a student. Students records are reviewed in May, July, 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.
ACADEMIC REGULATIONS

**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, July, 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 continue on Programme Probation for one reviewing period. You may be on Programme Probation only once, except with the special permission of the Faculty to reregister.

**MINIMUM REQUIREMENTS FOR CONTINUANCE AT THE UNIVERSITY**

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

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

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

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

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

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

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

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

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

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

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

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

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

**Major Programmes:** Major programmes are available through the Faculty of Science only.

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

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

Graduation Standing in Major degree programmes is awarded in three classes: first-class, second-class, and third-class. For first-class standing a minimum Graduation Average of 9.5 is required; for second-class standing 7.0, and for third-class standing 4.0 for the first group covered.
A student in a Second Degree programme must meet the minimum requirements prescribed in earlier sections for the University Average, the Cumulative Area Average, and the Graduation Average, with the exception that, where the number of Area courses prescribed is less than the minimum normally prescribed for inclusion in the Graduation Average, all Area courses taken in the second degree programme will be included in the computation of the Graduation Average.

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

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

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

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

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

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

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

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

**Graduation**

When you register for the session in which you expect to complete the graduation requirements, you must file a graduation information card. If you fail to do so at the time of registration you must do so in the Office of the Registrar before March 4 for Spring Convocation and before September 11 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.
Financial Information

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

Payment of academic fees does not mean acceptance to the University or approval of a student’s registration. Academic requirements have to be fulfilled before registration is completed.

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

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

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

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

Undergraduate Fees

NOTES APPLICABLE TO ALL UNDERGRADUATES

The fees payable by a student are composed of an academic fee and supplementary fees. The academic fees payable are calculated on a per unit basis up to the maximum stated under Tuition Fee shown in the 1986-87 fee schedules, below. The full supplementary fees are payable by full-time students, i.e. those taking 24 units or more.

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

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

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

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

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

Fees charged by the University are approved annually by the Board of Governors for the academic year commencing September 1. Fees shown below are for 1986/87. The current fee schedule, including the refund schedule, for any given academic year will be sent to each student during the summer preceding September registration.

CANADIAN CITIZENS and LANDED IMMIGRANT STUDENTS

Full-time Fees

The following fees for Canadian students for an academic load of 28 units or more were charged during 1986-87 and are subject to change:

<table>
<thead>
<tr>
<th>Course</th>
<th>Tuition Fee</th>
<th>Supplementary Fees</th>
<th>Total Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine I,II</td>
<td>$2,412.00</td>
<td>$106.00</td>
<td>$2,518.00</td>
</tr>
<tr>
<td>Medicine III</td>
<td>1,608.00</td>
<td>91.00</td>
<td>1,699.00</td>
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<tr>
<td>Engineering, and</td>
<td>1,373.00</td>
<td>155.50</td>
<td>1,528.50</td>
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<tr>
<td>Eng. Mgt. III, V</td>
<td>1,263.00</td>
<td>155.50</td>
<td>1,418.50</td>
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<td>Arts &amp; Sci. Prog., and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td>1,263.00</td>
<td>125.50</td>
<td>1,388.50</td>
</tr>
<tr>
<td>Business,</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Commerce, and</td>
<td>1,263.00</td>
<td>125.50</td>
<td>1,388.50</td>
</tr>
<tr>
<td>Physical Education.</td>
<td>4,330.00</td>
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<td>Nursing</td>
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<tr>
<td>Engineering</td>
<td>7,060.00</td>
<td>155.50</td>
<td>7,215.50</td>
</tr>
<tr>
<td>Business,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commerce, and</td>
<td>4,330.00</td>
<td>125.50</td>
<td>4,455.50</td>
</tr>
<tr>
<td>Physical Education.</td>
<td>4,330.00</td>
<td>130.50</td>
<td>4,460.50</td>
</tr>
<tr>
<td>All other programmes</td>
<td>4,330.00</td>
<td>120.50</td>
<td>4,450.50</td>
</tr>
</tbody>
</table>

Additional Notes to Full-time Fees: For academic loads between 24 and 27 units, the fee was $44.75 per unit plus full supplementary fees.

An additional charge is made for students enrolled in the Nursing and Medical programs to cover the cost of Learning Resource material. The charge is $22.00 for Nursing students and $135.00 for Medical Students.

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

Part-time

For students taking less than 18 units, the fee was $44.75 per unit plus a supplementary fee of $1.25 per unit for membership in the McMaster Association of Part-time Students. Students taking 18-23 units pay supplementary fees of $59.50.

Students enrolled in the Nursing program as part-time students should also note an additional $22.00 charge to cover the cost of Learning Resource material.

Listeners

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

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

Persons Aged 65+

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

VISA STUDENTS

Full-time Visa Students

The following fees for full-time Visa students were charged during 1986-87 and are subject to change.
FINANCIAL INFORMATION

Part-time Visa Students

Engineering, Engineering and Management IV, and Nursing

are assessed at $195.00 per unit tuition fee, plus supplementary fees of $1.25 per unit. For example:

- 3 units × $195.00 per unit = $585.00
- Plus supplementary fees at 3 × $1.25 = 3.75
- Total Fee for a 3-unit course = $588.75
- 6 units × $187.00 per unit = $1,122.00
- Plus supplementary fees at 6 × $1.25 = 7.50
- Total Fee for a 6-unit course = $1,139.50

All other programmes are assessed at $143.00 per unit tuition fee plus $1.25 per unit supplementary fee. For example:

- 3 units × $143.00 per unit = $429.00
- Plus supplementary fees at 3 × $1.25 = 3.75
- Total Fee for a 3-unit course = $432.75
- 6 units × $143.00 per unit = $858.00
- Plus supplementary fees at 6 × $1.25 = 7.50
- Total Fee for a 6-unit course = $863.50

Payment of Fees

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

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

Cheques must be made payable to McMaster University. Any cheque not accepted and returned by the bank will be subject to an additional administrative charge of $15.00.

Failure to comply with payment dates will result in the University adding interest at the rate of 1.5% per month on overdue fees.

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. Fees to the date of withdrawal will be assessed.

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

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.

PREPAYMENT OF ACADEMIC FEES

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

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

- August 1 for Level I students who will be registering in early August;
- August 20 for Upper Level students who will be registering in early September.

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

Students who are expecting to receive financial assistance under the Ontario Student Assistance Programme or are to be recipients of scholarships, bursaries or other awards, may arrange fee deferments 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 an academic award, scholarship, etc., and first installment, should be paid by September 1.

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.

Students who are unable to pay their fees at the time of registration should contact the Business Office Room 208 Gilmour Hall prior to registration.

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 in writing are received at the office of the Dean of the appropriate Faculty. All refunds of tuition are reduced by an administrative charge of $50.00 for full-time students and $10.00 for 6 units or part for part-time students.

Residence and Food Service Fees

REGULAR SESSION

Residence fees for students living on campus cover the period, Labour Day to the end of the April examination period.

The fees below are those for 1986-87. Fees are due on September 1, but may be paid in two instalments. Please note the due dates. Full payment of fees must be completed by January 15.

<table>
<thead>
<tr>
<th>Residence</th>
<th>Payable in Full by September 1</th>
<th>Payable in Part by September 1</th>
<th>Completion of payment by Jan 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room and Board*</td>
<td>$2,670.00</td>
<td>$1,850.00</td>
<td>$820.00</td>
</tr>
<tr>
<td>Apartments: Per Person (Room Only)</td>
<td>1,365.00</td>
<td>950.00</td>
<td>415.00</td>
</tr>
<tr>
<td>Food Plan Only*</td>
<td>1,305.00</td>
<td>910.00</td>
<td>395.00</td>
</tr>
<tr>
<td>* lunch and dinner 5 days per week</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

Students will be assessed for unwarranted breakage.

OTHER THAN REGULAR SESSION

(Students, Alumni, Transient Visitors, and School Children in Groups)

The following rates are for Room Only during May to September.

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

The following rates apply to 1986 only. For successive years and other enquiries, contact the Conference Office, Commons Building Room, 101B, telephone 525-9140, extension 4781.

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

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

Miscellaneous Fees

As a guide, the following fees were in effect for the 1986-87 academic year, and are over and above assessed academic fees, supplementary fees, and residence fees and food plan fees.

OPTIONAL USER FEES

- Transcript (for up to 3 copies) ......................... $ 2.00
- Replacement of Diploma ................................ 15.00
- Replacement of M.D. and Graduate Diploma .......... 25.00
- Letter of Permission .................................... 25.00
- Late Registration Fee ................................... 25.00
- Deferred Examination at Another Centre ............. 30.00
- Supervision of Examinations for Other Universities 25.00
- Examination Reread .................................... 25.00
- Duplicate Tuition Fee Receipt ............................

Replacement of Diploma .....................................
Replacement of M.D. and Graduate Diploma ..............
Letter of Permission ....................................
Late Registration Fee ...................................
Deferred Examination at Another Centre .............
Supervision of Examinations for Other Universities 25.00
Examination Reread ....................................
Duplicate Tuition Fee Receipt ............................

Instalment Fee .........................................
Residence Withdrawal Fee ...............................
Photocopy

Locker, large .......................................... Athletic
Locker, small .......................................... Locker, large ........................................

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 $4,200 depending upon the amount the student chooses to pay for room and board.

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

Transportation: Students are responsible for expenses involved in transporting themselves to community agencies, making home visits or in connection with other clinical practice. In Nursing, for example, if using public transportation, the cost is approximately $34.00 in Level I; $80.00 in Level II; and $135.00 to $175.00 in each of Levels III and IV. In Levels II, III and IV, a car would be an asset.

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

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

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

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

Student Financial Aid

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

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

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

ONTARIO STUDY GRANT PLAN

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

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

CANADA STUDENT LOANS PLAN

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

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

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

ONTARIO STUDENT LOANS PLAN

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

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

ONTARIO SPECIAL BURSARY PLAN

A plan which helps exceptionally needy students (usually single parents) who are unable to attend school full-time but need post-secondary training to improve their job prospects. A student participating in this plan will not receive assistance through the Ontario Study Grant Plan. Bursaries are available to such part-time students enrolled at recognized post-secondary institutions in Ontario only.
ONTARIO WORK-STUDY PLAN
A recent addition to the OSAP package which is intended to complement the original four plans. It offers to needy students part-time jobs during the school year to help them meet exceptional costs, often unexpected, not recognized under OSAP. It also helps students who lack resources expected under OSAP criteria or, whose assessed need under OSAP is not met because of grant/loan maximums or, who do not wish to borrow further due to high debt load.

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

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

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

The following provides a brief summary of the major policies contained in the Senate Policy Statements. Additional copies may be obtained from the Senate Secretariat, Room 1004, Gilmour Hall.

ACADEMIC ETHICS
The expectations of the University for academic work are contained in the document Statement on Academic Ethics.

Academic dishonesty is defined as follows:
Academic dishonesty is not qualitatively different from other types of dishonesty. It consists of misrepresentation by deception or by other fraudulent means. 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 or credits.

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

Students are strongly encouraged, however, to pursue any complaint or grievance through informal channels, before following the formal procedures. Experience has shown that many complaints can be resolved satisfactorily through informal communication.

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

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

Students who have been refused re-admission to an undergraduate degree programme may appeal the decision using the procedures described in the Student Appeal Procedures, if the following two conditions have been met:
1. the applicant withdrew from the University voluntarily; and
2. the applicant alleges error or injustice on grounds other than academic judgement.

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

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

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

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

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

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

Information about applicants for admission who do not gain admission will be kept for a limited period only. For those admitted to the Nursing and M.D. Programmes a separate admission file is maintained.

While a student may have access to his or her file, documents received from a third party in confidence are not normally placed in the student's file, but, in those cases where they have been, they will not be disclosed.

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

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

For information and applications contact:
Ron Coune, Director
Denise Ellis, Financial Aid Coordinator
Student Financial Aid Office
Divinity College, Room 229
McMaster University
Hamilton, Ontario
L8S 4K7
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

McMaster University offers the following undergraduate degrees:

**FACULTY AND DEGREE** | **Duration in Years**
--- | ---
Arts and Science Programme | 3
Faculty of Business | 4
Faculty of Engineering | 4
Faculty of Health Sciences | 1
Faculty of Social Sciences | 4
Second Undergraduate Degree | 2

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 enrollment 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 can be found under the appropriate Department within the section Courses by Departments in this Calendar.

**ELECTIVE COURSES AVAILABLE TO LEVEL I STUDENTS**

- Anthropology 1A03, 1B06, 1Z03
- Art History 1A06
- Biology 1G06
- Canadian Studies 1A06
- Chemistry 1B06
- Chinese 1Z06
- Classical Civilization 1A06
- Comparative Literature 1A06
- Computer Science 1B03, 1C03, 1H03
- Dramatic Arts 1A06
- Economics 1A06
- English 1D06, 1C06
- French 1A06, 1B06, 1D06
- Geography 1A06
- Geography 1B06, 1D06
- Geology 1A03, 1C03
- German 1A06, 1Z06, 2Z06
- Gerontology 1A06
- History 1C06, 1D06, 1L06
- Humanities 1C03, 2B06
- Italian 1A06, 1Z06, 1Z26
- Japanese 1Z06
- Labour Studies 1AA3, 1A03
- Latin 1Z06
- Linguistics 1A06
- Mathematics 1A06, 1B03, 1K03, 1L03, 1M03
- Materials 1A03, 1B03
- Music 1A06
- Philosophy 1B06, 1D06
- Physics 1A06, 1B06, 1C06
- Polish 1Z06
- Political Science 1A06
- Psychology 1A06
- Religious Studies 1B06, 1E06, 1F06, 1G03, 1H03
- Russian 1Z06
- Serbo-Croatian 1Z06
- Sociology 1A06
- Spanish 1A06, 1Z06
- Ukrainian 1Z06

* These courses are not acceptable for the 6-unit liberal studies elective required in Engineering 1.
† These courses are not acceptable for the 6 units of Humanities, Social Sciences, or Science electives required in Natural Sciences 1.

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

Combined Programmes

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

Courses Instructed in French

(In addition, the B.Sc.N. is available as a 2-year programme to those holding a R.N. Diploma.)

*The M.D. Degree is taken after at least three years of undergraduate study.*

*The M.D. Degree is normally shortened.*

*Application procedures, and Academic Regulations, Second Bachelor's Degree Programme.*

*These courses are not acceptable for the 6-unit liberal studies elective required in Engineering 1.*

*These courses are not acceptable for the 6 units of Humanities, Social Sciences, or Science electives required in Natural Sciences 1.*
### 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>
</tr>
</thead>
</table>
| Applied Chemistry | B.A.* | B.Sc. | B.Sc. | B.A.* | B.Com.&Arts (Hon.)
| Art | B.A.* | B.Sc. | B.Sc. | B.A.* | B.Com.&Arts (Hon.)
| Arts and Science | B.Sc. | B.Sc. | B.Sc. | B.Sc. | B.Sc.
| Asian Studies | B.Sc. | B.Sc. | B.Sc. | B.Sc.; B.A. | B.Sc.; B.A.
| Biochemistry | B.Sc. | B.Sc. | B.Sc. | B.Sc. | B.Sc.
| Biotechnology and Genetic Engineering | B.Sc. | B.Sc. | B.Sc. | B.Sc. | B.Sc.
| Biology | B.Sc. | B.Sc. | B.Sc. | B.Sc. | B.Sc.
| Business | B.Sc. | B.Sc. | B.Sc. | B.Sc. | B.Sc.
| Canadian Studies | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Ceramic Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Chemical Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Chemistry | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Chinese | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Civil Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| and Computer Systems | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Civil Engineering and Engineering Mechanics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Classics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Classics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Commerce | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Comparative Literature and Literary Theory | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Computer Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Computer Science | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Dramatic Arts | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Economics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Eighteenth Century Studies | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Electrical Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Engineering Physics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| English | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Film | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| French | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Geography | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Geology | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| German | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Gerontology | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Greek | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Health and Radiation Physics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Hebrew | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| History | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Humanities (Interdisciplinary Studies) | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Italian | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Japanese | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Labour Studies | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Latin | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Life Sciences | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Linguistics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Manufacturing Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Materials Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Mathematics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Mechanical Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Medicine | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Metallurgical Engineering | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Metallurgy and Materials Science | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Modern Languages and Linguistics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Molecular Biology and Biotechnology | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Music (General) | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Music (Performance) | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Nursing | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Occupational Therapy | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Peace Studies | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Philosophy | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Physical Education | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Physiotherapy | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Political Science | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Psychology | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Religious Studies | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Russian | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Sanskrit | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Science | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Serbo Croatian | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Social Work | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Sociology | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Spanish | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Statistics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Theoretical Physics and Applied Mathematics | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*
| Ukrainian | B.A.* | B.A.* | B.A.* | B.A.* | B.A.*

* degree programme is available through a combination of evening and summer study.
† degree programme is pending approval.
×× course areas not offered as degrees.
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 significant achievements in both arts and sciences. The Programme also allows for substantial specialization in a discipline or problem area through the use of electives. A.N. Whitehead expressed the philosophy of the Arts and Science Programme when he wrote:

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

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

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

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

Meeting the last of these objectives is the aim of inquiry seminars which begin in Level I and continue in upper levels. To investigate with skill and insight a serious public issue, such as world population growth 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 preparation for advanced study in many professional schools including those of law, medicine, business, and journalism.

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

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

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

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**Artists and Science Programme**

**H.M. Jenkins/B.A., Ph.D., Director**

**Academic Regulations**

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

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

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

**Inquiry Seminar Requirements**

Inquiry seminars are comprised of Arts and Science 1C06 and a variety of topics offered as Arts and Science 3C06. Arts and Science 1C06 must be completed in Level I.

Students intending to complete the B. Arts Sc. (Honours) degree are required to complete 12 units of upper level inquiry seminars as either two topics of Arts and Science 3C06, or one topic of Arts and Science 3C06 and an additional 6 units in a course or courses approved by the Director that study another age or culture.

Students intending to complete the B. Arts Sc. degree are required to complete 6 units of an upper level inquiry seminar as one topic of Arts and Science 3C06. An additional 6 units (one topic) of inquiry seminar may be taken as an elective.

**Combined Honours**

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

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

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

**Individual Study/Thesis:** Students in the B. Arts Sc. (Honours) Programme are required to complete either Individual Study or Thesis (Arts and Science 4A06, or 4C06). This requirement can be, and in some cases must be, met in the combined discipline.

**Level I Standing**

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

**Continuation Beyond Level II**

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

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

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

Graduation Average
The Graduation Average for all Arts and Science programmes will include Arts and Science 2A06 and 2D06. For combined programmes, a single Graduation Average will be computed.

Arts and Science Programmes
B. ARTS SC.(HONOURS) AND B. ARTS SC.
Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Biology 1A06. (Biology 1A06 must be completed by the end of Level II.)
E Electives to make a total of 30 units.

Level II: 30 units
R Arts and Science 2A06, 2D06; Arts and Science 3C06 (may be taken in Level III); six units from Arts and Science 2R06, Statistics 2D03, 2M03, Computer Science 1MA3 or 1ZA3, Mathematics 1B03; Biology 1A06 (if not completed in Level I).
E Electives to make a total of 30 units.

Level III: 30 units
R Arts and Science 3A06, 3B06, either 3A06 or 3D06, and 3C06 (if not already completed).
E Electives to make a total of 30 units. Students enrolled in B. Arts Sc. may include an additional topic of Arts and Science 3C06 as an elective if one topic was completed in Level II.

Level IV: 30 units
R Arts and Science 3A06 or 3D06 (whichever not completed in Level III); an additional topic from Arts and Science 3C06, if not completed, or a course or courses approved by the Director; 6 to 12 units from Arts and Science 4A06, 4A12, 4C06, 4C12.
E Electives to make a total of 30 units.

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

HONOURS ARTS AND SCIENCE AND ANTHROPOLOGY
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30-33 units of Level I work including Arts and Science 1D06, and Mathematics 1B03.

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

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

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

Admission:
Option A requires a Level I standing of at least 7.0, with at least 7.0 in Economics 1A06.
Option B requires a Level II Cumulative Area Average of at least 7.0, with at least 7.0 in Economics 1A06.

Programme Note:
For both Options A and B, a Single Graduation Average will be calculated on the basis of all Level II, III and IV Economics courses and all Level III and IV Arts and Science courses, and Arts and Science 2A06 and 2D06.

ARTS AND SCIENCE PROGRAMME

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

Level I: 30-33 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Anthropology 1A03 and 1Z03, or 1B06 and 1A03 or 1Z03.

Level II, III, IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units of Arts and Science 3C06; Arts and Science 4A06 or 4C06, or Anthropology 4G03, which may be repeated if on a different topic, or extended to 6 units on the same topic;
Biology 1A06; six units from Arts and Science 2R06, Statistics 2D03, 2M03, Computer Science 1MA3 or 1ZA3, Mathematics 1B03; 30 units of Anthropology Area courses, including 9 units of Level IV Anthropology courses and Anthropology 2F03, 3S06, 4103.
ARTS AND SCIENCE PROGRAMME

Option A:
Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Economics 1A06.
Level II: 30 units
R Arts and Science 2A06, 2D06; Biology 1A06; Economics 2L06, 2M06.
Level III: 30 units
R Arts and Science 3A06, 3B06, 3C06; one of Economics 3C06, Arts and Science 2R06; 6 additional units of Economics.
Level IV: 30 units
R Arts and Science 3D06 and 3C06; Economics 3A03, 3AA3, 4M06 and 6 additional units of Economics.

Option B:
Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Biology 1A06.
Level II: 30 units
R Arts and Science 2A06, 2D06, 2R06; Economics 1A06.
E 6 units of electives
Level III: 30 units
R Arts and Science 3A06, 3B06, 3C06; Economics 2L06, 2M06.
Level IV: 30 units
R Arts and Science 3C06, 3D06; Economics 3A03, 3AA3, 4M06 and 6 additional units of Economics.

HONOURS ARTS AND SCIENCE AND ENGLISH
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30 units of Level I work including at least 7.0 in English 1A06, 1B06, or 1D06.

Programme Note:
Completion of the English component of this combined programme requires a minimum of 6 units of work from five of the six English subfields. Students should consult with the Departmental Counsellor concerning the specific courses related to each subfield.

Area Courses and Calculation of CAA:
The English CAA is calculated on English 2B06, 2G06, 2H06, 2I06, 2V06, 2J06, 3D03, 3D03, 3I03, 3K06, 3Q03, 3QQ3, 3T03, 3V06, 4B06, 4E06, 4L03, 4M06, 4N06.

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; English 1D06.

Levels II, III and IV: 90 units
R Arts and Science 2A06, 2D06, 3B06, 3D06, and 4A06 or 4C06; 12 units of Arts and Science 3C06; Biology 1A06; 6 units from Arts and Science 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Mathematics 1B03; 36 units of English Area courses, including 12 units Level II, 12 units Level III and 12 units Level IV.

HONOURS ARTS AND SCIENCE AND FRENCH
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30 units of Level I work including at least B in French 1A06 or at least B in French 1B06.

Area Courses and Calculation of CAA:
The French CAA is calculated on all Level II, III, IV French courses, except French 3V03.

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; French 1A06 or 1B06.

Levels II, III and IV: 90 units
R Arts and Science 2A06, 2D06, 3B06, 3D06; 12 units from Arts and Science 3C06; Biology 1A06; 6 units from Arts and Science 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Mathematics 1B03; 36 units of French including 12 units French Language Practice including 2A03, 3C03, 4A03, 18 units French/Francophone Literature including one of 2J03, 2J13, one of 2W03, 2W3, one of 3K03, 3K13, one of 3Q03, 3QQ3, and two 3-unit Level IV French courses approved as replacement for Arts and Science 4A06 or 4C06.
E 6 units of electives. Arts and Science 4A06 or 4C06 may be taken as an elective.

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

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

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

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Geography 1A06 or 1B06.

Level II, III, IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units of Arts and Science 3C06; Biology 1A06; 42 units of Geography Area courses including Geography 2LL3 and 2L03, and 24 units from Levels III and IV Geography courses, including Geography 4C06.

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

Programme Notes:
1. By the end of Level III, students must take at least 6 units in each of three of the following six fields of History: European, Ancient, Asian, Canadian, British, and the Americas (excluding Canada).
2. No Level IV seminars may be taken before completion of 12 units of History beyond Level I.

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

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; 6 units of Level I History.

Levels II, III and IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units from Arts and Science 3C06; Biology 1A06; 6 units from Arts and Science 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Mathematics 1B03; 36 units of History courses including 12 units Level II courses, 12 units Level III courses, and 12 units of Level IV courses.

HONOURS ARTS AND SCIENCE AND MATHEMATICS
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30 units of Level I work including Arts and Science 1D06 or Mathematics 1A06, and one of Mathematics 1B03, 1B04, or 1G04.

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

Level I: 30-33 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Mathematics 1B03;
Biology 1A06 (may be taken in Level II).
E 3 units of electives, if Biology 1A06 not taken in Level I.

Level II: 30-36 units
R Arts and Science 2A06, 2D06;
Statistics 2D03 or 2M03 or Arts and Science 2R06 if Biology 1A06 completed in Level I; Mathematics 2A06, 2B06, 2F03;
Biology 1A06 (if not completed in Level I).

Level III: 33-36 units
R Arts and Science 3A06, 3B06, 3C06;
Mathematics 3A06, 3E06 and one of 2C03, 3B03, 3F06, 3H03,
3L06, 3P03, 3Q03, Statistics 3D06.

Level IV: 30-36 units
R Arts and Science 3D06, 3C06, one of 4A06 or 4C06;
one of Mathematics 2C03, 3B03, 3F06, 3H03, 3L06, 3P03, 3Q03,
and 9 to 12 additional units of Mathematics or Statistics from Mathematics 4A06, 4B06, 4E03, 4P03, 4Q06, 4S03, 4V06,
Statistics 4M03.

HONOURS ARTS AND SCIENCE AND PHILOSOPHY
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30 units of Level I work.

Programme Note:
Philosophy 2C06 will be included in calculating the Graduation Average.

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

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Biology 1A06.

Level II, III, IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units from Arts and Science 3C06; 6 units from Arts and Science 2R06; Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Mathematics 1B03;
36 units of Philosophy including: Philosophy 2A06 and 2C06,
3W03 and 4W03 or 4206, and 18 units of Level III and IV Philosophy.
E 6 units

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

Programme Note:
Political Science 2F06 and 2006 will be included in calculating the Graduation Average if taken after Level II.

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

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Biology 1A06.

Level II, III, IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units from Arts and Science 3C06; Arts and Science 4A06 or 4C06. Political Science 4I06 or 4206 may replace Arts and Science 4A06 or 4C06.
6 units from Arts and Science 2R06, or Psychology 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Mathematics 1B03;
36 units of Political Science courses of which only 12 units may be Level II and at least 6 units must be Level IV.
E 6 units of electives if Political Science 4106 or 4206 is taken in place of Arts and Science 4A06 or 4C06.

HONOURS ARTS AND SCIENCE AND PSYCHOLOGY
Continuation Beyond Level I:
Students must achieve a Level I standing of at least 7.0 in the best 80% of the 30 units of Level I work including at least B in Psychology 1A06.

Programme Notes:
1. Students must meet a laboratory requirement by completing one of Psychology 2U03, 3C06, 3E03, 3QQ3, 3S03, 4G03, 4QQ3.
2. Arts and Science 2R06 or Psychology 2R06 will be included in the Graduation Average if taken after Level II.

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

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06;
Psychology 1A06.

Levels II, III and IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units of Arts and Science 3C06;
Psychology 1A06;
Arts and Science 2R06 or Psychology 2R06; Psychology 2H03, 2T03, 3W06, 4D06, 6 units Level III Psychology and 6 units Level III or IV Psychology.
E 6 units of electives.

HONOURS ARTS AND SCIENCE AND RELIGIOUS STUDIES
Admission:
Level I Standing of at least 7.0 in Arts and Science and at least 7.0 in Arts and Science 1A06.

Area Courses and Calculation of CAA:
The overall CAA is based on all courses taken by students who are in Level II, III, or IV. The CAA in Religious Studies is based on all Level II, III, and IV Religious Studies courses.

Programme Note:
Students must complete at least 36 units of Religious Studies in Levels II, III, and IV including: Religious Studies 2GG3, 2NN3, 3F03, 4FF3, 4GG3; 6 units of Level II Religious Studies Area courses; 9 units of Level III Religious Studies Area courses; 6 units of Level IV Advanced Study.

Level I: 30 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Biology 1A06.

Levels II, III, and IV: 90 units
R Arts and Science 2A06, 2D06, 3A06, 3B06, 3D06; 12 units of Arts and Science 3C06; 6 units from Arts and Science 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Math 1B03; Religious Studies 2GG3, 2NN3, 3F03, 4FF3, 4GG3, 6 units Level II and 9 units Level III Area courses, and 6 units Level IV Advanced Study.
E 6 units

BARTS SC/BSW
Admission:
Completion of Level I, including Psychology 1A06 and Sociology 1A06, with a Level I standing of 7.0. An applicant must complete Level I by April of the year in which application is made. The School of Social Work will evaluate personal suitability by one, or a combination of, written statements, tests, or interviews.

Enrolment is limited. Students who intend to apply must consult the School of Social Work before applying; applications must be made prior to March 1.

Continuation Beyond Level I:
Students must achieve a minimum grade of C+ in each of the required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses at each review; students must maintain an Arts and Science Level I standing of 7.0 and a CAA of at least 7.0 at the end of Level II and beyond in order to continue in the programme.
Programme Notes:
1. Courses in Social Work are divided into 3 groupings: required core courses, practice oriented courses, and policy oriented courses. Students should consult a counsellor in the School of Social Work concerning the specific courses related to each grouping.
2. Students are expected to assume the cost of travelling to and from field practice agencies.

Area Courses:
All Social Work Area courses taken for B.S.W. degree. All courses taken in Levels II, III and IV not designated Social Work Area courses will be considered Arts and Science Area courses.

Level I: 36 units
R Arts and Science 1A06, 1B06, 1C06, 1D06; Psychology 1A06; Sociology 1A06.

Level II: 36 units
R Arts and Science 2A06, 2D06; Biology 1A06; Psychology 2A03; Social Work 2B06, 2C03, 2D03, 2E03.

Level III: 36 units
R Arts and Science 3B06, 6 units from Arts and Science 2R06, Statistics 2D03, 2M03, either Computer Science 1MA3 or 1ZA3, Math 1B03; Social Work 3D09, and 3N03 or 3R03; 3 units from Social Work practice courses, and 6 units from Social Work policy courses.
E 3 units.

Level IV: 36 units
R Arts and Science 3C06, and 3A06 or 3D06; Social Work 4D12, and one of Social Work 4O03, 4X03 or 4Y03; 3 units from Social Work practice courses, and 6 units from Social Work policy courses.
The Faculty of Business

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

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

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

Also, the Faculty of Business participates in the Committee of Instruction and offers courses for the B.A. programme in Labour Studies which is described in the Faculty of Social Sciences section of this Calendar.

The Commerce Programmes

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

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

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

PART-TIME STUDIES

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

CONTINUING STUDENTS

Graduates of McMaster's three Commerce programmes or one of the Engineering and Management programmes may take Level III and IV Commerce courses as part-time students with permission of the Associate Dean (Academic Programmes). Such permission will be given only if normal prerequisites are satisfied and if space permits after meeting the requirements of in-course students. (see Admission Requirements I. Continuing and Post-Degree Students).

With this exception, Commerce courses are not open to Continuing Students. Such students are eligible for courses designated Business.

SECOND UNDERGRADUATE DEGREE

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

CREDIT TOWARDS THE M.B.A. AND PROFESSIONAL DESIGNATIONS

If appropriate academic standing has been attained in undergraduate courses, credit may be given toward the Master of Business 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. and B.Eng.Mgt. degrees.

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

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

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

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

Academic Regulations

A student enrolled in any of the Commerce programmes, in addition to meeting the General Academic Regulations of the University, shall be subject to the following Faculty Regulations:
The programmes and academic regulations specified in this calendar apply in their entirety to students entering Level I in September, 1982 or thereafter. Any students who entered Level I previously should refer to Transitional Arrangements for Programmes and Academic Regulations: Faculty of Business. Copies of this document are available from the Office of the Undergraduate Student Advisor (KTH-118).

**CUMULATIVE COMMERCE AVERAGE**

The Cumulative Area Average for the Commerce programmes is termed the Cumulative Commerce Average (CCA) and is the weighted average of grades in all courses, including non-Commerce courses, attempted subsequent to admission to Commerce Level II or readmission to the Commerce programme, excepting those courses designated at registration as Extra.

**WORK LOAD**

A full-time student must complete a 30-unit load 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 (including Extra courses) without the approval of the Associate Dean (Academic Programmes). Such approval will not be given to a student with a Cumulative Commerce Average below 9.0.

**CONTINUATION IN PROGRAMME**

A student who maintains a Cumulative Commerce Average of at least 7.0, with no more than 6 units of F grades, may continue in the Honours Commerce programme. A student who maintains a CCA of at least 7.0, with no more than 6 units of F grades, maintains at least a 7.0 cumulative weighted grade-point average in all Economics courses taken beyond Economics IA06, may continue in the Honours Commerce and Economics programme. A student who maintains a CCA of at least 4.0, with no more than 6 units of F grades, may continue in the Commerce programme.

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

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

**CHANGE OF PROGRAMME**

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

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

Students in good standing in the Engineering and Management programme may transfer to a Commerce programme with the permission of the Associate Dean (Academic Programmes). The condition for eligibility for entrance to the Commerce programmes are the same as for students registered in the Faculty of Business.

**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. The grades for both the failed course and its repetition or replacement, as appropriate, will be included in the calculation of a student’s CCA. Voluntary repetitions of courses in which passing grades have been previously attained are designated as Extra courses. (See Extra Courses below)

**EXTRA COURSES**

Courses in addition to those which constitute the student’s programme must be designated Extra at registration and the grades obtained in such courses affect neither eligibility for continuation in the programme nor graduation standing. In addition, the units are not included in those required for graduation. The designation Extra can be neither 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 in Level II, III or IV of a Commerce programme who becomes ineligible to continue in the Faculty may apply for re-admission to the Commerce programme in a subsequent calendar year.

Re-admission is not guaranteed.

Application for re-admission must be made in writing to the Associate Dean (Academic Programmes) by April 30 of the year for which re-admission is desired. This application should explain why the student would expect to succeed in the programme if re-admitted.

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 earliest possible session for re-admission is the session starting in September of the year following the year in which the student became ineligible to continue. The computation of a student’s CCA begins anew at such re-admission.

**PREREQUISITES FOR COMMERCE COURSES**

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

**COURSE CHANGES**

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

**GRADUATION**

The Graduation Average (GA) 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 9.5 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.

**INQUIRIES RE: ACADEMIC REGULATIONS**

A student seeking relief from the Faculty of Business regulations must apply in writing, with appropriate documentation attached. Guidelines for such requests may be obtained from the Office of the Undergraduate Student Advisor (Kenneth Taylor Hall, Room 118).

**Programmes**

The chart Structure of Programmes should be used in conjunction with the text description of the programmes that follow.

**BUSINESS I: 30 units**

R Computer Science 1BA3; Economics 1A06; Mathematics 1L03; Mathematics 1M03 or 1A06; Psychology 1A06 or Sociology 1A06.

E Electives to make a total of 30 units (students without Grade 13 Calculus must elect Mathematics 1K3).

**COMMERCE**

Admission:

Admission to Commerce Level II 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 a weighted average of at least 5.0 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).

Enrolment in Commerce Level II is limited to a maximum of 300 students.

A maximum of 50 of the 300 places in Commerce Level II may 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, 2MA3, 2QA3; Economics 2G03 or 2L06; Economics 2H03 or 2M06.

(A student who wishes to proceed in the Honours Commerce programme or the Commerce programme may substitute Economics 2L06 for 2G03 and Economics 2M06 for 2H03, and should do so if a substantial amount of further work in Economics is planned. A student who wishes to proceed in the Honours Commerce and Economics programme must take Economics 2L06 and 2M06.)

E Electives from non-Commerce courses to make a total of 30 units.

(A student who wishes to proceed in the Honours Commerce and Economics programme must take elective work from other than Commerce and Economics courses, and is advised to elect Mathematics 2L03 as preparation for Economics 3A03 in Level III.)

**HONOURS COMMERCE (Honours B.Com.)**

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

**Level III: 30 units**

R Commerce 3AA3, 3FA3, 3MA3, 3QA3, 3QB3; Commerce 3BA3 or 3BB3; six additional units from among Commerce 3AB3, 3BA3, 3BB3, 3FB3, 3MB3.

E 6 units of electives from non-Commerce courses.

**Level IV: 30 units**

R Commerce 4PA3, 4QA3; 15 or 18 additional units from Groups 1 to 6 below. No more than 12 of these 15 or 18 additional 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.

**STRUCTURE OF PROGRAMMES**

<table>
<thead>
<tr>
<th>LEVEL I</th>
<th>30 units*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>Introductory courses in computer science, economics, mathematics, and technology or psychology</td>
</tr>
<tr>
<td>Electives</td>
<td>Chosen from courses offered in Humanities, Science and the Social Sciences</td>
</tr>
<tr>
<td>30 units</td>
<td>30 units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL II</th>
<th>30 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>Commerce courses in accounting, finance, marketing, organizational behaviour, statistical analysis, Intermediate level courses in Economics</td>
</tr>
<tr>
<td>Electives</td>
<td>Non-Commerce courses offered in other Faculties</td>
</tr>
<tr>
<td>30 units</td>
<td>30 units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL III</th>
<th>30 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>Commerce courses in Business Policy and Operations</td>
</tr>
<tr>
<td>Electives</td>
<td>Commerce electives</td>
</tr>
<tr>
<td>30 units</td>
<td>6 units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL IV</th>
<th>30 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required</td>
<td>Commerce courses in Business Policy and Production/Operations</td>
</tr>
<tr>
<td>Electives</td>
<td>Commerce electives</td>
</tr>
<tr>
<td>30 units</td>
<td>6 units</td>
</tr>
</tbody>
</table>

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

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

* A unit represents one class hour per week for a 13 week term.
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:

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

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

- Civil Engineering and Computer Systems

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

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

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

At McMaster, Engineering students take a common Level I programme comprising Mathematics, Physics, Chemistry, Engineering Design, Computation and a liberal studies elective. The specialized programmes are entered at Level I. Students interested in one of the Engineering and Management programmes must take Economics 1A06 as their elective in Level I.

Programmes offered by the Faculty of Engineering include three 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 1A06 for Engineering and Management programmes).

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

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

**Technical Electives** are Engineering or Applied Science courses in subjects relevant to the particular Engineering programme.

**Commerce Electives** are required in Level V of Engineering and Management programmes. With appropriate selection of these electives, students may obtain exemption from certain course requirements on subsequent admission to the MBA programme at McMaster University.

Both the appropriate Department Chairman and the Associate Dean of Engineering must approve each student's Technical and Commerce Elective Courses.

**Academic Regulations**

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

**ENGINEERING I**

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

**ADMISSION TO LEVEL II ENGINEERING PROGRAMMES**

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

**CUMULATIVE ENGINEERING AVERAGE**

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

**CONTINUATION IN PROGRAMME**

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

**THE MCMASTER TEST OF WRITING COMPETENCE**

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

**SEQUENCE OF COURSES**

Courses must be taken in the sequence specified in the Calendar for the Programme. Students must register for all outstanding work of one Level before attempting work for a higher Level.
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.

WINTER SESSION WORK LOAD
The Faculty of Engineering has set a minimum Winter Session work load of 34 units for Engineering I students. The work load for other students must be approved by the appropriate Department Chairman and the Associate Dean of Engineering. In order to qualify for most scholarships, students should register in the full load of work prescribed by programme and level.

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

Readmission is not guaranteed.
A student who is readmitted after being ineligible to continue at a given Level must repeat all the courses of that Level, unless specific course exemptions are granted explicitly in the letter of readmission. The computation of the Cumulative Engineering Average begins anew at such readmission.

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

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

Engineering I: 37 units
R Chemistry 1A06; Engineering 1C04, 1D03; Mathematics 1H05, 1N06; Physics 1D03, 1E04.
E 6 units liberal studies elective. Note: In order to be considered for admission to one of the Engineering and Management programmes at Level II, it is necessary to complete Economics 1A06, with a grade of at least C.

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 1A06 with a minimum grade of C.

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

Programme Notes:
1. Level II Ceramic Engineering is identical to Level II Metallurgical Engineering. Transfer to Level III Metallurgical Engineering can therefore be made without course deficiency.
2. Attention is drawn to Materials 4A01, which requires a report based on experience in the summer before entering Level IV.

Level II: 36 units
R Chemistry 2T06; Engineering 2M04, 2003, 2P04; Materials 2C04, 2F03; Mathematics 2M06; 6 units approved English literature.

Level III: 37 units
R Ceramics 3A04; Chemical Engineering 2004; Chemistry 2W03; Geology 2B04; Materials 3B04, 3D06, 3E06; Mathematics 3V06.

Level IV: 36-37 units
R Ceramics 4L04, 4R03, 4S03; Engineering 4B03 or Chemical Engineering 4N04; Materials 3P03, 4A01, 4E03, 4K04.
E 6 units liberal studies elective; 6 units approved Level III or IV technical elective.

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

Level II: 38 units
R Chemical Engineering 2C02, 2D04, 2F04, 2G03, 2004; Chemistry 2M05, Engineering 2R04; Mathematics 2M06; 6 units approved English literature.

Level III: 34 units
R Chemical Engineering 3A04, 3D03, 3E03, 3G03, 3K03, 3L02, 3M04, 3P03; Chemistry 2006; Statistics 3N03.

Level IV: 35 units
R Chemical Engineering 4K03, 4L02, 4M03, 4N04, either 4W04 or 4Y04; Engineering 2M04; one of Chemical Engineering 4D03, Chemistry 3I03, Engineering 4U03.
E 6 units liberal studies electives; 6 units approved Level III or IV technical electives.

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

Level II: 35 units
R Chemical Engineering 2C02, 2D04, 2F04, 2004; either Chemical Engineering 2G03 or Commerce 3Q03; Commerce 2AA3, 2BA3; Economics 2G03, 2H03; Mathematics 2M06.

Level III: 36 units
R Chemical Engineering 3A04, 3D03, 3E03, 3M04; Chemistry 2006; Commerce 2FA3, 3AA3; Engineering 2R04; 6 units approved English literature.

Level IV: 37 units
R Chemical Engineering 3G03, 3K03, 3L02, 3P03, 4M03; Commerce 2NA3, 3FA3, 3BA3 or 3BB3, 4PA3, 4QA3; Engineering 2M04, Engineering and Management 4A01; Statistics 3Y03.
E 6 units of Commerce selected from all Level III and IV Commerce courses; 6 units Level III or IV approved technical electives.

Level V: 35 units
R Chemical Engineering 4K03, 4L02, 4N04, and 4W04 or 4Y04; one of Chemical Engineering 4D03, Chemistry 3I03, Engineering 4U03; Commerce 3MA3; Engineering and Management 5A01, 5B03.
CIVIL ENGINEERING AND COMPUTER SYSTEMS (B.ENG.)

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

Programme Note:
Because of planned revisions to Computer Science course offerings in the next two to three years, the specific course requirements in this Programme may, after the 1987-88 Winter Session, differ from those listed here.

Level II: 35 units
R Computer Science 1MB3, 2MF3; Civil Engineering 2A02, 2B02, 2C04, 2E02, 2Q03; Engineering 2P04; 6 units approved liberal studies; Mathematics 2M06.

Level III: 35 units
R Computer Science 2MF3, 3P03; Civil Engineering 2B02, 2D03, 3K03, 3M04, 3O04; Engineering 2C03, 2Q04, 3P03; Mathematics 3Q03.

Level IV: 37 units
R Computer Science 3A03, 3D03, 3E03, 3T03; Civil Engineering 3A03, 3B03, 3C04, 3G04, 3J04; Mathematics 3J04.

Level V: 36-38 units
R Computer Science 4G06, 4L03; 21 to 23 units Civil Engineering Level IV courses; Engineering 4B03, 4C03.

CIVIL ENGINEERING AND ENGINEERING MECHANICS (B.ENG.)

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

Programme Note:
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 elective form, and ensure that it has been approved by the Department before completing a Level IV Registration Form.

Level II: 39 units
R Civil Engineering 2A02, 2B02, 2C04, 2D03, 2E02, 2Q03; Engineering 2C03, 2P04, 2Q04; Mathematics 2M06; 6 units approved English literature.

Level III: 36 units
R Civil Engineering 3A03, 3B03, 3C04, 3G04, 3J04, 3K03, 3M04, 3O04; Engineering 3P03; Mathematics 3J04.

Level IV: 34-36 units
R Engineering 4B03; 25 to 27 units chosen from Level IV Civil Engineering courses.

E 6 units liberal studies elective.

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

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

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

Level II: 39 units
R Civil Engineering 2A02, 2B02, 2C04, 2D03; Commerce 2AA3, 2BA3; Economics 2G03, 2H03; Engineering 2P04; Mathematics 2M06; 6 units approved English literature.

Level III: 39 units
R Civil Engineering 2D03, 2E02, 2K03, 3M04, 3O04; Commerce 2FA3, 2MA3, 3AA3; Engineering 2C02, 2Q04, 3P03; Mathematics 3J04.

Level IV: 37-38 units
R Civil Engineering 3A03, 3B03, 3C04, 3G04, 3J04; 3 or 4 units Level IV Civil Engineering courses; Commerce 3FA3, 3BA3 or 3BB3, 4PA3, 4QA3; Engineering and Management 4A01; Statistics 3Y03.

Level V: 37-38 units
R 20 to 21 units of Level IV Civil Engineering; Commerce 3MA3, 4PA3; Engineering and Management 5A01.

E 6 units Commerce electives selected from Level III and IV Commerce courses; liberal studies or approved technical electives to make a total of 37 units. (In 1988-89, Commerce 4PA3 will be replaced by Engineering and Management 5B03.)

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

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

Level II: 39 units
R Computer Science 2B03, 2L03; Electrical Engineering 2B04, 2D03, 2F03, 2K03; Engineering 2O03, 2S03; Mathematics 2P04, 2Q04; 6 units approved English literature.

Level III: 38 units
R Computer Science 3A03; Electrical Engineering 2H03, 3B04, 3C04, 3H03, 3K04, 3T04, 3U04, 3V03; Mathematics 3K03; Statistics 3X03.

Level IV: 35-36 units
R Computer Science 3C03, 4L03, Electrical Engineering 4J04, 4S04, 4T04; Engineering 4B03.

E 6 units approved liberal studies elective; 8 or 9 units from Computer Science 4E03, 4W03, 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 2A03, 2B03, 2E02, 2Q03; Electrical Engineering 2B04, 2D03, 2F03, 2K03; Engineering 2O03, 2S03; Mathematics 2P04, 2Q04.

Level III: 38 units
R Commerce 2FA3, 3AA3; Economics 2G03, 2H03; Electrical Engineering 2H03, 3B04, 3C04, 3H03; Mathematics 3K03; Statistics 3X03; 6 units approved English literature.

Level IV: 38 units
R Commerce 2MA3, 3FA3, and 3BA3 or 3BB3; Computer Science 3A03, 3C03; Electrical Engineering 3K04, 3T04, 3U04, 3V03, 4S04; Engineering and Management 4A01; Statistics 3Y03.

Level V: 37-38 units
R Commerce 3MA3, 4PA3, 4QA3; Computer Science 4L03; Electrical Engineering 4J04, 4T04; Engineering and Management 5A01, 5B03.

E 6 units Commerce electives selected from Level III and IV Commerce courses; 7 or 8 units approved electives from Computer Science 4E03, 4W03, 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 2B04, 2D03, 2F03, 2H03, 2K03; Engineering 2003, 2S03; Mathematics 2P04, 2Q04; 6 units approved English literature.

**Level III:** 36 units
- R Electrical Engineering 3B04, 3C04, 3H03, 3K04, 3N04, 3S03, 3T04, 3U04; Mathematics 3K03; Statistics 3X03.

**Level IV:** 36-37 units
- R Electrical Engineering 4J04; Engineering 4B03; 12 units of Electrical Engineering Level IV courses.
- E 6 units liberal studies elective; 11 to 12 units Level III or IV approved technical electives.

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

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

**Level II:** 39 units
- R Commerce 2A03, 2BA3; Economics 2G03, 2H03; Electrical Engineering 2B04, 2D03, 2F03, 2H03, 2K03; Engineering 2003; Mathematics 2P04, 2Q04.

**Level III:** 37 units
- R Commerce 2F03, 3AA3; Electrical Engineering 3B04, 3C04, 3H03, 3T04, 3U04; Mathematics 3K03; Statistics 3X03; 6 units approved English literature.

**Level IV:** 36-38 units
- R Commerce 2M03, 3FA3, 3BA3 or 3BB3; Electrical Engineering 3K04, 3N04, 3S03; Engineering 2S03; Engineering and Management 4A01; Statistics 3Y03.
- E 9 to 11 units approved Level III or IV technical electives.

**Level V:** 37-38 units
- R Commerce 3MA3, 4PA3, 4QA3; Electrical Engineering 4J04; Engineering and Management 5A01, 5B03.
- E 6 units Commerce electives selected from Level III and IV Commerce courses; 17 or 18 units Level III or IV approved technical electives, of which at least 11 units must be selected from Electrical Engineering Level IV courses.

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

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

**Programme Note:**
The following areas and courses are suggested as technical electives for Level IV:
- **Biomedical Engineering**
  - Engineering Physics 4U04, Engineering 4X03, Engineering Physics 3X03, 4Y03.
- **Computer Systems**
  - Engineering Physics 4W03, Physics 4D06.
- **Lasers and Electro-Optics**
  - Engineering Physics 4G03, 4K03, 4S04.
- **Nuclear Engineering**
  - Engineering Physics 4D03, 4L03, 4N03.
- **Solid State Electronics**
  - Engineering Physics 4E03, 4F03.

**Level II:** 37 units
- R Engineering 2003, 2P04, 2W04; Engineering Physics 2A03, 2E04; Mathematics 2P04, 2Q04; Physics 2C05; 6 units approved English literature.

**Level III:** 37 units
- R Chemical Engineering 2004 or Mechanical Engineering 3O04; Engineering Physics 3D03, 3E03, 3F03; Mathematics 3C03, 3D03, 3Q03; Physics 3B06, 3M06.

**E** Liberal studies elective (which may be deferred to Level IV), or approved technical electives to make a total of 37 units.

**Level IV:** 36-38 units
- R Engineering 4B03; Engineering Physics 4C02, 4U04; Physics 4B04; at least 10 units selected from Engineering Physics 4D03, 4E03, 4F03, 4G03, 4N03, 4S04, 4W03, Physics 4D06.
- E 6 units liberal studies elective (if not completed in Level III); or approved technical electives to make a total of 36 to 38 units.

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

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

**Level II:** 38 units
- R Commerce 2A03, 2BA3; Economics 2G03, 2H03; Engineering 2003, 2P04, 2W04; Engineering Physics 2A03, 2E04; Mathematics 2P04, 2Q04.

**Level III:** 38 units
- R Commerce 2FA3, 3AA3, 2MA3; Engineering Physics 3E03, 3F03; Mathematics 3C03, 3D03; Physics 2C05, 3B06; 6 units approved English literature.

**Level IV:** 35 units
- R Chemical Engineering 2004 or Mechanical Engineering 3O04; Commerce 3FA3, 4QA3, and 3BA3 or 3BB3; Engineering and Management 4A01; Engineering Physics 3D03, 4C02, 4U04; Mathematics 3Q03; Physics 3M06; Statistics 3Y03.

**Level V:** 40 units
- R Commerce 3MA3, 4PA3; Engineering and Management 5A01; Engineering Physics 4U04; Physics 4B04; at least 10 units selected from Engineering Physics 4D03, 4E03, 4F03, 4G03, 4N03, 4S04, 4W03, Physics 4D06.
- E 6 units Commerce electives selected from Level III and IV Commerce courses; approved technical electives to make a total of 40 units. (Commercing in 1988-89, Engineering Physics 4U04 will be replaced by Engineering and Management 5B03.)

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

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

**Level II:** 37 units
- R Engineering 2M04, 2C03, 2P04, 2Q04, 2W04; Manufacturing Engineering 2C03; Mathematics 2M06; Mechanical Engineering 2A03; 6 units approved English literature.

**Level III:** 38 units
- R Engineering 3M03, 3N03; Manufacturing Engineering 3M03; Mathematics 3V06; Mechanical Engineering 3A03, 3C03, 3E04, 3N04, 3R03. Either Engineering 3R03 and Mechanical Engineering 4X03 or, 6 units liberal studies elective.

**Level IV:** 39 units
- R Engineering 4C03, 4J03; Manufacturing Engineering 4A03, 4M04, 4P02; Mechanical Engineering 4C03, 4D03, 4Q03, 4R03, 4T03, 4Z03.
- E Either 6 units liberal studies elective, or Engineering 3R03 and Mechanical Engineering 4X03, whichever was not completed in Level III.

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

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

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

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FACULTY OF ENGINEERING

2. Attention is drawn to Materials 4A01, which requires a report based on experience in the summer before entering Level IV.

Level II: 38 units
R Chemistry 2T06; Engineering 2M04, 2P04, 2Q04; 6 units approved English literature; Materials 2C04, 2F03; Mathematics 2P04, 2Q04.

Level III: 34 units
R Chemistry 2W03; Engineering 3Q03; Materials 3B04, 3D06, 3E06; Mathematics 3C03, 3D03; Physics 3M06.

Level IV: 33 units
R Engineering 4B03; Materials 3P03, 4A01, 4E03, 4K04; Metallurgy 4L04.
E 6 units approved liberal studies electives; 9 units approved Level III or IV technical electives.

MECHANICAL ENGINEERING (B.ENG.)

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

Level II: 37 units
R Engineering 2W04, 2P04, 2Q04, 2W04; Mathematics 2M06; Mechanical Engineering 2A03, 2B03, 2C03; 6 units approved English literature.

Level III: 37 units
R Engineering 2003, 3M03, 3N03; Mathematics 3V06; Mechanical Engineering 2C03, 3003, 3M02 3004, 3R03.

Level IV: 36-39 units
R Mechanical Engineering 4G03, 4M04, 4P02, 4Q03, 4R03, 4S03; Engineering 4B03.
E 6 units liberal studies elective; three of the following courses: Chemical Engineering 4T03, Civil Engineering 3K03, Electrical Engineering 3S03, Engineering 3P03, 3Q03, 3R03, 4J03, 4X03, Engineering Physics 4D03, 3X03, Mechanical Engineering 4A03, 4C03, 4D03, 4F03, 4L03, 4T03, 4U03, 4V03, 4W03, 4X03, 4Y03, 4203. Manufacturing Engineering 4A03 may be substituted, with the permission of the Department.
Electives must be chosen so that no more than 21 units are taken in any one term.

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

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

Level II: 39 units
R Commerce 2AA3, 2BA3; Economics 2G03, 2H03; Engineering 2M04, 2P04, 2W04; Mathematics 2M06; Mechanical Engineering 2A03; 6 units approved English literature.

Level III: 37 units
R Commerce 2FA3, 3AA3; Engineering 2O03, 2Q04, 3M03; Mathematics 3V06; Mechanical Engineering 2C03, 3D03, 3M02, 3O04, 3R03.

Level IV: 37-38 units
R Commerce 2MA3, 3FA3, and 3BA3 or 3BB3; Engineering and Management 4A01; Mechanical Engineering 3A03, 3C03, 3E04, 4C03, 4P02, 4R03, 4S03; Statistics 3Y03.
E 3 or 4 units Level III or IV approved technical electives.

Level V: 38 units
R Commerce 3MA3, 4PA3; Engineering and Management 5A01; Mechanical Engineering 4G03, 4M04, 4Q03, 4R03, 4S03.
E 6 units Commerce electives selected from Level III and IV Commerce courses; additional approved Level III or IV technical electives, which must include at least 9 units of Mechanical Engineering, to make a total of 38 units. (In 1988-89, Mechanical Engineering 4R03, 4S03 will be replaced by Engineering and Management 5B03.)

METALLURGICAL ENGINEERING (B.ENG.)

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

Programme Notes:
1. Level II Metallurgical Engineering is identical to Level II Ceramic Engineering. Transfer to Level III Ceramic Engineering can therefore be made without course deficiency.
2. Attention is drawn to Materials 4A01, which requires a report based on experience in the summer before entering Level IV.

Level II: 36 units
R Engineering 2T06; Engineering 2M04, 2O03, 2P04; Materials 2C04, 2F03; Mathematics 2P04, 2Q04; 6 units approved English literature.

Level III: 35 units
R Chemical Engineering 2004; Chemistry 2W03; Materials 3B04, 3D06, 3E06, 3P03; Mathematics 3V06; Metallurgy 3C03.

Level IV: 37 units
R Engineering 3M03 or 3N03, 4B03; Materials 4A01, 4E03, 4K04; Metallurgy 4C04, 4L04.
E 6 units liberal studies elective; 9 units Level III or IV approved technical electives.
Faculty of Health Sciences

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

For Information concerning Health Sciences programmes and admission requirements, contact

E. Rhodes, Assistant Registrar,
Health Science Complex, Room 187,
Telephone (416) 525-9140, ext. 2114

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

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

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

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

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

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

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

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

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

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

Admission and Registration

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

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

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

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

<table>
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<tr>
<th>Programme</th>
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<td>Medicine (M.D.)</td>
<td>November 1</td>
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<td>Nursing (B.Sc.N.)</td>
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<td>Non-Grade 13 applicants</td>
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<td>Grade 13 applicants</td>
<td>May 1</td>
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<tr>
<td>Occupational Therapy/Physiotherapy (B.H.Sc.)</td>
<td>April 1</td>
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</table>

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

As places in the degree programmes of the Faculty of Health Sciences are limited, admission is by selection of applicants, and possession of published minimum requirements does not guarantee admission. The University, therefore, reserves the right to grant admission to a limited number of students, and to refuse 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.

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 the student or his or her conduct so warrant.

Falsification of Admission Information

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

Health Regulations for Admission

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Skills: To acquire and use the following skills:

1. Provisional Appraisal Skills: The application of certain rules of evidence to clinical, investigational and published data, in order to determine their validity and applicability.

2. Clinical Skills: The ability to acquire, interpret, synthesize and record clinical information in managing the health problems of patients, considering their physical, social and emotional function. Included is the use of the clinical reasoning process.

3. Self-Directed Learning Skills: The ability to identify areas of deficiency in one's own performance, find appropriate educational resources, evaluate personal learning progress, and use new knowledge and skills in the care of patients.

Personal Qualities: To recognize, develop and maintain the personal qualities required for a career as a health professional. Acquiring the authority to intervene in the lives of patients carries with it the obligation to act responsibly:

1. toward oneself: to recognize and acknowledge personal assets, emotional reactions, and limitations in one's own knowledge, skills and attitudes, and to build on one's assets and to overcome areas of limitation;

2. toward patients and their families: to be able, under appropriate supervision, to take responsibility for the assessment and care of patients and their families;

3. toward colleagues: to contribute to productive communication and co-operation among colleagues engaged in learning, research, or health care;

4. toward the community: to contribute to the maintenance and improvement of the health of the general population.

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

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

The class is divided into small groups, each with a tutor. In the tutorial session students present and discuss what they have learned and tutors assist in identifying their strengths and weaknesses and in proposing ways to overcome the latter.
Students admitted to the M.D. programme have the responsibility and privilege of taking an active role in the planning and evaluation of the education programme. Through representation on many policy-making and implementation committees, students can influence decisions regarding philosophy, faculty recruitment, and curriculum design. It is expected that all students will participate in the continuing reappraisal and improvement of the programme. Such participation is a hallmark of the School.

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

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

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<td>THE CLERKSHIP (Continued)</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 system as a basis. A comprehensive analysis of human structure, function and behaviour is organized around organ systems of the body, as follows:

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

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

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

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

The Clerkship Programme consists 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, 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 will be carried out in various activities utilizing local and regional resources.

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

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

1. **Block Electives:** The Block Elective 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 6 (16 weeks).

2. **Horizontal Electives:** These are undertaken concurrently with other parts of the curriculum. The Community Physicians' Elective is offered to Unit 1 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.

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

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

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

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

ADMISSION POLICY FOR THE MEDICAL PROGRAMME
The admission policy is subject to annual review. For current policies and procedures, applicants must consult the latest edition of the Ontario Medical School Application Service (OMSAS) Instruction booklet, or write to the Office of the Assistant Registrar (Health Sciences).

The School of Medicine considers that the type of medical student selected will have a significant influence in achieving the objectives of the school, namely producing doctors who meet current and anticipated health needs both at the individual and community level. In meeting these needs, the student will require the ability to examine physical, biological and behavioural mechanisms of health problems and develop personal characteristics and attitudes required for a career in medicine. Faculty members, students in course, and members of the community are involved in the review of applications.

Application Procedures
Application material may be obtained from the Medical Admissions Office, McMaster University Health Sciences Centre, Hamilton, Ontario, L8N 3S5, Room 1B7, or from the Ontario Medical School Application Service (OMSAS), Box 1328, Guelph, Ontario N1H 7P4.

Completed application forms, the application fee and requested documents must be received by the Ontario Medical Schools Application Service, in Guelph, by November 1, for consideration for admission in the following September.

In view of the detailed nature of the selection process, applications, including the autobiographical sketch and letter, transcripts and references, received after the specified deadline, will not be considered.

Only the academic record of work completed and citizenship status (if applicable) existing by the deadline date of November 1 will be considered.

Eligibility
Before registering in the M.D. programme in September, students must have completed a minimum of three (3) full years in a recognized university and have at least an overall second class (B) average in their university career. Two of the three years must be at a level beyond the first year/Level 1. An applicant who offers work from a CEGEP in the province of Quebec is expected to have at least two additional years of university.

A year is defined as the block of work approved by Faculty, and specified in the programme descriptions in their university calendar. It is the candidate's responsibility to document, from their university calendar upon request, that the block of work submitted equates to a year as previously defined. In the computation of eligibility averages, the years completed most recently, prior to application may be given additional weight.

Consideration will be given to applicants not meeting the above criteria, but who have completed the requirements for a Baccalaureate degree prior to November 1 of the year in which they make application for admission.

Applicants who do not meet these academic requirements will not be accepted for admission, unless they qualify for consideration as a Special Applicant as described below.

For further information regarding the interpretation of three full years of university work, contact the Assistant Registrar (Health Sciences).

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

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

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

Approximately 400 applicants who are assessed highest in academic achievement (based upon undergraduate work) and personal qualities (assessed on the basis of the autobiographical 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.

Applications are responsible for their own travel expenses. Interviews are held in late March/April. All candidates will be informed in March whether or not they are invited for an interview.

From those interviewed, the incoming medical class of 100 will be selected. Those candidates interviewed will be advised on the last working day in May whether or not they are accepted for admission in the following September.

Previous Academic Experience
There are no course prerequisites. No preference is given to applications from any particular academic background. All post-secondary courses must be reported by the candidate.

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

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

All applicants are considered for Year I.

Geographic Weighting
Some weighting according to bona-fide place of residence will be used in the following priority:

a. Hamilton Health Region and Northwestern Ontario (defined as west of Wawa to the Manitoba boundary)
b. The rest of Ontario.
c. The rest of Canada.
d. Other countries.

To qualify for (a) or (b) above, an applicant must be a Canadian citizen (or permanent resident by the deadline date for application) and have resided for at least 3 years in the area since the age of 14 or attended a university in the area for at least 3 years. An applicant who is a Canadian Citizen (or a permanent resident by the deadline date for application) but who does not meet the residence or university requirements for (a) or (b) qualifies for (c). An applicant who does not meet the requirements of (a), (b) or (c) qualifies for (d). While the application of those qualifying for (d) are considered, these applicants are selected only when their suitability is judged on all criteria to be clearly superior to that of other candidates. Geographic status is determined from the Autobiographical Sketch. McMaster applicants are requested to note, if possible, their assessment of their geographic status in this section of the application material provided by OMSAS.

Special Applicants
Any applicant who is, or has been, a full-time post-secondary student must apply by the regular procedures.

Successful Special Applicants, who will be exceptionally mature, competent and motivated, will:
a. have completed a minimum of four full-credit university courses with the equivalent or an overall grade point average of 8 on the McMaster grading scale as described in the Ontario Medical School Application Instruction booklet. These courses would usually be taken in extension programmes;
b. have been employed or active in the community for at least seven years since leaving high school;
c. have made an exceptional contribution to society. In this, the applicant is expected to have shown creativity, initiative and leadership;
d. be residents of Ontario. (see Geographic Weighting above)

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

Application for Deferral of Registration
Application for deferred registration may be granted only under exceptional circumstances. Deferred registration applications may be requested only by those candidates offered a place in the class on the last working day in May. The application must be submitted within a specified deadline.

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

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

The approximate annual expenses (1984-85) for a student in McMaster's M.D. programme were as follows:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Academic fees</td>
<td>$2523.52</td>
</tr>
<tr>
<td>Room/lodging</td>
<td>3640.67</td>
</tr>
<tr>
<td>Meals/board</td>
<td>3439.10</td>
</tr>
<tr>
<td>Books</td>
<td>700.00</td>
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<tr>
<td>Equipment (diagnostic)</td>
<td>700.00</td>
</tr>
<tr>
<td>Household supplies, laundry &amp; miscellaneous</td>
<td>1100.00</td>
</tr>
<tr>
<td>Transportation</td>
<td>1000.00</td>
</tr>
<tr>
<td>Total (approximately)</td>
<td>$13200.00</td>
</tr>
</tbody>
</table>

In addition to Government financial assistance programmes, the following are available.

Abbott Memorial Scholarship Loan Fund This fund was established by the Federation of Medical Women of Canada. Small loans are available to any female medical student or first-year intern. In special cases, a loan up to $1,000 may be made to a student for recognized postgraduate training. Loans are payable within five years of date of issue, after which time interest will be charged at a rate of 5% compounded annually. Information regarding these loans may be obtained from the Secretariat, Federation of Medical Women of Canada, Box 8244, Ottawa, Ontario K1G 3H7.

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

Further information on this programme and on the career opportunities in medicine in the Canadian Armed Forces may be obtained from local Canadian Forces Recruiting Centres. In Hamilton the Recruiting Centre is at 150 Main Street West. Telephone (416) 529-2751.

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

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

Other Funds The School of Medicine administers a small loan and bursary programme to assist some medical students who may be in need. Unfortunately, these funds are limited and cannot be relied on to meet a major portion of any student's financial obligations. The source of these funds includes: The Ontario Medical Association Bursaries and Loan Fund; The William Andrew Vanderburgh Sr. Memorial Fund; and the Ripley Estate Bursary and Loan Fund.

For further information, contact Dr. R.G. Butler, c/o the Student Affairs Office, at ext. 2271.

Academic Awards The School of Medicine has in the past indicated its preparedness to recognize students who distinguish themselves and the University by virtue of their scholarship and their contribution to the university community. At the same time, the School has indicated that the terms of reference for such awards should neither compromise the spirit of co-operative scholarship which characterizes its M.D. programme nor replace its priority of concern for financial assistance awards.

A small, but growing number of estates and agencies have donated funds to the University and the School of Medicine for purposes of recognizing scholastic merit among medical students. In order to meet the requirements of these awards within the spirit of co-operative scholarship, these funds are administered by the School's Student Financial Aid Committee to support individual students in their pursuit of specific elective projects or activities.

Students are required to submit an application through the Student Affairs Office, outlining the nature of their work and the need for funds. For further information, contact Dr. R.G. Butler, at ext. 2271.

The School of Nursing

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

Applicants often wish to discuss the implications of embarking upon a degree programme in nursing. During the school year Health Sciences Information Sessions are presented. Information about these sessions may be obtained from the Student Liaison Office (Gilmour Hall, Room 102, Ext. 4287). Any applicant wishing to discuss aspects of the admission process to the B.Sc.N. programme should write to the Assistant Registrar (Health Sciences) for information or make an appointment for an interview (Health Sciences Centre, Room 1007, Ext. 2115). In addition, applicants may wish to discuss their career goals in nursing with a faculty member of the School of Nursing. Appointments can be arranged through the Assistant Registrar's office.

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

THE B.Sc.N. PROGRAMME

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

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

Evaluation by self, peers and faculty is part of an on-going process of assessment of the achievement of clinical, course, and programme objectives.

Objectives of the B.Sc.N. Programme

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

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

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

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

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

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

ADMISSION POLICY AND PROCEDURE

As places in the B.Sc.N. programme are limited admission is by selection of applicants, and possession of published minimum requirements does not guarantee admission.

There are two (2) streams of study for the completion of the B.Sc.N degree. The Basic (A) Stream requires four years of study, and is available to: applicants directly from Ontario Grade 13, or with qualifications equivalent to Grade 13; applicants with other qualifications including mature students and university college students. Diploma Registered Nurses in Ontario, enter the Diploma R.N. (B) Stream.

The requirements and application deadlines vary depending on the applicant's background. Please note carefully the sections that follow as to procedures and requirements.

Grade 13 or Equivalent Applicants: The major portion of places for Level 1 are held by Grade 13 or equivalent students. The selection method is by academic qualifications. Either interim or final grades provide the academic base calculated the first part of June.

Applicants with other Qualifications: The selection method is based on academic qualifications, a personal qualities' score and interview score.

Applicants achieving the minimum academic qualifications are invited to write an autobiographical letter. The letter is assessed by teams of assessors normally representing the faculty and student or alumni constituencies. The scores awarded to the applicants are final. A portion of applicants with the highest letter scores are invited to interview in May. Applicants are responsible for their own travel expenses. Failure to attend the interview will result in cancellation of the application. The scores awarded by the assessors are final.

All applicants will be informed of the admission decision in mid-June. Where courses were in progress from the time of application to September registration, the offer of admission will be conditional upon the applicant achieving an overall B average. Failure to meet the condition will result in withdrawal of the offer of admission.

Admission Procedure

Applications for all studies beginning in September must be postmarked no later than midnight of the previous May 1 for Grade 13 applicants and February 15 for applicants with other qualifications.

Applicants currently in Grade 13 apply through the Ontario Universities’ Application Centre. Application forms are available in secondary school guidance offices.

Applicants with other qualifications should write to the Assistant Registrar (Health Sciences) for an application form.

All application forms must be completed and forwarded to the Ontario Universities’ Application Centre. Transcripts from the secondary schools and any post-secondary educational courses either completed or in progress must be included with the application by the deadline date.

Students enrolled in other programmes at McMaster University wishing to be considered for transfer to the B.Sc.N. programme should apply through the Office of the Assistant Registrar (Health Sciences) by February 15th.

ADMISSION REQUIREMENTS TO THE SCHOOL OF NURSING

If you plan to enter a nursing programme, you may qualify under one of the five categories (A to E) described below. Please note that in categories A, B, C, and D, the admission requirements vary depending on whether you are seeking entry in the September 1987-88 or September 1988-89.

A. APPLICANTS TO THE BASIC STREAM FROM SECONDARY SCHOOLS

1987-88

1. Applicants from Ontario Schools: To be eligible for consideration, Ontario candidates must have completed:
   i. Grade 12 Mathematics (advanced level);
   ii. one Grade 13 credit in each of Chemistry and English;
   iii. one Grade 13 credit in Mathematics or Biology or Physics;
   iv. additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma. At least two of the additional Grade 13 credits must be selected from English, French, other languages, Calculus, Functions and Relations, Algebra, Biology, Physics, Geography, History and Music.

   The Grade 13 admission average will be calculated on the best six of the required Grade 13 subjects.

2. Applicants with qualifications equivalent to Grade 13: Applicants from other provinces and countries must achieve the qualifications listed above in their secondary school graduation year. Those students who qualify in January for admission based on their secondary school graduation year grades and who choose to take university courses beginning in January will be considered for the B.Sc.N. programme as a Grade 13 applicant. The application will be among the Grade 13 applications for the following September.

1988-89

1. Applicants from Ontario Schools: (Who have Not Attended University) To be eligible for consideration, Ontario candidates must have completed:
   i. Grade 12 Mathematics (advanced level);
   ii. one Grade 13 credit in each of Chemistry and English;
   iii. one Grade 13 credit in Mathematics or Biology or Physics;
required Grade 13 subjects.

B. APPUCANTS

1. Mature Applicants: Applicants who do not meet the stated interview. Such Applicants who do not qualify under Category A normally should:

ii. have completed or are currently enrolled in university

i. are at least 21 years old or will be in the calendar year in which they propose to commence university;

ii. have not attended secondary school on a full time basis for at least 2 years;

iii. obtain a satisfactory standing in the mature applicant test (held in June and August) or achieve a minimum of C average in a university academic course taken within the past 3 years;

iv. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test;

v. have completed or plan to have completed successfully Grade 13 Chemistry and English or equivalent prior to enrolment in the programme; and

vi. provide an autobiographical letter.

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

2. University Students and College Students: Applicants who have completed or are currently enrolled in university or college courses will be considered if they:

i. achieve a minimum of a second class standing in their current programme;

ii. are proficient in the English language or have achieved a standing satisfactory to the University in the University of Michigan English Language Test;

iii. have completed or plan to have successfully completed Grade 13 Chemistry and English or equivalent prior to enrolment in the programme; and

iv. provide an autobiographical letter.

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

Applicants currently enrolled in a diploma nursing programme will be considered on the above conditions. The University does not credit diploma nursing courses. Any nurse holding or being eligible for nursing registration prior to the date of entry will not be considered for admission to the Basic Stream of the Undergraduate B.Sc.N. programme. (See below D. Diploma Registered Nurses.)

1987-88

Applicants who do not qualify under Category A normally should:

1.a be currently enrolled in first year of a University programme with a university admission average of 75%; or

1.b if attending university on a part-time basis, provide evidence of achievement of a minimum of B− in 12 units (or equivalent) university degree credit courses in the past two years; or

1.c if attending university on a full-time basis, provide evidence of a minimum of B− in at least five 6-unit (or equivalent) university degree courses within the past two years; and

2. submit a completed original and two (2) copies of their response to the questionnaire provided in the application packet; and

3. submit three (3) completed reference forms from non-relatives, including one person qualified to address the applicant’s academic capabilities. Reference forms will be provided in the application packet.

Applicants will be evaluated on the basis of the material submitted in 1, 2 and 3 above. Those ranked highest may be invited to come to McMaster for a problem-solving exercise and/or personal interview. Applicants are responsible for their own travel expenses.

C. ADMISSION ABOVE LEVEL I

1987-88

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 in D below.

1988-89

Applicants who are currently enrolled in a Nursing degree programme at another university and who wish to transfer to Level II or above at McMaster should:

1.a send a written request to the Chairperson, Undergraduate Nursing Admissions Committee outlining their request; and

1.b submit evidence that the applicant is considered in “good standing” by the Dean of their present programme; and

1.c submit transcripts of completed courses.

The applicant may be invited to McMaster for a personal interview. Applicants are responsible for their own travel expenses.

Availability of space in the level requested will be determined by the Chairperson of the Bachelor of Science in Nursing programme. Even if no space is available, the applicant may choose to complete the admission process and be placed on a waiting list.

D. DIPLOMA REGISTERED NURSES

1987-88

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. 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:

a. reasons for applying to this programme,

b. reasons for continuing education,

c. self-assessment abilities, and

d. interpersonal qualities.

1988-89

Any nurse holding, or being eligible for, nursing registration prior to the date of entry to the programme will be considered for admission to the Diploma R.N. Stream of the Undergraduate Bachelor of Science in Nursing programme. Applicants currently enrolled in a diploma nursing programme will be considered in Category B above. The University does not grant advance credit for diploma nursing courses.

Applicants in this category normally should:

1. possess a current Certificate of Competence as a Registered Nurse in Ontario, be eligible for reciprocity, or be eligible to write and subsequently pass the Certification examinations;
FACULTY OF HEALTH SCIENCES

2. show evidence of at least two years full-time, or equivalent, nursing practice within the five years prior to date of entry to the programme;
3. provide evidence of a minimum of a B – grade in at least 6 units (or equivalent) of University degree credit work within the past five years.
4. submit a completed original and two (2) copies of their response to the questionnaire provided in the application packet;
5. submit three (3) completed reference forms from non-relatives, including one person qualified to address the applicant's academic capabilities. Reference forms will be provided in the application packet.

Applicants will be evaluated on the basis of the material submitted in 3, 4 and 5 above. Those ranked highest may be invited to come to McMaster for a problem-solving exercise and/or personal interview. Applicants are responsible for their own travel expenses.

E. PART-TIME STUDENTS

1987-88 and 1988-89

Students will be permitted to enter, proceed through and graduate from the B.Sc.N. programme on a part-time basis. University and programme rights and responsibilities governing the full-time undergraduate students will govern the part-time student.

As enrolment is limited, places reserved for part-time students at each level will be restricted. Nursing courses are available only during the day. Electives may be taken either in the day or evening.

Guidelines have been established for part-time study. Applicants are advised to seek counselling from the B.Sc.N. programme before engaging in part-time study.

ACADEMIC REGULATIONS

In addition to meeting the General Academic Regulations of the University, students enrolled in the B.Sc.N. programme shall be subject to the following programme regulations:

Registration in the B.Sc.N. Programme implies acceptance on the part of the student of the objectives of that Programme and the methods by which progress toward the achievement of those objectives is evaluated.

Since the academic regulations are continually reviewed, we reserve the right to change the regulations in this section of the Calendar.

The University also reserves the right to cancel the academic privileges of a student at any time should the student's scholastic record or conduct warrant so doing. Where, in the opinion of faculty, the performance of the student in clinical nursing practice may jeopardize or endanger the welfare of the patient, or the patient's family, the student may be removed from clinical experience any time during the academic year until continuation in the course is reviewed. The clinical activities associated with any clinical course must be successfully achieved for attainment of a passing grade in the course.

Level I Nursing

A student in Level I must:
1. achieve a University Average (UA) of at least 2.5; and
2. achieve an average of at least 4.0 in the Nursing and required Health Science courses; and
3. achieve a grade of at least C- in the Nursing and required Health Science courses with the exception that a grade of D-, D, or D+ is permissible in one Health Science course.

A student who fails to meet these requirements may not continue in the programme but may seek readmission by writing to the B.Sc.N. Programme Chairman.

Area Courses:
The Area courses consist of all the Nursing and Health Science courses above Level I.

The following courses are designated clinical courses:

Basic (A) Stream: Nursing 2L06, 2H04, 3X07, 3Y07, 4J07, 4K07.
Diploma Registered Nurses (B) Stream: Nursing 3L05, 3M05, 3N08, 4S05/4S06, 4T05/4T06, 4Z08.

A grade of at least C- is required in all Area courses with the exception that a grade of D-, D, or D+ is permissible in a non-clinical Area course only once beyond Level I. In order to meet these requirements an Area course may be repeated only once. If a student fails to meet the minimum grade requirements after repeating the course, he or she may not continue in the Nursing programme.

A course for which credit has been granted may be repeated only when approval is granted by the B.Sc.N. Programme Chairman.

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

Continuation in the Programme
To continue in the B.Sc.N. programme a student must obtain a University Average (UA) of at least 2.5 and a Cumulative Area Average of at least 4.0. A student whose CAA is less than 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 during the total programme.

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

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

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

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

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

CURRICULUM FOR THE B.SCN. 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 timetabling 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 1A06, 1B07; Nursing 1F07; Psychology 1A06.
E 6 units.
Level II: 38 units
Terms 1 and 2: 34 units
R Health Sciences 2B08, 2L06, 2M05;
E 15 units.
Term 3: 4 units
R Nursing 2H04.
Level III: 35 units
R Health Sciences 3A04, 3B04; Nursing 3S08, 3X07, 3Y07.
E 3 units.
Level IV: 32 units
R Health Sciences 4L04; Nursing 4A02, 4E06, 4J07, 4K07.
E 6 units.

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

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

Each level of the programme will consist of eight months of academic study with concurrent clinical practice, followed by 6 to 8 weeks of concentrated clinical practice in one setting. The concentrated experience is designed to provide the student with the opportunity to develop areas of specific interest and to demonstrate decision-making capacity in those areas such as primary care, oncology, gerontology, etc.

Electives: 1987-88 Twenty-four (24) units of electives are to be selected from disciplines of the student's choice, of which a minimum of 6 units are to be chosen from courses designated as Level II or above.

Electives: 1988-89 Thirty (30) units of electives are to be selected from disciplines of the student's choice, of which a minimum of 12 units are to be chosen from courses designated as Level II or above.

Level III: 55 units
Terms 1 and 2: 35 units
R Health Sciences 1A06, 1B07, 3A04; Nursing 3L05, 3M05, 3S08.
Term 3: 14 units
R Nursing 3N08.
E 6 units.
Summer Term
E 6 units.

Level IV: 54 units 1987-88
Terms 1 and 2: 34 units
R Health Sciences 2B08, 3B04, 4L04; Nursing 4A02, 4E06, 4S05, 4T05.
Term 3: 14 units
R Nursing 4Z08.
E 6 units.
Summer Term
E 6 units.

Level IV: 54 units 1988-89
Terms 1 and 2: 36 units
R Health Sciences 2B08, 3B04, 4L04; Nursing 4A02, 4E06, 4S06, 4T06.
Term 3: 6 units
E 6 units.
Summer Term: 6 units
E 6 units.
Additional Electives: 6 units
E 6 units to be chosen in consultation with a programme counsellor.

Occupational Therapy and Physiotherapy Programme
The Bachelor of Health Science Programme is available to diploma graduates of the Mohawk College programmes in Occupational Therapy or Physiotherapy and diploma graduates in Occupational Therapy and/or Physiotherapy from other institutions. Through an emphasis on the synthesis of the theoretical and clinical components of practice, the programme provides an opportunity for increased academic and scholarly preparation. In this way, the student will acquire an improved understanding of the health care problems of clients.

Further professional development is offered through the various Master and Doctoral programmes in the Faculty of Health Sciences.

OBJECTIVES OF THE B.H.Sc. PROGRAMME
The Programme is designed to further the development of an occupational therapist or physiotherapist who will be able to:

1. Understand the physical, biological and behavioural mechanisms of health problems including aspects such as molecular, individual, family and community.
2. Understand the political, economical, sociocultural and epidemiological factors which influence health policies and the systems and models of health care delivery.
3. Examine in depth, issues related to the responsibilities of the professions of Occupational Therapy and Physiotherapy in the delivery of health services.
4. Analyze and critique the scientific bases of the professions of Occupational Therapy and Physiotherapy, and critically evaluate emerging data related to these professions.
5. Plan and complete an investigation into a specific area of clinical practice. Principles of scientific inquiry and clinical reasoning will be emphasized.

ADMISSION POLICY AND PROCEDURE
A. Applicants from Mohawk College Programmes in Occupational Therapy and Physiotherapy
The Faculty of Health Sciences, McMaster University, participates with the Faculty of Health Sciences at Mohawk College in the diploma programmes of Mohawk College in Occupational Therapy and Physiotherapy. To be considered for admission to the B.H.Sc. Programme, graduates from the Mohawk programmes should present:

1. Mohawk College Diploma of Occupational Therapy or Physiotherapy with the certificate from McMaster University.
2. Official transcripts from Mohawk College.
3. All transcripts from other post-secondary institutions attended.
4. A letter outlining the candidate's learning objectives. Guidelines are available from the Assistant Registrar (Health Sciences).
5. A personal interview may also be required.

Applicants currently in Year III of the Occupational Therapy or Physiotherapy Programmes at Mohawk College should present:

1. Official transcript of marks of work completed (to date) at Mohawk.
2. A letter from the Programme Chairman assessing the student's potential to graduate.
3. All transcripts from other post-secondary institutions attended.
4. A letter outlining the student's learning objectives. Guidelines are available from the Assistant Registrar (Health Sciences).
5. A personal interview may also be required.

Admission Procedures: Application forms are available from the Associate Registrar (Admissions), Gilmour Hall, Room 120, McMaster University. These should be completed and forwarded to McMaster University in accordance with the instructions. Official transcripts of marks from Mohawk College must be provided by the student.

Applications and a letter outlining learning objectives must be postmarked no later than April 1 for the classes beginning in September. It is the applicant's responsibility to ensure that all application documentation is received by April 1. The B.H.Sc. Programme will not normally consider applications for admission after the April 1 deadline, unless written documentation is provided showing good cause, as determined by the B.H.Sc. Admissions Committee.

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

B. Applicants with Diplomas in Occupational Therapy and/or Physiotherapy from Other Institutions
Successful applicants register in the Faculty of Health Sciences and must
complete a minimum of 31 units of required study in the Pre-programme Phase at McMaster University before being eligible for admission to the B.H.Sc. Programme.

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

The Admissions Committee will review professional education, course transcripts, and clinical experience, and in its recommendation may require work in addition to the 31 units of required study.

To be considered for admission to the Pre-programme Phase, graduates presenting diplomas from institutions other than Mohawk College should present:

1. Diploma of Occupational Therapy and/or Physiotherapy.
2. Official transcripts from the diploma-granting institution.
3. Eligibility to practise in the jurisdiction which provided the diploma.
4. Canadian Citizenship or landed immigrant status.
5. A letter outlining the candidate's learning objectives. Guidelines available from the Assistant Registrar (Health Sciences).
6. An interview.

ACADEMIC REGULATIONS

Registration in the Bachelor of Health Science Programme implies acceptance on the part of the student of the objectives of that programme and the methods by which progress toward the achievement of those objectives is evaluated. The University reserves the right to cancel the academic privileges of any student at any time that the student's scholastic record or conduct warrant doing so. Where, in the opinion of the faculty, the performance of the student in a clinical setting may jeopardize or endanger the welfare or safety of the patient or the patient's family, the student may be removed from the clinical setting at any time during the academic year, until continuation in the course is reviewed.

Graduation

In order to graduate, a student must obtain a Cumulative Area Average of at least 4.0 in all courses taken. Graduation standing will be determined on the basis of the C.A.A.

Dean's Honour List

The requirements for being named to the Dean's Honour List are as follows:

i. for graduates of the Mohawk College programme, a Graduation Average of at least 9.5, and an Average of at least 3.2 on the Mohawk scale, in the final year of the occupational therapy or physiotherapy diploma programme; or

ii. for students in the Pre-programme Phase, a University Average of at least 9.5 on at least 30 units of work; or

iii. for graduating students who completed the Pre-programme Phase, an average of at least 9.5 on the 19 units of degree work, and an average of at least 9.5 in the Pre-programme Phase on previous session(s) sufficient to include at least 11 units.

Occasional Students

Applicants holding a diploma in occupational therapy or physiotherapy may register as Occasional students in Health Sciences and take up to six/seven units of core courses in the B.H.Sc. Programme.* Preference in required courses will be given first to students in the B.H.Sc. Programme and the B.H.Sc. Pre-programme Phase, and then to Occasional and Continuing students if space is available.

To be considered for admission as an Occasional student in Health Sciences, applicants must present the following documentation to the Associate Registrar (Admissions), Gilmour Hall, Room 120, McMaster University:

1. Diploma of occupational therapy and/or physiotherapy, including an official transcript of marks;
2. All other official transcripts from post-secondary institutions attended; and
3. A letter outlining the applicant's academic plans and reasons for applying as an Occasional student to the Faculty of Health Sciences.

4. Continuing Students

Continuing students are those who hold a university degree in occupational therapy or physiotherapy, and who are not proceeding to an advanced degree, but wish to take one or more undergraduate courses.

Continuing students may take Health Science courses at the discretion of the B.H.Sc. Student Studies Chairman and the instructor(s) concerned.

Preference in required courses will be given first to students in the B.H.Sc. Programme and the B.H.Sc. Pre-programme Phase, and then to continuing and occasional students if space is available. To be considered for admission as a Continuing student in Health Sciences, applicants must present the following documentation to the Associate Registrar (Admissions), Gilmour Hall, Room 120, McMaster University:

1. Degree of occupational therapy and/or physiotherapy, including an official transcript of marks;
2. All other official transcripts from post-secondary institutions attended; and
3. A letter outlining the applicant's academic plans and reasons for applying as a Continuing student to the Faculty of Health Sciences.

For further information please refer to the more detailed section on Occasional and Continuing students in the section Admission Requirements, in this Calendar.

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

The Pre-programme Phase is for applicants with diplomas in occupational therapy and/or physiotherapy programmes from other institutions. It consists of a minimum of 31 units of study completed entirely at McMaster University. Additional course work to a maximum of 43 units may be required at the discretion of the Admissions Committee.

The Pre-programme Phase may be completed either full-time or part-time. Under normal circumstances, the Pre-programme Phase should be completed in one year as a full-time student, or three years as a part-time student.

The student must attain a University Average of at least 4.0, and a minimum grade of C- in each course taken in the Pre-Programme Phase.

Students who do not meet the requirements on a first attempt will be reviewed by the Student Studies Chairman, and will require permission to continue in the Programme.

The programme of required study consists of 31 units as follows: Health Sciences 3A04 and 3C03; 24 units chosen from the Faculties of Science, Social Science, Humanities or Health Sciences. Upon successful completion of this Pre-programme Phase the student is admitted to the B.H.Sc. Programme.

THE B.H.Sc. PROGRAMME REQUIREMENTS AND CURRICULUM

The Programme consists of 19 units of study completed entirely at McMaster University, to include four Level IV required courses, and one or more undergraduate elective courses designated as Level III or Level IV.

All courses required for the 19 units of credit in the programme are Area courses.

The student must attain a Cumulative Area Average (CAA) of at least 4.0. A minimum C- is required in each course in the programme.

A student who fails to obtain a CAA of at least 4.0, or who obtains one or more grades below C-, may continue in the programme only with the permission of the Student Studies Chairman.

Course Load: The Programme is available in a modified full-load or part-time format. Full-load students will normally complete a minimum of 10 units of course work between September and December. The remaining course work may be completed in subsequent terms. Full-load students are advised not to carry a course load of greater than 16...
units in one term. Written permission from the Student Studies Chairman is required to take a course load greater than 16 units in one term.

Students may choose to complete the programme on a part-time basis. Elective courses will be selected from courses available during the day or evening throughout the year. Required courses usually are available in Term I of the Winter Session (September to December) during the day. Under normal circumstances, part-time students are expected to complete the programme within three years. Permission of the Student Studies Chairman is required to alter this time limit.

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

**Repetition of a Course:** To repeat a course for which credit has been obtained, approval of the Student Studies Chairman is required. Any course in which less than C – standing is achieved may be repeated only once. The grades of all attempts appear on the transcript and enter into the computation of the Cumulative Area Average.

**Sequence of Courses:** For students who request to study Health Sciences 4C03/4003, priority will be given as follows:

a. B.H.Sc. students who have completed Health Sciences 4A03 and/or Health Sciences 4B04.

b. B.H.Sc. students

c. Other students

Enrolment in these courses is limited and where numbers warrant, a special allocation process will be implemented. Students who are not placed in their first choice will be offered a place in those courses that are not full.

The same clinical study area must be selected for Health Sciences 4C03 and Health Sciences 4D03. Permission of the instructor is required to register in Health Sciences 4D03 in a different term from Health Sciences 4C03.

**Cancellation of a Required Course:** The B.H.Sc. Programme offers all required courses within one academic year. Wherever possible, the Programme offers all the listed areas of clinical study (Health Sciences 4C03/4D03). If there is insufficient enrolment in any of the required courses (minimum of 5) the Programme reserves the right to withdraw the course, and re-schedule or replace the course within that academic year.

**B.H.Sc. Programme Level IV: 19 units**

R Health Sciences 4A03, 4B04, 4C03, 4D03.

E 6 units of Level III or IV courses chosen from Faculties within McMaster University. These courses are chosen in consultation with the Advisor. The student must meet the prerequisite requirements for the elective courses.
Faculty of Humanities

D.P. Gagan/B.A., M.A., Ph.D., Dean of Humanities
(S)S)
P.A. Kalnin/B.A., Assistant to the Associate Dean
S.A. Richard/Student Advisor

The humanities tell us how men and women of our own and other civilizations have grappled with life’s enduring, fundamental questions: What is justice? What should be loved? What deserves to be defended? What is courage? What is noble? What is base? Why do civilizations flourish? Why do they decline?...

Mankind’s answers to compelling questions are available to us through the written and spoken word — books, manuscripts, letters, plays, and oral traditions — and also in non-literary forms, which John Ruskin called the book of art. Within them are expressions of human greatness and of pathos and tragedy. In order to tap the consciousness and memory of civilization, one must confront these texts and works of art.

William J. Bennett

The humanistic disciplines — philosophy, languages and literature, history, music, art and drama — are those fields of critical enquiry which help us to know ourselves through an understanding of humanity’s creative and intellectual traditions, its moral and aesthetic values and its spiritual and material aspirations, and through the realization of human memory. The task of the humanistic scholar is to cultivate an appreciation for traditional learning, and to generate new ideas about the nature of human conditions; to discover, through historical perspective, the processes which link past and present; and to bring to bear on the problems of an age of rapid and often unsettling transformation perceptions informed by values which make us more, rather than less, human and civilized.

The attainment of precise knowledge and fresh insights through lectures, class discussions, reflection, analysis and writing is the essence of study in the Faculty of Humanities’ eight academic departments and two interdepartmental programmes. These are:

- Department of Art & Art History
- Department of Classics (Greek,Latin,Classical Civilization)
- Department of English
- Department of French
- Department of History
- Department of Modern Languages (German,Italian,Slavic Studies, Spanish)
- Department of Music
- Department of Philosophy
- Dramatic Arts Programmes
- Humanities Interdisciplinary B.A. Programme

In addition, beginning in 1988-89, and contingent upon approval by the Ontario Council on University Affairs, the Faculty will offer two new interdepartmental programmes: Honours Comparative Literature and Literary Theory, and Honours Modern Languages and Linguistics.

Programmes and Degrees

A. LEVEL I PROGRAMMES

Admission Requirements

Students intending to qualify, after Level I, for admission to a degree programme in one of the Humanities disciplines should complete Humanities I. Students intending to enrol in a degree programme in Music should complete Music I, although students may enter a B.A. programme in Music from Humanities I.

The admission requirements for Humanities I and Music I are described in the Admissions section of the Calendar.

Level I Programme Requirements

Students admitted to Humanities I must complete 30 units of work as follows:

R 18 units representing three (3) of the following four (4) areas of study:

a. Historical and Philosophical Studies
   - Classical Civilization 1A06
   - History 1C06, 1D06, 1L06
   - Philosophy 1B06, 1D06

b. Languages other than English
   - Chinese 1Z06
   - French 1A06, 1B06, 1D06
   - German 1A06, 1Z06
   - Greek 1Z06
   - Italian 1A06, 1Z06, 1Z26
   - Japanese 1Z06
   - Latin 1Z06
   - Polish 1Z06*
   - Russian 1Z06
   - Serbo-Croatian 1Z06*
   - Spanish 1A06, 1Z06
   - Ukrainian 1Z06*

(c. The Arts
   - Art 1F06**
   - Art History 1A06
   - Dramatic Arts 1A06
   - Music 1A06, 1B06, 1C02, 1CC2, 1D02, 1DD2***

(d. English/Comparative Literature
   - English 1D06
   - Comparative Literature 1A06

E 12 units elective of which at least 6 should be selected from courses offered by a Faculty other than Humanities. Suggested elective courses offered by the Faculty of Humanities include Humanities 1C03, 2B06, and Canadian Studies 1A06.

No Humanities I student may take more than 6 units of work in any single subject.

* May not be offered every year.

** Portfolio Required: If you intend to take Art 1F06 you must present a portfolio and be interviewed by the Department of Art and Art History by the end of April. The portfolio should contain a variety of original works in different media, including works derived from both first-hand observation and the imagination. During the interview you may be asked to do some drawing as an additional means of demonstrating your skills and interests.

*** Students wishing to take Music courses other than Music 1A06 must make arrangements with the Music Department for qualifying tests.

Students admitted to Music I (General) must complete 32 units of work as follows:

R Music 1B06, 1C02, 1CC2, 1D02, 1DD2, 1E04, 1G02

E 12 units normally representing two (2) of the following four (4) areas of study:

a. Historical and Philosophical Studies
   - Classical Civilization 1A06
   - History 1C06, 1D06, 1L06
   - Philosophy 1B06, 1D06
b. Languages other than English
Chinese 1206
French 1A06, 1B06, 1206
German 1A06, 1206
Greek 1206
Italian 1A06, 1206, 1226
Japanese 1206
Latin 1206
Polish 1206*
Russian 1206
Serbo-Croatian 1206*
Spanish 1A06, 1206
Ukrainian 1206*
c. The Arts
Art 1F06**
Art History 1A06
Dramatic Arts 1A06
d. English/Comparative Literature
English 1D06
Comparative Literature 1A06
* May not be offered every year.
** Portfolio Required: If you intend to take Art 1F06 you must present a portfolio and be interviewed by the Department of Art and Art History by the end of April. The portfolio should contain a variety of original works in different media, including works derived from both first-hand observation and the imagination. During the interview you may be asked to do some drawing as an additional means of demonstrating your skills and interests.

The Faculty of Humanities will also be offering the programme Honours Music (Performance), pending approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.

The full programme description for Honours Music (Performance) can be found further on in this section under Programmes for the B.A., B.A. (Honours) and B.Mus Degrees.

Second Language Proficiency
Students embarking on Humanities programmes should be aware that most graduate schools require, for admission, proficiency in at least one, and frequently two, languages other than English. In this Faculty, proficiency in at least one language other than English is regarded as an essential tool for students interested in English Literature, Comparative Literature, or Dramatic Arts. Generally, proficiency in more than one language is a hallmark of most highly-qualified Humanities graduates seeking the widest range of post-graduation academic and employment opportunities.

Part-Time Study
Students wishing to enter any programme offered by the Faculty of Humanities and pursue a programme on a part-time basis should consult the appropriate Departmental Counsellor(s) before making their plans. It is anticipated that at least the following Honours programmes in the Humanities will be available to those part-time students who are unable to take any of their work in the regular Winter Day Session:

- Art History; Classical Studies; Dramatic Arts; English; History; Philosophy.

For part-time students who are unable to attend the regular Winter Day Session, the following B.A. programmes are available:

- Humanities Interdisciplinary B.A.; Art and Art History; Classical Studies; Dramatic Arts; English; French; History; Philosophy.

Academic Regulations

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

McMaster Test of Writing Competence
Students are urged to take the McMaster Test of Writing Competence at the time of their first registration. They are expected to pass the test before proceeding beyond the first 30 units of work. Those who have failed to do so at this point will be required to consult the Associate Dean (Studies), in person, for appropriate counselling regarding remedial work. Students who have completed 60 units but have not passed the test will not be allowed to register in the Faculty of Humanities until such time as they successfully complete this test.

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 2B03 is cross-listed as Classical Civilization 2B03, so students in an Art History programme wishing to register for this course must register for it under the label Art History 2B03. 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.
FACULTY OF HUMANITIES

Dropping and adding of courses will be permitted only within the periods stated in this Calendar.

Withdrawal

Students who wish to withdraw from the University are required to advise the Dean of Studies Office in writing. Students must surrender their identity cards to the Dean of Studies to ensure the processing of any fee refunds. Students who fail to withdraw formally 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. Applications for readmission in September must be made in writing, to the Associate Dean of Humanities (Studies), by July 15. Students who apply after the July deadline will only be considered for readmission in January.

Applications should explain the reasons for the student’s inadequate performance and should include relevant documentary evidence, for example a letter from a physician outlining any medical condition that might have affected the student’s academic performance or final grades. Readmission cases will be carefully screened and the evidence considered will include the student’s academic performance before and after admission to McMaster, as well as the nature of the reasons cited in the application letter and the accompanying documentation.

Readmission is not guaranteed.

Students will not be considered for readmission to Humanities I from other Faculties unless their pre-University work meets the current admission requirements of the Faculty of Humanities.

The computation of Cumulative Area Averages begins anew at readmission.

Academic Regulations Pertaining to the Department of Music

The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music programme, a student must maintain a CMA of at least 7.0.

The Graduation Average will be computed on a minimum of 39 units of Area courses for the B.Mus. degree in Education, on a minimum of 42 units of Area courses for the B.Mus. degree in History and Theory, and on a minimum of 41 units of Area courses for the B.Mus. degree in Performance.

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

Third Year Study Elsewhere

Students enrolled in Honours Programmes, single or combined, involving French, German, Italian or Spanish, may apply to take part in McMaster University’s Third Year Study Elsewhere programme at an appropriate university in France, Germany, Italy, Spain or the province of Quebec. Students may choose to spend one or two terms in this programme according to their wishes and 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) 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 before being placed in the appropriate level of study. Detailed course descriptions must be submitted so that an assessment may be made and Letters of Permission may be issued on the students’ behalf. Students not registered in a programme in French may take up to 12 units of credit in this manner. Students registered in a programme in French may take a maximum of six units of credit as elective work only.

Programmes for the B.A., B.A. (Honours) and B.Mus. Degrees

HUMANITIES INTERDISCIPLINARY B.A.

This programme affords students the opportunity to earn a B.A. degree encompassing formal instruction in the work of more than one Humanities department. Students choose to pursue, beyond Level I, one of five programmes of study structured around a thematic area of concentration to which the work of several departments may contribute. In selecting their Humanities I programmes students should be aware of the prerequisites for entry into particular Level II programmes.

Admission:

Completion of Humanities I with a University Average of at least 4.0. Any student whose Level I programme contains fewer than 12 units of Humanities work and who is interested in entering this programme should consult the Committee of Instruction for ways of meeting the admission and programme requirements. Students are strongly advised to take History 1A06 in their Level I programme.

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

Area Courses:

Humanities 2B06, 3B06 plus all courses required in the selected theme of study.

Levels II and III: 60 units

R Humanities 2B06 and 3B06; 30 units of Area courses relating to the selected theme.

E 18 units of electives.

Themes of Study

Within this programme, there are five themes of study: Ancient Studies, Comparative Literature, Contemporary Studies, Creative Arts, and Linguistics as set out below. Every student must concentrate his/her courses in one of these themes. Before selecting courses, students are required to arrange for counselling with the Coordinator of the Committee of Instruction for the Humanities Interdisciplinary B.A. programme. Students should note that not every course relevant to their theme may be available to them in a given year.

The courses relevant to each theme of study are as follows:

I. Ancient Studies

Students interested in this theme should include Classical Civilization 1A06 in their Level I programmes.

R History 2106 and 24 units from:
Art and Archaeology
   Classical Civilization 2A03, 2B03, 2C03, 3G03, 3R03, 3S03, 4L03.
   Classical World
   Classical Civilization 2U03, 2V03, 2X03, 2Z03, 3U03, 3V03, 3W03.
   History 3L03, 3M03
   Philosophy 2A06, 3E03, 3J03
   Religious Studies 2K03
   Judeo-Christian Tradition
   Religious Studies 2D03, 2E03, 2F06, 3K03, 3M03, 3T03.
Language
   One of Hebrew, Greek, Latin
   Comparative Literature 2D03, 2E03, 3C03, 3I03, 4A03.
   No more than 12 units of Required work (excluding languages) may be taken from any single department's offerings.

II. Comparative Literature
Students interested in this theme should include at least one of Comparative Literature 1A06 in their Level I programmes.
R 30 units of Area courses to be comprised as follows:
   6 to 12 units from:
      Comparative Literature 2C06, 2D03, 2G03, 4A03, 4B03
   18 to 24 units from:
      Comparative Literature 2B03, 3A06, 3E03, 3F03, 3I03, 3J03, 3Q03, 3Q03, 4D03
      German 2H03, 2I03, 2M03
      Italian 2I06
      Russian 2A06, 3D03, 3E03, 3K06, 3T03
In selecting these courses students must ensure that they take at least 6 units in each of two national literatures in addition to English. Students who meet the prerequisites for literature courses in languages other than English offered by the Departments of Classics, German, Romance Languages or Slavic Studies may take such courses with the approval of the Department offering the course(s).

Suggested related electives:
Dramatic Arts 2C03, 2E03, 2X06, 3P03, 3R03, 3R3, 3Y03, 4E03
English 2C03, 2G06, 3B03, 3J03, 3X03, 3Z03
Philosophy 2H03
Religious Studies 2D03, 2E03, 2E06, 2II3, 2JJ3, 2KK3, 2LL3, 2TT6

III. Contemporary Studies
R 30 units with at least 9 each from two of the following:
   Historical and Philosophical Studies
   History 2B06, 3A03, 3B03, 3E06, 3FF3, 3G03, 3I03, 3I16, 3K06, 3P03, 3PP3, 3RR3, 3U03, 3YY3, 3W03
   Philosophy 2D03, 2G03, 2M03, 3C03, 3R03, 3N06, 3R03, 4B03, 4D03, 4E03, 4F03
   Languages and Literature
   English 2C03, 2I06, 3H03, 3I13, 3PP3, 3Q03, 3X03, 3Z03
   French 2W03*, 2W03*, 3Z03*
   German 2A03*, 2F03*, 2H03*, 4X03*
   Italian 3M03*, 3P03*, 4J03*
   Russian 3K06
   The Arts
   Art History 2P03, 3M03, 3R03, 3W03, 4M03*
   Canadian Studies 2B03
   Dramatic Arts 2J03, 2X06, 3BB3, 3C03, 3P03, 3R03, 3R3, 3XX3, 3Y03, 4J03, 4K03
   Music 2BB3*, 3T03, 3U03
   E 18 units of elective.
   No more than 12 units of Required work may be taken from any single department's offerings.
   *Students should pay close attention to course prerequisites.

IV. Creative Arts
Students interested in this theme should include at least one of Dramatic Arts 1A06 or Music 1A06 in their Level I programmes.

R Philosophy 2H03 and
   9 units from:
      Art History 2B03, 2C03, 2G03, 2M03, 2N03, 2O03, 2P03, 2Q03, 3B03, 3D03, 3E03, 3G03, 3I03, 3M03, 3Q03, 3R03, 3S04, 4A03, 4C03, 4M03, 4N03, 4R03, Art 1C03
   9 units from:
      Dramatic Arts 2A06, 2B06, 2C03, 2E03, 2F03, 2FF3, 2J03, 2X06, 3A06, 3BB3, 3C03, 3D03, 3K06, 3P03, 3Q03, 3R03, 3R3, 3X03, 3Y03, 4D03, English 3FF3
   9 units from:
      Music 2A06, 3A03, 3AA3, 3T03, 3U03; and additional courses available (subject to successful completion of qualifying tests) from: Music 1B06, 1C02, 1C02, 1D02, 1DD2, 2B03, 2BB3, 2C02, 2CC3, 2D02, 2DD2, 2H04

V. Linguistics
Students interested in this theme should include Linguistic 1A06 and 6 units of a language other than English in their Level I programmes.
R 12 units of one language other than English (the same language taken in Level I), and
   12 units from:
      Linguistics 2L03, 2M03, 2Q03, 2T03, 3I03, 3M03, 3Y03, 4K03
   6 units from:
      English 2V06, 3D03, 3DD3, 4E06
      French 2H03, 3B03, 3E03, 3G03, 3I03, 4C03, 4E03, 4X03, 4Z03
      Italian 4L04
      Russian 4J03, 4K03
      Sanskrit 3A06

Department of Art and Art History

HONOURS ART

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in Art History 1A06 and Art 1F06, including a grade of at least B – in Art 1F06.

Programme Notes:
1. Students in Honours Art must complete Art 2A04, 2B04, 2C03, 2F04 before registering in Level III or IV Art courses. Normally Art 3F06 will be taken concurrently with any one of Art 3A06, 3B06, 3E06, 4A06.
2. Nine units of Level III or IV Art History, designated at the time of registration for Level IV, will be included in the Graduation Average.

Area Courses:
All Level II, III and IV Art courses, excluding Art 2E03 and 2G03.

Levels II, III and IV: 90 units
R 42 units of Art including Art 2A04, 2B04, 2C03, 2F04, 3C03, 3F06 and 4B12 and 6 additional units of Level III or IV Art; 18 units of Art History, 9 of which must be Level III and IV.
6 units Humanities, excluding Art and Art History, or other non-departmental offerings approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units of electives, 12 of which may be from Art and Art History.

HONOURS ART HISTORY

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work including a grade of at least B – in Art History 1A06.

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

Faculty of Humanities
Levels II, III and IV: 90 units

R 54 units of Art History, including Art History 3V03, and 33 other units of Levels III and IV Art History, which must include at least one Level IV course in Art History;

12 units Humanities, excluding Art and Art History, or other non-Art and Art History offerings, approved by the Chairman of the Department and the Associate Dean of Humanities.

E 24 units elective, of which 12 may be from departmental offerings, but no more than 12 of which may be Art History.

COMBINED HONOURS IN ART HISTORY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Art History 1A06.

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

Levels II, III and IV: 90 units minimum

R 33 units of Art History which must include at least 9 units of Level II Art History and 24 units of Levels III and IV Art History, including Art History 3V03 and at least one Level IV course in Art History; 3 additional units of Art History.

E To the combined total of a minimum of 72 units of Area work beyond Level I, the student must add elective work to make up an overall total of at least 90 units.

B.A. IN ART AND ART HISTORY

Admission:
Completion of any Level I programme with a grade of at least C – in Art History 1A06 and, for those students wishing a studio component, a grade of at least C – in Art 1F06.

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

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

Levels II and III: 60 units

R 30 units of Art and/or Art History beyond Level I including at least 15 units of Art History; at least 9 units of Level III or IV Area courses; 6 units of Humanities.

E 24 units elective, of which 12 may be Art and/or Art History.

Canadian Studies

The B. A. Programmes in Canadian Studies have been suspended. Courses with a focus on Canadian Studies are available. Students with an interest in this area should consult the section Courses by Department,Canadian Studies in this Calendar.

Department of Classics

HONOURS CLASSICAL STUDIES

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Classical Civilization 1A06. (Students are encouraged to include at least one of Greek 1Z06 or Latin 1Z06 in their Level I programme.)

Programme Notes:
1. Programme Groups: At least 12 units must be taken from one Programme Group and at least 6 units from each of the other two Programme Groups.
   a. Classical Archaeology and Art History
      Classical Civilization 2A03, 2B03, 2C03, 2F03, 3G03, 3R03, 3S03, 3X03.
   b. Greek and Roman Literature in Translation
      Classical Civilization 2D03, 2E03, 3C03, 3I03, 4A03.
   c. Public and Private Life in the Classical World
      Classical Civilization 2U03, 2V03, 2X03, 2Z03, 3L03, 3M03, 3U03, 3V03, 3W03, 4D06, 4I06, 4L06.

2. Classical Civilization 2B03, 2C03, 2D03, 2E03, 2G06, 2U03, 2V03, and all Level II Greek and Level II Latin courses will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV courses in Classical Civilization, Greek and Latin. Greek 1Z06 and Latin 1Z06, if not completed in the Level I programme.

Levels II, III and IV: 90 units

R Classical Civilization 2G06, 4F03; 33 additional units of courses listed above under Programme Groups, including at least 15 units of Level III and IV courses; 12 units of Greek (including Greek 1Z06, if not completed in the Level I programme); 12 units of Latin (including Latin 1Z06, if not completed in the Level I programme); 6 additional units of Classical Civilization, Greek, or Latin.

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

COMBINED HONOURS IN CLASSICAL STUDIES AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Classical Civilization 1A06.

Programme Notes:
1. Programme Groups: At least 12 units must be taken from one Programme Group, and at least 6 units from each of the other Programme Groups. Students are encouraged to take at least 6 units of Greek or Latin.
   a. Classical Archaeology and Art History
      Classical Civilization 2A03, 2B03, 2C03, 2F03, 3G03, 3R03, 3S03, 3X03.
   b. Greek and Latin Language and Literature
      Classical Civilization 2D03, 2E03, 3C03, 3I03, 4A03; Greek 1Z06 (if not completed in the Level I programme); 2C03, 2E03, 2F03, 2G03, 3F03, 3G03, 3Q03, 4P03; Latin 1Z06 (if not completed in the Level I programme), Latin 2B03, 2E03, 2G06, 2L03, 2M03, 2Q03, 2R03, 3F03, 3G03, 3Q03, 4P03, 4Q03.
   c. Public and Private Life in the Classical World
      Classical Civilization 2U03, 2V03, 2X03, 2Z03, 3L03, 3M03, 3U03, 3V03, 3W03, 4D06, 4I06, 4L06.

2. With the approval of the Departmental Counsellor, courses offered by other departments in Ancient Philosophy and Ancient Religious Studies may be substituted for courses in Classical Civilization.

3. Classical Civilization 2B03, 2C03, 2D03, 2E03, 2G06, 2U03, 2V03, and all Level II Greek and Level II Latin courses will be included in calculating the Graduation Average.

Area Courses:
Classical Civilization 2G06, 4F03, and all Classical Civilization, Greek, and Latin courses listed above under Programme Groups.

Levels II, III and IV: 90 units minimum

R Classical Civilization 2G06, 4F03; 27 additional units from courses listed above under Programme Groups.

E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN CLASSICAL STUDIES

Admission:
Completion of any Level I programme with a grade of at least C – in Classical Civilization 1A06. With the approval of the Departmental Counsellor, one of Greek 1Z06, Latin 1Z06 or History 1L06 with a grade of at least C – may be substituted for Classical Civilization 1A06.
Programme Notes:

1. Programme Groups: At least 3 units must be taken from each of the three Programme Groups. Students are encouraged to take at least 6 units of Greek or Latin.
   a. Classical Archaeology and Art History
   Classical Civilization 2A03, 2B03, 2C03, 2F03, 3G03, 3R03, 3S03, 3X03.
   b. Greek and Roman Language and Literature
   Classical Civilization 2D03, 2E03, 3C03, 3I03, 4A03, Greek 2C03, 2E03, 2F03, 2Q03, 2R03, 3F03, 3G03, 3Q03, 4P03, 4Q03; Latin 2B03, 2E03, 2G03, 2L03, 2M03, 2Q03, 2R03, 3F03, 3G03, 3Q03, 4P03, 4Q03.
   c. Public and Private Life in the Classical World
   Classical Civilization 2U03, 2V03, 2X03, 2Z03, 3L03, 3M03, 3U03, 3V03, 3W03.

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

Area Courses:

Classical Civilization 2G06, and all Classical Civilization, Greek, and Latin courses listed above under Programme Groups.

Levels II and III: 60 units
R  Classical Civilization 2G06; 18 units from courses listed above under Programme Groups; 12 units from the Faculty of Humanities.
E 24 units elective, 12 of which may be from courses listed above under Programme Groups.

HONOURS CLASSICS

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Greek 1206 and a grade of at least B in Latin 1206. (Students with Grade 13 Greek or Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.) Students are encouraged to include Classical Civilization 1A06 in their Level I programme.

Programme Note:
Greek 2E03 and Latin 2G03 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III, and IV Greek, Latin and Classical Civilization courses.

Levels II, III, and IV: 92 units
R  Greek 2C03, 2E03, 2F03, 2Q03, 2R03; Latin 2B03, 2E03, 2G03, 2Q03, 2R03; 32 units of Levels II and IV Greek and Latin, including Greek 3Q03, 3R02, 4Q03, 4R02 and Latin 3Q03, 3R02, 4Q03, 4R02; Classical Civilization 2G06 and 6 additional units of Classical Civilization.
E 18 units of elective, 6 of which may be from Latin and Greek.

COMBINED HONOURS IN GREEK AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Greek 1206. (Students with Grade 13 Greek are eligible for advanced study and should consult the Department of Classics.)

Programme Note:
Greek 2E03 will be included in calculating the Graduation Average.

Area Courses:
All Level II, III and IV Greek Courses.

Levels II, III and IV: 90 units minimum
R  Greek 2C03, 2E03, 2F03, 2Q03, 2R03; 22 units of Levels III and IV Greek, including Greek 3Q03, 3R02, 4Q03, 4R02.
E  To the minimum total of 73 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

COMBINED HONOURS IN LATIN AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Latin 1206. (Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.)

Programme Note:
Latin 2G03 will be included in calculating the Graduation Average.

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

Levels II, III and IV: 90 units minimum
R  Latin 2B03, 2E03, 2G03, 2Q03, 2R03; 22 units of Levels III and IV Latin, including Latin 3Q03, 3R02, 4Q03, 4R02.
E  To the minimum total of 73 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN LATIN

Admission:
Completion of any Level I programme with a grade of at least B in Latin 1206. (Students with Grade 13 Latin are eligible for advanced study and should consult the Department of Classics.)

Programme Note:
Students in the B.A. programme in Latin who achieve a weighted average of at least 7.0 in 12 units of Level II Latin courses may be admitted to Combined Honours in Latin and another subject in Level III.

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

Levels II and III: 60 units
R  Latin 2B03, 2E03, 2G03, 2Q03, 2R03; 22 units of Levels III and IV Latin; Classical Civilization 2G06 and 6 additional units of Classical Civilization.
E  Electives, 12 of which may be Latin, to make a total of at least 60 units overall.

Dramatic Arts

HONOURS DRAMATIC ARTS

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Dramatic Arts 1A06.

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

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

Levels II, III and IV: 90 units
R  Dramatic Arts 2A06, 2C03, 2E03, 3A06, 3D03, one of 3C03, 3P03; 3K06, 4A06, one of 4E03, 4P03; plus 6 additional units of Level II Dramatic Arts and 9 additional units of Level III or IV Dramatic Arts; 12 units Humanities, excluding Dramatic Arts, or other non-Dramatic Arts courses approved by the Chairman of the Committee of Instruction and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Dramatic Arts.
FACULTY OF HUMANITIES

COMBINED HONOURS IN DRAMATIC ARTS AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in Dramatic Arts 1A06.

Programme Note:
Students must have a working knowledge of a language other than English (at least high school Grade 13 or a University 1206 course). Those who do not meet this requirement should consult the Chair of the Committee. Students who meet the prerequisites for courses on drama in languages other than English offered by the Departments of Classics, French, or Modern Languages may take up to 6 units of such courses as a part of their Dramatic Arts R-group with the approval of the Chair of the Committee.

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

Levels II, III and IV: 90 units minimum
R Dramatic Arts 2A06, 2C03, 2E03, 3A06, 3K06, one of 3C03, 3P03, plus nine additional units of Level III or IV Dramatic Arts which must include at least one Level IV Dramatic Arts course.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN DRAMATIC ARTS

Admission:
Completion of any Level I programme including 12 units from the Faculty of Humanities with a grade of at least C in Dramatic Arts 1A06.

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

Levels II and III: 60 units
R Dramatic Arts 2A06, 2C03, 2E03, 3K06, one of 3C03, 3P03, plus 3 additional units of Level III or IV Dramatic Arts; 12 units from the Faculty of Humanities.
E 24 units, of which 12 may be Dramatic Arts.

Department of English

ARTS AND SCIENCE PROGRAMME AND ENGLISH (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS ENGLISH

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in English 1A06, 1B06 or 1D06.

Programme Notes:
1. Students wishing to graduate in Honours English should plan their programmes in consultation with the Departmental Counsellor, so as to cover as many of the following courses as possible. A minimum of 6 units of work from each of the six indicated fields must be taken.
   I
   Medieval
   English 3D03, 3DD3, 4E06
   II
   Renaissance
   English 3I03, 3K06, 3T03
   III
   17th and 18th Centuries
   English 3V06, 4B06
   IV
   19th and 20th Centuries
   English 2106, 4L03, 4M03
   V
   North American
   English 2G06, 2H06
   VI
   Studies in Language, Criticism and Genre
   English 2B06, 2V06, 3Q03, 3QQ3, 4N06

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

Area Courses:
English 2B06, 2G06, 2H06, 2V06, 3D03, 3D3, 3I03, 3K06, 3Q03, 3QQ3, 3T03, 3V06, 4B06, 4E06, 4L03, 4M03, 4N06.

Levels II, III and IV: 90 units
R 54 units of English Area courses, including 18 units of Level II, 18 units of Level III and 18 units of Level IV;
12 units Humanities (excluding English) or other non-English courses approved by the Chair of the Department and the Associate Dean of Humanities.
E 24 units, of which may be from English.

COMBINED HONOURS IN ENGLISH AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in English 1A06, 1B06 or 1D06.

Programme Notes:
1. Students wishing to graduate in Combined Honours English and another subject should plan their programmes in consultation with the Departmental Counsellor, so as to cover as many of the following courses as possible. A minimum of 6 units of work from each of the six indicated fields must be taken.

   I
   Medieval
   English 3D03, 3DD3, 4E06
   II
   Renaissance
   English 3I03, 3K06, 3T03
   III
   17th and 18th Centuries
   English 3V06, 4B06
   IV
   19th and 20th Centuries
   English 2106, 4L03, 4M03
   V
   North American
   English 2G06, 2H06
   VI
   Studies in Language, Criticism and Genre
   English 2B06, 2V06, 3Q03, 3QQ3, 4N06

2. 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 1A06, 2L03, 2M03, 3I03, 3M03, English 2V06. The Department strongly advises students to fulfill this requirement before Level III.

Note: Students who wish to take English 2V06 in fulfillment of the language requirement must register in the course as English 2V06, in which case it may not be used to fulfill the English Area requirements.

Area Courses:
English 2B06, 2G06, 2H06, 2V06, 3D03, 3D3, 3I03, 3K06, 3Q03, 3QQ3, 3T03, 3V06, 4B06, 4E06, 4L03, 4M03, 4N06.

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

Levels II, III and IV: 90 units minimum
R 36 units of English Area courses, including 12 units of Level II, 12 units of Level III and 12 units of Level IV;
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN ENGLISH

Admission:
Completion of any Level I programme with a grade of at least C in English 1A06, 1B06 or 1D06.
Programme Notes:
1. 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.
   I Medieval
   English 3D03, 3DD3, 4E06
   II Renaissance
   English 3I03, 3K06, 3T03
   III 17th and 18th Centuries
   English 3V06, 4B06
   IV 19th and 20th Centuries
   English 2B06, 4L03, 4M03
   V North American
   English 2G06, 2H06
   VI Studies in Language, Criticism and Genre
   English 2B06, 2V06, 3Q03, 3QQ3, 4N06

2. 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 1A06, 2L03, 2M03, 3I03, 3M03, English 2VV6. The Department strongly advises students to fulfill this requirement before Level III.

Note: Students who wish to take English 2V06 in fulfillment of the language requirement must register in the course as English 2VV6, in which case it may not be used to fulfill the English Area requirements.

Area Courses:
   English 2B06, 2G06, 2H06, 2I06, 2V06, 3Q03, 3103, 3K06, 3Q03, 3QQ3, 3T03, 3V06, 4B06, 4E06, 4L03, 4M03, 4N06.

Levels II and III: 60 units
R 12 units from English 2B06, 2G06, 2H06, 2I06, 2V06, 2W06; 18 units from English 3D03, 3DD3, 3I03, 3K06, 3Q03, 3QQ3, 3T03, 3V06, 4B06, 4E06, 4L03, 4M03, 4N06; 6 units Humanities.
E 24 units, 12 of which may be from English.

Department of French

ARTS AND SCIENCE PROGRAMME AND FRENCH (B. Arts Sci.)
(See Arts and Science Programme)

HONOURS FRENCH

Programme A: Language and Literature
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in French 1A06. (French 1B06 with a grade of at least B may be substituted for French 1A06 with permission of the Department.)

Programme Note:
1. 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 French and the Associate Dean of Humanities (Studies), Level III of Honours French may be replaced by courses of study at a French-language university.

Area Courses:
   All Level II, III and IV courses in French, except 3Y03.

Levels II, III and IV: 90 units
R 12 units of French Language Practice courses, including French 2A03, 3C03, 4A03; 18 units of French/Frangophone Literature and Civilization courses, including one of French 2J03, 2JJ3, one of French 2W03, 2V06, one of French 3K03, 3KK3, one of French 3Q03, 3QQ3, three three-unit Level IV French courses; 6 additional units of French. (The overall total must include a minimum of 24 units of Level III and IV French Area courses.)
E 27 units, 12 of which may be French.

COMBINED HONOURS IN FRENCH AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B in French 1A06. (French 1B06 with a grade of at least B may be substituted for French 1A06 with permission of the Department.)

Programme Note:
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 French 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.

Area Courses:
The French component of a Combined Honours Programme will be as follows: all Level II, III and IV courses in French, except 3Y03.

Levels II, III and IV: 90 units minimum
R 12 units of French Language Practice courses, including French 2A03, 3C03, 4A03; 18 units of French/Frangophone Literature courses, including one of French 2J03, 2JJ3, one of French 2W03, 2V06, one of French 3K03, 3KK3, one of French 3Q03, 3QQ3, three three-unit Level IV French courses; 6 additional units of French. (The overall total must include a minimum of 24 units of Level III and IV French Area courses.)
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN FRENCH

Admission:
Completion of any Level I programme with a grade of at least C – in French 1A06. (French 1B06, with a grade of at least C, may be substituted for French 1A06 with permission of the Department.)

Area Courses:
   All Level II, III and IV French courses, except 3Y03.
Levels II and III: 60 units
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R 9 units of French Language Practice courses, including French 2A03 and 3C03; 9 units of French/ Francophone Literature and Civilization courses, including one of French 2J03, 2J13, one of French 2W03, 2W03, one of French 3K03, 3K03, 3KQ3, 3Q03, 3Q03, 9 additional units of French; 9 units from the Faculty of Humanities.

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

Department of History

ARTS AND SCIENCE PROGRAMME AND HISTORY (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS HISTORY

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work acceptable to the Department, including a grade of at least B- in any Level I History course.

Programme Notes:
1. In selecting courses, students must ensure that they take at least 6 units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and the Americas (excluding Canada). This requirement must be satisfied by the end of Level III.
2. No Level IV seminar may be taken before completion of 12 units of History beyond Level I; no more than 12 units of Level IV History seminars should be taken in any session.

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

Levels II, III and IV: 90 units
R History 3J06 and 6 additional units of Level II History; 18 units of Level III History and 18 units of Level IV History.
12 units Humanities, excluding History, or other non-History courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from History courses approved by the Department.

COMBINED HONOURS IN HISTORY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B- in any Level I History course.

Programme Notes:
1. In selecting courses, students must ensure that they take at least 6 units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and the Americas (excluding Canada). This requirement must be satisfied by the end of Level III.
2. No Level IV seminar may be taken before completion of 12 units of History beyond Level I; no more than 12 units of Level IV History seminars should be taken in any session.

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

Levels II, III and IV: 90 units minimum
R 12 units of Level II History; 12 units of Level III History; 12 units of Level IV History.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond the Level I programme.

B.A. IN HISTORY

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

Programme Notes:
1. History students who achieve a Cumulative Area Average of at least 7.0 in their Level II History courses in the B.A. programme may be admitted to Honours History in Level III.
2. In selecting courses, students must ensure that they take at least 6 units in each of three of the following six fields of History: European, Ancient, Asian, Canadian, British, and the Americas (excluding Canada).
3. With the approval of the Departmental Counsellor, 6 units of Level III History may be replaced by Level IV History if the student has completed at least 12 units of History beyond Level I and has a minimum CAA of 7.0.

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

Levels II and III: 60 units
R History 2J06 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.

Department of Modern Languages

The Department of Modern Languages offers Combined Honours programmes in German, Italian, Russian and Spanish. Effective September 1988-89, the Department also intends to offer Single Honours programmes in Comparative Literature and Literary Theory, and Modern Languages and Linguistics.

HONOURS COMPARATIVE LITERATURE AND LITERARY THEORY

The three programme options in Comparative Literature provide students with a study of specially designed courses in Comparative Literature taught in English in conjunction with the study of one or two national literatures normally taught in the original language.

The offering of this degree programme, beginning in 1988-89, is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.

Programme A (With One Language Other Than English)

Admission:
Completion of any Level I programme, including Comparative Literature 1A06 with a grade of at least B-, and 6 units from French 1A06, 1B06, German 1A06, 1Z06, Greek 1Z06, Italian 1A06, 1ZZ6, 1Z06, Latin 1Z06, Russian 1Z06, Spanish 1A06, 1Z06 with a grade of at least B-.
(Students entering from German 1Z06 require a grade of at least A-.) Students who wish to enter this programme, but have not fulfilled the requirements, should consult the Associate Dean (Studies) of the Faculty of Humanities.

Area Courses:
All Level II, III, and IV courses in Comparative Literature, and approved Level II, III, and IV courses in the language and literature other than English.

Levels II, III, and IV: 90 units
R Comparative Literature 2A03, 2AA3, 3D03, 3Q03, 3QQ3, 4A03; one of Comparative Literature 4C03, 4E03; 15 units of other Comparative Literature courses; 36 units of courses in the language and literature other than English above Level I as specified in the description in the Combined Honours component of the language selected. (The overall total must include at least 36 units of Level III and IV work.)
E 18 units elective.

Programme B (With Two Languages Other Than English)

Admission:
Completion of any Level I programme, including Comparative Literature 1A06 with a grade of at least B--; 12 units covering two different languages from French 1A06, 1B06, German 1A06, 1Z06, Greek 1Z06, Italian 1A06, 1ZZ6, 1Z06, Latin 1Z06, Russian 1Z06, Spanish 1A06, 1Z06 with grades of at least B--. (Students entering from German 1Z06 require a grade of at least A--) Students who wish to enter this prog-
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HONOURS MODERN LANGUAGES AND LINGUISTICS
This programme combines the study of two or more modern languages (French, German, Italian, Russian, Spanish) with a concentration in Linguistics.

The offering of this programme, beginning in 1988-89, is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.

Admission:
Completion of any Level I programme with 12 units covering two different languages from the following: French 1A06 or 1B06, German 1A06 or 1B06 or 2Z6, Italian 1A06 or 1B06 or 2Z6, Russian 1Z06, Spanish 1A06 or 1Z06 with grades of at least B+. (Students entering from German 1Z06 require a grade of at least A—.) Students are strongly urged to complete Linguistics 1A06 in their Level I programmes. If not, Linguistics 1A06 must be included in Level II of their programme.

Programme Notes:
1. Students must maintain averages of at least 7.0 on two Cumulative Area Averages, one in Linguistics courses, and the other in the Modern Language courses selected. This programme, however, has unified Area courses. Therefore, only a single Graduation Average will be computed on the Level III and IV Area courses.

2. Students who take French 1206 in their Level I programme, must take French 1806 in order to enter the programme.

Programme Note:
Students selecting this option have no free elective choice in the programme.

Area Courses:
All Level II, III, and IV courses in Comparative Literature, and approved Level II, III and IV courses in the two languages and literatures other than English.

Levels II, III, and IV: 99 units
R Comparative Literature 2A03, 2AA3, 3D03, 3QQ3, 4A03; one of Comparative Literature 4C03, 4E03; 36 units each in the languages and literature other than English above Level I as specified in the description in the Combined Honours component of the languages selected, for a total of 72 units. (The overall total must include at least 36 units of Level III and IV work.)

Programme C (With English and Another Language)
Admission:
Completion of any Level I programme, including Comparative Literature 1A06 and English 1D06 with grades of at least B+; 6 units from French 1A06, 1B06, German 1A06, 1Z06, Greek 1Z06, Italian 1A06, 1Z26, 1Z06, Latin 1Z06, Russian 1206, Spanish 1A06, 1Z06 with a grade of at least B+. (Students entering from German 1Z06 require a grade of at least A—.) Students who wish to enter this programme, but have not fulfilled the requirements, should consult the Associate Dean (Studies) of the Faculty of Humanities.

Programme Note:
Students selecting this option have no free elective choice in the programme.

Area Courses:
All Level II, III and IV courses in Comparative Literature and approved Level II, III and IV courses in the two languages and literatures other than English;

Levels II, III, and IV: 99 units
R Comparative Literature 2A03, 2AA3, 3D03, 3QQ3, 4A03; one of Comparative Literature 4C03, 4E03; 36 units of English Area Courses (12 units each from Levels II, III, and IV); 36 units of a language and literature other than English above Level I as specified in the description in the Combined Honours component of the language selected. (The overall total must include at least 36 units of Level III and IV work.)

Notes:
1. Students must maintain averages of at least 7.0 on two Cumulative Area Averages, one in Linguistics courses, and the other in the Modern Language courses selected. This programme, however, has unified Area courses. Therefore, only a single Graduation Average will be computed on the Level III and IV Area courses.

2. Students who take French 1206 in their Level I programme, must take French 1806 in order to enter the programme.

Area Courses:
All Level II, III, and IV courses in Linguistics, French, German, Italian, Russian and Spanish. Those courses listed as Other Related Courses under Linguistics in the section Courses by Department in this Calendar may be considered as Area courses, with the permission of the Department.

Levels II, III, and IV: 90 units
R Linguistics 2A06, 3A06, 4A06: 18 units of a language other than English above Level I; 18 units of a second language other than English above Level I; 21 units of Area courses. (The overall total must include a minimum of 36 units of Level III and IV Area courses.

E 15 units elective.

COMBINED HONOURS IN GERMAN AND ANOTHER SUBJECT
Alternative A (for students entering with German 1A06)
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 1A06.

Programme Note:
With the approval of the Department of Modern Languages, and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.

Area Courses:
All Level II, III and IV German courses, excluding 2H03, 2J03, 2K03, 2L03 and 2Z06.

Levels II, III and IV: 90 units minimum
R German 2A03, 2F03; 33 additional units of German, at least 24 of which must include Level III and IV literature and/or philology courses.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I. Students are strongly advised to take History 3J06 as an elective.

Alternative B (for students entering with German 1Z06)
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 1Z06.

Programme Notes:
1. German 2A03, 2E03, 2F03 and 2G03 will be included in calculating the Graduation Average.
2. Students are strongly advised to take History 3J06 as an elective.
3. With the approval of the Department of Modern Languages, and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.

Area Courses:
All Level II, III and IV German courses, excluding 2H03, 2J03, 2K03 and 2L03.

Levels II, III and IV: 90 units minimum
R German 2A03, 2E03, 2F03, 2G03, 2J03, 2K03, 2L03 and 2Z06, and 15 additional units of German, at least 12 of which must include Level III and IV literature and/or philology and at least one Level IV German course.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.
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HONOURS GERMAN AND POLITICAL SCIENCE

Alternative A (for students entering with German 1A06)

Admission:
Completion of any Level I programme with a grade of at least B – in German 1A06 and in Political Science 1A06.

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

Area Courses:
History 3J06 and all Level II, III and IV German courses, excluding 2H03, 2J03, 2K03, 2L03 and 2Z06. All Level II, III and IV Political Science courses.

Levels II, III and IV: 90 units
R German 2A03, 2E03, 2F03; 33 additional units of German, at least 24 of which must include Level III and IV literature and/or philology courses; History 3J06; Political Science 2P06; 9 to 12 units from Political Science 2E06, 3M06, 3P03, 3Q03, 3R03, 3X06; at least 6 units of Level IV Political Science; 6 to 9 additional units of Political Science, to make a total of 36 units of Area courses in Political Science, only 12 of which may be from Level II courses.

E 15 units.

Alternative B (for students entering with German 1Z06)

Admission:
Completion of any Level I programme with a grade of at least A – in German 1Z06 and B – in Political Science 1A06.

Programme Notes:
1. German 2A03, 2E03, 2F03 and 2G03 will be included in calculating the Graduation Average.
2. With the approval of the Departments of Modern Languages and Political Science, and of the Associate Deans of Humanities and Social Sciences, Level III of Honours German and Political Science may be replaced by courses of study at a university in a German-speaking country. Students who plan to spend their third year abroad must have a minimum of B Cumulative Area Averages in each of German and Political Science in their second year.

Area Courses:
History 3J06 and all Level II, III and IV German courses excluding 2H03, 2J03, 2K03 and 2L03. All Level II, III and IV Political Science courses.

Levels II, III and IV: 90 units
R German 2A03, 2E03, 2F03, 2G03, 2Y06, 2Z06; 15 additional units of German, at least 12 of which must include Level III and IV literature and/or philology courses and at least one Level IV German course; History 3J06; Political Science 2P06; 9 to 12 units from Political Science 2E06, 3M06, 3P03, 3Q03, 3R03, 3X06; 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.

HONOURS GERMAN

Available only to students who entered this programme before September 1987.

Alternative A (for students entering with German 1A06)

Programme Note:
With the approval of the Department of Modern Languages, and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.

Area Courses:
History 3J06 and all Level II, III and IV German courses, excluding German 2H03, 2J03, 2K03, 2L03 and 2Z06.

Levels II, III and IV: 90 units
R 48 units of German including German 3A03, 3B03, 4G03, 15 additional units of Level III and IV literature and/or philology courses and 24 additional units of German which must include 6 units at Level III and IV; History 3J06.
12 units Humanities, excluding German, or other non-German courses approved by the Chairman of the Department and the Associate Dean of Humanities.

E 24 units, 9 of which may be from German.

Alternative B (for students entering with German 1Z06)

Programme Notes:
1. German 2A03, 2E03, 2F03 and 2G03 will be included in calculating the Graduation Average.
2. With the approval of the Department of Modern Languages, and of the Associate Dean of Humanities (Studies), Level III of Honours German may be replaced by courses of study at a university in a German-speaking country.

Area Courses:
History 3J06 and all Level II, III and IV German courses, excluding German 2H03, 2J03, 2K03 and 2L03.

Levels II, III and IV: 90 units
R German 2A03, 2E03, 2F03, 2G03, 2Y06, 2Z06, 3A03, 3B03, 4G03; 9 additional units of Level III and IV literature and/or philology courses; 6 additional units of Level III and IV German; History 3J06; 12 units Humanities; excluding German, or other non-German courses approved by the Chairman of the Department and the Associate Dean of Humanities.

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

B.A. IN GERMAN

Available only to students who entered this programme before September, 1987.

Alternative A (for students entering with German 1A06)

Area Courses:
All Level II, III and IV German courses, excluding German 2H03, 2J03, 2K03, 2L03 and 2Z06.

Levels II and III: 60 units
R 24 units of German, including German 2A03, 2F03, 3A03, 3B03; 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 3J06 as an elective.

Alternative B (for students entering with German 1Z06)

Area Courses:
All Level II, III and IV German courses, excluding 2H03, 2J03, 2K03 and 2L03.

Levels II and III: 60 units
R 30 units of German, including German 2A03, 2E03, 2F03, 2G03, 2Y06, 2Z06 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 3J06 as an elective.

COMBINED HONOURS IN ITALIAN AND ANOTHER SUBJECT

Alternative A (for students entering with Italian 1A06)

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 1A06.

Programme Notes:
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 Modern 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.

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Area Courses:
History 3A03 and all Level II, III and IV Italian courses, excluding Italian 2A03 and 2106.

Levels II, III and IV: 90 units minimum
R Italian 2D06, 2E06, 3D04, 3R06, 3L03 or 3003; 4L04, 4M04, 4P03; 3 units of Level III or IV Italian; History 3A03.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

Alternative B (for students entering with Italian 1206 or 12Z6)
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 1206 or 12Z6.

Programme Notes:
1. Recommended Distribution of Italian Area Courses for students following Alternative B:
   - Level II: Italian 2E06, 2206.
   - Level III: Italian 2D06, 3R06 and additional units of Levels III and IV Italian to total 15 to 16 units.
   - Level IV: Italian 3D04, 4L04, 4P03 and additional units of Levels III and IV Italian to total 17 to 19 units.
2. Upon completion of 60 units of work (including at least 12 units of Level II Italian Area courses), and with the approval of the Department of Modern Languages, and the Associate Dean of Humanities (Studies), up to 15 units of Level III Italian work may be replaced by courses of study at an Italian university.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A03 and 2106.

Levels II, III and IV: 90 units minimum
R Italian 2D06, 2E06, 2206, 3D04, 3R06, 3L03 or 3003, 4L04, 4M04, 4P03; and 6 to 8 units of Level III or IV Italian.

E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS ITALIAN
Available only to students who entered this programme before September, 1987.

Alternative A (for students entering with Italian 1A06)
Programme Note:
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 Modern Languages, and the Associate Dean of Humanities (Studies), Level III of Honours Italian may be replaced by courses of study at an Italian university.

Area Courses:
History 3A03 and all Level II, III and IV Italian courses, excluding Italian 2A03 and 2106.

Levels II, III and IV: 90 units
R Italian 2D06, 2E06, 3D04, 3R06, 4L04, 4M04, 4P03; one of 3L03 or 3003, 4P03; 9 units of Level III and IV Italian courses; History 3A03. 12 units Humanities (excluding Italian) which must include 6 units of English if not previously completed. Other non-Italian courses may be substituted with the approval of the Chairman of the Department and the Associate Dean of Humanities.

E 90 units

Alternative B (for students entering with Italian 1206 or 12Z6)
Programme Notes:
1. Italian 2D06 will be included in calculating the Graduation Average.
2. 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 Modern Languages, and the Associate Dean of Humanities (Studies), Level III of Honours Italian may be replaced by courses of study at an Italian university.

Area Courses:
History 3A03 and all Level II, III and IV Italian courses, excluding 2A03 and 2106.

Levels II, III and IV: 90 units
R Italian 2D06, 2E06, 3D04, 3R06, 4L04, 4P03, one of 3L03 or 3003, and 9 units of Level III or IV Italian courses; History 3A03. 12 units Humanities (excluding Italian) which must include 6 units of English if not previously completed. Other non-Italian courses may be substituted with the approval of the Chairman of the Department and the Associate Dean of Humanities.

E Electives, 12 of which may be Italian, to make a total of at least 90 units.

B.A. IN ITALIAN
Available only to students who entered this programme before September, 1987.

Alternative A (for students entering with Italian 1A06)
Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A03 and 2106.

Levels II and III: 61 units
R Italian 2D06, 2E06, 3D04, 3R06, 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 1206 or 12Z6)
Programme Note:
Recommended distribution of Italian Area courses for students following Alternative B:
   - Level II: Italian 2E06, 2206
   - Level III: Italian 2D06, 3R06, and 3 additional units of Level III and IV Italian Literature.

Area Courses:
All Level II, III and IV Italian courses, excluding Italian 2A03 and 2106.

Levels II and III: 60 units
R Italian 2D06, 2E06, 3D04, 3R06, 4L04, 4P03, and 6 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.

COMBINED HONOURS IN RUSSIAN AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B — in Russian 1206.

Programme Note:
Russian 2A06 will be included in calculating the Graduation Average.

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

Levels II, III and IV: 90 units minimum
R Russian 2A06, 2C06, 3C06, 3K06, 4C06, two of 4G03, 4H06, 4I03, 4J03, 4K03.

E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

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HONOURS RUSSIAN AND POLITICAL SCIENCE
Admission:
Completion of Humanities I or Social Sciences I with a weighted average of at least 7.0 in Russian 1206 and 6 units acceptable to the Department of Political Science, including a grade of at least B— in Russian 1206. A Level I course in Political Science is recommended.

Programme Note:
Russian 2A06 will be included in calculating the Graduation Average.

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

Levels II, III and IV: 90 units
R Russian 2A06, 2C06, 3C06, 3K06, 4C06; two of 4G03, 4I03, 4J03, 4K03;
Political Science 2K06, 3M06, 4J06 and 6 additional units of Level II and 12 additional units beyond Level II in Political Science.
E 18 units.

HONOURS RUSSIAN STUDIES
Available only to students who entered this programme before September 1987.

Area Courses:
All Level II, III, and IV Russian courses; History 3H06, 4O06; Political Science 2K06, 4J06.

Levels II, III and IV: 90 units
R Russian 2A06, 2C06, 3C06, 3K06, 4C06; two of 4G03, 4I03, 4J03, 4K03;
Political Science 2K06, 3M06, 4J06 and 6 additional units of Level II and 12 additional units beyond Level II in Political Science.
E 24 units, 12 of which may be from Area courses.

B.A. IN RUSSIAN
Available only to students who entered this programme before September 1987.

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

Levels II and III: 60 units
R Russian 2A06, 2C06, 3C06, 3K06; one of 4G03, 4I03, 4J03, 4K03;
3 additional units of Area courses; and 6 units Humanities.
E 24 units, 12 of which may be from Russian.

COMBINED HONOURS IN SPANISH AND ANOTHER SUBJECT
Alternative A (for students entering with Spanish 1A06)
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 1A06.

Programme Notes:
1. Students who take Spanish 1206 during their first level of university are strongly urged to take Spanish 1A06 during the following summer in order to follow Alternative A of the Combined Honours programme. Students who are unable to take Spanish 1A06 during the summer and who enter the programme with Spanish 1206 only must follow Alternative B.
2. Upon completion of all Level II Spanish Area courses, with the approval of the Department of Modern Languages, and the Associate Dean of Humanities (Studies), up to 15 units of Level III Spanish may be replaced by courses of study at a university abroad.

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

Levels II, III and IV: 90 units minimum
R Spanish 2A04, 2E06; either Spanish 2B03 or 2C03; Spanish 3A04; Spanish 4A04 or 4X04; 18 units of Level IV Spanish Literature courses.
E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

Alternative B (for students entering with Spanish 1206)
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 1206.

Programme Note:
Three units of Level IV Literature may be taken in Term II of the session in which Spanish 2E06 is being taken. The following is a recommended distribution of Spanish Area courses:
Level II: Spanish 1A06; 2B03 or 2C03.
Level III: Spanish 2A04, 2E06, 3A04; and 3 units of Level IV Spanish Literature in Term II.
Level IV: Spanish 4A04 or 4X04; and 12 units of Level IV Spanish Literature courses.

Area Courses:
Spanish 1A06, all Level II, III and IV Spanish courses.

Levels II, III and IV: 90 units minimum
R Spanish 1A06; 2B03 or 2C03; 2A04, 2E06, 3A04; 4A04 or 4X04; 15 units of Level IV Spanish Literature courses.
E To the minimum total of 75 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS SPANISH
Available only to students who entered this programme before September 1987.

Alternative A (for students entering with Spanish 1A06)

Programme Note:
Upon completion of all Level II Spanish Area courses, with the approval of the Department of Modern Languages, and the Associate Dean of Humanities (Studies), Level III of Honours Spanish may be replaced by courses of study at a university abroad.

Area Courses:
All Level II, III and IV Spanish courses, and History 3AA3, 3XX3 and 3YY3.

Levels II, III and IV: 90 units minimum
R Spanish 2A04, 2B03, 2C03, 2E06; one of History 3AA3, 3XX3 or 3YY3; Spanish 3A04, 4A04 or 4X04; 30 units of Level IV Spanish Literature courses.
9 units Humanities (excluding Spanish) or other non-Spanish courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Spanish.

Alternative B (for students entering with Spanish 1206)

Programme Notes:
1. Spanish 2E06 will be included in calculating the Graduation Average.
2. Three units of Level IV Literature may be taken in Term II of the session in which Spanish 2E06 is being taken. The following is a recommended distribution of Area courses:
Level II: Spanish 1A06, 2B03 or 2C03.
Level III: Spanish 2A04, 2E06, 3A04; and 6 units of Level IV Spanish Literature in Term II.
Level IV: Spanish 4A04 or 4X04; and 18 units of Level IV Spanish Literature.
3. Study at a university abroad in Level III is not available to Alternative B programme students.

Area Courses:
Spanish 1A06, all Level II, III and IV Spanish courses, and History 3AA3, 3XX3 and 3YY3.
East and IV: 90 units
R Spanish 1A06, 2A04, 2B03, 2C03, 2E06; one of History 3AA3, 3XX3 or 3YY3; Spanish 3A04; Spanish 4A04 or 4X04; 24 units of Level IV Spanish Literature courses.
9 units Humanities (excluding Spanish) or other non-Spanish courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Spanish.

B.A. IN SPANISH
Available only to students who entered this programme before September, 1987.

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

Levels II and III: 60 units
R Spanish 2A04, 2E06; either 2B03 or 2C03, 3A04; 9 units of Level IV Spanish Literature courses;
10 units from the Faculty of Humanities.
E 24 units, 9 of which may be Spanish.

Department of Music
Completion of a Music degree requires considerable daytime attendance.

HONOURS PROGRAMMES FOR THE B.MUS. DEGREE
Programme A: Honours Music (Education)
Admission:
Completion of Music I (General) with a weighted average of at least 7.0 in Music 1B06, 1C02, 1CC2, 1DD2, 1DD2, 1EI04; successful completion of Music 1G02.

Programme Notes:
1. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.
2. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3B03, 3B03, 3C04, 3H04, 3L03, 3M04, 3N03, 3R03, 3B03, 3B03, 3C04, 3E04, 3H04, 3J04, 3K03, 3L03, 3M04, 3N03, 3R03, 3B03, 3B03, 3C04, 3E04, 4H03, 4I03, 4J03, 4L03, 4M04, 4N03, 4R03, 4I03, 4S03, 4Z03, 4ZZ3.
3. 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
4. The Graduation Average will be computed on a minimum of 39 units of Level III and IV Area courses.

Area Courses:
Music 2B03, 2B03, 2C02, 2CC3, 2D02, 2DD2, 2E04, 2H04, 2H04, 2H04, 2H04, 2D02, 2E04, 2G02, 2H04, 3C04, 3E04, 3H04, 3J04, 3K03, 3L03, 3M04, 3N03, 3R03, 3T03, 3U03, 4B03, 4B03, 4C04, 4E04, 4H03, 4I03, 4S03, 4Z03, 4ZZ3.

Levels II, III and IV: 91 units
R Music 2B03, 2B03, 2C02, 2CC3, 2D02, 2DD2, 2E04, 2G02, 2H04, 3C04, 3E04, 3H04, 3J04, 3K03, 3L03, 3M04, 3N03, 3R03, 4C04, 4E04; 9 units from Music 3B03, 3B03, 3B03, 3B03, 3B03, 3B03; 6 units from Music 3T03, 3U03, 4H03, 4I03 (only one of 3T03, 3U03 may be taken for R-credit).
E 24 units, 12 of which may be from Music.

Programme C: Honours Music (Performance)
(The offering of this programme is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Humanities.)

Admission:
Completion of Music I (Performance) with a weighted average of at least 7.0 in Music 1B06, 1C02, 1CC2, 1DD2, 1DD2, 1EI06; evidence of outstanding performing ability; and successful completion of Music 1G02.

Programme Notes:
1. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.
2. Continuation to each successive level of this programme requires evidence of outstanding performing ability and potential.
3. Music I (General) students contemplating entrance to this programme in Level II should apply to the Department before March 15 of the year preceding the one in which they expect to take Level II courses. They will be required to achieve the same standards as those students registered in Music I (Performance) proceeding to Level II of this programme.
4. Students must complete the minimum of 18 units of non-Music electives as follows:
   6 units by the end of Level I
   12 units by the end of Level II
   18 units by the end of Level III
Note: Students must complete 12 units of electives representing two of the four areas of study listed as Humanities electives under Programmes and Degrees. A, Level I Programmes, Music I (General). This will normally be done by the end of Level II.
5. The Graduation Average will be computed on a minimum of 41 units of Level III and IV Area courses.

Area Courses:
All Level II, III and IV Music courses except Music 2A06, 2E04, 2G02, 3A03, 3A03, 3E04, 3G02, 3T03, 3U03, 4E04, and 4G02.
FACULTY OF HUMANITIES

Levels II, III and IV: 93 units
R Music 2B03, 2B3, 2C02, 2CC3, 2D02, 2DD2, 2E06, 2F03, 2G02, 2H04, 3E06, 3EE3, 3F03, 3G02, 3J04, 3Q03, 4E06, 4EE4, 4F03, 4G02, and either 4Q03 or 4QQ3; 6 additional units of Level III or IV Area courses, including at least 3 units of Area courses in Programme B: Honours Music (History and Theory).

E 18 units, 6 of which may be from Music.

COMBINED HONOURS B.A. IN MUSIC AND ANOTHER SUBJECT

Alternative A: Music Education and Another Subject
Admission: Completion of Level II, III and IV: 93 units
R Music 2B03, 2B3, 2C02, 2CC3, 2D02, 2DD2, 2E06, 2F03, 2G02, 2H04, 3E06, 3EE3, 3F03, 3G02, 3J04, 3Q03, 4E06, 4EE4, 4F03, 4G02, and either 4Q03 or 4QQ3; 6 additional units of Level III or IV Area courses, including at least 3 units of Area courses in Programme B: Honours Music (History and Theory).

E 18 units, 6 of which may be from Music.

Programme Notes:
1. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average, and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.

2. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3BB3, 3B03, 3C04, 3H04, 3K03, 3L03, 3M04, 3N03, 3Q03, 3R03, 4B03, 4BB3, 4C04, 4E04, 4F03, 4G02, 4H03, 4I03, 4L03, 4M04, 4N03, 4Q03, 4P03, 4S03, 4Z03, 4ZZ3.

3. The Department recommends that students enrol at least one ensemble course as an elective. (The ensemble courses are Music 2G02, 3G02, and 4G02.)

4. Music 2H04 will be included in calculating the Graduation Average.

Area Courses:
Music 2B03, 2B3, 2C02, 2CC3, 2D02, 2DD2, 2E04, 2F04, 3A03, 3E04, 3J04, 3K03, 3L03, 3M04, 3N03, 3Q03, 4E04, 4K03, 4L03, 4M04, 4N03, 4Q03, 4P03.

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

Alternative B: Music History and Theory and Another Subject
Admission: Completion of Music 1(General) with a weighted average of at least 7.0 in Music 1B06, 1C02, 1CC2, 1DD2, 1E04; successful completion of Music 1G02.

Programme Notes:
1. The Cumulative Area Average for the Honours Music programmes and for the music portion of the Combined Honours programmes is termed the Cumulative Music Average, and is the weighted average of grades in all Area courses attempted. To continue in an Honours Music Programme, a student must maintain a CMA of at least 7.0.

2. The following courses have limited enrolments. Priority is given to students for whom these are Area courses: Music 3BB3, 3B03, 3C04, 3H04, 3K03, 3L03, 3M04, 3N03, 3Q03, 3R03, 4B03, 4BB3, 4C04, 4E04, 4F03, 4G02, 4H03, 4I03, 4L03, 4M04, 4N03, 4Q03, 4P03, 4S03, 4Z03, 4ZZ3.

3. Music 2H04 will be included in calculating the Graduation Average.

Area Courses:
Music 2B03, 2B3, 2C02, 2CC3, 2D02, 2DD2, 2E04, 2F04, 3A03, 3E04, 3J04, 3K03, 3L03, 3M04, 3N03, 3Q03, 4E04, 4K03, 4L03, 4M04, 4N03, 4Q03, 4P03, 4S03, 4Z03, 4ZZ3.

E To the minimum total of 79 units of Area work in the two components of this Combined Honours alternative, students must add elective work to make a minimum overall total of 90 units beyond Level I.

B.A. IN MUSIC
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 1A06; a successful music audition.

Programme Note: Students must complete the minimum of 24 units of non-Music electives as follows: 12 units by the end of Level I 18 units by the end of Level II 24 units by the end of Level III

Area Courses:
All Level II, III and IV Music courses, except Music 2G02, 3G02, 4G02, and those courses open only to students registered in Honours Music, Programme C (Performance).

Levels II and III: 62 units
R Music 1C02, 1CC2, 1DD2, 1E04, 1G02, 2A06, 2E04, 2H04; 10 units of Level III or IV Area courses.

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

Alternative B (for students entering from Music I (General))
Admission: Completion of Music I (General) with a weighted average of at least 4.0 in Music 1B06, 1C02, 1CC2, 1DD2, 1E04, successful completion of Music 1G02.

Programme Note: Students must complete the minimum of 24 units of non-Music electives as follows: 12 units by the end of Level I 18 units by the end of Level II 24 units by the end of Level III

Area Courses:
All Level II, III and IV Music courses, except Music 2G02, 3G02, 4G02, and those courses open only to students registered in Honours Music, Programme C (Performance).

Levels II and III: 60 units
R Either Music 2A06 or Music 2B03 and 2BB3; Music 2E04, 2H04; 12 additional units of Area courses including at least 6 units beyond Level II; 10 units from the Faculty of Humanities, which may include Music.

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

Department of Philosophy

HONOURS BIOLOGY AND PHILOSOPHY
(B. Sc.)
(See Faculty of Science, Department of Biology)

ARTS AND SCIENCE PROGRAMME AND PHILOSOPHY
(B. Arts Sc.)
(See Arts and Science Programme)

HONOURS PHILOSOPHY

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 2A06; one of 2B03, 2R03; 2C06, 3A06, 3G03, 3O03, 4H03 and 24 additional units of Philosophy, at least 21 units of which must be Level III or IV Philosophy courses;
12 units Humanities excluding Philosophy or other non-Philosophy courses approved by the Chairman of the Department and the Associate Dean of Humanities.
E 24 units, 12 of which may be from Philosophy beyond Level I.

COMBINED HONOURS IN PHILOSOPHY AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in 6 units acceptable to the Department of Philosophy.

Programme Note:
Philosophy 2C06 will be included in calculating the Graduation Average.

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

Levels II, III and IV: 90 units minimum
R Philosophy 2A06; one of 2B03, 2R03; 2C06 and 21 units of Levels III and IV Philosophy.
E To the minimum total of 72 units of Area work in the two components of the Combined Honours programme, students must add elective work to make a minimum overall total of 90 units beyond Level I.

HONOURS PHILOSOPHY AND BIOLOGY
Admission:
Completion of any Level I programme with a grade of at least B – in Philosophy 1B06 or Philosophy 1D06, and Biology 1A06 or 1G06 with a grade of at least B – in 6 units of Level I Mathematics. Students are cautioned to observe that Chemistry 1A06 is the normal prerequisite for Biology 2B03 and Biology 2C03, which are required courses in the programme.

Programme Note:
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 2B03, 2C03, 2E03, 2F03, 3F06, 3H03, 3I03, 3J03, 3N06, 3O03, 3Q03, 4E03; Chemistry 2O06.

Levels II, III and IV: 90 units
R Biology 2B03, 2C03, 2E03, 2F03; 24 units from Biology 3F06, 3H03, 3I03, 3J03, 3N03; 3O03, 3Q03, 4E03, including at least one Level IV Biology course (Chemistry 2O06 may replace 6 units of the above Biology courses); one of 2B03, 2R03; 2C06; one of 2D03, 2G03; 2M03; one of 3G03, 3M03, 3N06; 3O03; 3W03, 4W03; additional Level III or Level IV Philosophy courses to make a total of 42 units of Philosophy.
E 12 units elective.

HONOURS PHILOSOPHY AND MATHEMATICS
Admission:
Completion of any Level I programme with a weighted average of at least 7.0 in Mathematics 1A06 and Mathematics 1B03, and a grade of at least B – in 6 units of work acceptable to the Department of Philosophy.

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

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

Levels II, III and IV: 90 units
R Mathematics 2A06, 2B06, 2F03, 3A06, 3E06; 9 units from Mathematics 2C03, 3B03, 3L06, 3P03, 4B06; 6 units from Mathematics 4A06, 4E03, 4K03, 4L03; Philosophy 2A06; one of Philosophy 2B03, 2R03; 2C03; 24 units of Level III or Level IV Philosophy (including at least one Level IV Philosophy course).
E 9 units elective.

B.A. IN PHILOSOPHY
Admission:
Completion of any Level I programme with a grade of at least C – in a Level I course acceptable to the Department.

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

Levels II and III: 60 units
R Philosophy 2A06, 2C06, one of Philosophy 2B03, 2R03; 12 units of Philosophy, including at least 6 units of Level III or IV Philosophy; 9 units from the Faculty of Humanities, or 9 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.
Faculty of Science

R.F. Childs/B.Sc., Ph.D., Dean of Science
D.E.N. Jensen/M.A., Ph.D., Associate Dean of Science (Studies)
A.J. Ya’wood/B.Sc., Ph.D., Associate Dean of Science (Studies)
E. Calligan/Student Advisor
J. Wood/B.A./Student Advisor
M. Lazzarato, Programmes Assistant

The Faculty of Science provides studies through the following Departments:
* Biochemistry
* Biology
* Chemistry
* Computer Science and Systems
* Geography
* Geology
* Mathematics and Statistics
* Materials Science and Engineering
* Physics
* Psychology

All Departments offer four-level Honours B.Sc. programmes which prepare students for graduate studies, Ontario Teacher’s Certificate, and industry. A number of Departments offer Combined Honours degrees. An Honours Degree in Molecular Biology and Biotechnology is organized by a Committee of Instruction involving the Faculties of Health Sciences and Science.

Three-level B.Sc. programmes, which provide a science education, but are less extensive and less demanding than the Honours programmes, are also offered by all Departments except Biochemistry, and Materials Science and Engineering. A three-level B.Sc. in Science programme is also available.

Some Departments offer Major programmes as well (which are indicated in the list above by a star). Major programmes require four levels and offer in-depth studies suitable for students who 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 an Associate Dean (Studies).

EXTRA COURSES

Extra courses are courses taken in addition to those required for the degree programme in which the student is registered. Permission to take Extra courses must be obtained from the Office of the Deans of Science (Studies) and such courses must be designated Extra at the time of registration. The grades obtained in Extra courses will be included in neither the Cumulative Area Average nor the number of units required for graduation.

MAJOR PROGRAMMES

The following describes the change in regulations for Major programmes in the Faculty of Science. (Students in Honours, Combined Honours, and B.Sc. programmes should note the appropriate University-wide regulations in the section Academic Regulations.)

Admission: Students seeking admission after August 1987, will require a weighted average of 5.0 in Level I courses, or a grade of at least C in a specified course. The relevant courses are specified, under Admission, in each programme description.

Continuation in a Major Programme:

For students admitted to a Major programme before September 1987: If you obtain a Cumulative Area Average of 4.0, you may continue in a Major programme. If you fail to obtain a Cumulative Area Average of 4.0, but have an average of at least 3.5, you may continue on Programme Probation for one 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.

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

Graduation: Graduation standing in Major degree programmes is awarded in three classes. For first-class standing, a minimum Graduation Average of 9.5 is required; for second-class standing 7.0; and for third-class standing 4.0 for those who entered a Major programme before September 1987, and 5.0 for those who were admitted to a Major programme after August 1987.

RE-ADMISSION TO THE FACULTY OF SCIENCE

A student who is ineligible to continue in the Faculty of Science may apply for re-admission. Application for re-admission must be made in writing by June 15 to the Chairman of the Committee on Re-admissions, Office of the Deans of Science (Studies), and should include an explanation of the student’s previous academic performance and reasons why the student would expect to succeed in the programme if re-admitted. If the student has been Required to Withdraw for one calendar year, a letter of reference from an employer may be required.

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 selec-
tion, 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 and joint Computer Science programmes in the Faculties of Science and Social Sciences has been set.

In order to implement this target, enrolment in Computer Science 2L03 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 2L03, 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 60 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.

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

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

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

**SECOND BACHELOR’S DEGREE PROGRAMMES**

In addition to the regulations stated in the section Academic Regulations, Second Bachelor’s Degree Programmes in this Calendar, the following Faculty regulations will apply, effective September 1987.

Students will be admitted to Second Degree studies only if the second degree studies involve a significant component of work in the Area courses of a programme. Accordingly, permission will not be granted to take Second Degrees in the following cases or subject combinations:

1. In a subject which was a title component of a first combined Honours or Major degree. (e.g. Computer Science following Computer Science and Mathematics)
2. In a combined Honours or Major degree to a holder of another degree in a component subject of that degree. (e.g. Computer Science and Mathematics following Computer Science)
3. an Honours degree to a holder of a Major degree in the same subject.
4. In B.Sc. Science to a holder of another B.Sc. degree (either three- or four-year) in a programme given by a department.
5. In three-year departmental B.Sc. programmes requiring courses which constitute a significant component of an initial B.Sc. Science degree.
6. In the B.Sc. degree to a holder of the B.A. degree in the same subject.

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**Level I Programme**

**NATURAL SCIENCES I: 30 UNITS**

Mathematics 1A06

One or two of a) or b):

a. Chemistry 1A06
b. Physics 1A06 or 1B06 or 1C06

Additional selections from c) to j) to make a total of 30 units:

c. Biology 1A06
d. Computer Science 1MA3, or 1MA3 and 1MB3
e. Geography 1A06
f. Geology 1A03 and/or 1C03
g. Materials Science 1A03 or 1A03 and 1B03
h. Mathematics 1B03
i. Psychology 1A06
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 an Associate Dean (Studies), well-prepared students may be permitted to elect up to six additional units.

The choice in the programme that a first level student may elect is considerable and should be made carefully with the Level II admission requirements of a specific programme in mind. A suitable choice of Level I options will allow successful students to enter Level II of any one of several programmes.

Students who complete Natural Sciences I with high standing but who lack a Level I course required for entry into the desired Level II programme may be permitted entry to that programme after consultation with an Associate Dean (Studies) and the appropriate Department 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: 1987-88 only**

Completion of Natural Sciences I, with an average of at least 7.0 in Chemistry 1A06, and either Mathematics 1A06, or one of Physics 1A06, 1B06, 1C06. Students planning to enter Honours Biochemistry after August 1988 should note the requirement of Biology 1A06 which will then be in effect. The election of one of Physics 1A06, 1B06, 1C06, in Level I or II is recommended.

**Admission: Beginning in 1988-89**

Completion of Natural Sciences I, with an average of at least 7.0 in Biology 1A06, Chemistry 1A06, and one of Mathematics 1A06, Physics 1A06, 1B06, 1C06. The election of one of Physics 1A06, 1B06, 1C06 in Level I or II is recommended.

**Programme Note:**

Biochemistry 2A03 will be included in calculating the Graduation Average.

**Area Courses:**

Biochemistry 2A03, 3B03, 3C03, 3L06, 4B06, 4C03, 4D03, 4E03, 4G03, 4I03, 4L03, 4M03, 4N03, 4P03, 4Q03, Biology 2B03, 2C03, 4O03, Chemistry 2B06.

**Level II: 30 units**

R Biochemistry 2A03; Chemistry 2B06, 2N03 and one of Chemistry 2Q06 or 2T06; Biology 2C03 and 1A06 (if not completed); 3 units above Level I from any Science discipline. Election of Biology 2B03 in Level II is recommended for students who have completed Biology 1A06.

E Electives to make a total of 30 units. Chemistry 2C03, 2F03, Computer Science 1MA3 (if 1B03 not completed) and Statistics 2M3 are highly recommended.
FACULTY OF SCIENCE

Level III: 30 units
R Biochemistry 3B03, 3C03, 3L06; Chemistry 3D03; 9 units from Biology 2B03 (if not completed) and Level III or IV Biochemistry, Biology or Chemistry courses.

(For students planning to enter the Biotechnology and Genetic Engineering Option, Biology 2B03 and 3C03 must be completed by the end of Level III; Biology 3E03 is recommended.)

E 6 units, excluding Biochemistry.

Level IV (General Biochemistry Option): 30 units
R One of Biochemistry 4B06, or 4D03 and 4P03, or 4G03 and 4L03; Biochemistry 4E03, 4I03, 4M03 and 6 units of Level IV Biochemistry; 3 units of Level III and IV courses from any Science discipline other than Biochemistry.

E 6 units excluding Biochemistry.

Level IV (Biotechnology and Genetic Engineering Option): 30 units
A CAA of at least 8.0 on completion of Level III is required for admission.
R Biochemistry 4D03, 4E03, 4G03, 4I03, 4M03; 4B06 or 4P03; 3 units of Level IV Biochemistry; 3 to 6 units of Level III or IV courses from any Science discipline other than Biochemistry (Biology 3003 must be selected if not taken at Level III). Biology 4I03 and 4V03 are recommended.

E Electives excluding Biochemistry to make a total of 30 units.

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

Admission:
Completion of Natural Sciences I, including Chemistry 1A06, Mathematics 1A06, 1B06, and one of Biology 1A06, Physics 1A06, 1B06, 1C06, with an average of at least 7.0 in Mathematics 1A06 and Chemistry 1A06. Election of both Biology and Physics is highly recommended.

Area Courses:
Biochemistry 2A03, 2B03, 2C03, 2L06, 3A03, 3B03, 3C03, 3L06, 3G06; Chemistry 2A03, 2B06, 2T06, 3A03, 3B03, 3C03, 3L06, 3G03, 3E06, 3U03, 4A03, 4D03, 4G03, 4K03, 4L03, 4P03, 4V03.

Level II: 33 units
R Biochemistry 2A03; Chemistry 2A03, 2B06, 2C03, 2T06; Mathematics 2N03, Biology 1A06, and one of Physics 1A06, 1B06, 1C06, if not completed in Level I; courses in a Science discipline to make a total of 30 units. Students considering Level III Honours Biochemistry should elect Biology 2C03. Students considering Level III Honours Chemistry should elect Physics 2A03.

E Electives to make a total of 33 units.

Level III: 33 units
R Biochemistry 3B03, 3C03; one of Biochemistry 3L03, 3L06; Chemistry 3D03; one of Chemistry 3A03 or 3E03; Chemistry 3U03.

E Electives to make a total of 33 units.

Level IV: 33 units
R Biochemistry 4E03, 4I03 and 4M03, and one of Biochemistry 4D03, 4G03, 4Q03; one of Biochemistry 4B06, or 4U06 (same as Chemistry 4U06); Chemistry 4G06; one of Chemistry 3A03, 3E06, 4K06; 3 units of Level III or IV Chemistry.

E Electives to make a total of 33 units.

BIOCHEMISTRY MAJOR
Admission: 1987-1988 only
Completion of Natural Sciences I, with an average of at least 5.0 in Chemistry 1A06, and either Mathematics 1A06 or one of Physics 1A06, 1B06, 1C06. Students planning to enter Biochemistry Major after August 1988 should note the requirement of Biology 1A06 which will then be in effect. The election of one of Physics 1A06, 1B06, 1C06 in Level I or II is also recommended.

Admission: Beginning in 1988-89
Completion of Natural Sciences I, with an average of at least 5.0 in Biology 1A06, Chemistry 1A06, and one of Mathematics 1A06, Physics 1A06, 1B06, 1C06. The election of one of Physics 1A06, 1B06, 1C06 in Level I or II is recommended.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Biochemistry 2A3 will be included in calculating the Graduation Average.

Area Courses:
Biochemistry 2A03, 3B03, 3C03, 3L06, 3G06, 4C03, 4D03, 4E03, 4G03, 4H03, 4I03, 4L03, 4M03, 4N03, 4P03, 4Q03, 4R03, 4S03, 4T03, 4U03, 4V03; Biology 2B03, 2C03, 4D03, Chemistry 2B06, 2E06.

Level II: 30 units
R Biochemistry 2A03; Chemistry 2Q06; one of Chemistry 2B06, 2E06; one of Chemistry 2F03, 2N03; Biology 2C03 and 1A06 (if not completed in Level I); courses from any Science discipline, to make a total of 24 to 27 units in Level II. Election of Biology 2B03 in Level II is recommended for students who have completed Biology 1A06. Students planning to take Chemistry 3F03 must have completed Chemistry 2006 or 200E.

E Electives to make a total of 30 units.

Level III: 30 units
R Biochemistry 3B03, 3C03, 3L06; one of Chemistry 3D03, 3F03; 6 units of Level III or IV Biochemistry, Biology or Chemistry; Biology 2B03 and 2C03 (if not completed); and courses from any Science discipline to make a total of 24 units.

E 6 units, excluding Biochemistry.

Level IV: 30 units
R Biochemistry 4L03; one of Biochemistry 4E03, 4I03, 4M03, and 9 units of Level IV Biochemistry, and courses from any Science discipline to make a total of 24 units. Students with a CAA of at least 7.0 are eligible to take Biochemistry 4P03; students with a CAA of at least 8.0 are eligible to take Biochemistry 4G03.

E 6 units.

Department of Biology

HONOURS PHILOSOPHY AND BIOLOGY (B.A.)
(See Faculty of Humanities, Philosophy)

HONOURS BIOLOGY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06, and one of Physics 1A06, 1B06, 1C06 with at least B— in Biology 1A06 and at least B— in one of Mathematics 1A06, Chemistry 1A06, Physics 1A06, 1B06, 1C06.

Programme Notes:
1. Students are advised to note carefully the prerequisites for all Levels III and IV courses listed in the following programme, particularly Biochemistry 3B03, 3C03 and 3G06.
2. Students planning to enter the Biotechnology and Genetic Engineering Option at Level IV are advised to note carefully the Admission requirements at Level IV.

Area Courses:
All Levels II, III and IV Biology courses; Biochemistry 3B03, 3C03, 3G06, 4D03, 4E03, 4M03; Engineering 4X03; Geology 3D06, 4D03, 4F03; Psychology 3F06, 3R03, 3S03, 3T03.

Level II: 30 units
R Biology 2B03, 2C03, 2D03, 2E03, 2F03; Chemistry 2B06; Chemistry 2Q06, or Computer Science 1B03 (if not completed) and Statistics 2R06.

E Electives, excluding Biology and Biochemistry to make a total of 30 units.

Level III: 30 units
R 18 units from Levels II and IV Area courses in Biology; 6 units of Area courses.

E 6 units elective, at least 3 of which must not be from Biology or Biochemistry.

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Level IV (General Biology Option): 31-32 units
R 22 to 23 units of Levels III and IV Area courses in Biology, including Biology 4F04 or 4C08; 6 to 9 units of Area courses to make a total of 28 to 32 units.
E Electives to make a total of 31 to 32 units.

Level IV (Biotechnology and Genetic Engineering Option): 31-32 units
Admission:
Completion of Level III Honours Biology with a CAA of at least 9.0 and including Biology 3H03 and 3H13, 3O03, 6 to 9 units from Biology 3E03, 3I03, 3N06; one of Biochemistry 3B03 or 3G06.
R Biology 4A03, 4F04 or 4C08, 4P06, Biochemistry 4D03; 6 to 9 units from Biology 4R03, 4V03, 4B03, 4O03 to make a total of 25 to 26 units.
E Electives to make a total of 31 to 32 units.

HONOURS BIOLOGY AND GEOLOGY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06, one of Physics 1A06, 1B06, 1C06, and Mathematics 1A06 with at least B – in Biology 1A06 and at least B – in one of Geology 1A03, 1C03 or 1A06.

Programme Notes:
1. Biology 2B03, 2C03 and 2D03 will be included in calculating the Graduation Average.
2. Geology 3E02 is normally taken at the end of Level III. This course is scheduled outside of the regular term.

Area Courses:
Biology 2B03, 2C03, 2D03, 2E03, 2F03, 3A06, 3D03, 3E03, 3F06, 3S03, 3M06, 3S53, 3T03, 3U06, 4C08, 4D03, 4F04, 4G03, 4H03, 4I03, 4M03, 4M33, 4S03.

Level II: 33 units
R Biology 2B03, 2E03, 2F03; Geology 2B06, 2C06; Mathematics 1B03, or Statistics 2R06; Chemistry 2Q06 or Chemistry 2P06.
E Electives, which may not be from Biology or Geology, to make a total of 33 units.

Level III: 33 units
R Geology 3D06; Biology 2C03, 2D03; Chemistry 2D03 and Biochemistry 2E03; 12 units from Geology 3C06, 4S03, 4U03, Biology 3F06, 3M06 or 3M33, 3S06, 3U06.
E 3 units elective.

Level IV: 31-34 units
R Geology 3E02; Biology 3J03, 18 to 20 units from Biology 3A06, 3D03, 3E03, 3F06, 3M06 or 3M33, 3S53, 3T03, 3U06, 4D03, 4P04, 4C08, 4G03 and Geology 3C06, 4M03, 4M33, 4D03, 4F03, 4G06, 4S03, 4U03 which must include at least 6 units from Biology and at least 6 units from Geology. Only one of Biology 4F04, 4C08 and Geology 4G06 may be taken.
E Electives to make a total of 31 to 34 units (Geology 2D06 is recommended).

HONOURS BIOLOGY AND PHILOSOPHY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06 with at least B – in Biology 1A06 and at least B – in Philosophy 1B06 or 1D06.

Programme Notes:
1. Students are advised to note carefully the prerequisites for all courses listed in this programme. No student may register in any level of this programme without the approval of the Chairman of the Biology Department. Students are advised to consult the Chairman for counselling in March.
2. Philosophy 2A06, 2C06, 2M03 will be included in calculating the Graduation Average, if they are taken in Level III.

Area Courses:
Biology 2B03, 2C03, 2E03, 2F03, 3A06, 3H03, 3H13, 3I03, 3L03, 3M03, 3N06, 3Q03, 3R03, 4E03, 4F04; Biochemistry 3B03, 3G06; all Levels II, III and IV Philosophy courses.

Level II: 33 units
R Biology 2B03, 2C03, 2E03, 2F03; Philosophy 2B03 or 2R03, 2D03 or 2G03, 2A06 or 2C06, 2M03; either Chemistry 2B06, or both Chemistry 2D03 and Biochemistry 2E03.

Level III: 33 units
R 12 units from Biology 3F06, 3H03, 3H13, 3I03, 3J03, 3N06, 3Q03, 3Q03, Biochemistry 3G06; Philosophy 3O03, 2A06 or 2C06, 3M03 or 3W03 and 3 additional units from Philosophy.
E 6 units elective (Chemistry 2Q06 is recommended).

Level IV: 33 units
R Philosophy 4W03; 12 units from Levels III and IV Biology Area courses, or Biochemistry 3B03 or 3G06; 12 units of Philosophy including 3G03 or 3N06, 3M03 or 3W03, 3O03.
E 6 units elective.

HONOURS BIOLOGY AND PSYCHOLOGY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06, one of Physics 1A06, 1B06, 1C06, with at least B – in Biology 1A06 and at least B – in Psychology 1A06.

Programme Notes:
1. Students must complete a minimum of one laboratory course in Psychology and one in Levels III or IV Biology. A minimum of 18 units from Psychology and a minimum of 18 units from Biology must be included in the total required courses for Levels III and IV combined.
2. Enrolment is limited for the Psychology laboratory courses. Permission of the department must be obtained by March 1.
3. Psychology 3W06 must be completed in Level III or IV.
4. Biology 2E03 will be included in calculating the Graduation Average.

Area Courses:
Biology 2B03, 2C03, 2E03, 2F03, 3A06, 3H03, 3I03, 3J03, 3K06, 3O03, 3P03, 3Q03, 3U06, 4A03, 4C08, 4E03, 4F04, 4I03, 4P06, 4G03; Psychology 2H03, 2R06, 2T03, 3A03, 3B03, 3D03, 3E03, 3F06, 3G03, 3H03, 3K03, 3N06, 3P03, 3R03, 3T03, 3U03, 3V03, 3X03, 3Y03, 4D06, 4F03, 4G03, 4H03, 4Q03; Statistics 2R06.

Level II: 33 units
R Biology 2B03 and 2C03; Psychology 2T03 and 2H03; Statistics 2R06 or Psychology 2R06; Chemistry 2B06.
E 9 units elective. Students are advised to take English 3A03 and Chemistry 2Q06 as electives in Levels II and III, and Biochemistry 2A03 as an elective in Level II.

Level III: 33 units
R 12 units from Biology 2E03, 3H03, 3H13, 3F06, 3I03, 3J03, 3K06, 3O03, 3P03, 3Q03, 3U06. 12 units from Psychology 3A03, 3E03, 3F06, 3G03, 3H03, 3P03, 3N06, 3P03, 3R03, 3T03, 3U03, 3V03, 3X03, 3Z03; Psychology 3W06 must be completed in Levels III or IV; Biochemistry 3G06 or 3B03.
E 3 to 6 units elective. Biology or Psychology, to make a total of 33 units.

Level IV: 33-34 units
R One of Biology 4F04, 4C08, Psychology 4D06; 18 to 22 units (with at least 9 units from Biology and 9 units from Psychology, including Psychology 3W6 if not completed) from Levels III and IV Biology Area courses and Levels III and IV Psychology Area courses.
E Electives to make a total of 33 to 34 units.

BIOLOGY MAJOR
Admission:
Completion of Natural Sciences I, including Chemistry 1A06, with at least C in Biology 1A06, and at least C in one of Mathematics 1A06, Chemistry 1A06, Physics 1B06, 1A06, 1C06. One of Physics 1B06, 1A06, 1C06, is strongly recommended in Level I.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
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2. Students in Levels III and IV of this programme should select Area courses in consultation with the Chairman of the Department of Biology.

Area Courses:
All Levels II, III and IV Biology courses, except Biology 4C08; Biochemistry 3B03, 3G06.

Level II: 30 units
R Biology 2B03, 2C03, 2D03, 2E03, 2F03; Chemistry 2006.
E 9 units electives, at least 3 units of which may not be from Biology or Biochemistry.

Level III: 30 units
R 18 units of Area courses.
E 12 units electives, at least 3 units of which may not be from Biology or Biochemistry.

Level IV: 30-31 units
R 18 to 19 units of Area courses.
E 12 units electives, at least 3 units of which may not be from Biology or Biochemistry.

B.Sc. IN BIOLOGY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06, and at least a grade of C— in Biology 1A06. One of Physics 1A06, 1B06, or 1C06 is strongly recommended in Level I.

Area Courses:
All Levels II and III Biology courses.

Level II: 30 units
R Biology 2B03, 2C03, 2D03, 2E03, 2F03; Chemistry 2006; Biochemistry 2E03; Computer Science 1B03 (if not completed).
E 6 to 9 units, of which 6 must be from the Faculties of Social Sciences or Humanities.

Level III: 30 units
R 18 units of Level III Biology Area courses; Statistics 2R06.
E 6 units from the Faculties of Social Sciences or Humanities.

Department of Chemistry

HONOURS BIOCHEMISTRY AND CHEMISTRY
(See Department of Biochemistry)

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

Admission:
Completion of Natural Sciences I, including Chemistry 1A06, and Mathematics 1A06 and 1B03. A grade of at least B— must be achieved in Chemistry 1A06 and one of Mathematics 1A06, 1B03, Physics 1A06, 1B06, 1C06. One of Physics 1A06, 1B06, 1C06 must be taken before entry into Level III; its election in Natural Sciences I is strongly recommended.

Programme Note:
Recommended electives throughout the programme include Engineering 2003, Materials 2C04, 4D03, 4E03; Metallurgy 3C03, 4C04, 4N03; Chemical Engineering 3D03, 3P03, 4K03, 4N04; Business 3W06, 3X03, 3Y03, 3Z03; Physics 2A03.

Area Courses:
Chemistry 2A03, 2B06, 2C03, 3A03, 3D03, 3E06, 3L03, 3L03, 4A03, 4C03, 4D03, 4G06, 4K06, 4P03, 4R03, 4S03, 4T06; Chemical Engineering 2D04, 2F04, 3K03, 3M04.

Level II: 32 units
R Chemistry 2A03, 2B06, 2C03; Chemical Engineering 2D04, 2F04; Computer Science 1MA3, if 1B03 not completed in Level I; Mathematics 2N03.
E 6 to 9 units elective, excluding Chemistry, to make a total of 32 units.

Level III: 31 units
R Chemistry 3D03, 3E06, 3L03, 3L03, 3U03; Chemical Engineering 3M04.
E Electives, excluding Chemistry, to make a total of 31 units.

Level IV: 30 units
R Chemistry 3A03, 4G06 or 4T06; either Chemistry 4K06 or Chemical Engineering 3K03; 6 units of Level IV Area courses; an additional 3 units from Level III or IV Science or Engineering courses.
E Electives to make a total of 30 units.

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

Admission:
Completion of Natural Sciences I, including Chemistry 1A06, and Mathematics 1A06 and 1B03. A grade of at least B— must be achieved in Chemistry 1A06 and one of Mathematics 1A06, 1B03, Physics 1A06, 1B06, 1C06. One of Physics 1A06, 1B06, 1C06 must be taken before entry into Level III; its election in Natural Sciences I is strongly recommended.

Programme Note:
For students interested in physical chemistry, recommended electives throughout the programme include Statistics 2M03 and Mathematics 3C03, 3D03 (if Mathematics 2G03 and 2C03 were taken instead of Mathematics 2N03).

Area Courses:
Chemistry 2A03, 2B06, 2C03, 2T06, 3A03, 3D03, 3E06, 3L03, 3L03, 4A03, 4B03, 4C03, 4D03, 4G06, 4K06, 4P03, 4Q03, 4R03, 4S03, 4Y03.

Level II: 30 units
R Chemistry 2A03, 2B06, 2C03, 2T06; Mathematics 2N03; Physics 2A03; Computer Science 1MA3, if 1B03 not completed in Level I.
E 3 to 6 units elective, excluding Chemistry, to make a total of 30 units.

Level III: 30 units
R Chemistry 3A03, 3D03, 3E06, 3L03, 3U03.
E Electives, at least 6 of which may not be Chemistry, to make a total of 30 units.

Level IV: 30 units
R Chemistry 4G06, 4K06, and 6 units of Level IV Area courses; an additional 6 units from Level III or IV Science or Engineering courses.
E 6 units elective to make a total of 30 units.

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

Admission:
Completion of Natural Sciences I, including Chemistry 1A06, Geography 1A03 or 1C03, Mathematics 1A06 and 1B03, with a grade of at least B— in each of Chemistry 1A06 and Geography 1A03 or 1C03. The election of Physics 1A06 is recommended.

Programme Notes:
1. Geology 2D06 will be included in calculating the Graduation Average.
2. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Chemistry 2A03, 2B06, 2C03, 2T06, 3A03, 3E06, 3L03, 3U03, 4C03, 4P03, 4R03, 4S03; Geology 2B06, 2C06, 2D06, 3C06, 3G04, 4B03, 4BB3, 4M03, 4Q03, 4QQ3.

Level II: 33 units
R Chemistry 2B06, 2C03, 2T06, Geology 2B06, 2C06, Mathematics 2N03.
E 3 units elective, excluding Chemistry and Geology.
Level III: 33 units
R Chemistry 2A03, 3E06, 3U03; Geology 2D06, 3C06, 3E02, 3G04.
Attention is drawn to Geology 3E02 which is scheduled outside of
regular term.
E 3 units elective.

Level IV: 30 units
R 21 units selected as follows: Chemistry 3A03; 18 units of Levels III
and IV Chemistry and Geology to include at least 6 units of Area
courses from each.
E 9 units elective to make a total of 30 units.

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

Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and
1B03, Chemistry 1A06 and Physics 1A06, with a grade of at least B–
in Chemistry 1A06, Physics 1A06, and one of Mathematics 1A06 or
1B03. Students will also be considered for admission if they have com-
pleted Physics 1B06 or 1C06, instead of 1A06. However, Physics 1A06
is strongly recommended.

Programme Note:
Chemistry 2A03 will be included in calculating the Graduation Average.

Area Courses:
Chemistry 2A03, 2B06, 2C03, 2T06, 3E06, 4B03, 4C03, 4G06, 4K06,
4Q03, 4Y03. Physics 2B06, 2C05, 3B06, 3K04, 3M03, 3N03, 4F03,
4J04, 4K03, 4Q04.

Level II: 35 units
R Chemistry 2B06, 2C03, 2T06; Physics 2B06, 2C05; Mathematics
2G03, 2K03.
E 3 units to make a total of 35 units. Computer Science 1MA3 is re-
commended (if 1B03 not taken in Level I).

Level III: 33-34 units
R Chemistry 2A03, 3E06; Physics 3M06; 6 to 10 units from Physics
3B06, 3K04, 3N03; Mathematics 3C03, 3D03.
E Electives to make a total of 33 to 34 units.

Level IV: 31-34 units
R At least 25 units of Level III and Level IV Chemistry and Physics,
which must include: Chemistry 4G06 or Physics 4J04 or Physics
4Q04; Physics 4F03; Chemistry 4K06; Chemistry 4Y03 or Physics
3K04, 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 1A06 and
Mathematics 1A06 and 1B03. A grade of at least C must be achieved in
Chemistry 1A06 and one of Mathematics 1A06, 1B03, Physics 1A06,
1B06, 1C06. One of Physics 1A06, 1B06, 1C06 must be taken before
entry into Level III; its election in Natural Sciences I is strongly
recommended.

Programme Notes:
1. Students seeking admission to any Major programme after August
1987, should note the requirements for Admission, Continuation In
the Programme, and Graduation as described under Faculty of Sci-
ence, Academic Regulations, Major Programmes.
2. Recommended electives throughout the programme include Com-
puter Science 2MF3.
3. With departmental permission, Chemistry 4G06 can be substituted for
Chemistry 4T06. Only Level IV students with a GPA of at least
8.5 will be considered, and only if sufficient projects are available.

Area Courses:
Chemistry 2F03, 2K03, 2Q06, 2P06, 3B06, 3F03, 3G03, 3I03, 3K03,
3Q03, 4A03, 4B03, 4C03, 4D03, 4G06, 4K06, 4P03, 4Q03, 4R03,
4S03, 4T06, 4Y03.

Level II: 30 units
R Chemistry 2F03, 2K03, 2Q06, 2P06, Mathematics 2N03; Computer
Science 1MA3 (if 1B03 not completed in Level I).
E 6 to 9 units elective, excluding Chemistry, to make a total of 30 units.

Level III: 30 units
R Chemistry 3B03, 3F03, 3G03, 3I03, 3K03, 3Q03;
E Electives, excluding Chemistry, to make a total of 30 units.

Level IV: 30 units
R Chemistry 4K06, 4T06 and 6 units of Level IV Area courses; Physics
2A03.
E 9 units elective to make a total of 30 units.

B.Sc. IN CHEMISTRY
Admission:
Completion of Natural Sciences I, including Chemistry 1A06 with a
grade of at least C–, and Mathematics 1A06. Mathematics 1B03, and
one of Physics 1A06, 1B06, 1C06 must be taken before Level III. The
election of Mathematics 1B03 and one of Physics 1A06, 1B06, 1C06 in
Natural Sciences I is strongly recommended.

Area Courses:
Chemistry 2F03, 2K03, 2Q06, 2P06, 3B06, 3F03, 3G03, 3I03, 3K03,
3Q03.
Level II: 30 units
R Chemistry 2F03, 2K03, 2Q06, 2P06; Computer Science 1MA3, (if
1B03 not completed in Level I).
E 9 to 12 units elective, to make a total of 30 units.

Level III: 30 units
R Chemistry 3B03, 3I03, 3K03, 3Q03; Mathematics 2N03, if not taken
previously.
E Electives, at least 6 units of which may not be Chemistry, to make a
total of 30 units.

Department of Computer Science
and Systems
Because of resource limitations, enrolment in Computer Science and
all joint programmes involving Computer Science is limited. Students
intending to enter any Computer Science programme should consult the
Department.

HONOURS MATHEMATICS AND MATHEMATICS MAJOR
AND B.S.C. IN MATHEMATICS
(See Mathematics and Statistics)

HONOURS STATISTICS AND STATISTICS MAJOR
(See Mathematics and Statistics)

HONOURS ECONOMICS AND COMPUTER SCIENCE (B.A.)
(See Faculty of Social Sciences, Department of Economics)

HONOURS ARTS AND SCIENCE PROGRAMME AND
COMPUTER SCIENCE (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS COMPUTER SCIENCE
Admission 1987-88:
Completion of Natural Sciences I including Computer Science 1B03
or 1H03 and a weighted average of at least 7.0 in Mathematics 1A06,
1B03, and 6 units acceptable to the Department of Computer Science
and Systems.

Admissions 1988-89:
Completion of any Level I programme with a weighted average of at
least 7.0 in Computer Science 1MA3, 1MB3, and Mathematics 1A06 and
1B03.

FACULTY OF SCIENCE
FACULTY OF SCIENCE

Programme Notes:
1. 1987-1988: Students registered in Level I in another Faculty who have completed Mathematics 1A06, 1B03, and 6 units acceptable to the Department with a weighted average of at least 7.0 and who have completed one of Computer Science 1A03, 1B03, 1H03, or Engineering 1D03, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.
2. It is recommended that students choose a coherent set of electives. The following possibilities should be noted:
   - Numerical Analysis Option
   - Mathematics 2A06, 3Q03, 4Q06.
   - Computer Science Theory
   - Computer Science 4J03, 4X03; Mathematics 4C03, 4J03, 4S03.
   - Hardware Option
   - Mathematics 2A06, 2C03; Physics 2B06, 3B06, 4D06.

Area Courses:
- All Level II, III and IV Computer Science courses (except 2A03, 2N03, 2P03, 3I03, 4I03); Mathematics 2A05, 2B06, 2C03, 2F03, 3E06, 3L06, 3Q03, 3R03, 4C03, 4J03, 4Q06, 4S03, 4W03; Statistics 2D03, and all Level III and IV Statistics courses; Physics 2B06, 3B06, 4D06.

Level II: 30 units
- R Computer Science 2MF3 (if 1C03 not completed), 2B03, 2L03; Statistics 2D03; Mathematics 2F03; one of Mathematics 2A06, 2B06, 2C03.
- E Electives to make a total of 30 units, at least 6 of which must not be from either the Department of Computer Science and Systems, or the Department of Mathematics and Statistics.

Level III: 30 units
- R Computer Science 3A03, 3B03, 3C03, 3D03, 3T03; Statistics 2M03; 6 units of Mathematics or Statistics Area Courses beyond Level II.
- E Electives to make a total of 30 units.

Level IV: 30 units
- R Computer Science 4G06; 9 units from Level IV Computer Science courses, and Level III and IV Mathematics courses; 6 units of Area courses.
- E Electives to make a total of 30 units, which may include Mathematics 2A06, 2B06, 2C03.

HONOURS COMPUTER SCIENCE AND MATHEMATICS
Admission:
- Completion of Level II Honours Mathematics, including Computer Science 2B03, 2L03, or completion of Level II Honours Computer Science including Mathematics 2A05 or 2A06, and 2B04 or 2B06.

Area Courses:
- Computer Science 3A03, 3B03, 3C03, 3D03, 3E03, 3I03, 3P03, 3T03, 4E03, 4F03, 4G06, 4B03, 4C03, 4J03, 4L03, 4W03, 4X03; Mathematics 2C03, 2F03, 3A06, 3E06, 4F03, 3G03, 3L06, 3Q03, 3R03, 3S03, 3T03, 3X03, 3Y03, 4A06, 4C03, 4G03, 4Q06, 4S03; Statistics 3D06, 3S03, 3U03, 4H03, 4K03, 4M03, 4R03, 4S03, 4T03, 4U03, 4V03, 4X03, 4Z03.

Levels III and IV: 60 units
- R Computer Science 3A03, 3D03, 4G06, 6 units of Computer Science Area courses; Mathematics 2C03 or 2B03 (if neither completed), 2F03 (if not completed), 2A06, and one of Mathematics 4A06, 4C03, 4J03, 4Q06, 4S03; 6 units of Mathematics or Statistics Area courses; 6 units of Area courses.
- E Electives to make a total of 60 units, at least 6 of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

HONOURS COMPUTER SCIENCE AND PSYCHOLOGY
Admission 1987-88:
- Completion of Natural Sciences I with at least a B — in each of Computer Science 1B03, Psychology 1A06, Mathematics 1A06 and 1B03.

Admission 1988-89:
- Completion of Natural Sciences I with at least a B — in each of Computer Science 1MA3, 1MB3, Psychology 1A06, and Mathematics 1A06 and 1B03.

Area courses:
- All Computer Science and Psychology courses above Level I, except Computer Science 2A03, 2N03, 2P03, and 4I03; Statistics 2D03; Mathematics 4S03.

Level II: 30 units
- R Computer Science 2MF3 (if 1C03 not already completed), 2B03, 2L03; Psychology 2T03, 2H03; Statistics 2D03; Mathematics 2F03 and 2B06; 3 additional units Level II Psychology.
- E Electives to make a total of 30 units.

Level III: 30 units
- R Computer Science 3A03, 3B03, 3D03, Psychology 3W06; 6 additional units from Levels III or IV Computer Science; 5 additional units from Level III Psychology.
- E 3 units elective.

Level IV: 30 units
- R Computer Science 4G06 or Psychology 4D06 (the project or thesis topic must be approved by the Chairmen of both departments); Computer Science 4W03; Mathematics 4S03; 6 additional units Levels III or IV Computer Science; 9 additional units Levels III or IV Psychology.
- E 3 units elective.

HONOURS COMPUTER SCIENCE AND STATISTICS
Admission:
- Completion of Level II of Honours Mathematics, including Computer Science 1C03, 2B03, 2L03, or Level II of Honours Computer Science, including Mathematics 2A06 and 2B06.

Area Courses:
- Computer Science 3A03, 3B03, 3C03, 3D03, 3E03, 3I03, 3A03, 3P03, 3T03, 4E03, 4F03, 4G06, 4B03, 4C03, 4J03, 4L03, 4V03, 4W03, 4Z03; Mathematics 2C03, 3Q03, 3P03, 3S03, 3T03, 4G03, 4H03, 4G03, 4K03, 4O03, 4Q06; Statistics 2M03 and all Level III and IV Statistics courses.

Levels III and IV: 60 units
- R Computer Science 3A03, 4G06; Mathematics 2C03 or 2B03 (if neither completed), 2T03, Statistics 3D06, 2M03 (if not completed); 6 units of Mathematics Area courses; 6 units of Statistics Area courses; 12 units of Computer Science Area courses; 3 units of Area courses.
- E Electives to make a total of 60 units, at least 6 of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

COMPUTER SCIENCE MAJOR
Admission 1987-88:
- Completion of Natural Sciences I, including Computer Science 1B03 or 1H03, with a weighted average of at least 5.0 in Mathematics 1A06 and 1B03, and 6 units acceptable to the Department of Computer Science and Systems.

Admission 1988-89:
- Completion of any Level I programme with a weighted average of at least 5.0 in Computer Science 1MA3, 1MB3, and Mathematics 1A06 and 1B03.

Programme Notes:
1. 1987-1988: Students registered in Level I in another Faculty who have completed Mathematics 1A6, 1B03, and 6 units acceptable to the Department with a weighted average of at least 5.0, and who have completed one of Computer Science 1A03, 1B03, 1H03, or Engineering 1D03, may be considered for admission. They must complete the requirements of the Natural Sciences Level I programme before entry to Level IV.
2. It is recommended that students choose a coherent set of electives. The following possibilities should be noted:
Numerical Analysis Option
Mathematics 2G03, 2F03, 3Q03, 4Q06.
Computer Science Theory
Computer Science 4J03, 4X03; Mathematics 4C03, 4J03, 4S03.
Hardware Option
Mathematics 2G03, 2F03; Physics 2B06, 3B06, 4D06.

Area Courses:
All Level II, III, and IV Computer Science courses (except 2N03, 2P03); Mathematics 2G03, 2J06, 2003, 3E06, 3L04, 3Q03, 3R06, 4C03, 4J03, 4Q06, 45S03; Statistics 2D03, 2M03, and all Level III and IV Statistics courses; Physics 2B06, 3B06, 4D06.

Level II: 30 units
R Computer Science 2MF3 (if 1C03 not completed), 2B03, 2L03; Statistics 2D03; Mathematics 2J06; two of Mathematics 2G03, 2K03, 2003.

Level III: 30 units
R Computer Science 3A03, 3B03, 3C03, 3D03; Statistics 2M03 or 3M03; 6 units of Area Courses of which at least 3 units must be Mathematics or Statistics courses or Statistics courses beyond Level II.

Level IV: 30 units
R Computer Science 3T03, 4G06; 9 units of Computer Science courses beyond Level II; 3 to 6 units from Area Courses.

Electives to make a total of 30 units.

COMPUTER SCIENCE AND MATHEMATICS MAJOR

Admission:
Completion of Level II Mathematical Sciences Major, including Computer Science 2B03, 2L03, Statistics 2D03 or Level II Computer Science Major, including Mathematics 2G03 and 2003.

Area Courses:
Computer Science 2A03, 3A03, 3B03, 3C03, 3D03, 3E03, 3IA3, 3I03, 3P03, 3T03, 4E03, 4F03, 4G06, 4H03, 4I03, 4J03, 4L03, 4W03, 4X03; Mathematics 3E06, 3F06, 3L06, 3Q03, 3R03, 3S03, 3T03, 4C03, 4G03, 4J03, 4K03, 4Q03, 4Q06, 45S03; Statistics 3D06, 2M03, 3S03, 3U03, 4H03, 4J03, 4K03, 4M03, 4R03, 4S03, 4T03, 4U03, 4V03, 4203.

Levels III and IV: 60 units
R Computer Science 3A03, 3D03, 4G06; 6 units of Computer Science Area courses; Mathematics 3Q03; 6 units from 3Q03, 3T03, 4C03, 4J03, 4Q03, 4Q06; 6 units of Mathematics or Statistics Area Courses; 6 additional units of Area Courses.

Electives to make a total of 60 units, at least 6 units of which must not be from either the Department of Mathematics or Statistics, or the Department of Computer Science and Systems.

COMPUTER SCIENCE AND STATISTICS MAJOR

Admission:
Completion of Level II of Mathematics Major, including Statistics 2D03 and Computer Science 2B03, 2L03, or Level II of Computer Science Major, including Mathematics 2G03, 2003.

Area Courses:
Computer Science 3A03, 3B03, 3C03, 3D03, 3E03, 3IA3, 3P03, 3T03, 4E03, 4F03, 4G06, 4I03, 4J03, 4L03, 4W03, 4X03; Mathematics 3E06, 3F06, 3L06, 3Q03, 3R03, 3S03, 3T03, 4C03, 4G03, 4J03, 4K03, 4Q03, 4Q06, 45S03; Statistics 2M03, and all Level III and IV Statistics Courses.

Levels III and IV: 60 units
R Computer Science 3A03, 4G06; Mathematics 3T03; Statistics 3D06, 2M03 (if not completed); 12 units of Computer Science Area courses; 6 units of Statistics Area Courses; 6 units of Statistics or Mathematics Area Courses; 3 units of Area courses.

Electives to make a total of 60 units, at least 6 units of which must not be from either the Department of Mathematics and Statistics, or from the Department of Computer Science and Systems.

B.Sc. IN COMPUTER SCIENCE

Admission 1987-88:
Completion of any Level I programme including one of Computer Science 4A03, 1B03, 1H03, or Engineering 1D03 and with an average of at least 4.0 in Mathematics 1A06, and in 6 other units acceptable to the Department of Computer Science and Systems.

Admission 1988-89:
Completion of any Level I programme with a weighted average of at least 4.0 in Computer Science 1MA3, 1MB3, and Mathematics 1A06.

Programme Notes:
1. It is recommended that students should choose their electives so that 18 units of Level II and Level III courses are in a single subject. Economics 1A06 and Business 3W06 are recommended.
2. It is recommended that students elect Statistics 2M03 in Level III.

Area Courses:
All Level II, III and IV Computer Science courses (except 2N03, 2P03); all Level II, III and IV Mathematics and Statistics courses; Business 3W06.

Level II: 30 units
R Computer Science 2MF3 (if 1C03 not completed), 2ME3, 2B03, 2L03; 3 units of any Mathematics or Statistics courses.

Level III: 30 units
R Computer Science 3A03, 3D03, 3I03, 3R06 and one of Computer Science 3E03, 3T03, 4I03.

12 units, at least 6 of which must not be from either the Department of Computer Science and Systems, or the Department of Mathematics and Statistics.

Department of Geography

HONOURS GEOGRAPHY (B.A.) AND B.A. IN GEOGRAPHY, AND HONOURS GEOGRAPHY AND GEOLOGY (B.A.)
(See B.A. Programmes in Geography, Faculty of Social Sciences, Department of Geography)

HONOURS ECONOMICS AND GEOGRAPHY (B.A.)
(See Faculty of Social Sciences, Department of Economics)

HONOURS HISTORY AND GEOGRAPHY (B.A.)
(See Faculty of Humanities, Department of History)

HONOURS ARTS AND SCIENCE PROGRAMME AND GEOGRAPHY (B.Arts Sc.)
(See Arts and Science Programme)

HONOURS GEOGRAPHY (B.Sc.)

Admission:
Completion of Natural Sciences I, with at least a B – in Geography IA06, and an average of at least 7.0 in that and 6 additional units of Mathematics, Geology, Chemistry, Physics or Biology.

Programme Notes:
No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

Area Courses:
Geography 2F03, 2K03, 2L03, 2L06, 2M03, 2T03, 2W03, 3E03, 3F03, 3I03, 3K03, 3L06, 3Q03, 3R03, 3T03, 3U03, 4A03, 4C06, 4D03, 4E03, 4G03, 4H03, 4I03, 4K03, 4N03, 4P03, 4Q03, 4R03, 4V03, 4W03.

FACULTY OF SCIENCE
FACULTY OF SCIENCE

Level II:  30 units
R Geography 2F03, 2K03, 2LL3, 2L03, 2T03, 2W03.
E Electives to make a total of 30 units.

Level III:  30 units
R Geography 3E03 and 3O03; 12 units from Geography 3F03, 3K03, 3M03, 3P03, 3W03.
E Electives to make a total of 30 units, 6 of which may not be in Geography.

Level IV:  30 units
R Geography 4C06, and at least 12 additional units of Level IV Area courses.
E Electives to make a total of 30 units, 6 of which may not be from Geography.

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)

Admission:
Completion of Natural Sciences I, including Geography 1A06, Geology 1A03 or 1C03, and Mathematics 1A06 with a grade of at least B – in both Geography 1A06 and Geology 1A03 or 1C03. Chemistry 1A06 must be completed by the end of Level II.

Programme Notes:
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which must be obtained before completing registration forms in March.
2. Geology 2D06 will be included in calculating the Graduation Average.
3. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geography 2F03, 2K03, 2LL3, 2L03, 2T03, 2W03, 3E03, 3F03, 3I03, 3K03, 3M03, 3P03, 3W03, 3A03, 3C03, 3D03, 3E03, 3G03, 3K03, 3N03, 4P03, 4Q03, 4R03, 4V03; Geology 2B06, 2C06, 2D06, 3C06, 4E06, 4M03, 4MM3, 4T03.

Level II:  33 units
R Geography 2LL3, 2L03, 2T03, and one of Geography 2F03, 2K03, 2W03; Geography 2B06, 2C06, and 3 to 6 units of Natural Science or Engineering approved by the Departments.
E Electives, excluding Geography and Geology, to make a total of 33 units.

Level III:  32 units
R Geography 3E03, 3M03, 3P03, and one of 3F03, 3K03, 3P03, 3W03; Geology 2D06, 3C06, 3E02.
E 6 units electives, at least 3 of which may not be Geography or Geology.

Level IV:  30-33 units
R Six units of Level IV Geography Area courses; 6 units of Level IV 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 3G04 is strongly recommended.

B.Sc. IN GEOGRAPHY

Admission:
Completion of Natural Sciences I, with a grade of at least C – in Geography 1A06, and an average of at least 4.0 in that and another six units of Science.

Programme Notes:
No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

Area Courses:
Geography 2F03, 2K03, 2LL3, 2L03, 2T03, 2W03, 3E03, 3F03, 3I03, 3K03, 3L03, 3M03, 3O03, 3P03, 3W03.

Level II:  30 units
R Geography 2L03 and 15 units of Level II Area courses.
E 12 units of electives.

Level III:  30 units
R 18 units of Level III Area courses.
E 12 units, 6 of which may not be in Geography.

Department of Geology

Because of resource limitations enrolment in Geology and joint 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 Department of Geography)

HONOURS GEOLOGY

Admission:
Completion of Natural Sciences I including one of Geology 1A03 or 1C03, and Mathematics 1A06 and Chemistry 1A06, and one of Physics 1A06, 1B06, 1C06. A grade of B – must be obtained in Geology 1A03 or 1C03 and one other course listed.

Programme Notes:
1. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.
2. Materials 3D03, a prerequisite to Geology 4B03, should be taken in Level III.

Area Courses:
Geology 2B06, 2C06, 2D06, 2L03, 3C06, 3D06, 3G04, 4B03, 4BB3, 4E06, 4K03, 4M03, 4MM3, 4Q03, 4QQ3, 4T03.

Level II:  33 units
R Geology 2B06, 2C06, 2D06, 2L03; Chemistry 2P06; Biology 2E03.
E 3 units elective, excluding Geology.

Level III:  30 units
R Geology 3C06, 3D06, 3E02, 3G04; 6 units Science and/or Engineering courses.
E 6 units elective, excluding Geology.

Level IV:  30 units
R Geology 4B03 or 4BB3, 4E06 or 4K03, 4M03 and 4MM3, 6 units of Level IV Geology.
E 9 units of electives.

HONOURS GEOLOGY AND PHYSICS

Admission:
Completion of Natural Sciences I, including one of Geology 1A03 or 1C03, Physics 1A06, and Chemistry 1A06, and Mathematics 1A06 and 1B03, with a grade of at least B – in each of Geology 1A03 or 1C03, and Physics 1A06. Students will also be considered for admission if they have completed Physics 1B06 or 1C06 instead of Physics 1A06; however, Physics 1A06 is strongly recommended.

Programme Notes:
1. Geology 2D06 will be included in calculating the Graduation Average.
2. For students who entered this programme before September 1986, Geology 3J03 is an Area course.
3. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

Area Courses:
Geology 2B06, 2C06, 2D06, 2L03, 2A03, 3B03, 3C06, 4E06; Physics 2B06, 2C05, 3G03, 3M06, 4B04, 4K03, 4S03; Mathematics 3C06, 3C03, 3D03.
Admission:
3. For students who entered this programme before September 1986, a grade of at least C in each of Geology

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Geology 2D06 will be included in calculating the Graduation Average.
3. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.
4. Materials 3D03, a prerequisite to Geology 4B03, should be taken in Level III.

Area Courses:
Geology 2B06, 2C06, 2D06, 2I03, 3C06, 3D06, 3G04, 3B03, 3BB3, 4E06, 4K03, 4M03, 4MM3, 4Q03, 4QQ3, 4T03.

Level II: 30 units
R Geology 2B06, 2C06, 2I03; Chemistry 2P06; Biology 2E03.
E 6 units elective which may not be Geology.

Level III: 30 units
R Geology 2D06, 3C06, 3E02, 3G04;
E 12 units elective, 6 of which may not be Geology. Chemistry 2W03
is strongly recommended.

Level IV: 30 units
R Geology 3D06, 4B03 or 4BB3, 4E06, 4M03 and 4MM3.
E 9 units of electives.

GEOLOGY AND PHYSICS MAJOR

Admission:
Completion of Natural Sciences I, including one of Geology 1A03 or 1C03, Mathematics 1A06, Chemistry 1A06, and one of Physics 1A06, 1B06, or 1C06. A grade of at least C must be obtained in Geology 1A03 or 1C03 and one other course listed.

Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Geology 2D06 will be included in calculating the Graduation Average.
3. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.
4. Materials 3D03, a prerequisite to Geology 4B03, should be taken in Level III.

Area Courses:
Geology 2B06, 2C06, 2D06, 2I03, 3C06, 3D06, 3G04, 4B03, 4BB3, 4E06, 4K03, 4M03, 4MM3, 4Q03, 4QQ3, 4T03.

Level II: 30 units
R Geology 2B06, 2C06, 2I03; Chemistry 2P06; Biology 2E03.
E 6 units elective which may not be Geology.

Level III: 30 units
R Geology 2D06, 3C06, 3E02, 3G04;
E 12 units elective, 6 of which may not be Geology. Chemistry 2W03
is strongly recommended.

Level IV: 30 units
R Geology 3D06, 4B03 or 4BB3, 4E06, 4M03 and 4MM3.
E 9 units of electives.

Department of Materials Science and Engineering

HONOURS MATERIALS SCIENCE

Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and 1B03, Chemistry 1A06, and Physics 1A06 with a weighted average of at least 7.0 in Chemistry 1A06 and one of Mathematics 1A06, 1B03, or Physics 1A06.

Programme Note:
Attention is drawn to Materials 4A01, which requires a report based on employment in the summer between Levels III and IV.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T06; Engineering 2B03, 3Q03, and 4J03; Engineering Physics 4E03, 4F03; Mathematics 2A06, 2C03, 2G03, and 2003; Physics 4K03.

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Level II: 35 units
R Chemistry 2T06; Computer Science 1MA3 (unless 1B03 completed); Mathematics 2G03, 2C03; Engineering 2C03 (unless Materials 1A06, or 1A03 and 1B03 completed); Materials 2C04, 2F03; Physics 2B06; Engineering 2F04 or 2R04.

Level III: 34 units
R Materials 3B04, 3D06, 3E06; Mathematics 3C03, 3D03; Physics 3M06.
E Six units electives.

Level IV: 30 units
R Materials 4A01, 4E03, 4K04; Metallurgy 4L04; 12 units of Level III or IV Area Courses.
E Six units electives, which may not be selected from courses in Ceramics, Chemistry, Computer Science, Engineering Physics, Mathematics, Metallurgy, Physics or Statistics.

MATERIALS SCIENCE MAJOR
Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and 1B03, and Chemistry 1A06 with a weighted average of at least 5.0 in Mathematics 1A06 and Chemistry 1A06. Physics 1A06 must be taken in Level I or II. Its election in Level I is strongly recommended. Programme Notes:
1. Students seeking admission to any Major programme after August 1987 should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. Attention is drawn to Materials 4A01, which requires a report based on employment in the summer between Levels III and IV.

Area Courses:
All Ceramics, Materials and Metallurgy courses; Chemistry 2T06; Engineering 2003, 3Q03, and 4J03; Mathematics 2A06, 2C03, 2G03, and 2D03; Engineering Physics 4E03, 4F03; Physics 4K03.

Levels II & III: 60 units
R Chemistry 2T06; Computer Science 1MA3 (unless 1B03 completed); Mathematics 2G03, 2C03, 3V06; Engineering 2003 (unless Materials 1A03 and 1B03 completed); Engineering 2P04 or 2R04; Materials 2C04, 2F03, 3B04, 3D06, 3E06; Physics 1A06 (unless completed), 2B06.
E Electives to make a minimum of 60 units.

Level IV: 30 units
R Materials 3P03, 4A01, 4E03; Metallurgy 4L04; nine 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, Engineering, Physics, Mathematics, Materials, Metallurgy, Physics or Statistics.

HONOURS PHILOSOPHY AND MATHEMATICS (B.A.)
(See Faculty of Humanities, Department of Philosophy)

HONOURS ARTS AND SCIENCE AND MATHEMATICS
(See Arts and Science Programme)

HONOURS MATHEMATICS
(common Level II programme)
Admission:
Completion of any Level I programme, with a weighted average of at least 7.0 in Mathematics 1A06 and 1B03, and 6 units acceptable to the Department of Mathematics and Statistics.

Programme Notes:
1. This is a common Level II Programme from which the student, by a suitable selection of required and elective courses, may enter the Honours programmes in Computer Science, Computer Science and Mathematics, Computer Science and Statistics, Mathematics, Statistics, and Theoretical Physics and Applied Mathematics.
2. Choice of required courses and electives: Students should carefully choose their required and elective courses to be eligible for the programme of choice.

Department of Mathematics and Statistics

HONOURS COMPUTER SCIENCE AND COMPUTER SCIENCE MAJOR AND B.S.C. IN COMPUTER SCIENCE
(See Computer Science and Systems)

HONOURS COMPUTER SCIENCE AND MATHEMATICS, AND COMPUTER SCIENCE AND STATISTICS MAJOR
(See Computer Science and Systems)

HONOURS COMPUTER SCIENCE AND STATISTICS AND
COMPUTER SCIENCE AND STATISTICS MAJOR
(See Computer Science and Systems)

HONOURS ECONOMICS AND MATHEMATICS (B.A.)
(see Faculty of Social Sciences, Department of Economics)

HONOURS MATHEMATICS
(see Faculty of Science, Department of Mathematics and Statistics)

Level II: 30 units
R Mathematics 2A06, 2B06; three of Mathematics 2C03, 2F03, Statistics 2D03, 2M03.
E 9 units electives.

HONOURS COMPUTER SCIENCE AND COMPUTER SCIENCE MAJOR
(See Computer Science and Systems)

Area Courses:
Computer Science 2B03, 2L03, 2P03; Mathematics 2A06, 2B06, 2C03, 2F03; Statistics 2D03, 2M03; Physics 2C05.

Level II: 30 units
R Mathematics 2A06, 2B06; three of Mathematics 2C03, 2F03, Statistics 2D03, 2M03.
E 9 units electives.

HONOURS MATHEMATICS
Admission:
Completion of Level II Honours Mathematics, including Mathematics 2C03 or Level II Honours Computer Science, including Mathematics 2A06 and 2B06.

Area Courses:
Mathematics 2F03; 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 3B06, 3F06, 3H03, 3P03, 3L06, 4B06, 4E03, 4E06, 4I03, 4K03, 4V06.
Levels III and IV: 60 units
R Mathematics 2C03, 2F03 (must be completed by the end of Level III); Mathematics 3A06, 3E06, 4A06; 24 units of Area courses.
E Electives to make a total of 60 units, at least 6 of which must not be from the Department of Mathematics and Statistics.

HONOURS STATISTICS
Admission: Completion of Level II Honours Mathematics, including Statistics 2D03 or Level II Honours Computer Science, including Mathematics 2A06 and 2B06. Students are strongly urged to complete Computer Science 1B03 or 1MA3, or 1H03 or 1ZA3 before entering Level III.
Area Courses:
Computer Science 2B03, 2L03, 2ME3, 2P03, 3A03, 3IA3, 3P03; Mathematics 2C03, 2D04, 3A06, 3E04, 3E06, 3F06, 3G06, 3Q03, 3Q04, 3R03, 3S03, 3T03, 3W03, 3X03, 3Y03, 4A06, 4G03, 4K03, 4O06, 4Q06, 4W03; all Level III and IV Statistics courses.
Levels III and IV: 60 units
R Mathematics 2G03 (must be completed by the end of Level III), and 3A06 or 3G06, 3I03, Statistics 3D06, 2M03 or 3M03 (if not completed), 4M03; 9 units of Statistics Area Courses; 15 units of Area Courses.
E Electives to make a total of 60 units, of which at least 6 units must not be from courses in the Department of Mathematics and Statistics.

MATHMATICS MAJOR
(common Level II programme)
Admission: Completion of any Level I programme, with an average of at least 5.0 in Mathematics 1A06 and 1B03, and 6 units acceptable to the Department of Mathematics and Statistics.
For students intending to enter Computer Science Major, Computer Science and Mathematics Major, or Computer Science, Mathematics, in 1987-88, one of Computer Science 1A03, 1B03, 1BA3, or Engineering 1D03 is required in Level I; in 1988-89, Computer Science 1MA3 and 1MB3 are required in Level I.
Programme Notes:
1. Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
2. This is a common Level II Programme from which the student, by a suitable selection of required and elective courses, may enter the major programme in Computer Science, Computer Science and Mathematics, Computer Science, Mathematics, Statistics, Mathematics, Statistics.
3. Choice of required courses and electives: Students should carefully choose their required and elective courses to be eligible for the programme of choice.
For the Computer Science programme and the joint programme with Computer Science, the student must elect Computer Science 2B03 and 2L03. (These are restricted enrolment courses.) Students interested in Statistics must take Statistics 2D03 and should take Statistics 2M03. A course in Computer Science is recommended.
Area Courses:
Computer Science 2B03, 2L03, 2ME3, 2P03; Mathematics 2G03, 2J06, 2K03, 2O03, Statistics 2D03, 2M03.
Level II: 30 units
R Mathematics 2G03, 2J06, 2O03; one of Statistics 2D03, 2M03.
E Electives to make a total of 30 units, at least 6 of which must not be from the Department of Mathematics and Statistics.

MATHEMATICS MAJOR
Admission: Completion of Level II Mathematics Major, including Statistics 2D03, or Level II Computer Science Major including Mathematics 2G03 and 2O03.
Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
Area Courses:
All Levels III and IV Mathematics and Statistics courses.
Levels III and IV: 60 units
R Mathematics 3OO6, 3TO3, 4O03; 24 units of Area courses.
E Electives to make a total of 60 units, at least 6 of which must not be from the Department of Mathematics and Statistics.

STATISTICS MAJOR
Admission: Completion of Level II Mathematics Major, including Statistics 2D03, or Level II Computer Science Major including Mathematics 2G03 and 2O03. Students are strongly urged to complete Computer Science 1B03 or 1MA3, or 1H03 or 1ZA3 before entering Level III.
Programme Notes:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.
Area Courses:
Computer Science 2M03, 2P03, 3I03, 3D03, 3P03, 3TO3, 4I03, 4W03; Mathematics 3O06, 3Q03, 3R03, 3S03, 3T03, 3W03, 3X03, 3Y03, 4C03, 4C04, 4G03, 4J03, 4O06, 4Q06, 4W03; Statistics 2M03; all Level III and IV Statistics courses.
Levels III and IV: 60 units
R Mathematics 3O06, 3TO3, 4O03; Statistics 3D06, 2M03 or 3M03 (if not completed); 9 units of Statistics Area courses; 9 units of Area courses.
E Electives to make a total of 60 units at least 6 of which must not be from the Departments of Mathematics and Statistics.

B.Sc. IN MATHEMATICS
Admission: Completion of any Level I Programme, with a weighted average of at least 4.0 in Mathematics 1A06 and Mathematics 1B03.
Area Courses:
Mathematics 2G03, 2J06, 2K03, 2O03; Computer Science 2ME3, 2P03, 3P03; Statistics 2D03, 2M03; all Level III Mathematics and Statistics courses.
Levels II and III: 60 units
R Mathematics 2G03, 2J06, 2O03, 3O06; one of Mathematics 3B03, 3E06, 3TO3; 6 units of Area courses.
E Electives to make a total of 60 units, at least 12 units of which must not be from the Department of Mathematics and Statistics.

Molecular Biology and Biotechnology

HONOURS MOLECULAR BIOLOGY AND BIOTECHNOLOGY
This Honours degree programme is administered, within the Faculty of Science, jointly by the Departments of Biochemistry, Biology and Pathology, through a Committee of Instruction. The programme also draws on the McMaster Institute for Molecular Biology and Biotechnology, established July 1, 1986, as a teaching resource. Information and counselling may be obtained from the Programme Co-ordinator for the Molecular Biology and Biotechnology programme.
Admission:
Completion of Natural Sciences I including Biology 1A06, Chemistry 1A06, one of Physics 1A06, 1B06, or 1C06, with at least a B+ in Biology 1A06, Chemistry 1A06, and in one of Mathematics 1A06 or Physics 1A06, 1B06, 1C06. The inclusion of Computer Science 1B03 or 1MA3 in Level I is strongly recommended.
FACULTY OF SCIENCE

Programme Note:
Level IV programme registrations must be approved by the Programme Co-ordinator for Molecular Biology and Biotechnology.

Area Courses:
Biochemistry 2A03, 3B03, 3C03, 4B06, 4I03, 4M03, 4O03, 4P03; Biology 2B03, 2C03, 2D03, 2E03, 3E03, 3H03, 3I03, 3N06, 3C03, 4B03, 4D08, 4F04, 4H03, 4I03, 4V03; Chemistry 2B06, 2N03, 2Q06, 3D03; Molecular Biology 3A06, 4A03, 4B03, 4C03, 4D03, 4E03, 4F03, 4G03.

Level II: 33 Units
R Biochemistry 2A03; Biology 2B03, 2C03, one of Biology 2D03 and 2E03; Chemistry 2B06, 2N03, 2Q06; Computer Science 1MA3, if 1B03 not completed.
E Electives to make a total of 33 units.

Level III: 33 Units
R Biochemistry 3B03, 3C03 or 3G06, (if Biochemistry 2A03 not completed); Molecular Biology 3A06; Biology 3I03, 3N06, 3C03; Chemistry 3D03.
E 6 units, 3 of which may not be Biology or Biochemistry. Biology 3E03, 3H03 are recommended.

Level IV: 30-32 Units (Beginning September 1988)
R Either Molecular Biology 4A03 and one of Biochemistry 4P03, Biology 4F04, or one of Biochemistry 4B06, Biology 4C08; Molecular Biology 4B03, 4C03, 4D03; 9 units chosen from Biochemistry 4I03, 4M03, 4C03, Biology 4H03, 4I03, 4V03; Molecular Biology 4E03, 4P03, 4G03.
Students who have opted in either Biochemistry 4B06 or Biology 4C08 for a thesis topic which is outside of the Molecular Biology discipline will be required to take Molecular Biology 4A03.
E 6 units of electives.

Department of Physics

HONOURS CHEMISTRY AND PHYSICS
(See Department of Chemistry)

HONOURS GEOLOGY AND PHYSICS
(See Department of Geology)

HONOURS PHYSICS

Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and 1B03; Physics 1A06, Chemistry 1A06, and one of Biology 1A06, Computer Science 1B03 or 1MA3, 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 Physics 1B06 or 1C06, instead of 1A06. However, Physics 1A06 is strongly recommended. It is also recommended that Computer Science 1B03 or 1MA3 be taken in Natural Sciences I.

Programme Notes:
Students who have completed Level II of Honours Physics are eligible to proceed to Level III of Honours Physics, Honours Applied Physics, and Honours Theoretical Physics and Applied Mathematics. They may also be considered for admission to Level III of Honours Materials Science, preferably if Materials 1A06 or 1A03 and 1B03, or Engineering 2003, has been completed in Level II.

Area Courses:
Physics 2B06, 2C05, 2H03, 3A03, 3H04, 3K04, 3M06, 3N03, 3X03, 3Y03, 4A02, 4B04, 4C03, 4D06, 4E03, 4F03, 4I03, 4V03; Mathematics 2A06, 3C03, 3D03.

Level II: 32-35 units
R Physics 2B06, 2C05, 2H03; Mathematics 2A06, 2C03; Computer Science 1MA3 (if 1B03 not completed).
E Electives to make a total of 32 to 35 units, at least 6 of which must not be from Physics.

Level III: 32-35 units
R Physics 3H04, 3K04, 3M06, 3N03; Mathematics 3C03, 3D03; 3 to 6 units of Level III or IV courses from the Faculty of Science. At least one of Physics 3B06 or 4D06 must be completed in either Level III or IV. Students will generally find that more choices are offered by the timetable if Physics 3B06 is taken in Level III and if Physics 4D06 is taken in Level IV.

E 6 units, excluding Physics and Engineering Physics.

Level IV: 31-34 units
R Physics 4A02, 4B04, 4F03, 4J04; two of Physics 3A03, 3X03, 3Y03, 4C03, 4D06, 4E03, 4K03; 6 units of Level III or IV courses from the Faculty of Science.
E Electives to make a total of 31 to 34 units.

HONOURS APPLIED PHYSICS

Admission:
Completion of Level II Honours Physics, or Level II Honours Mathematics including Physics 2B06 and 2C05.

Area Courses:
Applicable Level II Area courses; Physics 3B06, 3H04, 3M06, 4A02, 4B04, 4D06, 4J04; Mathematics 3C03, 3D03; Engineering Physics 4W03.

Level III: 34-36 units
R Physics 3B06, 3H04, 3M06, 2H03 (if not completed); Mathematics 3C03, 3D03; additional units chosen from Physics 3K04, 3N03, 3T03, 3X03, 3Y03, Engineering Physics 3D03, 3X04, Mathematics 3Q03 to make a total of 28 to 30 units.
E 6 units, excluding Physics and Engineering Physics.

Level IV: 32-34 units
R Physics 4A02, 4B04, 4D06, 4J04; Engineering Physics 4W03; 6 to 8 units of Level III or IV Physics or Engineering Physics.
E Electives to make a total of 32 to 34 units.

HONOURS APPLIED PHYSICS (HEALTH AND RADIATION OPTION)

Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and 1B03; Physics 1A06, Chemistry 1A06, and one of Biology 1A06, Computer Science 1B03 or 1MA3, 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 Physics 1B06 or 1C06, instead of 1A06. However, Physics 1A06 is strongly recommended. It is also recommended that Computer Science 1B03 or 1MA3 be taken in Natural Sciences I.

Area Courses:
Physics 2B06, 2C05, 2H03, 3H04, 3M06, 3T03, 4A02, 4B04, 4D06, 4E03, 4Q04, 4R03, 4T03; Mathematics 2A06, 3C03, 3D03; Biology 3Q03.

Level II: 32-35 units
R Physics 2B06, 2C05, 2H03; Mathematics 2A06, 2C03; Computer Science 1MA3 (if 1B03 not completed), and Biology 1A06 (if not completed); one of Computer Science 2P03, 2N03.
E Electives to make a total of 32 to 35 units. Chemistry 2D03 is strongly recommended.

Level III: 31-34 units
R Physics 3H04, 3M06, 3T03; Mathematics 3C03, 3D03; Biology 3Q03; two of Physics 3B06, Mathematics 3Q03, Chemistry 2F03.
E Electives to make a total of 31-34 units.

Level IV: 34 units
R Physics 4A02, 4B04, 4D06, 4E03, 4Q04, 4R03, 4T03; Engineering Physics 4W03; one of Engineering 4X03, Engineering Physics 4Y03. The project of Physics 4Q04 must be taken in the field of Health and Radiation Physics.
E Electives to make a total of 34 units.

HONOURS THEORETICAL PHYSICS AND APPLIED MATHEMATICS

Admission:
Completion of Level II Honours Physics, or Level II Honours Mathematics including Physics 2B06, 2C05.

Area Courses:
Applicable Level II Area courses; Physics 3K04, 3M06, 4A02, 4B04, 4C03, 4F03; Mathematics 3A06, 3C03, 3D03, 3O06, 3T03, 4A06, 4D03, 4G03.
Level III: 31-34 units
R Mathematics 3C03, 3D03; one of Mathematics 3A06, 3O06; Physics 3K04, 3M06, 4C03 (in 1987-88), 2H03 (if not completed); 3 to 6 units from Physics 3A03, 3N03, 3X03, 3Y03, Mathematics 3Q03.
E Electives to make a total of 31 to 34 units.

Level IV: 33-36 units
R Mathematics 3Q03 (if not completed), 4D03, Physics 4A02, 4B04, 4C03 (if not completed), 4F03; Mathematics 4A06 or both 3T03 and 4O03; 3 to 9 units of Level III or IV Mathematics or Physics.
E Electives to make a total of 33 to 36 units.

PHYSICS MAJOR (GENERAL OPTION)
Admission:
Completion of Natural Sciences I, including Mathematics 1A06 and 1B03; Physics 1A06, and Chemistry 1A06 with a weighted average of at least 5.0 in the Physics and Mathematics courses. Students will also be considered for admission if they have completed Physics 1B06 or 1C06 instead of 1A06. However, Physics 1A06 is strongly recommended. It is also recommended that Computer Science 1B03 or 1MA3 be taken in Natural Sciences I.

Programme Note:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

Area Courses:
Physics 2B06, 2C05, 2G03, 2H03, and all Levels III and IV Physics courses; Mathematics 2G03, 2O03; Engineering Physics 3D03, 3F03, 4D03, 4E03, 4F03, 4G03, 4K03, 4N03, 4S04, 4W03.

Level II: 30-32 units
R Physics 2B06, 2H03; one of 2G03, 2C05; Mathematics 2G03, 2O03; Computer Science 1MA3 (if 1B03 not completed).
E Electives to make a total of 30 to 32 units, at least 6 of which must not be Physics.

Level III: 29-32 units
R Physics 3H04; either Physics 3M06, and Mathematics 3C03 and 3D03, and 3 to 4 units from Levels III and IV Physics, or Physics 3O03, 3Q03, and Mathematics 3C03, and 6 to 7 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 4A02, 4J04; 8 to 10 units of Level III and IV Physics which must include one of Physics 3B06 or 4D06 if neither has been completed; 6 units of Level III or IV Area courses.
E Electives to make a total of 30 to 32 units.

PHYSICS MAJOR (HEALTH AND RADIATION OPTION)
Admission:
Completion of Natural Sciences I, including Mathematics 1A06 or 1B03, Physics 1A06, Chemistry 1A06, one of Biology 1A06, Computer Science 1B03 or 1MA3, with a weighted average of at least 5.0 in Physics, one of the Mathematics courses, and any one other required course. Students will also be considered for admission if they have completed Physics 1B06 or 1C06, instead of 1A06. However, Physics 1A06 is strongly recommended.

Programme Note:
Students seeking admission to any Major programme after August 1987, should note the requirements for Admission, Continuation in the Programme, and Graduation as described under Faculty of Science, Academic Regulations, Major Programmes.

Area Courses:
Physics 2B06, 2C05, 2G03, 2H03 and all Levels III and IV Physics courses; Mathematics 2G03, 2O03; Biology 3Q03; Engineering 4X03; Engineering Physics 4Y03.

Level II: 30-32 units
R Physics 2B06, 2H03; one of 2C05, 2G03; Mathematics 2G03, 2O03; Computer Science 1MA3 (if 1B03 not completed), and Biology 1A06 if not completed; one of Computer Science 2N03, 2P03.
E Electives to make a total of 30 to 32 units. Chemistry 2D03 is strongly recommended.

Level III: 31-34 units
R Physics 3B06, 3H04, 3O03, 3Q03, 3T03; Mathematics 3C03; Biology 3Q03; Chemistry 2F03.
E Electives to make a total of 31 to 34 units.

Level IV: 30-32 units
R Physics 4A02, 4D06, 4E03, 4Q04; one of Engineering 4X03, Engineering Physics 4Y03. The project of 4Q04 must be taken in the field of Health and Radiation Physics.
E Electives to make a total of 30 to 32 units.

B. Sc. in Physics
Admission:
Completion of Natural Sciences I, including Mathematics 1A06, Mathematics 1A06 and 1B03. Chemistry 1A06, with at least C− in Physics. Students will also be considered for admission if they have completed Physics 1B06 or 1C06, instead of 1A06. However, Physics 1A06 is strongly recommended. It is also recommended that Computer Science 1B03 or 1MA3 be taken in Natural Sciences I.

Area Courses:
Physics 2B06, 2G03, 2H03 and all Levels III and IV Physics courses; Mathematics 2G03; Chemistry 2P06.

Level II: 30 units
R Physics 2B06, 2G03; either Physics 2H03 or Chemistry 2P06; Mathematics 2G03, 2O03; Computer Science 1MA3 (if 1B03 not completed).
E Electives to make a total of 30 units, at least 6 of which must not be from Physics.

Level III: 29-31 units
R Physics 3H04, 3O03; 6 to 9 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 PSYCHOLOGY (B.A.) AND B.A. IN PSYCHOLOGY
(See Faculty of Social Science, Department of Psychology.)

HONOURS BIOLOGY AND PSYCHOLOGY (B.Sc.)
(See Department of Biology)

HONOURS COMPUTER SCIENCE AND PSYCHOLOGY (B.Sc.)
(See Department of Computer Science and Systems)

HONOURS ARTS AND SCIENCE PROGRAMME AND PSYCHOLOGY (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS PSYCHOLOGY (B.Sc.)
Admission:
Completion of Natural Sciences I, with a grade of at least B− in Psychology 1A06, and a grade of at least B− in 6 additional units of Biology, Chemistry, Physics, or Mathematics.

Programme Notes:
1. At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2U03, 3C06, 3E03, 3Q03, 3S03, 3V03, 4G03, or 4Q03.
   Enrolment in Psychology Laboratory courses is limited. Permission of the department is required by March 1.
2. The electives taken during Levels III and IV must include a minimum of 6 units which are not Psychology.

**Area Courses:**
All Psychology courses above Level I.

**Level II: 30 units**
R Psychology 2H03, 2R06, 2T03; 3 units of Level II Psychology; one of English 1C06, 1D06, 3A03; 9 units chosen from Biochemistry, Biology, Chemistry, Physics, Mathematics and Statistics, Computer Science.

E Electives to make a total of 30 units, only 3 of which may be from Psychology.

**Level III: 30 units**
R Psychology 3W06; 12 units of Level III Psychology; 6 units chosen from Levels III and IV Biochemistry, Biology, Chemistry, Physics, Mathematics and Statistics, or Computer Science.

E Electives to make a total of 30 units. (See Programme Notes above.)

**Level IV: 30 units**
R Psychology 4D06; 12 units of Levels III or IV Psychology.

E Electives to make a total of 30 units. (See Programme Notes above.)

**B.Sc. IN PSYCHOLOGY**

**Admission:**
Completion of Natural Sciences I, with a grade of at least C— in Psychology 1A06.

**Programme Notes:**
1. At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2U03, 3C06, 3E03, 3Q03, 3S03, or 3V03.
2. Enrolment in Psychology laboratory courses is limited. Permission of the department is required by March 1.

**Area Courses:**
All Psychology courses above Level I.

**Level II: 30 units**
R Either Psychology 2T03 and 2H03 or 2D06; Psychology 2R06; one of English 1C06, 1D06, or 3A03; 6 units chosen from Biochemistry, Biology, Chemistry, Mathematical Sciences or Physics.

E Electives to make a total of 30 units, at least 3 of which must not be from Psychology.

**Level III: 30 units**
R 12 units of Level III Psychology; 6 units beyond Level I chosen from Biochemistry, Biology, Chemistry, Mathematics and Statistics, Computer Science or Physics.

E Electives to make a total of 30 units, at least 6 of which must be from Psychology.

**Science**

**B.Sc. IN SCIENCE**

For students who enter this programme from September 1987 the following will prevail.

**Admission:**
Completion of Natural Sciences I, including Mathematics 1A06, and two of Chemistry 1A06, Physics 1A06, 1B06, 1C06, Biology 1A06, Psychology 1A06 with an average of at least 4.0 in two of the specified courses. Chemistry 1A06, one of Physics 1A06, 1B06, 1C06, one of Biology 1A06 or Psychology 1A06, and one of Geography 1A06, Geography 1A03, 1C03 must be completed before Level III. The completion of all the requirements in Level I is strongly recommended.

**Programme Notes:**
1. * Science Courses: Courses referred to as Science Courses and marked with * are those courses offered by the Departments of Biochemistry, Biology, Chemistry, Computer Science and Systems, Geology, Mathematics Science and Engineering, Mathematics and Statistics, Physics, Psychology, and courses offered by the Department of Geography which are classified as Science courses.

2. No more than 24 units of the R- and E-group courses designated as Science Courses* may be taken in any one department. No more than 12 units of Level I courses may be taken.

**Area Courses:**
All Level II and III Science Courses*.

**Levels II and III: 60 units**
R 18 units of Level II Science courses*, 12 units of Level III Science courses*, one of English 1C06, 1D06, Humanities 1C03, Philosophy 1B06, 1D06; 6 additional units from the Faculties of Humanities or Social Sciences.

No more than 18 units of R-group courses may be taken in any one Department.

E Electives to make a total of 60 units.

For students who entered this programme before September 1987, the following will prevail.

**Programme Notes:**
1. * Science Courses: Courses referred to as Science Courses and marked with * are those courses offered by the Departments of Biochemistry, Biology, Chemistry, Computer Science and Systems, Geology, Mathematics Science and Engineering, Mathematics and Statistics, Physics, Psychology, and courses offered by the Department of Geography which are classified as Science courses.

2. In Levels II and III combined, not more than 14 units of Level I work may be taken and not more than 18 units of R-group courses may be taken in any one Department.

**Area Courses:**
All Level II and III Science Courses*.

**Level II: 30 units**
R 18 units of Level II and III Sciences courses*, including a Level I Chemistry (if not completed) and a Level I Physics (if not completed).

E 12 units, at least 6 of which are not Area courses.

**Level III: 30 units**
R 18 units of Level II and III Science Courses*, at least 12 units of which must be from Level III.

E 12 units, at least 6 of which are not Area courses.
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., Academic Assistant to the Dean
A. Yanwood/B.S.W., M.A., Student Advisor
J. Weston/B.A., Student Advisor
E. Moore/Programmes Co-ordinator

The social sciences are concerned with the systematic study of activities and 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, Gerontology, 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 Arts and Science, or any discipline in the Faculty of Humanities.

The two schools, Social Work and Physical Education, offer programmes of study which lead to the B.A./B.S.W. degrees in the one case, and the B.P.E. degree in the other. The B.S.W. degree may be attained separately by those who have already received one undergraduate degree.

Students are strongly advised to take advantage of the extensive advisory services provided by the Faculty. New students in particular should plan a programme of study that will allow them a number of options for Level II.

Academic Regulations

Students enrolled in a programme in the Faculty of Social Sciences, in addition to meeting the Academic Regulations of the University, shall be subject to the following regulations of the Faculty of Social Sciences.

Mcmaster Test of Writing Competence
A student admitted to McMaster University in 1986 or later, and who has completed 60 units of any programme, must also have passed the McMaster Test of Writing Competence, before continuing in any Social Sciences Programme. The intent of this regulation is to ensure that students pass the Test before registering in Level III of, or graduating from, any Social Sciences programme, and the regulation will be applied in accordance with this intent.

Humanities Requirements

Students registered in programmes in the Faculty of Social Sciences, except for those registered in the Bachelor of Physical Education programme and the B.A./B.S.W. programme, are required to complete 6 units of courses chosen from the Faculty of Humanities before graduation, preferably before Level II.

Students registered in B.A. programmes in Economics and Psychology will fulfill this requirement by completing the English requirement for their programme. Students in the B.A. Psychology programme should note the additional Science or Humanities requirements for that programme.

Deadlines
The Faculty of Social Sciences will not consider applications for admission, admission to a second degree or continuing studies, registration, or dropping and adding of courses after the deadlines stated in this Calendar under Application Procedures and Sessional Dates unless written documentation is provided showing good cause, as determined by the Faculty Admissions, Study and Reviewing Committee.

Course Selection and Changes
A student must ensure that the selection of courses meets the degree requirements for the programme in which the student is registered, that any prerequisites have been met, and that written permission of the instructor has been obtained if required. Considerable inconvenience can result for a student whose registration does not meet the requirements.

All registrations, programme and course changes must be approved by the Associate Dean (Studies), and are subject to the deadline dates established by the University.

Courses in Physical Education and Social Work Available for Undergraduate Credit
Several courses offered by the School of Physical Education and the School of Social Work may be taken by students in B.A. programmes as electives for undergraduate credit. These courses are:

Physical Education 3J03, 3P03, 3Q03, 4E03, 4G03, 4J03, 4L03, 4M03, 4Q03

Social Work 3C03, 3G03, 3H03, 3J03, 4J03, 4M03

Students who are in the Bachelor of Physical Education programme may take as electives up to 6 units of Physical Education courses from the list above.

Re-admission
A student who is ineligible to continue at the University may apply for re-admission to the Faculty of Social Sciences. Application for re-admission must be made in writing to the Associate Dean (Studies) before the application deadline for the session in which the student seeks to be re-admitted. The letter of application should include an explanation of the student's academic performance and reasons why the student would expect to succeed if re-admitted. Further guidelines for the letter of application may be obtained from the Office of the Associate Dean (Studies).

In considering a student's request for re-admission, the Faculty's Admissions, Study and Reviewing Committee will use several criteria, including the student's academic record before and after admission to McMaster, the letter of application and the student's ability in English.

Students are advised that re-admission is a privilege given only to those who are able to show good reasons for an expectation of improved academic performance. In the case of students who have been required to withdraw, re-admission will not be considered for a session beginning within 12 months of this requirement, except in extraordinary circumstances. If a student is applying for re-admission after the 12-month withdrawal period, a letter of reference from an employer may be required.

Re-admission is not automatic or guaranteed.

Programmes

Combined Honours Programmes: Subject to possible timetable restrictions, and provided that the student meets the requirements for entry into each of the relevant Honours Programmes, a student may combine work in any two departments, and be graduated with a Combined Honours degree in the two subjects.
FACULTY OF SOCIAL SCIENCES

All Combined Honours programmes must be approved by both Departments concerned as well as by the Associate Dean(s) (Studies).

These programmes will normally include approximately 36 units of work beyond Level I in each Department (normally 12 units of work per Level in each).

Honours Programmes: For special requirements in Honours programmes, and for taking Extra courses, either as extra work or as make-up work, see the University's statement on Academic Regulations in this Calendar.

Bachelor of Arts Programmes: For special requirements in Bachelor Degree programmes except for Gerontology and Another Subject, Faculty of Humanities.

Part-time basis any programme (described in the Faculty of Social Sciences section of the Calendar). The other subject may be from the Faculty of Social Sciences or the Faculty of Humanities.

PART-TIME STUDIES
Subject to limitations of course offerings, a student may pursue on a part-time basis any programme in the Faculty of Social Sciences, except for the B.P.E. programme. Normally, students will arrange their programme of studies in consultation with a Student Advisor in the Office of the Associate Dean (Studies) and with the Undergraduate Advisor of the appropriate Department.

Level I Programmes

SOCIAL SCIENCES I: 30 units
R 12 units from: Anthropology 1A03, 1Z03, 1B06; Canadian Studies 1A06; Economics 1A06; Geography 1A06 or 1B06; Gerontology 1A06; Labour Studies 1A03, 1AA3; Political Science 1A06; Psychology 1A06; Religious Studies 1B06, 1E06, 1F06, 1G03, 1H03; Sociology 1A06.

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). It is recommended that this requirement be completed in Level I.

Students may take more than 12 units of work in the Faculty of Social Sciences if they wish, subject to the conditions outlined in E (Electives) below.

E 18 units elective.

Normally, a student will take only 6 units of work in any one discipline. In special circumstances, a student may be permitted to take up to 12 units in one discipline.

PHYSICAL EDUCATION I: 31 UNITS
R Physical Education 1A06, 1B03, 1E03, 1F03; Practicum: 1 unit, plus the McMaster Basic Swimming Test; Biology 1J03.

E 12 units.

Department of Anthropology

HONOURS ARTS AND SCIENCE PROGRAMME AND ANTHROPOLOGY (B. Arts Sc.)
(See Arts and Science Programme)

Programme Notes: (Applicable to all Anthropology programmes) Anthropology includes the four major subfields of Social/Cultural Anthropology, Physical/Biological Anthropology, Archaeology, and Linguistics. Students may specialize in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites (see course listings by department in the Calendar).

<table>
<thead>
<tr>
<th>Cultural/Social</th>
<th>Anthropology:</th>
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<tbody>
<tr>
<td>Anthropology:</td>
<td>2B03, 2C03, 2F03, 2G03, 2H03, 2I03, 2K03, 2P03, 2Q03, 2R03, 2S03, 2U03, 3A03, 3B03, 3D03, 3F03, 3G03, 3H03, 3J03, 3J6, 3L03, 3P03, 3Q03, 3S06, 3T03, 3V03, 3X03, 3Z03, 4A03, 4I03, 4N03, 4Y03.</td>
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</tbody>
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<tr>
<th>Physical/Biological</th>
<th>Anthropology:</th>
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<tbody>
<tr>
<td>Anthropology: 2D03, 2E03, 2I03, 2K03, 3A03, 3D03, 3Z03, 3Z23, 3N06, 4C03, 4F03, 4Q03 (relevant courses are also offered by Biology and Physical Education).</td>
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</tr>
</tbody>
</table>

| Archaeology: | Anthropology 2A03, 2N03, 2O03, 2V03, 3A03, 3U03, 4E03, 4F03, 4M03 (relevant courses are also offered by History and Classics). |

| Linguistics: | Anthropology 2L03, 2M03, 2Q03, 2T03, 3I03, 3M03, 3Y03, 4K03. |

| Other courses: | Courses not distinguished by subfield include the reading courses 2W03, 2Y03, 3W03, 3R03 as well as the seminar course 4B03. |

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 1A03 and 1Z03, or an average of at least 7.0 in Anthropology 1B06 and 1A03 or 1Z03.

Programme Notes:
1. See subfield descriptions above.
2. Honours students are required to take at least 3 units above Level I in each of the four Anthropology subfields. This requirement is in effect for students entering Level II in 1984-85 or later.
3. The Graduation Average is computed on all Level II, III and IV Anthropology courses taken.

Area Courses:
All Level II, III and IV Anthropology; Sociology 2Y03, Philosophy 2R03.

Levels II, III and IV: 90 units
R 36 units of Anthropology Area courses, including Anthropology 2F03, 3S06 and 4I03, Sociology 2Y03, Philosophy 2R03 and at least 9 additional units of Level IV Anthropology courses.

E Electives to make a total of 90 units.

B.A. IN ANTHROPOLOGY

Admission:
Completion of 30 units with an average of at least 4.0 in Anthropology 1A03 and 1Z03, or an average of at least 4.0 in Anthropology 1B06 and 1A03 or 1Z03.

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 2F03.

E Electives to make a total of 60 units.

Canadian Studies

The B.A. Programmes in Canadian Studies have been suspended. Courses with a focus on Canadian Studies are available. Students with an interest in this area should consult the section Courses by Department, Canadian Studies in this Calendar.
Department of Economics

HONOURS COMMERCE AND ECONOMICS

In conjunction with the Faculty of Business, a programme is offered in Honours Commerce and Economics. Since students register in the Faculty of Business, details concerning admission, the programme of study and academic requirements are given in the Faculty of Business section of the Calendar.

HONOURS ARTS AND SCIENCE PROGRAMME AND ECONOMICS (B. Arts Sc.)

(See Arts and Science Programme)

A combined honours programme is offered for students in the Arts and Science Programme. The academic requirements and programme of study are given in the Arts and Science Programme section of the Calendar.

HONOURS ECONOMICS

Admission:

Completion of any Level I programme with an average of at least 7.0 in Economics 1A06 and 6 units of Mathematics (or another 6 units acceptable to the Department), including a grade of at least B — in Economics 1A06.

Programme Notes:

1. **English Requirement:** Students entering this programme in September 1985 or later are required to complete one of English 1A06, 1B06, 1C06, 1D06, or 2E06 by the end of Level II. It is strongly recommended that one of these English courses be included in the student's Level I programme.

2. **Mathematics Requirement:** One course from each of the following groups must be completed by the end of Level II.

   a. Grade 13 Calculus or Mathematics 1K03.
   b. Mathematics 1A06 or 1M03.
   c. Mathematics 1L03.

   (Students with credit in Mathematics 1F06 or 1G06 have fulfilled the Mathematics requirements. Students with credit in Mathematics 1B03, 1B04 or 1G04 must consult a Departmental adviser.)

3. The Graduation Average is computed on all Level II, III and IV Economics courses.

Area Courses:

All Level II, III and IV Economics courses.

Levels II, III and IV: 90 units

R

At least 36 units of Economics, including Economics 2L06, 2M06, 3O06, 3A03, 3AA3, one of Economics 2K03, 3I03, 3R03; one of Statistics 2D03, 3A03, 3M03; one of Economics 3O06, Statistics 3D06; Computer Science 2MF3 (if Computer Science 1C03 not completed), 2B03, 2L03, 3A03, 3D03, 4G06; two of Computer Science 3B03, 3C03, 3E03, 3T03; 6 additional units of Computer Science; and additional English units as described above in Programme Notes.

E Electives to make a total of 90 units. Mathematics 2L03 or equivalent is recommended as preparation for Economics 3A03, 3AA3.

COMBINED HONOURS IN ECONOMICS AND ANOTHER SUBJECT

Admission:

Completion of any Level I programme, including a grade of at least B — in each of Economics 1A06 and 6 units of the other subject.

Programme Notes:

1. **English Requirement:** See Honours Economics above.

2. **Mathematics Requirement:** See Honours Economics above.

3. 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.

4. The Economics component of the Graduation Average is computed on all Level II, III and IV Economics courses.

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 2L06, 2M06, 3O06 (students combining Economics with Religious Studies or a subject in Humanities may substitute Economics 2B03 for 3O06); 3A03, 3AA3, one of Economics 2K03, 3I03, or 3R03; additional English and Mathematics units as described above in Programme Notes, if not completed in Level I; three or six units of Statistics offered by the other department may be substituted for Economics 2B03 or 3O06 respectively.

E Electives, if needed, to make a total of 90 units. Mathematics 2L03 or equivalent is recommended as preparation for Economics 3A03, 3AA3.

HONOURS ECONOMICS AND COMPUTER SCIENCE

Admission 1987-88:

Completion of any Level I programme, including, one of Computer Science 1A03, 1B03, 1H03 or Engineering 1D03, and including a grade of at least B — in Economics 1A06, and an average of at least 7.0 in Economics 1A06, Mathematics 1A06 and Mathematics 1B03.

Admission 1988-89:

Completion of any Level I programme, including Computer Science 1M03 and 1MB3, and including a grade of at least B — in Economics 1A06, and an average of at least 7.0 in Economics 1A06, Computer Science 1MB3, Mathematics 1A06 and Mathematics 1B03. Mathematics 1B03 may be postponed until Level II.

Programme Notes:

1. Because of resource limitations, enrolment in Honours Economics and Computer Science is limited. Students intending to enter the programme must consult the Department of Computer Science and Systems.

2. **English Requirement:** See Honours Economics above.

3. The Graduation Average is computed on all Level II, III and IV Economics and Computer Science courses.

Area Courses:

All Level II, III and IV Economics and Computer Science courses.

Levels II, III and IV: 90 units

R

At least 36 units of Economics, including Economics 2L06, 2M06, 3A03, 3AA3; one of Economics 2K03, 3I03, 3R03; one of Statistics 2D03, 2M03, 3M03; one of Economics 3O06, Statistics 3D06; Computer Science 2MF3 (if Computer Science 1C03 not completed), 2B03, 2L03, 3A03, 3D03, 4G06; two of Computer Science 3B03, 3C03, 3E03, 3T03; 6 additional units of Computer Science; and additional English units as described above in Programme Notes, if not completed in Level I. Selection of all of Computer Science 3B03, 3C03, 3E03, 3T03 is advised. Computer Science 2A03, 3I03, 4L03 are recommended as preparation for Business Data Processing.

E Electives to make a total of 90 units.

HONOURS ECONOMICS AND GEOGRAPHY

Admission:

Completion of any Level I programme with a grade of at least B — in each of Economics 1A06 and Geography 1B06.

Programme Notes:

1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

2. **English Requirement:** See Honours Economics above.

3. **Mathematics Requirement:** See Honours Economics above.

4. A single Cumulative Area Average and a single Graduation Average will be computed.

Area Courses:

Geography 2A03, 2B03, 2L13, 2L03, 2R03, 2Y03, 3G03, 3N03, 3O03, 3Q03, 3T03, 3X03, 4C06, 4F03, 4H03, 4J03, 4N03, 4T03, 4X03, 4Y03; all Level II, III and IV Economics courses.
Level II: 30 units
R Geography 2L03, 2L03 or Economics 3006 (in Level III); 9 units from Geography 2A03, 2B03, 2R03, 2Y03; Economics 2L06, 2M06; one of Economics 2K03, 3I03, 3R03 (this requirement may be met in Level III or IV); Mathematics and English requirements as listed above if not completed in Level I.
E Electives to make a total of 30 units.

Level III: 30 units
R Geography 3Q03, 3Q03 and 6 units of Geography from 3G03, 3T03, 3X03; Economics 3A03, 3AA3, 3006 (if Geography 2L03 and 2L03 not taken in Level II), and 6 additional units of Economics.
E Electives to make a total of 30 units.

Level IV: 30 units
R Geography 4C06 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 IA06 and an average of at least 7.0 in Mathematics IA06 and IB03.

Programme Notes:
2. Graduation Average is computed on all Level II, III and IV Economics, Mathematics and Statistics courses.

Area Courses:

Levels II, III and IV: 90 units
R At least 36 units of Economics and 36 units of Mathematical Sciences, selected as follows: Economics 2L06, 2M06, 3A03, 3A3; one of 2K03, 3I03, 3R03; Statistics 2D03; either Economics 3006 or Statistics 3D06; Mathematics 2A06, 2B06, 2F03; one of 2C03, 3A06, 3006; 15 units from Mathematics 3E06, 3F06, 3P03, 3Q03, 3R03, 3S03, 3T03, 4A06, 4C03, 4G03, 4J03, 4K03, 4L03, 4M03, Statistics 3D06, 3S03, 3U03, 4H03, 4K03, 4M03.
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 IA06 and 6 additional units. Students must obtain a grade of B – in Economics IA06. A Level I course in Political Science is recommended.

Programme Notes:

Area Courses:
All Economics and Political Science courses.

Level II: 30 units
R Economics 2L06 and 2M06; one of Economics 2K03, 3I03, 3R03 (may be postponed to Levels III or IV); 12 units of Level II Political Science (Political Science 2F06 is recommended); Mathematics and English requirements as described above in Programme Notes, if not completed in Level I.
E Electives to make a total of 30 units, at least 3 of which must be outside of Economics and Political Science.

Level III: 30 units
R Economics 3A03, 3AA3 and 3006; 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 2K03, 3I03, 3R03 (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 IA06, Mathematics 1K03, 1L03 and 1M03 (for exceptions to this requirement, see Programme Notes below), including a grade of at least C – in Economics IA06.

Programme Notes:
1. English Requirement: Students entering this programme in September 1985 or later are required to complete one of English 1A06, 1B06, 1C06, 1D06, or 2E06 by the end of Level II. It is strongly recommended that one of these English courses be included in the student’s Level I programme.
2. Mathematics Requirement: One course from each of the following groups must be completed by the end of Level II.
   a. Grade 13 Calculus or Mathematics 1K03.
   b. Mathematics 1A06 or 1M03 (Students entering Level II in 1984-85 or before are exempt from this requirement.)
   c. Mathematics 1L03.
   (Students with credit in Mathematics 1F06 or 1G06 have fulfilled the Mathematics requirements. Students with credit in Mathematics 1B03, 1B04 or 1G04 must consult a Departmental adviser.)

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

Levels II and III: 60 units
R 24 to 36 units of Economics, including one of Economics 2K03, 3I03, 3R03; Economics 2G03 or 2L06; Economics 2H03 or 2M06; Economics 2P03 or 3006; additional English and Mathematics requirements as described above in Programme Notes, if not completed in Level I; at least 24 units outside Economics, including Mathematics and other required outside courses taken in Levels II and III.
E Electives to make a total of 60 units.

Department of Geography
HONOURS GEOGRAPHY (B.Sc.) AND B.S.C. IN GEOGRAPHY
AND HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(See B.Sc. Programmes in Geography, Faculty of Science, Department of Geography)

HONOURS ECONOMICS AND GEOGRAPHY (B.A.)
(See Department of Economics)

HONOURS HISTORY AND GEOGRAPHY (B.A.)
(See Faculty of Humanities, Department of History)

HONOURS ARTS AND SCIENCE PROGRAMME AND GEOGRAPHY (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS GEOGRAPHY (B.A.)
Admission:
Completion of any Level I programme with at least a B – in Level I Geography, and an average of at least 7.0 in that and 6 additional units. One of Mathematics 1A06 or 1M03 must be completed by the end of Level II. Its inclusion in the student’s Level I programme is strongly recommended. Students are reminded of the Humanities requirement of the Faculty of Social Sciences. (See Faculty of Social Sciences, Humanities Requirement.)

Programme Notes:
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.
2. Students are advised to take Geography 1A06 or 1B06 in Level I and to take Geography 2L03 and 2LL3 in Level II. Geography 3003 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 2L03 and 2LL3, at least 12 units of 2A03, 2B03, 2D03, 2F03, 2K03, 2R03, 2T03, 2W03, 2Y03, and one of Mathematics 1A06 or 1M03 if not taken in Level I.
E Electives to make a total of 30 units. At least 6 units of electives must be in Humanities or Science, excluding Geography.

**Level III:** 30 units
R Geography 3003; at least 12 units from Geography 3D03, 3F03, 3G03, 3K03, 3M03, 3P03, 3Q03, 3T03, 3W03, 3X03, 3Z03, and 3 additional units of Level III or IV Geography.
E Electives to make a total of 30 units, 6 of which must not be from Geography.

**Level IV:** 30 units
R Geography 4C06; 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.)**

**Admission:**
Completion of any Level I programme with a grade of at least B – in both Geography 1A06 and Geology 1A03 or 1C03. Six units of Mathematics (either 1A06, or two of 1K03, 1L03, 1M03) which must be completed by the end of Level II. Their inclusion in the student's Level I programme is strongly recommended. Chemistry 1B06 must be completed by the end of Level III.

**Programme Notes:**
1. No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.
2. Students wishing to enter this programme are to follow the procedures for admission to the Limited Enrolment Programme in Geology.
3. 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 2D06 will be included in calculating the Graduation Average.
4. Geology 3E02 is normally taken at the end of Level II. This course is scheduled outside of the regular term.

**Area Courses:**
Geography 2F03, 2K03, 2LL3, 2L03, 2L06, 2M03, 2T03, 2W03, 3E03, 3F03, 3I03, 3K03, 3M03, 3P03, 3Q03, 3V03, 4A03, 4C06, 4D06, 4E03, 4G03, 4K03, 4N03, 4P03, 4Q03, 4R03, 4V03, 4W03; Geology 2B06, 2C06, 2D06, 3C06, 4E06, 4M03, 4M3, 4T03.

**Level II:** 30-33 units
R Geography 2LL3, 2L03, 2T03 and one of Geography 2F03, 2K03, 2P03, 2W03; Geology 2B06, 2C06; 6 units of Mathematics (either 1A06 or 1K03 and one of 1L03 or 1M03) if not taken in Level I, or 3 to 6 units from the Faculties of Science or Engineering approved by the Departments. (Chemistry 1B06 is strongly recommended and must be completed by the end of Level III.)
E Electives, excluding Geography and Geology, to make a total of 30 to 33 units.

**Level III:** 29-32 units
R Geography 3E03, 3M03, 3C03, and one of 3F03, 3K03, 3P03, or 3W03; Geology 2D06, 3C06, 3E02; Chemistry 1B06 if not previously completed.

**E Electives to make a total of 29 to 32 units, at least 3 of which may not be Geography or Geology.**

**Level IV:** 30-31 units
R 6 units of Level IV Geography Area courses; 6 units of Level IV Geography Area courses; 6 units of Level IV Geography or Geology Area courses.
E Electives to make a total of 30 to 31 units. Geology 3C04 is strongly recommended.

**B.A. IN GEOGRAPHY**

**Admission:**
Completion of any Level I programme, including Level I Geography with a grade of at least C –, and one other subject with a grade of at least C –.

**Programme Note:**
No student may register in any Level of this programme without the approval of a Departmental Counsellor, which should be obtained before completing registration forms in March.

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

**Level II:** 30 units
R At least 6 units from Geography 2A03, 2B03, 2D03, 2F03, 2K03, 2L03, 2R03, 2T03, 2W03, 2Y03; at least 6 additional units of Level II Geography.
E Electives to make a total of 30 units, so that at least 18 units from outside of Geography are taken in Levels II and III.

**Level III:** 30 units
R At least 6 units from Geography 3D03, 3F03, 3G03, 3K03, 3M03, 3P03, 3Q03, 3T03, 3W03, 3X03, 3Z03; at least 6 additional units of Level III Geography.
E Electives to make a total of 30 units, so that at least 18 units from outside of Geography are taken in Levels II and III.

**Gerontological Studies**

The offering of these programmes (Combined Honours Gerontology and Another Subject, and B.A. in Gerontology and Another Subject) is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Social Sciences.

**COMBINED HONOURS IN GERONTOLOGY AND ANOTHER SUBJECT**

**Admission:**
Completion of any Level I programme with a weighted average of at least 7.0 in 12 units of Level I work, including a grade of at least B – in Gerontology 1A06 or Social Science 2G06, and satisfaction of admission requirements for the Honours B.A. programme in the other subject.

**Programme Notes:**
1. **Enrolment in the programme is limited.** Application for admission, including a statement explaining the applicant's interest in the Programme, should be made to the Chairman of the Committee of Instruction, prior to April 15. The Admissions Committee may wish to interview the applicants.
2. Students who have not taken Gerontology 1A06 or Social Science 2G06 in Level I may be considered for admission to the programme, and should consult the Chairman of the Committee of Instruction.
3. Courses other than those listed below as Area Courses, may qualify as Gerontology Area courses. Students wishing to designate an Area course not on the list of Gerontology Area courses must do so at registration, with the permission of the Chairman of the Committee of Instruction.
4. No Gerontology course may be counted as credit toward the other subject of the combined programme.
5. Students should refer to the Course Listing by Department and take note of the prerequisites for some of the Area courses.

Area Courses:
All Level II, III and IV Gerontology courses, and all designated Gerontology Area courses: Religious Studies 2A06; Anthropology 3Q03; History 3E03; Philosophy 3C03; Social Work 3C03; Sociology 3C03 and 3X03; Health Sciences 3B04, 4C03 and 4D03; or other designated and approved Area courses. (See Programme Notes above.)

Levels II, III and IV: 90 units
R Gerontology 2A03, 3B03, 3C03; one of Gerontology 2B03 or 3D03; Gerontology 4A06 (Thesis) or Psychology 4D06; 18 units of Gerontology Area courses; the Area requirements of the Honours B.A. programme of the other subject.
E Electives, beyond Level I, to a total of 90 units.

B.A. IN GERONTOLOGY AND ANOTHER SUBJECT

Admission:
Completion of any Level I programme with a Grade of at least C- in Gerontology 1A06 or Social Science 2G06, and satisfaction of admission requirements for the B.A. in the other subject.

Programme Notes:
1. Enrolment in the programme is limited. Application for admission, including a statement explaining the applicant's interest in the programme, should be made to the Chairman of the Committee of Instruction, prior to April 15. The Admissions Committee may wish to interview the applicants.
2. Students who have not taken Gerontology 1A06 or Social Science 2G06 may be considered for admission to the programme and should consult the Chairman of the Committee of Instruction.
3. Courses other than those listed below as Area Courses, may qualify as Gerontology Area courses. Students wishing to designate an Area course not on the list of Gerontology Area courses must do so at registration, with the permission of the Chairman of the Committee of Instruction.
4. No Gerontology course may be counted as credit toward the other subject of the combined programme.
5. Students should refer to the Course Listing by Department and take note of the prerequisites for some of the Area courses.

Area Courses:
All Level II and Level III Gerontology courses and the following designated Gerontology Area courses: Religious Studies 2A06; Anthropology 3Q03; History 3E03; Philosophy 3C03; Social Work 3C03; Sociology 3G03 and 3X03; Health Sciences 3B04, 4C03 and 4D03; or other designated and approved Area courses. (See Programme Notes above.)

Levels II and III: 60 units
R Gerontology 2A03, 3B03, 3C03; one of 2B03 or 3D03; 12 units of Gerontology Area Courses; the Area requirements of the B.A. programme of the other subject.
E Electives, beyond Level I, to a total of 60 units.

Labour Studies

B.A. IN LABOUR STUDIES
If the Honours B.A. in Labour Studies and the revised B.A. in Labour Studies are approved (see below), only Level III of the current programme will be offered in 1987-88.

Admission:
Completion of any Level I programme with an average of at least 4.0 in Labour Studies 1A03 and 1A03, and an average of at least 4.0 in 12 units from Economics 1A06, History 1C06, Mathematics 1K03, 1L03, Political Science 1A06, Psychology 1A06, Sociology 1A06.

Programme Notes:
1. Enrolment in the Labour Studies programmes is limited. Application for admission, including a statement explaining the applicant's interest in the programme, should be made to the Chairman of Instruction, prior to April 15. The Admissions Committee may wish to interview each applicant.
2. Students are strongly advised to select Level I courses which are prerequisites for required courses in Levels II and III, so to maximize choice among these courses. Normally, students will complete all Level II requirements before proceeding to Level III.
3. Students enrolled in the Labour Studies Programme are not eligible for admission to Commerce courses other than those specified in the Labour Studies curricula, even where they have fulfilled the necessary prerequisites (for example, Commerce 3B03).

Area Courses:
Labour Studies 2A03, 3A03; Commerce 2B03, 3B03; Economics 3D03; Political Science 3A06, Social Work 2B06; Sociology 3Y03.

Level II: 30 units
R Labour Studies 2A03; Commerce 2B03; Social Work 2B06; and 15 to 18 units from Commerce 2A03, Economics 2B03, 2G03, 2H03, History 2J06, Political Science 2F06, 2G06, Psychology 2C03, Social Work 3H03, 3J03, Sociology 2D06, 2I03, 2J06.
E Electives to make a total of 30 units.

Level III 30 units
R Commerce 4B03, 4D03; Labour Studies 3A03; 12 units which must include at least one of Economics 3D03, Political Science 3A06, Sociology 3Y03, and additional units from Commerce 3B03, Economics 3D03, 3S03, History 3K03, Political Science 3206, Psychology 3D03, Social Work 3H03, 3J03, Sociology 3E06, 3L03.
E Electives to make a total of 30 units.

HONOURS LABOUR STUDIES
The offering of the following programmes (Honours Labour Studies and the revised B.A. in Labour Studies) is contingent upon approval by the Ontario Council on University Affairs. Further information should be obtained from the Associate Dean (Studies) of the Faculty of Social Sciences.

Admission:
Completion of any Level I programme with an average of at least 7.0 in Labour Studies 1A03 and 1A03, and an overall average of at least 7.0 in 12 units, which includes Labour Studies 1A03 and 1A03, and 6 units from Economics 1A06, History 1C06, Mathematics 1K03, Mathematics 1L03, Political Science 1A06, Psychology 1A06, Sociology 1A06.

Programme Notes:
1. Enrolment in the Labour Studies programmes is limited. Application for admission, including a statement explaining the applicant's interest in the programme, should be made to the Chairman of Instruction, prior to April 15. The Admissions Committee may wish to interview each applicant.
2. Students must successfully complete Economics 1A06 and Sociology 1A06 by the end of Level II.

Area Courses:
All Level II, III and IV Labour Studies courses, and all Level II and IV Commerce courses.

Level II: 30 units
R Labour Studies 2A06, 2B03, 2C03 and Commerce 2B03.
E 15 units.

Level III: 30 units
R Labour Studies 3A06, 3B03 or 3J03, 3C03; Commerce 4BC3 and 4D03.
E 12 units.

Level IV: 30 units
R Labour Studies 3D03 or 3E03, 4A06, 4B03, 4C03, 4D03.
E 12 units.

B.A. IN LABOUR STUDIES (Revised)
The offering of this program is contingent upon the approvals as noted above under Honours Labour Studies.

Admission:
Completion of any Level I programme with an average of at least 4.0 in Labour Studies 1A03 and 1A03 and an overall average of at least 4.0 in 12 units, which includes Labour Studies 1A03 and 1A03, and 6 units.
2. May Continue on Probation: Repeated Courses

Students who have failed (F grade) any Area course, but who have achieved a CAA of 4.0 at the review period may be permitted to continue on probation subject to the approval of the School of Physical Education Admissions and Review Committee. In such cases the student must repeat any failed Required Area course or replace any failed Elective Area course. To lift the probationary status a minimum grade of C- must be obtained in any repeated course, and the CAA must be raised to at least 4.0 for the Level in question.

Work Load

All B.P.E. students must complete a Winter Session work load of 31 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. While no unit credit is given, students are also required to pass the McMaster Basic Swimming Test, normally during Level I, but no later than the end of Level II.

Graduation

The minimum requirement for graduation from the B.P.E. programme is a CAA of 4.0 in at least 60 units of Area courses taken in Levels II, III, and IV. A student may be awarded First, Second, or Third Class standing on the basis of the Graduation Average (GA).

Students require 133 units to graduate. These units are composed of 54 units of electives, 66 units of Physical Education theory, and 13 units of Physical Education practicum.

Area Courses

All Level I, II, III and IV Physical Education courses. Normally, the requirements for each Level must be completed satisfactorily before a student is allowed to proceed to the next Level of the Physical Education programme.

Level I: 31 units
R Physical Education 1A06, 1B03, 1E03, 1F03; Practicum: 1 unit, plus the McMaster Basic Swimming Test; Biology 1J03.
E 12 units, excluding Physical Education.

Level II: 34 units
R Physical Education 2A03, 2B03, 2C03, 2D03, 2E03; Practicum: 4 units, plus the McMaster Basic Swimming Test, if not passed in Level I.
E 12 units, excluding Physical Education courses.

Level III: 34 units
R 15 units from Level III or IV Physical Education courses; Practicum: 4 units.
E 15 units, excluding Physical Education courses but which may include up to 6 units of Physical Education courses approved for B.A. credit during Levels III and IV inclusive.

Level IV: 34 units
R 15 units from Level III or IV Physical Education; Practicum: 4 units.
E 15 units, excluding Physical Education but which may include up to 6 units of Physical Education courses approved for B.A. credit provided that the 6 unit limit has not been reached during Level III.

B.P.E. AS A SECOND DEGREE

Individuals already holding an undergraduate degree may be admitted to the Physical Education programme. Applications should be made to the Undergraduate Physical Education programme prior to May 15 for the Fall term.

Enrolment is limited and applicants must normally provide evidence of at least second class standing (B-) in their previous university work to be eligible. Only full-time students will be considered.

Students are required to take 79 units of Physical Education courses which consist of 66 units of Physical Education theory and 13 units of Physical Education practicum, plus satisfactory completion of the McMaster Basic Swimming Test. Level I and II theory and practicum courses must be taken in sequence and be completed before Level III and IV courses are undertaken.

The B.P.E. degree will be awarded if the student achieves a minimum grade of D- in each course and maintains a CAA of at least 4.0 (C-).
FACULTY OF SOCIAL SCIENCES

TRANSFERRING INTO THE SCHOOL OF PHYSICAL EDUCATION
Undergraduate students from McMaster University or any other university seeking to transfer into the B.P.E. program may be admitted. Enrollment is limited and applicants must normally provide evidence of at least second class standing (B-) in their previous university work to be eligible. Only full-time students will be considered.

Department of Political Science

HONOURS ARTS AND SCIENCE PROGRAMME AND POLITICAL SCIENCE (B. Arts Sc.)
(See Arts and Science Programme)

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 at least C- in 6 units of Political Science and 6 other units.

Programme Notes:
1. After completion of Level I, students in Honours Political Science must complete not fewer than 48 units and not more than 60 units of Political Science.
2. Recommended Courses: Political Science 2F06 and Political Science 2006 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis. Political Science 2F06, 2006 will be included in calculating the Graduation Average if taken in Level III.
3. Prerequisites: All students should note those Level II Political Science courses that are required in order to register in a number of Level III and Level IV courses.
Area Courses:
All Level II, III and IV Political Science courses.

Level I: 30 units
R 12 units of Level II Political Sciences.
E Electives to make a total of 30 units, with at least 6 units of Political Science.

Level II: 30 units
R 12 units of Level III Political Sciences; or 12 units Level III Political Science and 6 units of Political Science 2F06 or 2006.
E Electives to make a total of 60 units, with at least 6 units of Political Science.

Level IV: 30 units
R Political Science 4206; 6 units of Level IV Political Science; 6 units of either Level III or IV Political Science.
E 12 units elective.

COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme with a grade of at least B- in 6 units of Political Science and a grade of at least B- in 6 units of the combined component.

Programme Notes:
1. During Levels II, III and IV, students in the Combined Honours programme must complete not fewer than 36 units of Political Science, of which only 12 units may be in Level II courses, and at least 6 units should be in Level IV courses.
2. Recommended Courses: Political Science 2F06 and Political Science 2006 are recommended to students enrolled in Honours Political Science because their conceptual concerns underlie all political analysis. Political Science 2F06, 2006 will be included in calculating the Graduation Average if taken in Level III.

Area Courses:
All Level II, III and IV Political Science courses for the Political Science component.

B.A. IN POLITICAL SCIENCE
Admission:
Completion of any Level I programme, with a grade of at least C- in 6 units of Political Science.

Programme Notes:
1. After completion of Level I, students in the B.A. programme must complete not fewer than 24 units and not more than 36 units of Area courses, of which at least 12 units should be at Level III or IV.
2. Prerequisites: All students should be alerted to those Level II Political Science courses that are required in order to register in a number of Level III and IV courses. Students at Level III may take courses at Levels II, III or IV, provided they meet the prerequisites.

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

Level II: 30 units
R 12 to 18 units of Level II Political Science.
E Electives to make a total of 30 units, with at least 12 units excluding Political Science.

Level III: 30 units
R 12 to 18 units of Level III or IV Political Science.
E Electives to make a total of 30 units.

Department of Psychology

HONOURS PSYCHOLOGY (B.Sc.) AND B.Sc. IN PSYCHOLOGY
(See B.Sc. Programmes in Psychology, Faculty of Science, Department of Psychology)

HONOURS BIOLOGY AND PSYCHOLOGY (B.Sc.)
(See Faculty of Science, Department of Biology)

HONOURS COMPUTER SCIENCE AND PSYCHOLOGY (B.Sc.)
(See Faculty of Science, Department of Computer Science & Systems)

HONOURS ARTS AND SCIENCE PROGRAMME AND PSYCHOLOGY (B. Arts Sc.)
(See Arts and Science Programme)

HONOURS PSYCHOLOGY (B.A.)
Admission:
Completion of any Level I programme with a grade of at least B- in Psychology 1A06, at least B- in six additional units, at least C- in English 1A06, 1B06, 1C06, or 1D06, and credit in Mathematics 1A06 or 1F06 or at least C- in Mathematics 1M03. Students who did not complete the English or Mathematics requirements in Level I should obtain the permission of the department to register for Level II Psychology. They may be admitted to the Honours Psychology programme on completion of Level II, subject to the completion of these requirements, and obtaining a CAA of at least 7.0 or greater in the required Level II Psychology courses.

Programme Notes:
1. When Mathematics is delayed to Level II, then Psychology 2R06 must be deferred to Level III and another 6 units of Psychology must be taken to fulfill that Level II requirement.
Psychology 2R06 will be included in calculating the Graduation Average, if it is taken after Level II.
2. At some time during the programme, the student must meet a laboratory requirement by completing one of Psychology 2U03, 3C06, 3E03, 3QQ3, 3S03, 3V03, 4G03, 4QQ3.

Enrolment in Laboratory courses is limited. Permission of the Department must be obtained by March 1.

Area Courses:
All Psychology courses above Level I, except Psychology 2G03.

Level II: 30 units
- Psychology 2H03, 2R06, 2T03: 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 1K03, 1M03).

E Electives to make a total of 30 units, at least 6 of which must not be from Psychology.

Level III: 30 units
- Psychology 3W06: 12 units of Level III Psychology, or 6 units of Level III Psychology and Psychology 2R06 (if not completed).

E Electives to make a total of 30 units, 6 of which must not be from Psychology.

Level IV: 30-31 units
- Psychology 4D06: 12 units of Levels III or IV Psychology.

E Electives to make a total of 30 units.

B.A. IN PSYCHOLOGY

Admission:
Completion of any Level I programme with a grade of at least C— in Psychology 1A06, and at least C— in one of English 1A06, 1B06, 1C06, or 1D06.

Students who did not complete the English requirement in Level I will be admitted to the programme only with the written approval of a departmental counsellor and must complete the requirement by the end of Level II.

Area Courses:
All Psychology courses above Level I.

Level II: 30 units
- Psychology 2G03, and either 2T03 and 2H03, or 2D06; 3 units of Level II Psychology; Mathematics 1L03, 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 1A06, 1B06, 1C06, 1D06, 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
- 12 units of Level III Psychology; 6 units of courses chosen from the Faculty of Science or the Faculty of Humanities, excluding Psychology.

E 12 units, 6 of which must not be from Psychology.

Department of Religious Studies

Programme Notes: (Applicable to all Religious Studies programmes)
Religious Studies at McMaster includes three major subfields of Biblical Studies, Western Religious Traditions, and Asian Religions. Students may concentrate in any one of these subfields though it is not necessary to do so. It should be noted, however, that each subfield has its own sequence of courses and prerequisites. Courses listed below are considered central to the subfield and are strongly recommended for any student wishing such a concentration.

Biblical Studies
- Hebrew Bible: Religious Studies 2D06, 2D03, 2E03, 3M03
- Christianity: Religious Studies 2E06, 2F06, 3O03, 3T03, 3X03

Western Religious Traditions
- Religious Studies 2I13, 2J13, 2K13, 2L13, 3D03, 3M03, 3N03

Asian Religions
- Religious Studies 2J06, 2M06, 3Q06

(For the Social Scientific Study of Religion, the following courses are recommended: Religious Studies 3J06, 3J16.)

FACULTY OF SOCIAL SCIENCES

HONOURS ARTS AND SCIENCE PROGRAMME AND RELIGIOUS STUDIES (B. Art Sc.)
(See Arts and Science Programme)

HONOURS RELIGIOUS STUDIES

Admission:
Completion of any Level I programme with an average of 7.0 in 12 units acceptable to the department, preferably including one of the Level I Religious Studies courses.

Programme Notes:
1. All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.
2. The Graduation Average will be computed on the basis of all Religious Studies courses taken in Levels II, III and IV.
3. Students are required to complete at least 48 units of Religious Studies courses or approved substitutes in Levels II, III and IV as specified. Required (R) below, and at least 18 units of Electives (E) outside Religious Studies.

Courses from other departments may, with the written approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses, and will then be designated Area courses.
4. Part-time students should be aware that the required courses in Levels II, III and IV are regularly offered in the evening and/or in the summer. Students who anticipate difficulty in fulfilling departmental requirements should consult a Departmental Undergraduate Advisor as early as possible in their programmes.

Area Courses:
All Level II, III, and IV Religious Studies courses or approved substitutes.

Level II: 30 units
- At least 12 units, including Religious Studies 2G03 and 2N03, and 6 additional units of Level II Religious Studies courses.

E Electives to make a total of 30 units.

Level III: 30 units
- At least 18 units, including Religious Studies 3F03; an Undergraduate Advisor will aid each student in the choice of the 15 remaining units.

E Electives to make a total of 30 units.

Level IV: 30 units
- At least 18 units, including Religious Studies 4F03, 4G03, 6 units of Level IV Advanced Study and 6 additional units of Level II or III Religious Studies courses (or substitute) to be determined in consultation with a Departmental Undergraduate Advisor.

E Electives to make a total of 30 units.

COMBINED HONOURS IN RELIGIOUS STUDIES AND ANOTHER SUBJECT

Programme Notes:
1. All Combined Honours students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.
2. Students in Combined Honours programmes must complete at least 36 units of Religious Studies courses or approved substitutes in Levels II, III and IV, including Religious Studies 2G03, 2N03, 3F03, 4F03, 4G03, 6 units of Level II Religious Studies Area courses, 9 units of Level III Religious Studies courses; normally 6 units of Level IV Advanced Study.

B.A. IN RELIGIOUS STUDIES

Admission:
Completion of any Level I programme with an average of at least 4.0 in 6 units of work acceptable to the Department. Completion of 6 units of Level I Religious Studies is recommended.
Programme Notes:
1. All students are required to obtain written approval of their programmes from a Departmental Undergraduate Advisor before registering every year.
2. Students are required to complete at least 30 units of Religious Studies courses or approved substitutes in Levels II and III as specified as Required (R) below, and at least 12 units of Electives (E) outside Religious Studies.
   Courses from other departments may, with the written approval of a Departmental Undergraduate Advisor, be substituted for Religious Studies courses and will then be designated Area courses.
3. Part-time students should be aware that required courses in Levels II and III are regularly offered in the evenings and/or in the summer. Students who anticipate difficulty in fulfilling departmental requirements should consult a Departmental Undergraduate Advisor as early as possible in their programmes.

Area Courses:
All Level II, III and IV Religious Studies courses or approved substitutes.

Level II: 30 units
R At least 12 units, including Religious Studies 2GG3 and 2NN3, and 6 additional units of Level II Religious Studies courses.
E Electives to make a total of 30 units.

Level III: 30 units
R At least 18 units, including Religious Studies 3F03; an Undergraduate Advisor will aid each student in the choice of the 15 remaining units. Normally, at least 9 of these 15 units should be Level III Religious Studies courses.
E Electives to make a total of 30 units.

School of Social Work

COMBINED B.ARTS SC./B.S.W.
Students interested in this combined programme should consult both the Director of the Arts and Science Programme and the Director of the School of Social Work prior to enrollment in Level I. (See Arts & Science Programme.)

COMBINED B.A./B.S.W.
Admission:
Completion of any Level I programme, including Psychology IA06 and Sociology IA06, normally with a University Average of at least 6.0 and evidence of personal suitability, which may be evaluated by one or a combination of written statements, tests, or interviews.
   An applicant must complete Level I by April of the year in which application is made.
   In choosing Level I courses, the student should take care to include those courses that will allow entry to the B.A. programme. Students should consult the relevant sections of the Calendar and/or the Associate Dean of the Faculty.

Enrolment in the Combined B.A./B.S.W. programme is limited. Students who intend to apply for the combined B.A. and B.S.W. programme must consult the School of Social Work prior to application.

All applications for admission to the School of Social Work are considered annually and must be made prior to March 1 for the Fall term. Applicants transferring from other universities must also apply through the Guelph Application Centre for full-time study, or through the Associate Registrar (Admissions) for part-time study, and are required to meet the introductory Psychology and Sociology prerequisites.
Students admitted to the Combined Programme who have completed B.A. work beyond Level I normally will require three years after admission to complete the programme.

Programme Notes
1. Course Groupings: There are three groups of courses in the Social Work programme:
   Group I are those which are required core courses;
   Group II are those which are primarily practice oriented;
   Group III are those which are primarily policy oriented. All Group III courses may be taken for B.A. elective credit by undergraduates not in Social Work. Social Work students must take 6 units in each of Levels III and IV from Group III courses for B.A. Elective credit.
   Group I:
   Social Work 2B06, 2C03, 2D03, 2E03, 3D09, 4D12
   Group II:
   Social Work 3N03, 3O03, 3P03, 3R03, 4G03, 4H03, 4K03, 4O03, 4P03, 4T03, 4V03, 4W03, 4X03, 4Y03
   Group III:
   Social Work 3C03, 3G03, 3H03, 3J03, 4J03, 4M03

2. Continuation Beyond Level I: Students must achieve a minimum grade of C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses at each review in order to continue in the programme.
3. Graduation: To qualify for the B.A. and B.S.W. degrees, students must complete a total of at least 48 units of Social Work for credit towards the B.S.W. degree and a total of 90 units of credit towards the B.A. degree.
   The B.S.W. degree will be granted only if the student has achieved a grade of at least C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses. Graduation from the three-year B.A. portion of the programme requires a Graduation Average of at least 4.0.
4. Students are expected to assume the cost of travelling to and from field practice agencies.

Area Courses:
All Social Work Area courses taken for B.S.W. degree. Grades for Social Work courses designated in advance for B.A. credit will not be calculated in the Social Work area average.

Level I: 30 units (B.A.)
B.A. as prescribed above for admission to the programme.

Level II: 36 units
R Social Work 2B06, 2C03, 2D03 and 2E03, all of which must be completed prior to enrolling in Social Work 3D09; courses in the corresponding B.A. programme to total 21 units, including Psychology 2A03 which must be completed prior to enrolling in Social Work 3D09.

Level III: 36 units
R Social Work 3D09, which must be completed prior to enrolling in Social Work 4D12; one of Social Work 3N03 or 3R03; and one other Group II Social Work course to total 15 units; courses in the corresponding B.A. programme to total 21 units, of which 6 units must be from Group III Social Work courses for B.A. credit.

Level IV: 36 units
R Social Work 4D12; one of Social Work 4O03, 4X03, or 4Y03; and one other Group II Social Work course to total 18 units; courses in the corresponding B.A. programme to total 18 units, of which 6 units must be from Group III Social Work courses for B.A. credit.

B.S.W. AS A SECOND DEGREE
Admission:
Completion of an undergraduate degree from a recognized university including Introductory Psychology and Sociology, (equivalent to the McMaster courses Psychology IA06 and Sociology IA06) normally with an average of at least 6.0 or its equivalent, and evidence of personal suitability which may be evaluated by one or a combination of written statements, interviews, or tests.
   An applicant is required to complete the prerequisite undergraduate degree work by April of the year in which application is made.

Enrolment in the B.S.W. Second Degree programme is limited. Students who intend to apply for the B.S.W. as a Second Degree programme must consult the School of Social Work prior to application.

All applications for admission to the School of Social Work are considered annually and must be made prior to March 1 for the Fall
Admission:
Completion of any Level I programme with an average of at least 7.0 in 12 units, including Sociology 1A06 with a grade of at least B-.

Programme Notes:
1. McMaster Work: Students are required to take courses to total 60 units, all of which must be completed at McMaster. If advanced standing is granted, additional courses must be taken at McMaster to total 60 units.
2. Course Groupings: There are three groups of courses in the Social Work programme:
   - Group I are those which are required core courses;
   - Group II are those which are primarily practice oriented;
   - Group III are those which are primarily policy oriented. All Group III courses may be taken for B.A. elective credit by undergraduates not in Social Work. Social Work students must take 12 units from Group III courses.
3. Progression Within Programme: Students must achieve a minimum grade of C+ in each of the Group I required Social Work core courses, and a Cumulative Area average of at least 6.0 in Social Work courses at each review in order to continue in the programme.
4. Graduation: To qualify for the B.S.W. as a Second Degree, students must complete a total of 60 units of credit at McMaster. The B.S.W as a Second Degree will be granted only if the student has achieved a grade of at least C+ in each of the Group I required Social Work core courses, and has a Cumulative Area average of at least 6.0 in Social Work courses.
5. Students are expected to assume the cost of travelling to and from field practice agencies.

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

Levels II, III and IV: 90 units
R 48 units of Sociology, including: Sociology 2S06 and one of 3A03, 3P03 or 3P3; Sociology 3H06 and one of 3003 or 3W03; 30 additional units of Levels II, III and IV Sociology including at least 12 units of Level IV Sociology.
E 42 units.

COMBINED HONOURS IN SOCIOLOGY AND ANOTHER SUBJECT
Admission:
Completion of any Level I programme, including a grade of at least B- in each of Sociology 1A06 and 6 units of the other subject.

Programme Notes:
1. With the approval of both departments concerned, students may arrange to follow a Combined Honours programme in Sociology and another subject in the Faculties of Social Sciences and Humanities. The Sociology component of such programmes is described below.
2. The Sociology component of the Graduation Average is computed on all Level II, III and IV Sociology courses.
3. Level IV courses in Sociology may be taken after completion of 60 units beyond Level I or with the permission of the instructor.
   A student may take a maximum of 6 units of Level IV independent research (Sociology 4M03/4N03).

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

Levels II, III and IV: 90 units
R At least 36 units of Sociology including: Sociology 2S06 and one of 3A03, 3P03 or 3P3; Sociology 3H06 and one of 3003 or 3W03; 18 additional units of Level II, III and IV Sociology, including at least 12 units of Level IV Sociology.

B.A. IN SOCIOLOGY
Admission:
Completion of any Level I programme, including Sociology 1A06 with a grade of at least C-.

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

Levels II and III: 60 units
R 24 units of Sociology, including Sociology 2S06 and at least one of Sociology 2Y03, 2203 or 3H06.
E 36 units.
Part-time Degree Studies

The University offers a broad range of educational opportunities for students who wish to take degree studies on a part-time basis. In addition to the day time offerings in the Winter and Summer sessions, a wide selection of evening classes is available throughout the year.

Each student taking degree courses will associate with one of the undergraduate faculties (Business, Humanities, Science, or Social Sciences). By so doing, students will have the opportunity to consult with the academic counsellors of their Faculty, and with the departments concerned with the interests in which they wish to develop further study. If their interests change, it is often possible to transfer to another department or Faculty.

The courses which part-time students take in the early stages of their education will form the basis for choosing their programme of study. The Level I courses will give them the information they need for this purpose, as well as provide the prerequisites for more advanced courses and admission to programmes of study. The programmes of study which are available entirely through evening and summer courses are indicated on the chart Degrees by Programme, in the Degrees and Programmes section of this Calendar.

There are specific regulations that part-time students should be aware of. They are described below. Students should also familiarize themselves with the requirements and information found in this Calendar in the following sections: Admissions, Academic Regulations and Sessions Dates as well as the programme descriptions found in the specific Faculty sections.

Admission

Before you can register for any course or programme, you must apply for admission to the University. Applicants who satisfy the normal admission requirements of the University may choose to 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. Initially, Special Students, with the approval of the appropriate Associate Dean (Studies), may take only 6 units of work per session until 12 units are completed.

Students who do not wish to enter a degree programme, but would like to take a course for credit, may be admissible as Special Students under the same conditions as apply to Special Students. 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.

Many part-time students enter degree study from other forms of post-secondary education. Students who want to inquire regarding credit recognition for work taken in non-degree programmes (e.g. diploma, certificate, CAAT) should contact the appropriate Faculty Office.

Please refer to the section Admission Requirements for details about the various avenues for admission to study at McMaster.

Availability of Courses

Although both daytime and evening courses are open to all students, part-time students often have other responsibilities which restrict them to the courses offered in the evenings, winter and summer. We have, therefore, listed the 1987/88 Winter Evening courses which the University intends to offer on the main campus as well as an indication of projected course offerings for the February to July Evening and Summer Day Sessions for 1988. This schedule is part of a longer plan which has been designed to make available the required courses for a number of the 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. Announcements concerning course offerings planned primarily for part-time students will be made from time to time through separate Part-Time Degree Studies brochures.

Co-ordinator of Part-Time Degree Studies

The Co-ordinator of Part-time Degree Studies, Mr. Gordon Raymond, may be telephoned at 525-9140, extension 4325, Gilmour Hall Room 103, for counselling and to discuss preparation and plans for degree study. His office is open in the day, an the evening by appointment. More detailed information concerning programmes and courses is provided by the Academic Counsellors within each Faculty as follows:

Business (extn. 4432); Humanities (extn. 4326); Science (extn. 2612); Social Sciences (extn. 4604). Information about Application Procedures and Admission Regulations is available at the Admissions Office (extn. 4796, Gilmour Hall, Room 120). Information about non-degree courses and programmes, including courses for pre-university upgrading, is available through the Centre for Continuing Education (extn. 4321).

OFF-CAMPUS CENTRES

In addition to the courses scheduled for the main campus, the University offers evening courses through the year in Brantford, Burlington, Oakville and Stoney Creek. These courses are not included in this listing.

In co-operation with the Mohawk College of Applied Arts and Technology, the University operates an Education Information Centre in downtown Hamilton and supports the Brantford Information Centre, which is directed by the Council for Continuing Education for Brantford and Brant County. These centres exist to provide information and assistance in career planning for persons 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 directly or help you to make contact with the appropriate persons at McMaster.

The Centre in Hamilton is in the Hamilton Central Library just off Jackson Square, telephone (416)525-9140, extension 2020. The Information Centre in Brantford is located at 115 Colborne Street, 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. All part-time students are invited to use these facilities and to assist their Association in its efforts to improve the quality and range of educational opportunities available to students who can only attend university in the evening.

Schedule of Courses

The following plan of programmes and courses is a projection only. It is subject to change according to the availability of Instructors and adequate resources. Specific dates and examination times are found in the section Sessional Dates in this Calendar.

Courses are arranged alphabetically by department. The various sessions in which courses are offered are identified by the following code:

- Session code:
  - Winter Evening, 1987-88: Code G
  - February to July Evening, 1988: Code H
  - May/June 1988: Code H
  - July/July 1988: Code H
  - May/July 1988: Code H
  - Summer Day, 1988: Code J

First- and second-term Winter Session offerings are identified by a 1 or 2, following the letter code, respectively, while a 3 indicates a course that runs throughout both terms of the Winter Session. An x indicates that the term within the session has not yet been determined.

* As of the printing of this Calendar, no scheduling by term had taken place within the new February to July Session. Projections for this session are tentative and subject to changes. Please refer to the sessional brochures prior to the February to July Session for full information on course offerings.
### PART-TIME DEGREE STUDIES

#### ANTHROPOLOGY
- **1A03** Introduction to Anthropology: Culture and Society  
  - G2, Hx, J2
- **1Z03** Introduction to Anthropology: Human and Cultural Origins  
  - G1, Hx, J1
- **2B03** Native Peoples of North America  
  - G1
- **2C03** Communal Societies  
  - G2
- **2E03** Physical Anthropology  
  - Hx
- **2F03** Social Anthropology  
  - G1
- **2H03** Ecological Anthropology  
  - G2
- **2I03** History of Anthropology  
  - Hx
- **2J03** Human Growth and Adaptation  
  - Hx
- **2K03** Social Biology  
  - G1
- **2KX3** Myth  
  - G1
- **2L03** Phonetics  
  - Hx
- **2O03** New World Prehistory  
  - Hx
- **2R03** Religion, Magic and Witchcraft  
  - G2
- **2Z03** Introduction to Social Research  
  - Hx
- **3E03** Ethnology: Pacific Islands  
  - Hx
- **3G03** Comparative Mythology  
  - G2
- **3H03** Ethnology: Southeast Asia  
  - G1
- **3J03** Advanced Social Anthropology  
  - G2
- **3JU6** Primitive Religion  
  - Hx
- **3L03** Primitive Systems of Thought  
  - G2
- **3Q03** Anthropological Approaches to the Study of Aging  
  - G2
- **3Z03** Medical Anthropology: The Biomedical Approach  
  - Hx
- **3Z23** Medical Anthropology: Symbolic Healing  
  - G2
- **4A03** Advanced Drawing  
  - G3
- **4I03** Contemporary Anthropological Theory  
  - G1

#### ART
- **1F06** Introduction to Studio Practice  
  - G3
- **3C03** Advanced Drawing  
  - G3

#### ART HISTORY
- **1A06** Introduction to the Study and History of the Visual Arts  
  - G3
- **3Q03** The Art of Photography  
  - Gx
- **3W03** Introduction to Art Galleries and Museums  
  - Gx

#### BUSINESS
- **3V03** Business Law  
  - G1
- **3Z03** Human Resource Management  
  - G2

#### CHEMISTRY
- **2F03** Inorganic Chemistry  
  - G2

#### CLASSICAL CIVILIZATION
- **2A03** Introduction to Classical Archaeology  
  - G2
- **2G06** The History of Greece and Rome  
  - G3
- **2Z03** Greek and Roman Religion  
  - Hx
- **3C03** Greek and Roman Epic  
  - Hx
- **3S03** The Roman City: An Archaeological Study  
  - G1

#### COMMERCE
- **2AA3** Financial Accounting I  
  - G2
- **2BA3** Organizational Behaviour  
  - G1
- **2FA3** Financial Instruments and Institutions  
  - Hx
- **2MA3** Introduction to Marketing  
  - G1
- **2QA3** Computer-Augmented Statistical Analysis  
  - G2
- **3BA3** Industrial Relations  
  - Hx
- **3BB3** Personnel  
  - G1
- **3FA3** Introduction to Managerial Finance  
  - G1
- **3FB3** Securities Analysis  
  - Hx
- **3MA3** Introduction to Marketing Research  
  - G2
- **3QB3** Business Data Processing  
  - G2
- **4BC3** Collective Bargaining  
  - G1
- **4BD3** Settlement of Industrial Disputes  
  - G2
- **4PB3** Taxation  
  - G1, Hx
- **4PC3** Advanced Canadian Income Taxation  
  - G2
- **4PD3** Commercial Law  
  - Hx

#### COMPARATIVE LITERATURE
- **1A06** Introduction to the Western Literary Tradition  
  - G3
- **3E03** Modern European Drama in English Translation  
  - G2
- **3J03** Studies in 16th-Century Literature  
  - Hx

#### COMPUTER SCIENCE
- **1BA3** Introduction to Computing and Computer Use for Business  
  - G1
- **1ZA3** Introduction to Computing and Computer Use  
  - G2
- **2F03** Pascal and Problem Solving  
  - Hx

#### DRAMATIC ARTS
- **1A06** Introduction to Drama  
  - G3
- **2B06** The Development of English Drama  
  - Hx
- **2FF3** Studies in Opera  
  - G2
- **2X06** The Art of the Film  
  - G3
- **3C03** Modern European Drama in English Translation  
  - G2
- **3K06** Shakespeare  
  - G3
- **3P03** Modern Drama in English  
  - G1
- **3Q03** Seventeenth-Century French Drama  
  - Hx
- **3XX3** Topics in 20th-Century Drama  
  - G2

#### ECONOMICS
- **1A06** Introductory Economics  
  - G3, H3
- **2G03** Intermediate Price Theory  
  - G2
- **2H03** Intermediate Income and Employment Theory  
  - G1, G2
- **2K03** Economic History of Canada  
  - Gx
- **3D03** Labour Economics  
  - G1
- **3O06** Economic Statistics  
  - G3
- **3V03** Public Choice and Benefit-Cost Analysis  
  - G1
- **3Z03** Health Economics  
  - G2

#### ENGLISH
- **1D06** Literature in English: Forms and Approaches  
  - G3, H3
- **2B06** The Development of English Drama  
  - Hx
- **2G06** Canadian Literature  
  - Hx
- **2H06** American Literature  
  - G3
- **2J06** Modern British Literature  
  - G3
- **3A03** Techniques of Expository Writing  
  - Gx
- **3FF3** Techniques of Creative Writing  
  - Hx
- **3I03** Studies in 16th-Century Literature  
  - Hx
- **3K06** Shakespeare  
  - G3
- **3P03** Modern Drama in English  
  - G1
- **3T03** Spenser  
  - Hx
- **3V06** Studies in 17th-Century Literature  
  - G3
- **3XQ3** Topics in 20th-Century Literature  
  - G2
- **4D03** Topics in Medieval and Renaissance Literature  
  - G1
- **4N06** The British Novel  
  - G3

#### FRENCH
- **1B06** Intermediate French  
  - G3, J3
- **1D06** Beginners’ Intensive French  
  - G3, H3
- **2A03** French Language Practice  
  - G3
- **2C03** French Language Practice: Oral  
  - G3
- **2J03** Nineteenth-Century French Literature I  
  - Gx
- **3CC3** French Language Practice: Intermediate Translation  
  - Hx
- **3P03** French Language Practice: Oral  
  - G3
- **3XQ3** Eighteenth-Century French Literature II  
  - Gx
- **3XQ3** Seventeenth-Century French Literature I  
  - Hx

#### GEOGRAPHY
- **2K03** Introduction to Soil and Land Use Studies  
  - G2
- **3T03** Geography of Planning  
  - G1
- **4A03** Karst Geomorphology and Hydrogeology  
  - G2

#### GERMAN
- **1Z06** Beginners’ Intensive German  
  - G3
- **2Z06** Intermediate Intensive German  
  - G3

#### GERONTOLOGY
- **1A06** Introduction to Gerontology  
  - G3
- **2B03** Biological Dimensions of Human Aging  
  - G2

#### GREEK
- **1Z06** Beginners’ Intensive Greek  
  - G3

#### HISTORY
- **1C06** The Modern World: The Era of European Primacy  
  - G3
- **1D06** The Civilization of the West  
  - Hx
- **2H06** United States History  
  - G3, Hx
- **2J06** The History of Canada  
  - G3, J3
- **2L06** The History of Greece and Rome  
  - G3
- **3A03** Topics in Modern Italian History, 1815 to the Present  
  - G2
- **3CC3** Ancient China: Selected Topics in the History of China Prior to 221 B.C.  
  - G1
### PART-TIME DEGREE STUDIES

- **2FF3 Modern Poland 1863-1970**
- **3RK6 Canada in the Twentieth Century**
- **3SS3 Aspects of the Cultural History of England, 1500-1868**
- **4A06 Special Topics in British History, 1688-1830**
- **4Y06 Society and Culture in Seventeenth-Century Europe**

#### ITALIAN
- **1A06 Intermediate Italian**
- **1ZZ6 Beginners' Intensive Italian for Dialect Speakers**
- **2D06 Advanced Italian**
- **3O03 Italian Renaissance Literature**
- **4P03 Dante**

#### LABOUR STUDIES
Consult Sessional Evening and Summer Brochures for full information on course offerings in Labour Studies.

#### LINGUISTICS
- **2L03 Phonetics**

#### MATHEMATICS
- **1A06 Calculus I**
- **1K03 Introductory Calculus for the Business and Social Sciences**
- **1L03 Linear Algebra and Probability for Business and Social Sciences**
- **1M03 Calculus for Business and the Social Sciences**
- **2G03 Intermediate Calculus**
- **2K03 Financial Mathematics**
- **2O03 Differential Equations**

#### MUSIC
- **1A06 Introduction to Music**
- **3A03 Music Education I**
- **3A03 Music Education II**

#### PHILOSOPHY
- **2D03 Moral Issues**
- **2F03 Philosophical Psychology**
- **2G03 Social and Political Issues**
- **2R03 Reasoning**
- **3C03 Advanced Bioethics**
- **3G03 Ethics**
- **3M03 Philosophy of Biology**
- **3N06 Political Philosophy**
- **3O03 Theory of Knowledge**
- **3T03 Modern Poland 1863-1970**
- **4A03 Cartesianism**
- **4H03 Metaphysics**

#### PHYSICAL EDUCATION
Consult Sessional Evening and Summer Brochures for offerings in Physical Education.

#### PHYSICS
- **1B06 General Physics I**
- **2E06 Introduction to Astronomy and Astrophysics**

#### POLITICAL SCIENCE
- **1A06 An Introduction to the Study of Politics**
- **2B06 Politics in the U.S.A.**
- **2F06 The Systematic Study of Politics**
- **2G06 Politics in Canada**
- **3A06 History of Political Ideas**
- **3D06 Political Participation and Elitist Politics in Canada**
- **3F03 Issues in Canadian Foreign Policy**
- **3O06 Modern Political Thought**
- **3PP3 Politics in Germany**
- **4D06 Comparative Studies in Ethnicity and Politics**
- **4O06 Canadian Public Policy**

#### PSYCHOLOGY
- **1A06 General Psychology**
- **2A03 Theories of Human Development**
- **2B03 Personality**
- **2C03 Introduction to Social Psychology**
- **2G03 Psychological Statistics**
- **2H03 Human Learning and Cognition**
- **2T03 Principles of Conditioning**
- **2U03 Laboratory in Animal Conditioning**
- **3C06 Social Psychology Laboratory**
- **3W06 Psychophysics and Perception**
- **4B03 History of Psychology**
- **4H03 Psychological Psychology**

#### RELIGIOUS STUDIES
- **1E06 Ideas of Love**
- **2C03 Moral Issues**
- **2C03 Specialists in the Sacred**
- **2G03 Religious Traditions of the East**
- **2I06 India: Its Culture, Social History, Religion and Philosophy**
- **2K03 Myth**
- **2N03 Christian Thought in the 16th Century**
- **2L03 Christian Thought after 1600**
- **2M06 East Asian Religions**
- **2N03 Religious Traditions of the West**
- **2Q03 Cults in North America**
- **2S03 Women and Religion**
- **2W03 Health, Healing, and Religion**
- **2Z03 Greek and Roman Religion**
- **3D03 God, Reason and Evil**
- **3F03 Aspects of the Study of Religion**
- **3H06 Religion and Modern Society**
- **3J06 Primitive Religions**
- **3M03 Israelite Poetry and Wisdom**
- **3T03 Modern Research in the Life and Teachings of Jesus**
- **4F03 Approaches to the Study of Religion**
- **4G03 Honours Seminar**

#### SCIENCE
Consult Sessional Evening and Summer Brochures for full information on course offerings in Science.

#### SOCIAL WORK
Consult Sessional Evening and Summer Brochures for full information on course offerings in Social Work.

#### SOCIOLOGY
- **1A06 An Introduction to Sociology**
- **2C06 Deviant Behaviour**
- **2E06 Racial and Ethnic Group Relations**
- **2H06 A Sociological Analysis of Canadian Society**
- **2O06 Social Stratification**
- **2Q06 Sociology of Women**
- **2S06 Introduction to Sociological Theory**
- **2U06 Sociology of the Family**
- **2V03 Introduction to Quantitative Studies**
- **2Z03 Introduction to Sociological Research**
- **3A03 European Sociological Theory**
- **3B03 Selected Topics in the Sociology of Education**
- **3D03 Special Topics in the Sociology of the Family**
- **3H06 Research Techniques and Data Analysis**
- **3P03 American Sociological Theory**
- **3O03 Sociology of Aging**
- **3O03 The Sociology of Organizations II**
- **4J03 Selected Topics in Sociology II**
- **4V06 Special Topics in Racial and Ethnic Relations**

#### SPANISH
- **1A06 Intermediate Spanish**
- **1Z06 Beginners' Intensive Spanish**
- **2C03 Introduction to the Culture of Spanish America**
- **3A04 Advanced Language Practice**

#### STATISTICS
Consult Sessional Evening and Summer Brochures for full information on course offerings in Statistics.
Courses by Departments

Anthropology

Faculty as of January 15, 1987

E molest J.E. Szathmary/Chairman

Professors Emeriti

Ruth 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. Granville/B.A., Ph.D. (Dublin)
Christopher Hallpike/B. Litt. (Oxford), D.Phil. (Oxford)
William C. Noble/B.A. (Toronto), Ph.D. (Calgary)
Guido J. Preston/M.A., Ph.D. (North Carolina)
Edward S. Rogers/B.A. (Middlebury College), M.A., Ph.D. (New Mexico)/part-time
E molest J.E. Szathmary/B.A., Ph.D. (Toronto)

Associate Professors

Matthew Cooper/B.A. (Brooklyn College), M.Phil., Ph.D. (Yale)
David R. Counts/B.A. (Texas), Ph.D. (Southern Illinois)
Harvey Feit/B.A. (Queens), M.A., Ph.D. (McGill)
Klaus Jacklein/Ph.D. (Tübingen)/part-time
Peter G. Ramden/B.A. (Toronto), M.A. (Calgary), Ph.D. (Toronto)
William L. Rodman/B.A. (Sydney), M.A., Ph.D. (Chicago)
Charles E. Stortroen/A.B. (Luther), M.A. (Minnesota)
Shelley Saunders/B.A., M.A., Ph.D. (Toronto)

Assistant Professors

Laura Finsten/B.A. (Western), M.A. (Calgary), Ph.D. (Purdue)

Department Notes:

1. Not all Anthropology courses listed in this Calendar are taught every year. Students are advised to consult the department's brochure and the timetable which is published annually by the Registrar's Office to determine whether a course is offered.

2. The department offers three Level I Anthropology courses. Anthropology 1A03 and 1Z03, taken together, are designed to provide an introduction to the study of Anthropology. Anthropology 1B06 introduces the study of language as a sub-discipline of Anthropology.

3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honors essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar under Sessional Dates.

ANTHROP 1A03 INTRODUCTION TO ANTHROPOLOGY: CULTURE AND SOCIETY

A general introduction to the study of human culture and society in all of its aspects. Examples and illustrations will be drawn largely from non-Western societies. 3 hrs. (lects. and discussion); one term

ANTHROP 1B06 THE STUDY OF LANGUAGE

A far-reaching survey intended to acquaint the student with the numerous disciplines that deal with language and many of the crucial concepts and techniques developed within them. 3 hrs. (lects. and discussion); two terms

ANTHROP 1Z03 INTRODUCTION TO ANTHROPOLOGY: HUMAN AND CULTURAL ORIGINS

Emphasis will be on the evolution of man as seen in the fossil record and on the growth and development of human societies in prehistoric times. 3 hrs. (lects. and discussion); one term

ANTHROP 2A03 WORLD PREHISTORY: PALEOLITHIC

A study of human cultures and societies during the Pleistocene, from approximately 2 million to 8000 years ago. 3 hrs. (lects. and discussion); one term

ANTHROP 2B03 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

ANTHROP 2C03 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

ANTHROP 2D03 GENETICS AND EVOLUTION

Introduction to basic genetics and the operation of microevolutionary processes on human populations. 3 hrs. (lects. and discussion); one term

ANTHROP 2E03 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

ANTHROP 2H03 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

ANTHROP 2I03 HISTORICAL 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

ANTHROP 2J03 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

ANTHROP 2K03 SOCIAL BIOLOGY

Bio-social anthropology: The biological and evolutionary background of human social behaviour. 3 hrs. (lects. and discussion); one term

ANTHROP 2L03 PHONETICS

A study of the sounds of language and the articulatory capabilities of man. 3 hrs. (lects.); one term

ANTHROP 2M03 MYTH

Major definitions and theories of myth are discussed in conjunction with primary readings from mythological texts. 2 lects., 1 tut., one term

ANTHROP 2N03 RELIGIOUS STUDIES

Some as Religious Studies 2K03.

ANTHROP 2O03 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

ANTHROP 2P03 SOCIAL BIOLOGY

Bio-social anthropology: The biological and evolutionary background of human social behaviour. 3 hrs. (lects. and discussion); one term

ANTHROP 2Q03 MYTH

Major definitions and theories of myth are discussed in conjunction with primary readings from mythological texts. 2 lects., 1 tut., one term

ANTHROP 2R03 RELIGIOUS STUDIES

Some as Religious Studies 2K03.

ANTHROP 2S03 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

ANTHROP 2T03 SOCIAL BIOLOGY

Bio-social anthropology: The biological and evolutionary background of human social behaviour. 3 hrs. (lects. and discussion); one term

ANTHROP 2U03 MYTH

Major definitions and theories of myth are discussed in conjunction with primary readings from mythological texts. 2 lects., 1 tut., one term

ANTHROP 2V03 RELIGIOUS STUDIES

Some as Religious Studies 2K03.
ANTHROPOLOGY

ANTHROP 2M03 PHONOLOGY
A study of the patterns of distinctive sounds in the world's languages.
3 hrs.(lects.); one term
Prerequisite: Anthropology or Linguistics 2L03, or permission of the instructor.
Same as Linguistics 2M03.

ANTHROP 2N03 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 1 Anthropology; or permission of the instructor.

ANTHROP 2Q03 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 1 Anthropology; or permission of the instructor.

ANTHROP 2P03 PEOPLES OF THE PACIFIC
An introduction to the ways of life and thought in Pacific Island societies. The course will emphasize the material culture, networks of social relations, and systems of belief, of the peoples of Melanesia, Polynesia, and Micronesia.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 1A03.

ANTHROP 2Q03 LINGUISTICS AND THE STUDY OF CULTURE
A study of the rise of analytical thinking as a distinct mode of thought, the use of such thinking in structural linguistics and its extension to structuralism as practised in anthropology and other disciplines. The work of Levi-Strauss will be examined.
3 hrs.(lects. and discussion); one term
Prerequisite: Open to students in Level II and above.
Same as Linguistics 2Q03

ANTHROP 2R03 RELIGION, MAGIC, AND WITCHCRAFT
An introduction to the cross-cultural study of the relationship between the natural and supernatural, and between ideology and social action.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 1A03; or permission of the instructor.

ANTHROP 2S03 THE PEOPLES OF THE SOVIET UNION
This survey course will acquaint the student with the ethnology, languages and histories of the multiform peoples spanning the present-day Soviet Union and neighboring territories. Where possible, historical accounts of particular groups will be given, from remote antiquity to the present, and accounts of long-vanished peoples and civilizations will be presented.
3 hrs.(lects.); one term
Prerequisite: Open

ANTHROP 2T03 SELECTED TOPICS IN ANTHROPOLOGICAL LINGUISTICS
An examination of Chomsky's generative theory of language and a critical assessment of its prospects as a new paradigm for mind and culture.
3 hrs.(lects.); one term
Prerequisite: Anthropology 2Q03; or permission of the instructor.
Same as Linguistics 2T03

ANTHROP 2U03 THE AZTECS, MAYA AND INCA
A survey of these three great prehistoric New World civilizations, using archaeological, ethnohistorical and colonial information. Topics will include religion, social structure, political and economic organization, as well as the similarities and differences among the Aztecs, Maya and Incas.
3 hrs.(lects.); one term
Prerequisite: Anthropology 1A03 and 1Z03, or permission of the instructor.

ANTHROP 2W03 SPECIAL TOPICS IN ANTHROPOLOGY
Reading and discussion of selected topics in Anthropology.
One term
Prerequisite: Written permission of the supervising professor. Not open to students who received credit in 2G06 in 1974-75.
This course may be repeated in Level II, if on a different topic, to a total of six units.

ANTHROP 2Y03 HONOURS SEMINAR
This course will give students the opportunity to develop skills in critical thinking and in communicating their ideas by emphasizing individual work in a seminar format. Topics will vary from year to year.
3 hrs.(lects. and discussion); one term
Prerequisite: Registration in Level II or III Honours Anthropology; or permission of the instructor.

ANTHROP 2Z03 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 2A03 INTRODUCTION TO SOCIAL RESEARCH
This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined.
3 hrs.(lects. and discussion); one term
Prerequisite: Registration in Honours or B.A. Anthropology and Anthropology 1A03; or permission of the instructor.

ANTHROP 3A03 ETHNOLOGY: THE CANADIAN NORTH
A comparative ethno­logical analysis of selected societies in the Canadian North.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2B03 or 2F03; or permission of the instructor.

ANTHROP 3B03 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 3C03 ETHNOLOGY: PACIFIC ISLANDS
Analysis of selected issues in Pacific anthropology.
3 hrs.(lects. and discussion); one term
Prerequisite: Anthropology 2F03; or permission of the instructor.

ANTHROP 3F03 CONTEMPORARY NORTHERN PEOPLES
An examination of native-white interaction in northern Canada with an emphasis on present day events.
3 hrs.(lects. and discussion); one term
Prerequisite: One Anthropology course beyond Level I; or permission of the instructor.

ANTHROP 3G03 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 2G03; or permission of the instructor.

ANTHROP 3H03 ETHNOLOGY: SOUTHEAST ASIA
A comparative ethnological survey of selected societies in Southeast Asia.
3 hrs.(lects. and discussion); one term
Prerequisite: At least three units of Level I Anthropology; or permission of the instructor.

ANTHROP 3I03 SYNTAX
A study of the capacity of man to form words into sentences. Emphasis will be on generative transformational grammar.
3 hrs.(lects.); one term
Prerequisite: Open
Same as Linguistics 3I03.

ANTHROP 3J03 ADVANCED SOCIAL ANTHROPOLOGY
Further study of the topics introduced in Anthropology 2F03.
3 hrs.(lects. and discussion); one term
Prerequisite: Registration in Honours Anthropology including credit in Anthropology 2F03; or permission of the instructor.

ANTHROP 3J06 PRIMITIVE RELIGION
A critical examination of major anthropological and psychological theories of primitive religion and primitive modes of classification.
2 lects., 1 tut.: two terms
Prerequisite: Open
Same as Religious Studies 3J06.

ANTHROP 3K03 ARCHAEOLOGICAL METHODS
Technique and methodology in the investigation of archaeological material.
3 hrs.(lects. and discussion); one term
Prerequisite: Six units of Level II Archaeology courses; or permission of the instructor.
Enrolment is limited.

ANTHROP 3L03 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 2F03; or permission of the instructor.

ANTHROP 3M03 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 hrs.(lects.); one term
Prerequisite: Anthropology or Linguistics 3I03; or permission of the instructor.
Same as Linguistics 3M03.

ANTHROP 3N06 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 2D03 or 2E03; or permission of the instructor.

ANTHROP 3O06 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 2D03 or 2E03; or permission of the instructor.

ANTHROP 3P03 RESEARCH METHODS IN CULTURAL ANTHROPOLOGY
Methodologies and techniques of research, especially field study, in sociocultural anthropology.
3 hrs.(lects. and discussion); one term

Same as Sociology 2203.
Enrolment is limited.
Prerequisite: Registration in Level III Honours Anthropology, or permission of the instructor.

**ANTHROP 3Q03**  
**ANTHROP 3Q03**  
**ANTHROPOLOGICAL APPROACHES TO THE STUDY OF AGING**  
An examination of the contribution of anthropology to the study of aging with an emphasis on cross-cultural comparisons, and including an assessment of the anthropological literature relating to the biological basis of aging in modern and prehistoric populations.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 1203 and 2F03, or permission of the instructor.

**ANTHROPOLOGY TO THE STUDY OF AGING**  
An examination of the contribution of anthropology to the study of aging with an emphasis on cross-cultural comparisons, and including an assessment of the anthropological literature relating to the biological basis of aging in modern and prehistoric populations.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 1203 and 2F03, or permission of the instructor.

**ANTHROP 3S06**  
**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 2F03; or permission of the instructor.  
This course is required of all students registered in Honours Anthropology.

**ANTHROP 3T03**  
**COMPETITION AND CONFLICT**  
Focus is on the comparative study of political processes and the role which conflict and competition play in social life.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Six units of Anthropology.

**ANTHROP 3U03**  
**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 Anthropology; or permission of the instructor.

**ANTHROP 3V03**  
**COMPARATIVE ECONOMIC ORGANIZATION**  
An examination of contrasting types of economic organization, with particular reference to societies with a non-industrial base.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Six units of Anthropology; or permission of the instructor.

**ANTHROP 3W03**  
**SPECIAL TOPICS IN ANTHROPOLOGY**  
Reading and discussion of selected topics in Anthropology.  
One term  
Prerequisite: Written permission of the supervising professor.  
This course may be repeated in Level III, if on a different topic, to a total of six units.

**ANTHROP 3X03**  
**PEOPLE OF INDIA**  
Discussion of the ethnology, archaeology, and physical anthropology of selected societies in India.  
3 hrs. (lects. and discussion); one term  
Prerequisite: At least six units of Anthropology.

**ANTHROP 3Y03**  
**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 2L03 and 2M03; or permission of the instructor.

**ANTHROP 3Z03**  
**MEDICAL ANTHROPOLOGY: THE BIOMEDICAL APPROACH**  
Patterns of stress and disease with emphasis on the modern biomedical approach. Disease in the evolutionary context with emphasis on disease as a failure of adaptation and response.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 2E03; or permission of the instructor.

**ANTHROP 3Z23**  
**MEDICAL ANTHROPOLOGY: SYMBOLIC HEALING**  
An interdisciplinary approach to traditional systems of healing such as Greek humoral medicine, Chinese, Shamanic, etc. Emphasis will be on cultural and psychological parameters of healing.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 2E03; or permission of the instructor.

**ANTHROP 4A03**  
**THEORIES OF SOCIAL EVOLUTION**  
The various theories of social evolution from classical to modern times, but with special attention to Spencer, Marx, sociobiology, and modern anthropological works.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Six units of Level II or Level III Anthropology, including 2F03; or permission of the instructor.

**ANTHROP 4B03**  
**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.

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**ART AND ART HISTORY**

**ANTHROP 4E03**  
**ADVANCED REGIONAL ARCHAEOLOGY**  
A study of the field data, methods, and theoretical problems, in the prehistory of selected areas.  
3 hrs. (seminar); one term  
Prerequisite: Six units of Level III Archaeology courses; or permission of the instructor.

**ANTHROP 4F03**  
**ARCHAEOLOGICAL THEORY**  
A seminar in current topics and issues in archaeology.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Six units of Level III Archaeology; or permission of the instructor.

**ANTHROP 4G03**  
**INDEPENDENT RESEARCH**  
Independent study of a research problem through published materials and/or field work. Students will be required to write up the results of their inquiry in scholarly form.  
Prerequisite: Registration in Level IV Honours Anthropology, and written permission of the supervising professor.  
This course may be repeated, if on a different topic, to a total of six units.

**ANTHROP 4I03**  
**CONTEMPORARY ANTHROPOLOGICAL THEORY**  
Seminar on selected recent developments in anthropological theory.  
3 hrs. (seminar); one term  
Prerequisite: Registration in Level IV Honours Anthropology.  
This course is required of all students registered in Honours Anthropology.

**ANTHROP 4K03**  
**ADVANCED TOPICS IN LINGUISTICS**  
An advanced course covering many areas of linguistic theory through the intensive examination of 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.

**ANTHROP 4L03**  
**ADDITIONAL TOPICS IN LINGUISTICS**  
An advanced course covering many areas of linguistic theory through the intensive exami­nation of 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.

**ANTHROP 4M03**  
**ADVANCED REGIONAL ARCHAEOLOGY I**  
A study of the field data methods and theoretical problems in the prehistory of selected areas.  
3 hrs. (seminar); one term  
Prerequisite: Six units of Level III Archaeology courses.

**ANTHROP 4N03**  
**ANTHROPOLOGY AND EDUCATION**  
A comparison of the formal and informal ways in which people learn within their cultural context, and a survey of the uses of anthropology in schools.  
3 hrs. (seminar); one term  
Prerequisite: Registration in an Honours programme in Social Science; or permission of the instructor.

**ANTHROP 4O03**  
**HUMAN GENETICS**  
Consideration of some of the major areas in human genetics, including cytogenetics, bio-chemical, behavioural, and population genetics.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 2D03, or Biology 2C03; or permission of the instructor.

**ANTHROP 4P03**  
**PRIMATE BEHAVIOUR**  
Ecology, demography, social organization, and development of social behaviour among Old and New World monkeys and apes.  
3 hrs. (lects. and discussion); one term  
Prerequisite: One of Anthropology 2E03, 2F03, 2K03; or permission of the instructor.

**ANTHROP 4Q03**  
**ADVANCED SKELETAL BIOLOGY**  
Deals with topics in the analysis of prehistoric skeletal populations in more detail, including paleopathology, palaeodemography, palaeonutrition and the microscopic study of ancient human bone.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 3O06; or permission of the instructor.

**ANTHROP 4V03**  
**DEVELOPING SOCIETIES**  
Topics may include for example, the meaning of development, innovation and technological change, urbanization, and protest movements.  
3 hrs. (lects. and discussion); one term  
Prerequisite: Anthropology 3S06; or permission of the instructor.

For Graduate Courses, see Calendar of the School of Graduate Studies.

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**Art and Art History**

Faculty as of January 15, 1987  
P.H. Walton/Chairman  
Professor  
Associate Professor  
Donald F. Carr/B.A. (Guelph), M.F.A. (Chicago)  
Hugh G. Galloway/Dipl. Art (Edinburgh)  
Hayden B.J. Maginnis/B.A. (Western), M.F.A., Ph.D. (Princeton)
ART AND ART HISTORY

Assistant Professors
Warren D. Tremblay/B.A. (New South Wales), M.A. (British Columbia), Ph.D. (Michigan)

Instructor

Art Gallery Curator
Kim G. Ness/B.A. (McMaster), M.Litt. (Edinburgh), M.M.Sr. (Toronto)

Associate Members
Katherine M.D. Dunbabin/Classics/B.A., D.Phil. (Oxford)
Wayne Whilflet/Religious Studies/B.A. (Sir George Williams), Ph.D. (McMaster)

ART 1C03 THE LANGUAGE OF DRAWING
An introduction to the ideas and methods involved in the development of drawings.
1 studio practice (3 hours); two terms
Prerequisite: Open. Not available to students registered in, or with credit in, Art 1B06, 1D06 or 1F06. Not to be used by Humanities I students as an R-group course.
Enrolment is limited.

ART 1F06 INTRODUCTION TO STUDIO PRACTICE
An exploration of composition by two- and three-dimensional methods.
2 studio practices (3 hrs. each); two terms
Prerequisite: Submission of an acceptable portfolio, and an interview with the Department. Not available to students receiving credit for Art 1A06, 1B06 or 1F06. Same
Portfolio: The portfolio should contain a variety of original works in different media including works derived from both first-hand observation and the imagination. During the interview students may be asked to do some drawing as an additional means of demonstrating their skills and interests. Students are advised to submit their portfolios by the end of April.
Enrolment is limited.

ART 2A04 PAINTING I
An introduction to concepts, techniques and ideas related to the development of paintings from motif through organization to completed work.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F06, departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art 2A06.
Enrolment is limited.

ART 2B04 SCULPTURE I
An introduction to concepts, techniques and ideas related to the development of sculpture from initial maquettes, through organization to completed work.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F06; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art 2B06.
Enrolment is limited.

ART 2C03 FIGURE DRAWING AND SUPERFICIAL ANATOMY
1 studio practice (3 hrs.); two terms
Prerequisite: Art 1F06; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 2E03 INTRODUCTORY DESIGN AND COMPOSITION
An appreciation and application of the fundamental principles of design and composition through the study of line, area, colour, texture and volume.
1 studio practice (3 hrs.); two terms
Prerequisite: Open. Not available to students registered in or with credit in Art 1B06, 1D06 or 1F06. Not to be used by Humanities I students as an R-group course. No portfolio required.
Enrolment is limited.

ART 2F04 INTRODUCTORY PRINTMAKING
An introduction to methods of intaglio and relief printmaking, lithography and serigraphy.
1 studio practice (4 hrs.); two terms
Prerequisite: Art 1F06; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History. Not available to students with credit in Art 1D06, 3E06 or 4A06.
Enrolment is limited.

ART 2G03 STUDIO METHODS IN THE VISUAL ARTS
A studio course which will deal with a specific topic related to drawing, painting, printmaking, or sculpture, offering an examination of a specialized area.
1 studio practice (3 hrs.); two terms
Prerequisite: Departmental permission slip required. Registration in a programme in Art or Art History; or permission of the Department. Available as an elective only.
Enrolment is limited.

ART 3A06 PAINTING II
A continuation of subjects explored in Art 2A04.
2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2A04 or 2A06; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 3B06 SCULPTURE II
A continuation of subjects explored in Art 2B04.
2 studio practice (3 hrs. each); two terms
Prerequisite: Art 2B04 or 2B06; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 3C06 ADVANCED DRAWING
1 studio practice (3 hrs.); two terms
Prerequisite: Art 2C03; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 3D03 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 2D03, and one of 2A04, 2A06, 2F04; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 3F06 MINOR STUDIO PROJECT
Independent creative work under the supervision of a faculty member.
Prerequisite: Registration in Level III Honours Art, and a grade of at least B – in the Level II related studio course. Not available to students with credit in Art 4B12 or 4C06.
Normally this course is taken concurrently with, and related to, one of Art 3A06, 3B06, 3E06, 4A06.

ART 4A06 LITHOGRAPHY AND SILK-SCREEN PRINTING
Studio class in the techniques of lithography and silk-screen printing.
2 studio practices (3 hrs. each); two terms
Prerequisite: Art 2F04; departmental permission slips required; priority given to students registered in Honours Art or a B.A. in Art and Art History.
Enrolment is limited.

ART 4B12 MAJOR STUDIO PROJECT
A summation of investigations into painting, sculpture, printmaking or drawing to be conducted under the supervision of two studio faculty members.
Prerequisite: Registration in Level IV Honours Art, and a grade of at least B – in Art 3F06 and its related Level III course. Students wishing to combine Art 4D03 with Art 4B12 must have a grade of at least A – in a previous course in the chosen field or fields.

ART 4D03 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 3V03. Students wishing to combine Art 4D03 with Art 4B12 must have a grade of at least A – in a previous course in the chosen field or fields.

ART HISTORY

ART HIST 1A06 INTRODUCTION TO THE STUDY AND HISTORY OF THE VISUAL ARTS
An examination of the various forms and functions of art and architecture in the Western tradition, with an historical study of the major monuments of that tradition.
3 lects.; two terms
Prerequisite: Open.

ART HIST 2B03 GREEK ART
The architecture, sculpture, and painting of the Greek and Hellenistic worlds.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Same as Classical Civilization 2B03.
ART HIST 2C03  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 2C03.

ART HIST 2G03  THE ART OF THE MEDIEVAL WORLD
A systematic survey of the history of medieval art between c. 350 and 1400 A.D.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 2K03 and/or 2L03.

ART HIST 2M03  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 2N03  ITALIAN BAROQUE ART AND ARCHITECTURE
An examination of the major trends in Italian art and architecture from 1580-1780.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 2O03  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 2P03  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 3C03  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 3D03  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 2M03.
Offered in alternate years.

ART HIST 3E03  INNOVATIONS IN ITALIAN BAROQUE PAINTING
A discussion of the formation and character of the Baroque style in Italy in the 17th century. The paintings of Caravaggio and the sculpture of Bernini will be the focus.
3 lects.; one term
Prerequisite: Art History 2N03.
Offered in alternate years.

ART HIST 3G03  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 2C03 or 2G03 or Classical Civilization 2C03; or permission of the Department.
Same as Classical Civilization 3G03.
Not offered in 1987-88. Alternates with Art History 3K03.

ART HIST 3L03  VENETIAN RENAISSANCE PAINTING
An examination of the works of the major painters of the Renaissance in Venice, including such artists as Giovanni Bellini, Giorgione, and Titian.
3 lects.; one term
Prerequisite: Art History 2M03.
Offered in alternate years.

ART HIST 3M03  MODERN ARCHITECTURE
An examination of the new problems facing the architect in the 19th century, and the Modern Movement in Europe and America in the 20th century.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

ART HIST 3Q03  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 2J03.
Offered in alternate years.

ART HIST 3R03  AMERICAN PAINTING IN THE TWENTIETH CENTURY
Major figures and trends in American painting of the twentieth century.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 3S03  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 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 4D03.
Offered in alternate years.

ART HIST 3V03  SUPERVISED READING
Readings in a field of special interest to the student, under the guidance of a Faculty member.
Prerequisite: Registration in Level III of Honours Art History or Level IV Honours Art and a grade of at least B— in a previous course in the chosen field; or permission of the Department. Not open to students taking Art 4D03. Not available to students with credit in Art History 4K03.

ART HIST 4A03  THE ART OF PHOTOGRAPHY
An historical and critical discussion of photography and its contribution to modern visual culture.
3 lects.; one term
Prerequisite: Registration in Level III or IV of any programme.

ART HIST 4C03  THE ART OF THE HIGH RENAISSANCE IN ROME
A study of the art and architecture of Raphael, Michelangelo and their contemporaries in Rome in the early 16th century.
3 lects.; one term
Prerequisite: Art History 2M03.
Offered in alternate years.

ART HIST 4D03  CATHEDRAL AND ABBEY
The origin and development of church architecture from the Carolingian period to the age of the great cathedrals.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in Art History 2L03.
Offered in alternate years.

ART HIST 4G03  ASPECTS OF THE ART OF MATISSE AND PICASSO
An examination of selected paintings, sculptures and drawings by Henri Matisse and Pablo Picasso.
3 lects.; one term
Prerequisite: Art History 2P03.
Offered in alternate years.

ART HIST 4J03  SEVENTEENTH-CENTURY PAINTING IN FRANCE AND THE LOW COUNTRIES
Painting during the Golden Age of the Arts in France, Flanders and Holland.
3 lects.; one term
Prerequisite: Art History 2N03.
Offered in alternate years.

ART HIST 4K03  THEORETICAL AND HISTORICAL TOPICS IN RENAISSANCE ART
A study of the history of medieval and Renaissance art in Italy and the Roman Empire. The evidence will be drawn principally from wall-paintings, manuscripts, and other documents.
Seminar (2 hrs.); one term
Prerequisite: Art History 2B03 or 2C03, and registration in Level III or IV of a programme in Art History or Classical Studies; or permission of the Department of Classics.

ART HIST 4L03  THE ART OF THE MODERN MOVEMENT IN EUROPE AND AMERICA
An examination of the development of modern art in Europe and America from the 19th century to the present.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 4M03  THE MODERN MOVEMENT IN EUROPE AND AMERICA
An examination of the development of modern art in Europe and America from the 19th century to the present.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

ART HIST 4P03  PAINTING AND SCULPTURE OF FIFTEENTH-CENTURY ITALY
An examination of the representational arts of the early Renaissance with emphasis on the Florentine contribution.
3 lects.; one term
Prerequisite: Art History 2M03.

ART HIST 4Q03  INTRODUCTION TO ART GALLERIES AND MUSEUMS
A study of the history and methods of institutions created for the purpose of collecting, preserving, displaying, and interpreting art objects.
3 lects.; one term
Prerequisite: Departmental permission slip required. Registration in Level III or IV of an Art or Art History programme; or permission of the Department. Enrolment is limited.
Offered in alternate years.

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ARTS AND SCIENCE

Arts and Science

Council of Instructors
Herbert M. Jenkins (Psychology) / Director
Syed Ahmad (Economics)
Samuel Azenstat (Philosophy)
Sylvia Bowerbank (English)
Ezio Cappadocia (History)
Thomas M. K. Davison (Mathematics and Statistics)
Barbara M. Ferrier (Biochemistry)
Harry Freedman (Visiting)
Peter J. George (Economics)
David A. Goodings (Physics)
Louis Greenspan (Religious Studies)
David L. Hitchcock (Philosophy)
Roy W. Homesty (Sociology)
Robert C. Hudspith (Mechanical Engineering)
Atli A. Kubursi (Economics)
Stephen C. Lovergan (Geography)
Peter D. M. Macdonald (Mathematics and Statistics)
Alan Mendelson (Religious Studies)
Richard J. Preston (Anthropology)
W. Graeme Roeckel (English)
Michael L. Ross (English)
William Wallace (Music)
Wayne K. Whillier (Religious Studies)

Department Notes:
1. Prerequisites: The prerequisite for all Level I, II, III and IV courses is registration in the Arts and Science Programme, or permission of the instructor.
2. Limited Enrolment: Enrolment in Level I of the Arts and Science Programme is limited to approximately 50 students. In enrolment in Arts and Science courses is limited to approximately 50 students.
3. All courses are 3 hrs. (lects., discussion groups, seminars), except Arts and Science 2D06 which includes occasional labs. All courses are two terms.

ARTS & SCI 1A06 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 1B06 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 1C06 INQUIRY
Inquiry seminars are designed to develop skills basic to the systematic investigation of public issues. These skills include those involved in formulating questions, gathering and interpreting evidence from a variety of sources, evaluating arguments, and reaching well-considered conclusions. This course includes lectures and exercises on advanced methods of library research and an introduction to computers.

ARTS & SCI 1D06 CALCULUS
This course aims to provide a thorough understanding of the principles and major applications of differential and integral calculus of functions of one variable, as well as an introduction to multivariable calculus and differential equations. Arts and Science 1D06 serves as a prerequisite for all upper level Mathematics and Computer Science courses, for which Mathematics 1A06 is a prerequisite.

ARTS & SCI 2A06 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 2B06 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 2R06 MATHEMATICAL MODELS FOR CHANGE, CHANCE AND ERROR
Probability, distributions, measures of association, tests of significance, mathematical models, and other quantitative methods useful in the analysis of variable phenomena.

ARTS & SCI 3A06 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. Same as Comparative Literature 3A06.

ARTS & SCI 3B06 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 3C06 INQUIRY
The upper level inquiry seminars build on the skills acquired in Arts and Science 1C06, and examine a variety of important public issues. Some are more concerned with scientific, technological, or empirical matters; others emphasize cultural and personal values.

Topics in 1987-88: To be announced
Arts and Science 3C06 may be repeated, if on a different topic, to a total of 12 units.

Permission of the Director is required to take more than 12 units of inquiry seminars beyond Level I.

Students with credit in Arts and Science 3CC6 or 3X06 may take 6 additional units of Arts and Science 3C06, provided that the 12 unit limit of inquiry seminars has not been met.

ARTS & SCI 3D06 CREATIVE ARTS
The nature of the graphic arts and music, and their relation to culture and ideas, is examined. Close attention is paid to the creative process as a way of understanding the nature of the artistic product.

ARTS & SCI 4A06 INDIVIDUAL STUDY
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Students intending to register must first consult the Director of the Arts and Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.

Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4A12 INDIVIDUAL STUDY
Same as Arts and Science 4A06.

ARTS & SCI 4C06 THESIS
This course consists of a library, laboratory, or field project under the supervision of a faculty member. Three copies of a completed thesis must be submitted by the end of classes. Students intending to register must first consult the Director of the Arts and Science Programme and then prepare an outline for approval after consultation with the faculty supervisor.

Prerequisite: Registration in the Arts and Science Programme.

ARTS & SCI 4C12 THESIS
Same as Arts and Science 4C06.

Asian Studies

While there is no B.A. programme in Asian Studies, students interested in concentrating in this area may choose from among the following courses offered by various departments. Those desiring further information on specific courses should consult the departmental listing in the Calendar.

Students wishing to pursue Asian Studies may obtain further information from Dr. D. Barrett (History) or Dr. K. Shinozara (Religious Studies).

COURSES DEALING STRICTLY WITH ASIAN MATERIAL

Anthropology 3H03 Ethnology, Southeast Asia
Anthropology 3X03 People of India
History 2B06 China: From the Opium War to the Present
History 3B03 Modern Japan
History 3CC3 Ancient China
History 3D03 Imperial China
History 3G06 The History of the Indian Sub-Continent
History 4G06 The Revolutionary Movement in Modern China
Politics

Religious Studies

Chinese

English

Economics

BIOCHEMISTRY

A. Bruce Futcher/B.Sc., D.Phil. (Oxford) Calvin B. Harley/B.Sc. (Waterloo), Ph.D. (McMaster)
Richard A. Rachubinski/B.Sc., M.Sc., Ph.D. (McGill)

Associate Members

Stephanie A. Atkinson/Pediatrics B.A. (Western), Ph.D. (Toronto)
Stanley T. Bayley/Biology B.Sc., Ph.D. (London)

BIOCHEM 2A03 INTRODUCTORY BIOCHEMISTRY

A thematic treatment of Biochemistry covering the principles of specificity, energy flow, and regulation. Designed for students intending to proceed to Biochemistry 3B03.

3 lects.; one term
Prerequisite: Credit or registration in one of Chemistry 2B06, 2006, 2008, 2508. Not open to students who are registered in or have completed Biochemistry 2E03.

BIOCHEM 2E03 ELEMENTARY BIOCHEMISTRY

A treatment of the basic areas of biochemistry, including physiological chemistry. Designed for students who do not intend to pursue biochemistry.

3 lects.; one term
Prerequisite: Credit or registration in one of Chemistry 2D03, 2D04, 2B06, 2006, 2008, 2508. Not open to students who are registered in or have completed Biochemistry 2A03.

BIOCHEM 3B03 PRINCIPLES OF BIOCHEMICAL INVESTIGATION

Classical and modern methods of investigation using in vitro and in vivo techniques. Isolation of cellular components, determination of structure and characterization of interactions.

3 lects.; one term
Prerequisite: Biochemistry 2A03, and credit or registration in one of Chemistry 2B06, 2006, 2008, 2705. Not open to students who are registered in or have completed Biochemistry 3G06.

BIOCHEM 3C03 APPROACH TO BIOCHEMICAL PROBLEMS

Experience will be gained in the solution of biochemical problems.

3 lects.; one term
Prerequisite: Biochemistry 3B03. Not open to students who have completed Biochemistry 3G06.

BIOCHEM 3G06 COMPREHENSIVE BIOCHEMISTRY

Major concepts of biochemistry, and modern methods used in biochemical investigations, nature of cellular processes, structure and function of macromolecules, metabolism and its regulation.

3 lects.; two terms
Prerequisite: One of Chemistry 2B06, 2006, 2008, 2508. Not open to students who have completed Biochemistry 2A03, 3B03, or 3G03.

BIOCHEM 3H03 CLINICAL BIOCHEMISTRY

An outline of clinical chemistry; its relation to disease and relevance to health care.

3 lects.; one term
Prerequisite: Credit or registration in Biochemistry 3B03 or 3G06.

BIOCHEM 3L06 BIOCHEMISTRY LABORATORY

Illustration of fundamental principles as presented in Biochemistry 3B03.

2 labs.(3); two terms
Prerequisite: Biochemistry 2A03 and registration in a programme in which Biochemistry 3L06 is required.

BIOCHEM 3L03 BIOCHEMISTRY LABORATORY

Identical to first part of Biochemistry 3L06.

1 lab.(3); one term
Prerequisite: Credit or registration in Biochemistry 3B03.

BIOCHEM 4B06 SENIOR THESIS

A thesis based on a project supervised by a member or associate member of the Department of Biochemistry.

3 labs.(3); two terms
Prerequisite: In general only students registered in Level IV Biochemistry programmes who have a CAA of at least 10.0 will be admitted. Potential registrants should consult the Chairman before June 1st. Enrolment is limited.

BIOCHEM 4C03 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 3C03 and a CAA of at least 7.0.

BIOCHEM 4D03 BIOTECHNOLOGY AND GENETIC ENGINEERING

Theory, methods and applications in genetic engineering and biotechnology with emphasis on recombinant DNA, hybridomas, engineered organisms, and fermentation processes.

3 lects.; one term
Prerequisite: Biochemistry 3C03 or 3G06.

Same as Molecular Biology 4B03.
**BIOCHEMISTRY**

**BIOCHEM 4E03** RECENT DEVELOPMENTS IN MOLECULAR BIOLOGY
Biochemical approaches for studying the possible molecular components and regulatory mechanisms involved in complex biological phenomena, such as cell transformation, carcinogenesis, growth and differentiation. 3 lects.; 1 term.
Prerequisite: Biochemistry 3C03 or 3G06.

**BIOCHEM 4G03** BIOTECHNOLOGY AND GENETIC ENGINEERING LABORATORY
This lab is complementary to Biochemistry 4D03. Experiments may involve cloning, engineered mutagenesis, DNA sequencing, expression of cloned gene and fermentation.
2 labs.; 1 term.
Prerequisite: Biochemistry 3C03, one of Biochemistry 3L02, 3L03, 3L04, 3L06, and a GPA of at least 3.0.

**BIOCHEM 4I03** STRUCTURAL AND MECHANISTIC ASPECTS OF MACROMOLECULES
Advanced treatment of protein and nucleic acid structure. Mechanism of enzymes and coenzymes including metal ions. Interaction involving macromolecules.
3 lects.; 1 term.
Prerequisite: Biochemistry 3C03, and one of Chemistry 3D03, 3D06, 3F03; or permission of the instructor.

**BIOCHEM 4L03** ADVANCED BIOCHEMISTRY LABORATORY
Fundamental principles of experimental biochemistry with emphasis on modern methods in enzymology, membrane biochemistry and molecular biology.
2 labs.; 1 term.
Prerequisite: Biochemistry 3C03, and one of Biochemistry 3L02, 3L03, 3L04, 3L06. Not open to students who are registered in or have completed Biochemistry 4G03.

**BIOCHEM 4M03** MEMBRANE STRUCTURE AND FUNCTION
Chemical structure and molecular organization of membrane constituents. Molecular basis of the biological activity of membranes.
3 lects.; 1 term.
Prerequisite: Biochemistry 3C03 or 3G06.

**BIOCHEM 4N03** 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.; 1 term.
Prerequisite: Biochemistry 3C03 or 3G06.

**BIOCHEM 4O03** MOLECULAR BIOPHYSICS
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, X-ray diffraction, optical and magnetic resonance spectroscopy, and their application to proteins and nucleic acids.
3 lects.; 1 term.
Prerequisite: Registration in Level III or IV Honours Biology or Level IV Biology Major (with a GPA of at least 3.0) or in Level IV Honours Biochemistry or Honours Biochemistry and Chemistry, or Biochemistry Major; or permission of the instructor.

**BIOCHEM 4P03** RESEARCH PROJECT
A research project will be supervised by a member or associate member of the Department of Biochemistry.
3 labs.; 1 term.
Prerequisite: Students must be registered in a Level IV Biochemistry programme and have a GPA of at least 3.0. Permission of the Department required before September 15. Not open to students who have credit or are registered in Biochemistry 4L06, 4R05 or 4U05.

**BIOCHEM 4Q03** BIOCHEMICAL PHARMACOLOGY
Interactions of drugs with living systems. Drug absorption, distribution, mechanism of action, metabolism and elimination will be discussed.
3 lects.; 1 term.
Prerequisite: Biochemistry 3C03 or 3G06.

**BIOCHEM 4R06** ADVANCED EXPERIMENTATION
Fundamental experimental principles of biochemistry and chemistry including modern instrumental methods. Three units selected from Chemistry 4T06 plus Biochemistry 4P03.
2 labs.; 1 term.
Prerequisite: Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L06, 4P03, Chemistry 4T04, 4T06. Same as Chemistry 4U06.

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 1986-87 were as follows:

J.L. Brash (Chemical Engineering)
H. deBruijn (Medicine)
I.A. Feuerstein (Chemical Engineering)/Chairman
D.N. Ghista (Medicine)
L.D. Pengelly (Medicine)

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. However, due to prerequisites and restrictions on technical electives in specific engineering programmes, students should plan bioengineering studies in advance. Permission may be needed for these courses to be taken for B.Eng. credit.

- **Biology**
  - **Faculty as of January 15, 1987**
  - **S.F.H. Threlkeld/Chairman**
  - **Professors Emeriti**
    - Douglas M. Davies/B.A., Ph.D. (Toronto), F.E.S.C.
    - John J. Miller/B.A., Ph.D. (Toronto)
  - **Professors**
    - Stanley T. Bayley/B.Sc., Ph.D. (London)
    - Douglas Davidson/B.Sc. (Durham), D.Phil. (Oxford)
    - Frank L. Graham (Pathology) M.A., Ph.D. (Toronto)
    - Kenneth A. Kershaw/B.Sc., M.Sc. (Manchester), Ph.D. (N. Wales), D.Sc. (Wales), F.R.S.C.
    - John N.A. Lottt/ B.Sc. (British Columbia), M.Sc., Ph.D. (California, Davis)
    - Stanley Mak/M.Sc. (Saskatchewan), Ph.D. (Toronto)
    - Richard A. Morton/M.S., Ph.D. (Chicago)
    - B. Ann Oaks/B.Sc. (Toronto), M.A., Ph.D. (Saskatchewan)
    - Tuvik Prevec/M.A., Ph.D. (Toronto)
    - Andrew J. Rainbow/Radiology/ B.Sc. (Manchester), M.Sc. (London), Ph.D. (McMaster)
    - Rama S. Singh/V.Sc. (Agra), M.Sc. (Kanpur), Ph.D. (California, Davis)
    - George J. Sorg/B.Sc. (McGill), M.S., Ph.D. (Yale)
    - Iwa0 Takahashi/V.Sc. (Hokkaido), M.S.A. (Kyunshu), Ph.D. (Montreal)
    - Juan E.M. Westermann/B.Sc. (Western), M.A. (Mount Holyoke), Ph.D. (Toronto)
    - Christopher M. Wood/B.Sc., M.Sc. (British Columbia), Ph.D. (East Anglia)
  - **Associate Professors**
    - Thomas T. Chen/B.Sc. (National Chung-Hsing University), M.A. (SUNY, Plattsburg), Ph.D. (Alberta)
    - Allan D. Dingle/B.Sc. (McMaster), M.Sc. (Illinois), Ph.D. (Brandeis)
    - Doris E.N. Jensen/M.A. (Toronto), Ph.D. (British Columbia)
    - D. Gordon McDonald/B.A. (Western), M.A., Ph.D. (Calgary)
    - C. David Rollo/B.Sc., M.Sc. (Guelph), Ph.D. (British Columbia)
BIOLOGY 1A06  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 tut. or 1 lab.(3); two terms
Prerequisite: Registration in, or completion of Natural Sciences I, or Arts and Science I, or completion of Engineering I. Not open to students who have completed Biology 1B7. Chemistry IA06 is strongly recommended; in addition, students intending to take Level II, III, IV Biology courses should note that Chemistry IA06 is a prerequisite for many of the courses.

BIOLOGY 1G06  INTRODUCTION TO BIOLOGY
Basic concepts in cell biology, animal physiology and genetics. The course covers cell structure, organelle function, metabolism, growth, division, endocrinology, muscle function, circulation, excretion, and immunology.
3 lects. or 2 lects., 1 lab.(3); two terms
Prerequisite: At least a 60% average in two Grade 13 science or mathematics courses; or a grade of at least C+ in Physical Education 2C06. Not open to students registered in the Faculty of Science.

BIOLOGY 1H03  HUMAN PHYSIOLOGY
Physiology of respiration, circulation, energy and muscle metabolism and reproduction.
3 lects. or 2 lects., 1 lab.(3); one term
Prerequisite: Registration in Physical Education 1.

BIOLOGY 2B03  CELL BIOLOGY
The cell as the fundamental unit of life. The origin of life, evolution of prokaryote and eukaryote cells, development of multicellularity and cell specialization.
3 lects.; 2 lects., 1 lab.(3); or 2 lects., 1 tut.; one term
Prerequisite: Biology IA06; or a grade of at least B− in Biology 1G06; and one of Chemistry IA06, IA07, IB06, IB07.

BIOLOGY 2C03  GENETICS
Structure, function and transmission of genes; chromosomal basis of inheritance; mono- and dihybrid crosses; sequential steps in gene function; linkage maps; sex chromosomes and inheritance.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology IA06; or a grade of at least B− in Biology 1G06, and completion of Chemistry IA06, IA07, IB06, IB07.

BIOLOGY 2D03  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 IA06; or a grade of at least B− in Biology 1G06.

BIOLOGY 2E03  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 IA06; or a grade of at least B− in Biology 1G06; or registration in a programme for which Biology 2D03 is required.

BIOLOGY 2F03  FUNDAMENTALS OF ECOLOGY
A broad overview of ecology at the level of organisms, populations and communities.
3 lects.; one term
Prerequisite: Completion of Biology IA06; or a grade of at least B− in Biology 1G06.

BIOLOGY 3A06  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 2B03 and Biology 2D03.

BIOLOGY 3C03  MICROBIOLOGY II
Basic energy-yielding mechanisms; biochemical and genetic regulation of morphogenesis; microbial life under extreme conditions.
3 lects.; one term
Prerequisite: Biology 3E03.

BIOLOGY 3D03  ANIMAL PARASITOLOGY
Parasites of animals, dealing with life histories, host-parasite relationships, and arthropod vectors.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2B03.

BIOLOGY 3E03  MICROBIOLOGY I
2 lects., 1 lab.(3); one term
Prerequisite: Chemistry 2B06, 2004, 2D03 or 2D04, or 2B06.

BIOLOGY 3F06  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 2B03; or permission of the instructor.

BIOLOGY 3H03  SUBCELLULAR STRUCTURE AND FUNCTION
Structure and function of various subcellular components; concept of cellular compartmentalization; mechanism and regulation of gene expression in eukaryotic cells.
3 lects., or 2 lects., 1 lab.(3); one term
Prerequisite: Biology 2B03. Not open to students who have completed Biology 3H06.

BIOLOGY 3J03  THE GENETIC BASIS OF EVOLUTION
A survey of the conceptual foundations of evolutionary processes.
3 lects. or 2 lects., 1 lab.; one term
Prerequisite: Biology 2C03.

BIOLOGY 3K06  ANIMAL PHYSIOLOGY
The structure, function, and organization of cells, tissues, organs and organ systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2E03, or a grade of at least B− in Biology 1G06; or permission of the instructor.

BIOLOGY 3L06  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 2E03. Not open to students who are registered in, or have credit in, Biology 3M03.

BIOLOGY 3M03  INTRODUCTION TO BIOLOGY OF INVERTEBRATES
Analysis of form, function, and life cycle in selected groups.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2B03, 2C03, 2E03; or one of Chemistry IA06, IA07, IB06 or IB07.

BIOLOGY 3N06  DEVELOPMENTAL BIOLOGY
Comparative and analytical studies of development. Processes of growth, cell differentiation and morphogenesis will be emphasized; similarities between plant and animal development will be discussed.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B03, 2C03, 2E03; or one of Chemistry IA06, IA07, IB06 or IB07.

BIOLOGY 3O03  MICROBIAL GENETICS
The genetics of bacteriophages, bacteria and fungi. Special emphasis will be placed on relationships between microbial genetics and general problems in genetics.
2 lects., 1 tut.; one term
Prerequisite: Biology 2C03.

BIOLOGY 3P03  CELL PHYSIOLOGY
Cell function with emphasis on cell membranes and transport processes. A quantitative physicochemical interpretation of the electrical properties of cells.
2 lects., 1 tut.; one term
Prerequisite: Biology 2B03 and registration, or credit, in Biochemistry 3B03 or 3G06.

BIOLOGY 3Q03  RADIATION BIOLOGY
The effects of radiation upon biological material at the physical, molecular, cellular, tissue, and organ level. Applications of radiation in medicine and industry.
3 lects.; one term
BIOLGY

Prerequisite: Biology 1A06; or a grade of at least B— in Biology 1G06; and one of Physics 1A06, 1A07, 1B06, 1B07, 1C06, 1C07; or permission of the instructor.

BIOLOG3 3SS3 POPULATION ECOLOGY
Population processes, regulation of numbers and species interactions, coevolution and organism design. Computer simulation and models of population growth.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2F03, registration or credit in, Computer Science 1B03 or 1MA3 and Statistics 2R06; or permission of the instructor.

BIOLOGY 3T3 COMMUNITY ECOLOGY
Succession, energy flow, nutrient cycling and climatic influences. Factors influencing species diversity, stability and resilience will be discussed with emphasis on plant systems.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2F03, registration or credit in, Computer Science 1B03 or 1MA3 and Statistics 2R06; or permission of the instructor. Biology 2D03 is strongly recommended.

BIOLOGY 3U06 PRINCIPLES OF ANIMAL PHYSIOLOGY
Animal physiological systems including: circulation, respiration, acid-base and electrolyte balance, renal function, nervous and hormonal control systems.
2 lects., 1 lab.(3); two terms
Prerequisite: Biology 2B03; or permission of the instructor. Biochemistry 3G06 is recommended.

BIOLOGY 4A03 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: Approval must be given by the Chairman in the preceding Spring term. One of Biochemistry 2B03, 3G06. Open to students who have obtained a CAA of at least 9.0 and are registered in Level IV Honours Biology; or permission of the Chairman. Preference will be given to students registered in the Biotechnology and Genetic Engineering Option. Enrolment is limited to a maximum of 12 students.

BIOLOGY 4B06 PLANT PHYSIOLOGY
Principles of physiology and metabolism in plants. Topics include: aspects of photosynthesis, nitrogen assimilation, cell wall biosynthesis, hormone action and biochemistry as related to plants.
2 lects., 1 tut. or 1 lab.(3); two terms
Prerequisite: Registration in, or completion of, Biochemistry 3G06; or completion of Biochemistry 2A03; or permission of the instructor.

BIOLOGY 4B03 PLANT PHYSIOLOGY
The regulation of plant metabolism will be considered. There will be a major emphasis on carbon flow, light reactions of photosynthesis and the relationship of these reactions to chloroplast development.
2 lects., 1 tut.; one term
Prerequisite: Registration in or completion of, Biochemistry 3G06; or completion of Biochemistry 2A03. Not open to students registered in, or who have completed Biology 4B04 or 4B06. To be given concurrently with 4B06.

BIOLOGY 4C08 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 4F04.

BIOLOGY 4D03 PHYSIOLOGICAL ECOLOGY
Interaction of organisms and microclimate; contrasting strategies of animal and plant physiology in stressful environments. Examples will be chosen from desert, arctic and aquatic systems.
2 lects., 1 lab.(3); one term
Prerequisite: One of Biology 3S33, 3TT3, 3S06; or permission of the instructor.

BIOLOGY 4E03 POPULATION GENETICS
Experimental and theoretical aspects of the genetic basis of evolutionary changes in populations.
2 lects., 1 tut.; one term
Prerequisite: Biology 3F03 and Biology 2C03 and one of Mathematics 1F06, 1A06.

BIOLOGY 4F04 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 4G08.

BIOLOGY 4H03 PLANT DEVELOPMENT
An experimental analysis of development in plants: cytological, genetical, and biochemical studies.
3 lects.; one term
Prerequisite: Biology 2D03.

BIOLOGY 4I03 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 3B03, 3G06; or permission of the instructor.

BIOLOGY 4J03 FIELD EXERCISES IN ECOLOGY
Field projects focusing on local plants and animals in terrestrial and aquatic habitats. Students may propose a specific topic.
1 tut., 1 lab.(3); one term
Prerequisite: Biology 2F03, and registration or credit in one of Biology 3S33, 3TT3, 3S06; or permission of the instructor.

BIOLOGY 4K03 MOLECULAR BIOPHYSICS
The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, X-ray diffraction, optical and magnetic resonance spectroscopy and application to proteins and nucleic acids.
3 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 3B03, 3G06); 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 4R03.

BIOLOGY 4L06 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: one Biology 3003 and one of Biochemistry 3B03, 3G06.

BIOLOGY 4M03 Virology
The viruses of animals, bacteria, and plants, with emphasis on the molecular biology of virus replication and the diversity of virus-cell interactions.
2 lects., 1 tut.(2); one term
Prerequisite: Registration, or credit, in Biochemistry 3B03 or 3G06; or permission of the instructor.

BIOLOGY 4N03 ENVIRONMENTAL PHYSIOLOGY
Advanced physiology of animals with an emphasis on interactions with and adaptation to the environment.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 3106. Biochemistry 3G06 is also recommended.

BIOLOGY 4P03 SYSTEMATIC BOTANY
Processes of speciation in higher plants, cytological, mathematical, and biochemical methods in plant classification.
2 lects., 1 lab.(3); one term
Prerequisite: Biology 2D03. Offered in alternate years.

Business

Faculty Notes:
1. The following courses are offered by the Faculty of Business as electives for students in other Faculties. Eligible students will be registered in courses on a first-come/first-served basis.
2. Business courses are open to students registered in Level III or Level IV of programmes other than Commerce, and Engineering and Management. Business 3W06 and 3Z03 are not open to students registered in the degree programme in Labour Studies.

BUSINESS 3V03 BUSINESS LAW
An introduction to the relevance of law to the Canadian Business environment. Basic concepts of the judicial process and legal procedures, contracts, primary sources of law, and other aspects of the relationship between business and law will be examined.
3 lects.; one term
Prerequisite: Economics 1A06. Not open to students who have received credit for Commerce 4P03.

Enrolment limit: 45

BUSINESS 3W06 ACCOUNTING
An introduction to the basic principles and practices of accounting. Major topic areas to be considered include the economic valuation model, the fundamental concepts underlying, and the operation of, the traditional accounting model, external financial reporting and the preparation and use of accounting information for management planning and control.
3 lects.; two terms
Prerequisite: Economics 1A06. Not open to students who have received credit for Commerce 2A03.

Enrolment limit: 90

BUSINESS 3X03 BUSINESS FINANCE
An introduction to the theory and practice of business finance. An examination of the major financial decisions that businesses face: the problems of determining the overall level of sources and uses of funds by the firm, the evaluation of alternative uses of funds (capital budgeting and working capital management), and the choice
among alternative sources of funds. Analytical approaches to assist with these decisions are developed. 3 lects.; one term
Pre-requisite: Business 3W06 or Commerce 2A03, and Economics 1A06 (Business 3W06 may be taken concurrently with 3X03). Not open to students who have received credit for Commerce 2FA3. Enrolment Limit: 45
BUSINESS 3Y03 MARKETING
An introduction to the role that marketing plays in our society and in the Canadian economy. The course will take a macro-marketing viewpoint to deal with theoretical and social aspects of the exchanges that take place between organizations and their publics. 3 lects.; one term
Pre-requisite: Economics 1A06. Not open to students who have received credit for Commerce 2MA3. Enrolment Limit: 90
BUSINESS 3Z03 HUMAN RESOURCE MANAGEMENT
An introduction to basic concepts, theories and practice in human resource management. Various problems which arise from the employer-employee relationship and their publics. Information from Dr. R.L. Hyman (English) or Dr. D.R.L. Mathews. 3 lects.; one term
Pre-requisite: Economics 1A06. Not open to students who have received credit for Commerce 3BA3, or 3BB3. Enrolment Limit: 45

Canadian Studies

While the B.A. Programme in Canadian Studies has been suspended, there are courses with a focus on Canadian Studies. Students interested in this area may choose from among the following courses, subject to meeting the course prerequisites.

Students who wish to pursue Canadian Studies may obtain further information from Dr. R.L. Hyman (English) or Dr. D.R.L. Mathews (Sociology).

CDN ST 1A06 WAYS OF SEEING: A FRAMEWORK FOR CANADIAN STUDIES
An interdisciplinary study of Canada which examines major phases of regional development in Canada on the basis of the relationship between various economic and cultural centres and their respective peripheries or hinterlands. This course will be "team-taught" by members of the Faculties of Humanities and Social Sciences. 1 lect. (2 hrs.), 1 tut.; two terms
Pre-requisite: Open. Not available to students with credit in Canadian Studies 2A06.

OTHER RELATED COURSES

HUMANITIES
Art History 3B03 Canadian Art and Architecture
Dramatic Arts 3BB3 Contemporary Quebec Theatre
English 2C03 Contemporary Canadian Fiction
English 3203 Contemporary Canadian Poetry
French 2F03 The Civilization of French Canada I
French 2FF3 The Civilization of French Canada II
French 3AA3 The Modern French Canadian Novel
French 3BB3 Contemporary Quebec Theatre
French 4U03 Topics in French-Canadian Literature
History 2J06 The History of Canada
History 3C03 The Indian in Eastern Canada
History 3V06 The People of Ontario, 17090-1940: An Introduction to Regional Social History
History 4N06 Canadian Historiography
Music 3T03 Studies in Canadian Music

SOCIAL SCIENCES
Anthropology 3A03 Ethnology: The Canadian North
Anthropology 3F03 Contemporary Northern Peoples
Economics 2K03 Economic History of Canada
Economics 3C06 Public Finance
Geography 2E03 Canada
Geography 3D03 Historical Geography of Canada
Geography 4U03 Selected Problems in Urban Planning
Geography 4Z03 Advanced Cultural Geography
Political Science 2G06 Politics in Canada
Political Science 3D06 Political Parties, Movements and Elites in Canada
Political Science 3G03 Politics of Federalism
Political Science 3I06 Canadian Political Ideas
Political Science 4S06 Canadian Political Theory
Religious Studies 3B03 Native and Ethnic Religions in Canada

Religious Studies 3BB3 Major Denominations in Canada
Sociology 2H06 A Sociological Analysis of Canadian Society
Sociology 3BB3 Major Denominations in Canada (Same as Religious Studies 3BB3)
Sociology 3Q03 Native and Ethnic Religions in Canada (Same as Religious Studies 3B03)
Sociology 4003 Regionalism and Regional Development in Canada
Social Sciences 2L06 Making a Constitution: The Canadian Experience

Ceramics
(See Materials Science and Engineering, Ceramics)

Chemical Engineering

Faculty as of January 15, 1987

J. Vlachopoulos/Chairman

Professor Emeritus
Robert B. Anderson/A.B. (Augustana College), M.S., Ph.D. (Iowa), F.R.S.C., F.C.I.C.

Professors
John L. Bentley/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. Hamilete/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng./Chair in Polymer Production Technology.
Kenneth D. Hester/B.A., B.A.Sc. (British Columbia), M.B.A. (McMaster)/part-time
Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), F.C.I.C., P.Eng./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
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.
Philip E. Wood/B.A.Sc. (Waterloo), Ph.D. (California Inst. Tech.)

Assistant Professors
James M. Dickson/B.A.Sc., M.A.Sc. (Waterloo), Ph.D. (Virginia Tech.)
Andrew N. Hrymak/B.Eng., Ph.D. (Carneige-Mellon), M.Sc. (Toronto)/part-time

Department Note:
Enrolment in these courses by students in programmes other than Chemical Engineering, Chemical Engineering and Management, or Honours Applied Chemistry, may be limited.

CHEM ENG 2C02 TECHNICAL COMMUNICATIONS AND MEASUREMENTS
How to obtain, interpret, store, retrieve, manipulate and communicate information. T.V. tape to improve verbal communication, searching the literature, organization, laboratory measurements and treatment of data. 1 lect., one term; 1 lab., (3), two terms, alternate weeks
CHEMICAL ENGINEERING

Prerequisite: Registration in Level II Chemical Engineering or Chemical Engineering and Management; or permission of the Department.

CHEM ENG 2D04 CHEMICAL ENGINEERING PRINCIPLES I
Steady-state mass balances in chemical processes and the first law of thermodynamics. The behaviour of gases and liquids, and their physical equilibria. Recycle in steady state operation.
3 lects., 1 tut.(3); one term
Prerequisite: Registration in Level II Chemical Engineering, Chemical Engineering and Management or Applied Chemistry; or permission of the Department.

CHEM ENG 2F04 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 2D04.

CHEM ENG 2G03 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. Development of advanced computer programming skills.
1 lect., 2 tut.(3); one term
Prerequisite: Engineering 1D03.
Corequisite: Chemical Engineering 2D04, 2F04 or equivalent, and Chemical Engineering 2G02.

CHEM ENG 2H04 FLUID MECHANICS
The laws of statics and dynamics in both compressible and incompressible fluids. Equations of conservation and modern turbulence and boundary layer theory applied to submerged and conduit flow. Similitude, unsteady flow, measuring devices and fluid machinery.
3 lects., 1 tut. or lab.(3); one term
Prerequisite: Mathematics 2M06, or 2F04 and 2Q04, which may be taken concurrently.

CHEM ENG 3A04 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 2F04, 2G04.

CHEM ENG 3D03 CHEMICAL ENGINEERING THERMODYNAMICS
Review of the total energy balance and mechanical energy balance. Theoretical and practical cycles, including compression and refrigeration. Chemical reaction and phase equilibria of multicomponent systems, with emphasis on non-ideality. Thermodynamic analysis of processes.
2 lects., 1 tut.; one term
Prerequisite: Chemical Engineering 2F04.

CHEM ENG 3E03 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 2F04.

CHEM ENG 3G03 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 2G03 or Commerce 3QB3, Chemical Engineering 3A04, 3E03.
Pre- or Co-requisite: Chemical Engineering 3K03, 3M04.

CHEM ENG 3K03 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 3D03, 3E03; or registration in Level III or IV Honours Applied Chemistry.

CHEM ENG 3L02 INTERMEDIATE LABORATORY SKILLS
Experiments and projects in heat transfer, thermodynamics, mass transfer, process control and fluid mechanics.
1 lect., 1 lab. (3); one term
Prerequisite: Chemical Engineering 2004
Pre- or Co-requisite: Chemical Engineering 3A04, 3D03, 3M04, 3P03.

CHEM ENG 3M04 MASS TRANSFER AND STAGEWISE OPERATIONS
Stagewise operations, diffusion, mass transfer coefficients, distillation, differential contacting and adsorption.
3 lects., 1 tut. (2); one term
Prerequisite: Chemical Engineering 2F04.

CHEM ENG 3P03 PROCESS CONTROL
Transient behaviour of chemical processes. Theory and practice of automatic control. Introduction to computer process control.
3 lects.; one term
Prerequisite: Mathematics 2M06, and Chemical Engineering 3E03, or registration in Level IV Ceramic Engineering; or permission of the Department.

CHEM ENG 4B03 POLYMER REACTION ENGINEERING
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management; or permission of the Department.

CHEM ENG 4C03 STATISTICS FOR ENGINEERS
Linear regression analysis in matrix form, non-linear regression, multi-response estimation, design of experiments including factorial and optimal designs. Special emphasis on methods appropriate to engineering problems.
3 lects.; one term
Prerequisite: Statistics 3M03 or equivalent and permission of the Department.

CHEM ENG 4D03 DISPERSED PHASE AND PARTICLE PROCESSING
Particle size characterization, filtration, fluidization, sedimentation, centrifugation and flotation.
3 lects.; one term
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4E03 DIGITAL COMPUTER PROCESS CONTROL
Sampled data control systems: z-transform methods, design of digital controllers; advanced digital control techniques: dead time compensation, feedforward, multivariable systems.
3 lects.; one term
Prerequisite: Chemical Engineering 3P03 and permission of the Department.

CHEM ENG 4K03 REACTOR DESIGN
Non-ideal flow, mixing, catalytic kinetics, packed, fluidized bed reactors. Two phase reactors.
3 lects.; one term
Prerequisite: Chemical Engineering 3K03; or permission of the Department.

CHEM ENG 4L02 ADVANCED LABORATORY SKILLS
Experiments and projects in transport phenomena, reaction kinetics and reactor design.
1 lab. (3), 1 lect.; one term
Prerequisite: Chemical Engineering 3L02, and registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4M03 SEPARATIONS
Distillation column design; transport phenomena, laminar, turbulent and unsteady state mass transfer; analogies; adsorption, extraction, absorption, ion exchange, drying, humidification, crystallization.
3 lects.; one term
Prerequisite: Chemical Engineering 2004, 3A04, 3M04.

CHEM ENG 4N04 COST ESTIMATION AND PROCESS DEVELOPMENT
Design and operation of chemical plants; creation and development of new processes using case studies. Ethics. Design methodology, decision-making, reliability theory, project planning, cost estimation, time value of money, functional analysis and a survey of optimization techniques.
3 lects., 1 tut.(2); one term
Prerequisite: Chemical Engineering 3A04, 3E03, 3G03, 3K03, 3M04; or registration in Level IV Ceramic Engineering.

CHEM ENG 4T03 TRANSPORT PROCESSES IN BIOMEDICAL ENGINEERING
Analytical, experimental and design principles and chemical engineering skills for solving problems in biological flow systems, e.g. haemodynamics, extracorporeal oxygenator, artificial kidney and artery disease.
3 lects.; one term
Prerequisite: Chemical Engineering 2004; or permission of the Department.

CHEM ENG 4W04 CHEMICAL PLANT DESIGN AND SIMULATION
Projects, often in cooperation with industry, usually involve steady-state computer simulation of an existing process or design of a new process. Plant equipment may be tested to develop simulation models.
2 project labs.(3); two terms. The hours assigned can be freely scheduled to suit those involved in a particular project and may include computation classes, laboratory work, discussions, or individual study.
Prerequisite: Registration in Level IV Chemical Engineering or Level V Chemical Engineering and Management.

CHEM ENG 4Y04 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 a Cumulative Engineering Average of at least 9.5; or permission of the Department.
CHEM ENG 4203  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.

ENGINEE 4U03  WATER AND WASTEWATER TREATMENT PROCESS DESIGN

Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Chemistry

Faculty as of January 15, 1987
T. Birchalv/Chairman

Professors Emeriti
Ronald P. Graham/M.A. (Queen's), A.M., Ph.D. (Columbia), F.C.I.C.

Henry G. Thode/C.C., B.Sc., L.L.D. (Regina,Saskatchewan),
Ph.D. (Chicago), D.Sc. (Toronto, British Columbia, Acadia, Laval, Royal Military College, McGill, Queen's, McMaster, York), F.R.S., F.R.C.S., F.C.I.C.

Professors
Russell A. Bell/M.Sc. (Wellington), M.S. (Wisconsin), Ph.D. (Stanford), F.C.I.C.
Ronald F. Childs/B.Sc. (Bath University of Technology), Ph.D., D.Sc. (Nottingham)

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., Ph.D. (Oxford)

John E. Greedan/B.A. (Bucknell), Ph.D. (Tufts), F.C.I.C.
Olville E. Hileman, Jr/B.S.Ed. (Bowling Green State), Ph.D. (Case Institute of Technology), F.C.I.C.

Herbert L. Holland/M.Sc. (Warwick), Ph.D. (Queen's)/part-time

Michael L. Klein/B.Sc., Ph.D. (Bristol)/part-time
Joseph D. Laposa/B.Sc. (St. Louis), M.S. (Chicago), Ph.D. (Loyola)


David B. MacLean/B.Sc. (Acadia), Ph.D. (McGill), F.R.S.C., F.C.I.C.
Jack J. McCullough/B.Sc., Ph.D. (Queen's, Belfast)
Michael J. McGlachy/B.Sc., Ph.D. (Manchester), F.C.I.C.

David P. Santy/B.Sc., Ph.D. (London)

Donald R. Smith/B.Sc. (McMaster), Ph.D. (Leeds)/part-time

Richard H. Tomlinson/B.Sc. (Bishop's), Ph.D. (McGill), F.C.I.C.
John Warkentin/B.Sc., M.Sc. (McGill), Ph.D. (Iowa State), F.C.I.C.
Nick H. Wierust/B.Sc. (Alberta), M.A., Ph.D. (Johns Hopkins), F.C.I.C.

Associate Professors
Adam P. Hitchcock/B.Sc. (McMaster), Ph.D. (British Columbia)
David A. Humphreys/B.Sc., M.Sc. (London), Ph.D. (McMaster)
Brian E. McCarr/B.Sc. (British Columbia), Ph.D. (Stanford)
Gary J. Schrobilgen/B.Sc. (Dubuque, Iowa), M.Sc. (Brock), Ph.D. (McMaster)

A. John Yanwood/B.Sc., Ph.D. (Birmingham)

Assistant Professors
Michael A. Brook/B.Sc. (Toronto), Ph.D. (McGill)
William J. Leigh/B.Sc., M.Sc., Ph.D. (Western)
Michael A. Quilliam/B.Sc., Ph.D. (Manitoba)
Timothy A. Wildman/B.Sc., Ph.D. (Manitoba)

Associate Members
I. David Brown/(Physics) B.Sc., Ph.D. (London) F.C.I.C.
Alvin E. Hamielec/(Chemical Engineering) B.A.Sc.,M.A.Sc., Ph.D. (Trento), P.Eng

Walter F. Kean/(Medicine) M.B., Ch.B. (Glasgow) F.R.C.P.(C), F.A.C.P.

Department Notes:
1. * Course not necessarily offered every session.
2. Students not in a Science programme should note that Chemistry 1B06 or 1B07 serves as a prerequisite for Chemistry 2D03. Also, Chemistry 2D03 is a prerequisite for Biochemistry 2E03.

CHEMIA06  GENERAL CHEMISTRY

An introduction to chemistry. The laboratory is designed to illustrate the lecture material, and co-ordinates with it.
3 lects., 1 lab.(3) every other week; two terms
Prerequisite: Grade 13 Chemistry and registration in Natural Sciences I, or Engineering I, or the Arts and Science Programme. Students with Grade 12 Chemistry and an overall Grade 13 average of at least 85% who are registered in Natural Sciences I or Engineering I will also be considered by the Chairman of the Department.

CHEMIB06  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 103 average of at least 75% or permission of the instructor. Not open to students in Natural Sciences I or Engineering I.

CHEM 2A03  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 2T05 or 2T06, which may be taken concurrently, or registration in a programme in which Chemistry 2A03 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2A04, 2K03, 2M05, 2N03, 2N04, 3K03, 3K06.

CHEM 2B06  ORGANIC CHEMISTRY

A systematic treatment of aliphatic and aromatic compounds and an introduction to spectroscopic techniques for structure determination.
2 lects., 1 lab.(3); two terms
Prerequisite: Registration in a programme in which Chemistry 2B06 is required. Not open to students who are registered in, or who have credit in any of Chemistry 2B06, 2B08, 2B08.

CHEM 2C03  STRUCTURE AND REACTIONS OF THE MAIN GROUP ELEMENTS

Structure and reactions of inorganic compounds; introduction to symmetry.
3 lects., 1 lab.(3); one term
Prerequisite: A grade of at least B in Chemistry IA06, and registration in an Honours programme in the Faculty of Science. Not open to students who are registered in, or who have credit in any of Chemistry 2F03, 2F04, 2S08, 2W03.

CHEM 2D03  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 IA06, IA07, IB06, IB07.

CHEM 2F03  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 1A06 or 1A07. Not open to students who are registered in, or who have credit in Chemistry 2C03, 2F04, 2S08, or 2W03.

CHEM 2K03  ANALYTICAL CHEMISTRY

An introduction to classical analytical techniques.
1 lect., 2 labs.(3); one term
Prerequisite: One of Chemistry 2F04, 2P06, 2Q05, 2Q06, 2T05, 2T06, any of which may be taken concurrently. Not open to students who are registered in, or who have credit in any of Chemistry 2A03, 2A04, 2M05, 2N03, 2N04, 3K03, 3K06.

CHEM 2M05  ANALYTICAL CHEMISTRY

An introduction to classical and modern analytical techniques with an emphasis on applications in Engineering.
1 lect., 1 lab.(3), first term; 2 lects., 1 lab.(3); second term
CHEMISTRY

Prerequisite: Registration in a programme in Chemical Engineering. Not open to students who are registered in, or have credit in, any of Chemistry 2A03, 2A04, 2K03, 2N03, 2N04, 2X1, 3P03, 3K06.

CHEM 2N03 ANALYTICAL CHEMISTRY
An introduction to the basic principles of analytical chemistry; applications to selected classical and instrumental methods of analysis.
2 lects., 1 lab (3); one term
Prerequisite: One of Chemistry 2P04, 2P06, 2Q05, 2Q06, 2T05, or 2T06, any of which may be taken concurrently, and registration in a programme which requires Chemistry 2N03. Not open to students who are registered in, or have credit in, any of Chemistry 2A03, 2A04, 2K03, 2N04, 2X01, 3P03, 3K06.

CHEM 3O06 ORGANIC CHEMISTRY
An introduction to organic chemistry with emphasis on the reactions of functional groups.
3 lects., 1 lab (3); two terms
Prerequisite: One of Chemistry 1A06 or 1A07, with a grade of at least C-, or registration in a programme in which Chemistry 2006 is required. Not open to students who are registered in, or have credit in, Chemistry 2B06, 2D03, 2D04, 2X08 or 2Z08.

CHEM 2Q06 PHYSICAL CHEMISTRY
The states of matter; elementary principles of thermodynamics; chemical and physical equilibria; electrochemistry; rates of chemical reactions.
2 lects., 1 lab (3) every other week; two terms
Prerequisite: Chemistry 1A06 or 1A07 and Mathematics 1A06. Not open to students who are registered in, or have credit in, any of Chemistry 2P04, 2Q05, 2Q06, 2R02, 2T05, 2T06, Physics 2H03.

CHEM 2Q06 PHYSICAL CHEMISTRY
Basis of physical phenomena related to biological systems, including equilibria, transport, and kinetics.
2 lects., 1 lab (3) or problem session (3) every other week; two terms
Prerequisite: Chemistry 1A06 or 1A07, and one of Mathematics 1A06, 1B03, 1G04, 1P06. Not open to students who are registered in, or have credit in, any of Chemistry 2P04, 2P06, 2Q05, 2Q06, 2R02, 2T05, 2T06; Physics 2H03.

CHEM 2T06 THERMODYNAMICS
An introduction to the basic principles of thermodynamics, with applications to physical and chemical equilibria, including electrochemistry. rates of chemical reactions.
2 lects., 1 lab (3) every other week; two terms
Prerequisite: Chemistry 1A06 or 1A07 and Mathematics 2G03 or 2N03, which may be taken concurrently. Open only to students registered in a programme in which Chemistry 2T06 is required. Not open to students who are registered in, or have credit in, any of Chemistry 2P04, 2P05, 2Q05, 2Q06, 2R02, 2T05, 2T06; Physics 2H03.

CHEM 2W03 INORGANIC CHEMISTRY
Introduction to inorganic chemistry of silicates, metals, their oxides and sulfides.
3 lects.; one term
Prerequisite: Chemistry 1A06 or 1A07. Not open to students who are registered in, or have credit in, any of Chemistry 2C03, 2F03, 2F04, 2S08, 3E04, 3E06, 3Q03, 3Q04.

CHEM 3A03 ANALYTICAL CHEMISTRY II
An introduction to modern instrumental methods of analysis.
3 lects., 1 lab (3); one term
Prerequisite: Chemistry 2A03 or 2A04.

CHEM 3B03 MODERN PHYSICAL CHEMISTRY
An introduction to quantum mechanics and spectroscopy.
2 lects., 1 tut.; one term
Prerequisite: Chemistry 2P04 or 2P06; Mathematics 2G03 or 2N03. Not open to students who are registered in, or have credit in, any of Chemistry 2U03, 3B04, 3L03, 3U03.

CHEM 3D03 ORGANIC CHEMISTRY
A mechanistically-oriented discussion of mono- and multifunctional organic compounds with emphasis on applications to synthesis.
3 lects., 1 lab (3); one term
Prerequisite: Chemistry 2B06 and registration in a programme in which Chemistry 3D03 is required. Not open to students who are registered in, or have credit in Chemistry 3D06 or 3F03.

CHEM 3E06 TRANSITION METAL INORGANIC CHEMISTRY
The properties, structures, and reactions of inorganic compounds, with emphasis on transition metal chemistry; introduction to organometallic chemistry.
2 lects., 1 lab (3); two terms
Prerequisite: Chemistry 2C03 or 2S08 and registration in a programme in which Chemistry 3E06 is required.

CHEM 3F03 ORGANIC CHEMISTRY
Special topics in Organic Chemistry; a sequel to Chemistry 2006. The laboratory will emphasize synthesis and identification of organic compounds.
2 lects., 1 lab (3); one term
Prerequisite: Chemistry 2006 or 2008.

CHEM 3G03 MODERN PHYSICAL CHEMISTRY II
A continuation of Chemistry 3B03, with application to chemical problems.
2 lects., 1 tut.; one term
Prerequisite: Chemistry 3B03. Not open to students who have credit in, or are registered in Chemistry 2U03, 3B04, 3L03 or 3U03.

CHEM 3I03 INDUSTRIAL CHEMISTRY
A survey of the chemical industry. Products obtained from petroleum, natural gas, and soda ash. Petrochemicals, synthetic and natural polymers.
3 lects.; one term
Prerequisite: Level II courses in inorganic and organic chemistry, or Chemistry 2506, or registration in Level IV of a Chemical Engineering programme.

CHEM 3K03 ANALYTICAL CHEMISTRY
An introduction to modern analytical techniques.
2 lects., 1 lab (3); one term
Prerequisite: Chemistry 2K03. Not open to students who are registered in, or have credit in, any of Chemistry 2M03, 2N03, 2N04, 3A03, 3A04, 3K06.

CHEM 3L03 INTRODUCTION TO MOLECULAR SPECTROSCOPY
A course introducing group theory and aspects of molecular spectroscopy.
3 lects.; one term
Prerequisite: Chemistry 3U03. Not open to students who are registered in or have credit for Chemistry 3B03 or 3B04.

CHEM 3Q03 INORGANIC CHEMISTRY
Transition metal complexes; application of physical techniques to inorganic problems.
2 lects., 1 lab (3); one term
Prerequisite: Chemistry 2F03 or 2F04. Not open to students who are registered in, or have credit in, any of Chemistry 3E04, 3E06, 3Q04.

CHEM 3U03 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: Chemistry 1A06 or 1A07 and Mathematics 2Q03 or 2N03. Not open to students who are registered in or have credit for Chemistry 2U03, 3B03, 3B04, 3G03.

CHEM 4A03+ ADVANCED ORGANIC CHEMISTRY
A discussion of some modern advances in organic chemistry including such topics as aromaticity, molecular rearrangements, and organic photochemistry.
2 lects.; one term
Prerequisite: One of Chemistry 3D03, 3D06, 3F03.

CHEM 4B03+ CHEMICAL APPLICATIONS OF SPECTROSCOPY
The applications of spectroscopy to the solution of chemical problems, quantum states and spectra; theory of microwave, infrared, Raman and electronic spectra; gas and tunable lasers.
2 lects.; one term
Prerequisite: One of Chemistry 3B04, 3G03, 3L03 and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4C03+ SOLID STATE CHEMISTRY
Structure and properties of crystalline solids. Topics include crystal chemistry and crystal symmetry, introduction to space groups, defects in ionic crystals, nonstoichiometry, electronic structure and properties of semiconductors and metals.
2 lects.; one term
Prerequisite: One of Chemistry 3E06, 3Q03, 3Q04, and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4D03+ THE CHEMISTRY OF NATURAL PRODUCTS
The structural elucidation and synthesis of selected naturally-occurring organic compounds.
2 lects.; one term
Prerequisite: One of Chemistry 3D03, 3D06 or 3F03.

CHEM 4G06 SENIOR THESIS
A thesis based on a project under the direction of a member of the Faculty.
Prerequisite: Registration in Level IV of an Honours programme in Chemistry. Students registered in Level IV of the Chemistry Major programme, with a CAA of at least 8.5 will also be considered, if sufficient projects are available. Not open to students who are registered in, or have credit in Chemistry 4T06 or 4T04.

CHEM 4K06 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 lects., 1 lab (3) every other week; two terms
Prerequisite: One of Chemistry 3B04, 3G03, 3U03, Physics 3M06, 3Q03 and registration in Level IV of an Honours or Major Programme in Chemistry. Not open to students with credit in Chemistry 3C04.

CHEM 4P03+ ADVANCED ANALYTICAL CHEMISTRY
A course dealing with modern topics of analytical chemistry.
2 lects.; one term
Prerequisite: One of Chemistry 2M05, 2N03, 2N04, 3A03, 3A04, 3K03, 3K06.

CHEM 4Q03+ ADVANCED QUANTUM MECHANICS
Further applications of quantum mechanics to problems of chemical interest.
2 lects.; one term
Prerequisite: One of Chemistry 3B04, 3G03, 3U03, and registration in Level IV of an Honours or Major programme in Chemistry.

CHEM 4R03+ 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; ligand field theory.
2 lects.; one term

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**CIVIL ENGINEERING**

**Associate Professors**

Brian L. Allen/BSc. (Alberta), M.S., Ph.D. (Berkeley, California), P.Eng.
Tarek S. Aziz/BSc. (Carleton), D.Sc. (M.I.T.), P.Eng./part-time

Ahmed Ghobarah/BSc. (Cairo), M.ASc., Ph.D. (McMaster), P.Eng.
Robert G. Horvath/BSc. (Windsor), M.Sc. (Western Ont.), Ph.D. (Toronto), P.Eng.

Faroque A. Mirza/BSc. (Karachi), B.Sc. (McGill), M.ASc., Ph.D. (British Columbia)

**Graduate Courses**

**Chemistry of selected main group elements,**
**Advanced instrumental methods of analysis, with emphasis on general principles,**
**CHEM 4U06**
**CHEM 4T06**

**Prerequisite:** One of Chemistry 3E06, 3Q03, 3Q04 and registration in Level IV of an Honours or Major programme in Chemistry.

**CHEM 4T06**
**INSTRUMENTAL ANALYSIS**

Advanced instrumental methods of analysis, with emphasis on general principles, instrumentation, and applications of computers to chemical analysis.
1 lect., 1 lab (4); two terms

**Prerequisite:** Registration in Level IV Honours Applied Chemistry or Chemistry Major. Not open to students who are registered in, or have credit in Chemistry 4G06.

**CHEM 4U06**
**ADVANCED EXPERIMENTATION**

Fundamental experimental principles of biochemistry and chemistry including modern instrumental methods. Three units selected from Chemistry 4T06 plus Biochemistry 4P03.
2 labs.; one term

**Prerequisite:** Registration in Level IV Honours Biochemistry and Chemistry. Not open to students who have credit, or are registered in, one of Biochemistry 4L06, 4P03, Chemistry 4T04, 4T06.

Same as Biochemistry 4L04.

**CHEM 4V03**
**STATISTICAL THERMODYNAMICS**

Principles of statistical thermodynamics and their applications in chemistry.
2 lects., one term

**Prerequisite:** Chemistry 4K06, which may be taken concurrently. Not open to students with credit in Chemistry 3V03.

For **Graduate Courses** see Calendar of School of Graduate Studies.

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**Civil Engineering**

**Faculty as of January 15, 1987**

A.A. Smith/Chairman

**Professors**

Mark Donelan/B.Eng. (McGill), Ph.D. (British Columbia)/part-time
Robert G. Drysdale/B.Sc. (Manitoba), M.A.Sc., Ph.D. (Toronto), P.Eng.
Frederick L. Hall/A.B. (Amherst), M.S. (M.I.T.), Ph.D. (Chicago)
Paul F. Hamblin/B.Asc. (Toronto), M.Sc. (British Columbia), Ph.D. (Seattle), P.Eng./part-time
David C. Lam/B.Sc. (Hong Kong), M.A.Sc. (Waterloo), Ph.D. (Waterloo)/part-time
Keith L. Murphy/B.Asc. (Toronto), M.Sc., Ph.D. (Wisconsin), P.Eng. /part-time
Hugh Robinson/B.Sc., Ph.D. (Durham), P.Eng.
Alan W. Smith/B.Sc. (Glasgow), Ph.D. (Strathclyde), P.Eng.

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**Chinese**

Chinese is administered within the Department of Modern Languages of the Faculty of Humanities. Information and counselling may be obtained from the instructor, May Zhai.

**CHINESE 1206**
**BEGINNERS’ INTENSIVE CHINESE**

An intensive beginner’s course in modern Chinese designed for students with no prior knowledge of the language. This course gives the student a basic knowledge of Chinese grammar while emphasizing spoken Chinese. 4 hrs.; two terms

**Prerequisite:** Open. Students who speak either Mandarin or dialect Chinese, or who read Chinese, may not register in this course.

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**Civil Engineering**

**Associate Members**


**CIV ENG 2A02**
**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 2B02**
**COMMUNICATIONS AND CIVIL ENGINEERING**

Oral and written communication skills, design of engineering studies. A professional liaison programme involving site visits. Concrete mix design and laboratory testing.
1 lect., 1 lab or tut.; one term

**Prerequisite:** Physics 1D03, and registration in or completion of Engineering 2P04, and registration in a Civil Engineering programme.

**CIV ENG 2C04**
**STRUCTURAL MECHANICS**

Unsymmetrical bending, combined axial and flexural loading, shear stresses in thin-walled members, shear centre, plastic deformation, residual stress. Transformations of stress and strain; failure criteria; deflections of statically indeterminate beams; energy method; Castigliano’s theorem, column stability; introduction to plate bending.
3 lects., 1 lab (3); one term

**Prerequisite:** Engineering 2P04.

**CIV ENG 2D03**
**GEOMETRY FOR ENGINEERS**

Composition of the earth; geologic processes, minerals, rocks and classification systems; weathering, erosion, transportation and deposition of soils; engineering properties of rock and soil; subsurface exploration and site investigation; geologic map usage.
2 lects., 1 lab (3); one term

**Prerequisite:** Registration in a programme in Civil Engineering. Not open to students with credit in Geology 1A06 or 1B06.

**CIV ENG 2E02**
**COMPUTER APPLICATIONS IN CIVIL ENGINEERING**

1 lect., 1 lab (3); one term

**Prerequisite:** Engineering 1D03, Physics 1D03, Engineering 2P04 and registration in a Civil Engineering programme.

**CIV ENG 2E03**
**FLUID MECHANICS**

Hydrostatics; kinematics of fluids; continuity equation. Hydrodynamics; conservation of energy and momentum. Bernoulli equation; turbulence; pumps and turbines; streamlines and equipotentials.
2 lects., 1 tut. (1), 1 lab (2), every other week; one term

**Prerequisite:** Registration in, or completion of, Engineering 2P04 and Mathematics 2M06.

**CIV ENG 3A03**
**GEOTECHNICAL ENGINEERING I**

Composition and characteristics of soils; seepage theory; effective stress; stresses and displacements from theory of elasticity; elastic solutions for problems in soil mechanics; consolidation theory; Terzaghi’s theory; numerical solutions.
2 lects., 1 lab (3) or 1 tut (5), every other week; one term

**Prerequisite:** Civil Engineering 2D03, or Geology 3A03 and 1C03 or 1A06 or 1B06.

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CIVIL ENGINEERING

CIV ENG 3B03 GEOTECHNICAL ENGINEERING II
Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain and field tests; earth pressure theory; bearing capacity theory; slope stability and embankment analysis.
2 lects., 1 lab (3) or 1 tut.(2), every other week; one term
Prerequisite: Civil Engineering 3A03.

CIV ENG 3C04 ENGINEERING SYSTEMS
Mathematical models and systems; project comparison; optimization; linear, non-linear and dynamic programming; simulation and computer-aided design.
3 lects., 1 tut (2) or lab (3); one term
Prerequisite: Completion of, or registration in, Civil Engineering 3A03, 3B03, 3G04, 3J04, 3K03, 3M04, 3004. Not open to students with credit in Civil Engineering 4B03.

CIV ENG 3G04 STRUCTURAL ANALYSIS
Deflection of structures by moment area, conjugate beam and virtual work; analysis of indeterminate structures; slope deflection and moment distribution methods; approximate methods and influence lines.
3 lects., 1 lab (3); one term
Prerequisite: Civil Engineering 2C04.

CIV ENG 3J04 REINFORCED CONCRETE DESIGN
Introduction to concrete technology: design by ultimate strength method 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 3G04.

CIV ENG 3K03 INTRODUCTION TO TRANSPORTATION ENGINEERING
Traffic flow characteristics; capacity and control for interrupted and uninterrupted flow roadways; travel demand and forecasting.
2 lects., 1 tut.(2); one term
Prerequisite: Engineering 1D03 or equivalent.

CIV ENG 3M04 MUNICIPAL HYDRAULICS
Water quality, water requirements; population forecasting; water demand; water treatment; reservoirs; transport and distribution of water; wastewater collection; stormwater, pumping stations; wastewater treatment; water quality modelling in receiving water bodies.
3 lects., 1 lab (3); one term
Prerequisite: Civil Engineering 2003 and Mathematics 2M06, and registration in, or completion of, Civil Engineering 3C04.

CIV ENG 3N04 CIVIL ENGINEERING HYDRAULICS
Flow resistance equations; open channel flow; gradually varied flow; pipes; waterhammer mass-oscillations in conduits; river engineering.
3 lects., 1 tut.(1)/1 lab.(3), alternating weeks; one term
Prerequisite: Civil Engineering 2003, Mathematics 2M06.

CIV ENG 4A04 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.
3 lects., 1 lab (3); one term
Prerequisite: Civil Engineering 3M04.

CIV ENG 4C03 ENVIRONMENTAL PROTECTION
2 lects., 1 tut (2); one term
Prerequisite: Permission of the Department.

CIV ENG 4D04 GEOMETRIC HIGHWAY DESIGN
Design of various types and classes of streets and highways. Theory and practice in design of intersections, interchanges, arterial highways, and freeways, in urban and rural areas.
3 lects., 1 lab (2); one term
Prerequisite: Civil Engineering 3K03.

CIV ENG 4F03 TRAFFIC ENGINEERING
Traffic studies; collection analysis and interpretation of data. Traffic control and management; capacity; isolated intersection, arterial and network signal timing; warrants and use of traffic control devices. Freeway traffic management; surveillance and control strategies/systems.
2 lects., 1 tut (2); one term
Prerequisite: Civil Engineering 3K03.

CIV ENG 4G03 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; interlocking pavement structures.
2 lects., 1 lab (3); one term
Prerequisite: Civil Engineering 3A03 and 3B03.

CIV ENG 4H03 LAND USE AND TRANSPORTATION
Quantitative models to predict transportation flows and land use patterns in urban areas, including gravity-type models, the Lowry model and discrete choice models.
3 lects.; one term
Prerequisite: Civil Engineering 3K03.

Same as Geography 4H03.

CIV ENG 4I03 ENGINEERING ITS HISTORY, PHILOSOPHY AND INFLUENCE ON CIVILIZATION
2 lects., 1 tut (2); one term
Prerequisite: Registration in an Engineering programme.

CIV ENG 4K03 MODERN METHODS OF STRUCTURAL ANALYSIS
2 lects., 1 tut (2); one term
Prerequisite: Civil Engineering 3G04 and Mathematics 3J04.

CIV ENG 4L04 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 lab. (3); one term
Prerequisite: Civil Engineering 3M04; or permission of the Department.

CIV ENG 4N04 DESIGN OF STEEL STRUCTURES
Limit states design method; design of compression and tension members, beams, box-section composite beams and plate girders; bolted and welded connections; frame design including effects of sway; applications using Canadian steel building code.
3 lects., 1 tut (2); one term
Prerequisite: Civil Engineering 3G04.

CIV ENG 4P03 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; bending of thin plates; energy methods.
3 lects.; one term
Prerequisite: Civil Engineering 3G04.

CIV ENG 4R04 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 3G04, 3J04.

CIV ENG 4S04 FOUNDATION ENGINEERING
Principles of foundation design; bearing capacity, settlement and location, footings, deep foundations, piles, pile groups and drilled piers; geotechnical techniques and case histories.
3 lects., 1 tut (2); one term
Prerequisite: Civil Engineering 3B03.

CIV ENG 4Y04 ADVANCED REINFORCED AND Prestressed CONCRETE DESIGN
3 lects., 1 lab. and/or tut.(2); one term
Prerequisite: Civil Engineering 3G04 and 3J04.

ENGINEER 4U03 WATER AND WASTEWATER TREATMENT PROCESS DESIGN
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.

For Graduate courses, see Calendar of the School of Graduate Studies.

Classics

Faculty of Chemical Engineering and Civil Engineering

P. Kingston/Chairman

Professors Emeriti

Donald M. Shepherd/M.A. (Queen's), Ph.D. (Chicago)

Professors

Katherine M. D. Dunbabin/B.A., D. Phil. (Oxford)
Thomas F. Hoey/B.A. (Montreal), M.A. (Toronto), Ph.D. (Harvard),
S.T.L., Ph.L. (Immaculate Conception Seminary, Montreal)
Howard Jones/B.A. (London), M.A., Ph.D. (Indiana)
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.
Not offered in 1987-88. Alternates with Classical Civilization 2103.

CLAS CIV 2X03 GREEK AND ROMAN BACKGROUND TO EARLY CHRISTIANITY
A description and analysis of selected Greek and Roman social and political institutions which helped to form the background to the life of early Christians and the New Testament writers. The topics surveyed include the spread of the Greek language and culture, Roman provincial government and the Roman army, travel by land and sea, the life of major cities, education, and literature.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Alternates with Classical Civilization 2203.
Same as Religious Studies 2X03.

CLAS CIV 2203 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. Not offered in 1987-88. Alternates with Classical Civilization 2203. Same as Religious Studies 2203.

CLAS CIV 3C03 GREEK AND ROMAN EPIC
A survey of epic poetry, including the origins, Homer and Greek epic, Vergil and Roman epic.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.
Alternates with Classical Civilization 4403.

CLAS CIV 3G03 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 2C03, or Art History 2C03 or 2G03; or permission of the Department.
Not offered in 1987-88. Alternates with Classical Civilization 3X03.
Same as Art History 3G03.

CLAS CIV 3103 TOPICS IN GREEK AND ROMAN LITERATURE
1987-88: The Poet and Society
An examination of the role of the poet in Greek and Roman society. The topics surveyed include the poet as artist, teacher, critic, propagandist, pamphleteer, moralist, and popular entertainer.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department.
Same as Comparative Literature 3103.
Classical Civilization 3103 may be repeated, if on a different topic, to a total of 6 units.

CLAS CIV 3L13 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: Open to students in Level II and above. Not available to students with credit in History 3L06.
Some as History 3L13.
Offered in alternate years.

CLAS CIV 3M33 THE ROMAN EMPIRE
Rome, Italy and the provinces from the creation of an autocracy by Augustus until the end of the 2nd century A.D.: developments in government, society, defence and economy; the Romanization of the provinces. Archaeological evidence and new approaches to problems will be considered.
3 hrs. (lects. and discussion groups); one term
Prerequisite: 6 units of Classical Civilization or History 1L06; or permission of the Department. Not available to students with credit in History 3D06.
Some as History 3M33.
Offered in alternate years.

CLAS CIV 3R03 THE ARCHAEOLOGY OF GREEK CITIES
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, settling 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 2A03, 2B03, 2F03, 3F03, 3G03; or permission of the Department. Not available to students receiving credit for Classical Civilization 2L03.
Not offered in 1987-88. Alternates with Classical Civilization 3S03.
CLAS CIV 3503  THE ARCHAEOLGY OF ROMAN CITIES
A study of the transformation of the city of Rome from an obscure village to a vast metropolis, the nature of city planning and urban life, and the patterns of urban development in Rome and her Empire. The study is based upon the evidence of monuments and architectural remains in Rome, Pompeii and other surviving cities of the Empire in Europe, Africa and Asia.
3 lects.; one term
Prerequisite: One of Classical Civilization 2A03, 2C03, 2F03, 3R03, or permission of the Department. Not available to students receiving credit for Classical Civilization 2M03.
Offered in 1987-88. Alternates with Classical Civilization 3R03.

CLAS CIV 3U03  SOCIAL LIFE AND THOUGHT IN PERICLES' 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 2U03, 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 2U03 and three additional units of Classical Civilization; or Classical Civilization 2G06; or History 1L06; or permission of the Department. Not available to students with credit in Classical Civilization 3M03.
Alternates with Classical Civilization 3V03
Same as History 3U03.

CLAS CIV 3V03  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 2V03, 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 2V03 and three additional units of Classical Civilization; or Classical Civilization 2G06; or History 1L06; or permission of the Department. Not available to students with credit in Classical Civilization 4N03.
Not offered in 1987-88. Alternates with Classical Civilization 3UU3.
Same as History 3V03.

CLAS CIV 3W03  TOPICS IN GREEK AND ROMAN SOCIAL LIFE
A rapid introduction to the grammar of Ancient Greek. Passages of simple Greek will be used. This course, with a grade of at least B, is accepted as a prerequisite for admission to Honours Classics, Greek, Latin or History with a Cumulative Area Average of at least 9.0; or permission of the History Department. Same as History 3L03.

CLAS CIV 2M03  BEGINNERS' INTENSIVE GREEK
A course devoted to an exploration of the influences of classical literature upon English writers from medieval to modern times.
Seminar (3 hrs.); two terms
Prerequisite: Registration in Level II or IV of any programme in literature, or permission of the Department.
Offered in 1987-88. Alternates with Classical Civilization 2M03.

CLAS CIV 4A03  THE CLASSICS AND ENGLISH LITERATURE
3 lects.; one term
Prerequisite: Registration in Level III or IV of any programme in literature, or permission of the Department.
Same as Comparative Literature 4D03 and English 4A03.
Not offered in 1987-88. Alternates with Classical Civilization 3C03.

CLAS CIV 4D06  SPECIAL TOPICS IN GREEK HISTORY
Investigations into Greek social history and its interpretation.
Seminar (2 hrs.); two terms
Prerequisite: Six units from Classical Civilization 1A06, 2G06, 3L13, 3U03, or History 1L06, and registration in Level III or IV of any Honours programme in Classical Studies, Classics, Greek, or History; or permission of the Department of History.
Same as History 4D06.
Enrolment is limited.

CLAS CIV 4F03  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 4I06  SPECIAL TOPICS IN ROMAN HISTORY
The central theme will be development and change throughout the Roman Empire in the 3rd and 4th Centuries A.D.
Seminar (2 hrs.); two terms
Prerequisite: Six units from Classical civilization 2G06, 2V03, 3M03, 3V03, and registration in Level III or IV of any Honours programme in Classical Studies, Classics, Greek, Latin, or History; or permission of the History Department.
Same as History 4I06.
Enrolment is limited.

CLAS CIV 4L06  THEMES IN ANCIENT HISTORY
An examination of at least two selected themes in Ancient History, particularly the history of the Greco-Roman world, with emphasis on the use of source materials, primary and secondary, literary and non-literary.
Seminar (2 hrs.); two terms
Prerequisite: Six units from Classical civilization 2G06, 3L13, 3M03, 3U03, 3V03 and registration in Level IV of any honours programme in Classical Studies, Classics, Greek, Latin or History with a Cumulative Area Average of at least 9.0; or permission of the History Department.
Same as History 4L06.
Enrolment is limited.

RELATED CLASSICAL CIVILIZATION COURSES OFFERED BY OTHER DEPARTMENTS

GREEK

GREEK 1Z06  BEGINNERS' INTENSIVE GREEK
A rapid introduction to the grammar of Ancient Greek. Passages of simple Greek are read in the second term.
3 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.

GREEK 2C03  XENOPHON
Selected readings from the Anabasis, Cyropaedida and Memorabilia.
3 lects.; one term
Prerequisite: Greek 2Q03; or permission of the Department.
Not offered in 1987-88. Alternates with Greek 2E03.

GREEK 2E03  HERODOTUS
Selected readings from the Histories.
3 lects.; one term
Prerequisite: Greek 2Q03; or permission of the Department.
Alternates with Greek 2C03.

GREEK 2F03  EURIPIDES
Selected readings from the tragedies.
3 lects.; one term
Prerequisite: Greek 2Q03; or permission of the Department.

GREEK 2Q03  INTRODUCTION TO READING GREEK AUTHORS
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 1Z06; or permission of the Department.

GREEK 2R03  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 1206 with a grade of a least B or Greek 2Q03; or permission of the Department.

GREEK 3F03  TOPICS IN GREEK DRAMA
1987-88: 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 2Q03; or permission of the Department.
Offered in alternate years.
Greek 3F03 may be repeated, if on a different topic, to a total of six units.

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<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term</th>
<th>Prerequisite</th>
</tr>
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<tbody>
<tr>
<td>GREEK 3G03</td>
<td>TOPICS IN GREEK PROSE AUTHORS</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Greek including Greek 2Q03; or permission of the Department. Not offered in 1987-88. Offered in alternate years.</td>
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<tr>
<td>GREEK 4G03</td>
<td>GUIDED READING</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Greek including Greek 2Q03; or permission of the Department. Not offered in 1987-88. Alternates with Greek 4R03.</td>
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<tr>
<td>LATIN 1G03</td>
<td>BEGINNERS' INTENSIVE LATIN</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Latin including Latin 2Q03; or permission of the Department. Not offered in 1987-88. Alternates with Latin 3Q03.</td>
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<tr>
<td>LATIN 2G03</td>
<td>ROMAN LYRIC POETRY</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Latin including Latin 2Q03; or permission of the Department. Alternates with Latin 3Q03.</td>
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<tr>
<td>LATIN 2E03</td>
<td>LIVY</td>
<td>3</td>
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<td>Nine units of Level II Latin including Latin 2Q03; or permission of the Department. Alternates with Latin 3Q03.</td>
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<tr>
<td>LATIN 2Q03</td>
<td>VERGIL</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Latin including Latin 2Q03; or permission of the Department. Not offered in 1987-88. Alternates with Latin 3Q03.</td>
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<tr>
<td>LATIN 3G03</td>
<td>MEDIEVAL Latin: PROSE AUTHORS</td>
<td>3</td>
<td>1</td>
<td>Nine units of Level II Latin including Latin 2Q03; or permission of the Department. Alternates with Latin 3Q03.</td>
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</tbody>
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COMMERCE

Commerce

Faculty as of January 15, 1987

Naresh C. Agarwal/Chairman, Personnel and Industrial Relations Area
Peter M. Banting/Chairman, Marketing Area/Acting Chairman, Business Environment and Policy Area
James C. Gaa/Chairman, Accounting Area
George O. Wesolowsky/Chairman, Management Science and Information Systems Area

Professors Emeriti

Robert J. Joyner/B.A., M.A., Ph.D. (Toronto)/Organizational Behaviour
William J. Schlatter/A.B., A.M., Ph.D. (Illinois), C.P.A./Accounting
Andrew Z. Stenadriovits/M.A., Ph.D. (Kolosean)/Production and Management Science/Professor (Part-time) of Production and Management Science

Professors

Roy J. Adams/B.A. (Pennsylvania State), M.A., Ph.D. (Wisconsin)/Industrial Relations
Naresh C. Agarwal/B.A., M.A. (Delhi), Ph.D. (Minnesota)/Organizational Behaviour/Chairman of the Personnel and Industrial Relations Area
Peter M. Banting/B.A., M.B.A. (McMaster), Ph.D. (Michigan State)/Marketing/Chairman of the Marketing Area/Acting Chairman of the Business Environment and Policy Area
Robert G. Cooper/B.Engr., M.Engr. (McGill), M.B.A., Ph.D. (Western Ontario)/Marketing
Haim Falk/B.Ac. (Hebrew), M.B.A. (Tel-Aviv), Ph.D. (Hebrew), C.P.A./Accounting/Professorial Chair in Accounting
Harsh C. Jain/B.Com. (Delhi), M.B.A. (Indiana), Ph.D. (Wisconsin)/Organizational Behaviour
Robert F. Love/B.A.Sc. (Toronto), M.B.A. (Western Ontario), Ph.D. (Stanford), P.Eng./Management Science
Winston H. Mahatoo/B.A. (London), B.Sc., M.Sc. (McGill), Ph.D. (Montreal)/Marketing
Joseph B. Rose/B.B.A. (Adelphi), M.B.A. (California), Ph.D. (State University of New York at Buffalo)/Industrial Relations
Randolph E. Rose/B.A. (Waterloo Lutheran), M.B.A. (Michigan State), D.B.A. (Indiana)/Marketing/Associate Dean (External Relations)
George W. Torrance/B.A.Sc., M.B.A. (Toronto), Ph.D. (State University of New York at Buffalo)/Management Science/Dean of the Faculty
William G. Truscott/B.S.E. (Princeton), M.B.A. (McMaster), D.B.A. (Indiana), P.Eng./Production and Management Science/Director of the Ph.D. Programme
George O. Wesolowsky/B.A.Sc. (Toronto), M.B.A. (Western Ontario), Ph.D. (Wisconsin)/Management Science/Chairman of the Management Science and Information Systems Area

Associate Professors

Prakash L. Abad/B.Tech. (Indian Institute of Technology), M.S., M.B.A., Ph.D. (Cincinnati)/Management Science
Norman P. Archer/B.Sc. (Alberta), Ph.D. (McMaster), M.S. (New York)/Management Science
Min S. Basudur/B.Sc. (Toronto), M.B.A. (Xavier), Ph.D. (Cincinnati), P.Eng./Organizational Behaviour
Kenneth R. Deal/B.Sc., M.B.A., Ph.D. (State University of New York at Buffalo)/Marketing and Management Science
James C. Gaa/B.A. (Michigan State), A.M., Ph.D. (Washington, St. Louis), Ph.D. (Illinois)/Accounting/Chairman of the Accounting Area
Clarence C.Y. Kwan/Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto), P.Eng./Finance
John G. Millen/B.Engr.Mgt., M.B.A. (McMaster), M.Eng. (Toronto), Ph.D. (Waterloo), P.Eng./Production and Management Science
Thomas E. Muller/M.B.A. (Simon Fraser), Ph.D. (British Columbia)/Marketing
Mahmut Paltar/B.Sc., M.Sc. (Middle East Technical University), Ph.D. (Waterloo)/Management Science

A. William Richardson/B.Sc., Ph.D., M.B.A. (McMaster), C.M.A./Accounting/Associate Dean (Academic Programmes)
Anne G. Sambol/B.S. (Auburn), Ph.D. (North Carolina)/Business Economics (Part-time)
George Steiner/M.Sc. (Budapest), Ph.D. (Waterloo)/Production and Management Science
Eva Tihanyi/B.A. (Karl Marx), M.A., Ph.D. (Saskatchewan)/Finance (Half-time)

Assistant Professors

Christopher K. Bart/B.A., M.A. (York), Ph.D. (Western Ontario), C.A./Business Policy
Trevor W. Chamberlain/B.Sc. (California, Berkeley), M.B.A. (McGill), Ph.D. (Toronto), C.A./Finance
Y.C. Lilian Chan/B.B.A. (Chinese University of Hong Kong), Ph.D. (Virginia Polytechnic Institute and State University)/Accounting
C.S. Sherman Cheung/B.S. (Louisiana State), M.S., Ph.D. (Illinois)/Finance and Business Economics
Rick D. Hackett/B.Sc. (Toronto), M.A. (Windsor), Ph.D. (Bowling Green State)/Organizational Behaviour
George K. Kanaan/B.B.A. (Lebanese University), M.Acc. (Southern Illinois), Ph.D. (Wisconsin)/Accounting
Hwan Kim/B.S., M.S. (Illinois)/Accounting
Elko J. Retschmidt/Dip. Ing. (Staatliche Ingenieurschule, Hannover), M.B.A., Ph.D. (McGill)/Marketing and International Business
Itzhak Kriens/B.A., M.A. (Tel Aviv), Ph.D. (McMaster)/Finance and Business Economics
Bernadette E. Lynn/B.A. (Carlow College), M.A. (Pittsburgh), Ph.D., M.B.A. (McMaster), C.M.A./Accounting
John C.C. Macintosh/B.Sc. (Natal), M.Com. (Cape Town), D.Com., C.A. (South Africa)/Accounting
John W. Medcof/B.A. (New Brunswick), M.A. (Toronto), Ph.D. (Toronto)/Organizational Behaviour
Pushpalatha L. Shanker/B.E., M.Tech. (Madras), Ph.D. (Florida)/Finance
Yufei Yuan/B.S. (Fudan), Ph.D. (Michigan)/Information Systems
F. Isik Zeytinoglu/B.A., M.A. (Bogazici), M.S., Ph.D. (Pennsylvania)/Industrial Relations

Lecturers

Christopher C. Costanza/B.Com., M.B.A. (McMaster), C.A./Accounting (Half-time)
Elizabeth A. Csordas/B.Sc. (Windsor), M.B.A. (McMaster), C.M.A./Accounting/M.B.A. Advisor
Joan L. McDonald/B.Sc., M.B.A. (McMaster)/Management Science
R. Ann McLaughlin/B.A. (Guelph), M.B.A. (McMaster)/Information Systems
Wendy D. Rotenberg/B.Sc. (Carleton), M.B.A. (McMaster)/Marketing and Business Policy
Paul M. Stillman/B.Sc. (McMaster), LLB. (Osgoode Hall)/Business Law (Half-time)

Faculty Notes:

1. Commerce courses are open only to students registered in Commerce or the Engineering and Management programmes 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.
2. 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.
3. In most Level IV Commerce courses, section size will be restricted to a maximum of 30 students; students will be admitted on a first-come basis.

COMMERCE 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 1A06.
COMMERC 2BA3 ORGANIZATIONAL BEHAVIOUR
An 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.

COMMERC 2FA3 FINANCIAL INSTRUMENTS AND INSTITUTIONS
An introduction to 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 1A06 and Commerce 2A93.

COMMERC 2MA3 INTRODUCTION TO MARKETING
An introduction to marketing as a field of study. The marketing institutions, marketing concepts and strategies. Stress is placed upon the analytical, managerial, and conceptual aspects of the subject.
Prerequisite: Economics 1A06.

COMMERC 2QA3 COMPUTER-AUGMENTED STATISTICAL ANALYSIS
An introduction to the application of statistical analysis in managerial decision-making. The concepts of statistical analysis are applied to a variety of topics, including decision-making, estimation by sampling, hypothesis testing, analysis of variance, simple linear and multiple regression and forecasting.
Prerequisite: Business I Mathematics and Computer Science 1A03 or IB3 or equivalent courses.

COMMERC 3AA3 COST AND MANAGERIAL ACCOUNTING I
An introduction to concepts underlying the use of cost accounting information for managerial planning and control, and for inventory valuation. The nature and analysis of costs, and the usefulness and limitations of accounting data for decision-making will be discussed.
Prerequisite: Commerce 2AA3.

COMMERC 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 2A93.

COMMERC 3BA3 INDUSTRIAL RELATIONS
An introduction to the structure and process whereby labour, management and the public interact to produce terms and conditions of employment. Topics include the development, structure and objectives of organized labour, management philosophy and policy in industrial relations and governmental policy.
Prerequisite: Commerce 2B93.

COMMERC 3BB3 PERSONNEL
An introduction to the administrative and research aspects of the selection, placement, remuneration, training, and promotion of people in organizations.
Prerequisite: Commerce 2B93.

COMMERC 3FA3 INTRODUCTION TO MANAGERIAL FINANCE
An examination of 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.
Prerequisite: Commerce 2F93.

COMMERC 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 2F93.

COMMERC 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 2M93, and 2QA3 or Statistics 3Y2 or 3Y03.

COMMERC 3MB3 CONSUMER MORTION
An analysis of the motivations underlying consumer choice behaviour such as store patronage, brand loyalty, and new-product adoption. Specifically, the course will trace the role of perception, learning, attitudes, personality, reference groups, social class and culture in the consumer decision process.
Prerequisite: Commerce 2M93.

COMMERC 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 2Q93.

COMMERC 3QB3 BUSINESS DATA PROCESSING
An introduction to commercial data processing technology: I/O devices; storage, processors; software; interdepartmental and interorganizational data flows; and the analysis and design of such systems.
Prerequisite: Computer Science 1A03 or IB3, or equivalent course(s).

COMMERC 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 variances, cost behavior determination, and income measurement for management.
Prerequisite: Commerce 3AA3.

COMMERC 4AB3 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.

COMMERC 4AD3 AUDITING
An examination of the attest function in accounting including ethical, legal, and statutory influences in the development of auditing standards. The nature of control structures and of audit evidence is examined. The nature, scope, and application of auditing procedures are examined through a selected analysis of asset, liability, revenue, and expense items.
Prerequisite: Commerce 3AB3.

COMMERC 4AE3 ACCOUNTING INFORMATION SYSTEMS
Consideration of the principles underlying the role of accounting as an information system for planning and controlling business operations. The emphasis is on internal controls in both manual and computerized systems. Topics include: controls over the system development process, the auditor's use and analysis of internal control, and the role of the accountant in controlling an accounting information system.
Prerequisite: Commerce 3AA3, 3AB3 and 3QB3.

COMMERC 4AF3 SEMINAR IN ACCOUNTING THEORY
A review of accounting theory as a background for applying underlying concepts to current accounting problems. Emphasis is on current literature, with a major term paper required.
Prerequisite: Completion of, or concurrent registration in, Commerce 4AB3.

COMMERC 4AG3 BEHAVIOURAL ISSUES IN MANAGEMENT
A detailed analysis of employee motivation and reward systems: organizational structure; leadership and decision-making; group processes; and management of conflict and change.

COMMERC 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 manpower planning, methods of personnel recruitment and selection, human rights legislation in Canada and the U.S., the practice of recruitment and selection in Canada, decision-making strategies in personnel recruitment and selection, and assessment centres.
Prerequisite: Commerce 3BB3.

COMMERC 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 2A03.

COMMERC 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 2A03.

COMMERC 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 3BB3.

COMMERC 4BF3 MANAGERIAL FINANCE
A managerial point of view is established by the application of basic financial theory and analysis to actual case situations. Lectures are used to complement case discussions. The course is useful for students interested in general management, as well as for those wishing to attain a degree of specialization in Finance.
Prerequisite: Commerce 3BF3.

COMMERC 4F3 FINANCIAL THEORY
This course explores the theoretical and conceptual foundations of Finance. Topics include: utility maximization and choice involving risk; the quantification of risk and return; concepts of the investment and financing and dividend decisions of firms; asset pricing in perfect and imperfect markets.
Prerequisite: Commerce 3F3A.
COMMERCE

COMMERCE 4FC3 PORTFOLIO THEORY AND MANAGEMENT
The selection and management of investment portfolios is analyzed with mathematical models. The course covers recent developments in portfolio theory, with a view to applications by individual and institutional investors.
Prerequisite: Commerce 4FB3.

COMMERCE 4MC3 PRODUCT MARKETING
This course covers concepts, methods and strategies for both new and existing products. Topics include: the new product process; launch strategies; product policy; portfolio analysis and product positioning.
Prerequisite: Commerce 3MA3.

COMMERCE 4MD3 INDUSTRIAL MARKETING
To give the student an overall view of the marketing of industrial goods and services, this course utilizes techniques and concepts from introductory marketing courses and applies them to the special problems encountered in the industrial market.
Prerequisite: Commerce 3MA3.

COMMERCE 4PA3 BUSINESS POLICY
This course builds upon, and integrates, the student’s knowledge of the functional areas of business. Various management practices in specific corporate situations are compared, and several theories of management strategy formulation at different stages of corporate development are examined.
Prerequisite: Commerce 4PB3.

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 3AB3 and 3FA3.

COMMERCE 4PD3 COMMERCIAL LAW
The principles of Canadian federal income taxation are examined in considerable detail through a reading of both the statute law and the common law. Emphasis is placed on the application of the law to the situations of individuals and businesses. Topics include: administration, liability for income tax, computation of income, computation of taxable income and computation of tax.
Prerequisite: Commerce 3AB3 and 3FA3.

COMMERCE 4PE3 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.
Prerequisite: Not open to students who have received credit for Commerce 4MA3.

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 Mechanical Engineering 4C03.

COMMERCE 4QB3 ANALYSIS OF PRODUCTION/OPERATIONS PROBLEMS
An examination of analytical approaches to problems in the field of production/operations. The course will provide in-depth coverage of a limited number of topics. These topics may be selected from among: layout and location of facilities, scheduling, inventory control, and materials handling.
Prerequisite: Commerce 4QA3, or Mechanical Engineering 4C03.

COMMERCE 4QC3 QUANTITATIVE ANALYSIS FOR BUSINESS
An examination of the techniques of management science and their application to business problems. Topics include: linear programming, integer programming, and optimization problems on networks.
Prerequisite: Commerce 3QA3, or registration in the Engineering and Management programme.

Comparative Literature

Comparative Literature courses are administered within the Department of Modern Languages of the Faculty of Humanities.
N. Kolesnikoff (Modern Languages)/Co-ordinator

Department Notes:
1. Comparative Literature is the study of literature from the point of view of more than one national literature and/or in conjunction with any other intellectual discipline. It is designed to meet the needs of those students who wish to study literary texts as an intercultural and often interdisciplinary phenomenon.

2. Courses are organized to cover six basic areas of comparative literary study:
   - General Cultural Background
   - Comparative Literature 1A06, 3A06
   - Literary and Cultural History
   - Comparative Literature 2D03, 2G03, 4D03
   - Literary Forms
     - Narrative: Comparative Literature 2C06
     - Drama: Comparative Literature 2B03, 3E03
   - Cultural Periods
     - Comparative Literature 3B06, 3I03, 3J03
   - Literary Theory
     - Comparative Literature 3Q03, 3Q03, 4A03, 4B03
     - General
     - Comparative Literature 3F03

3. Subject to approval by the Ontario Council on University Affairs, a new programme in Honours Comparative Literature and Literary Theory will commence in 1988-89. (See the Faculty of Humanities, Modern Languages section of this Calendar for details.)

4. Students enrolled in the Humanities Interdisciplinary B.A. programme may elect Comparative Literature as a theme of study. (See the Faculty of Humanities, Interdisciplinary B.A. section of this Calendar for details.)

COMP LIT 1A06 INTRODUCTION TO THE WESTERN LITERARY TRADITION
An introduction to the origins and continuity of the Western literary tradition from the Bible and classical literature to modern literature, as seen in representative texts (in English translation). Attention is given to the development of critical skills in reading and writing.
2 lects.; 1 tut.; two terms
Prerequisite: Grade 13 English; or the permission of the Co-ordinator.

COMP LIT 2A03 STUDIES IN LITERARY MOVEMENTS I
A study of the central themes and forms of major literary movements from Classical Antiquity to Romanticism, through the reading of representative works (in English translation). Not offered in 1987-88.
3 lects.; one term
Prerequisite: Comparative Literature 1A06; or permission of the Co-ordinator.

COMP LIT 2A03 STUDIES IN LITERARY MOVEMENTS II
A study of the central themes and forms of major literary movements from Realism to Postmodernism, through the reading of representative works (in English translation). Not offered in 1987-88.
3 lects.; one term
Prerequisite: Comparative Literature 1A06; or permission of the Co-ordinator.

COMP LIT 2B03 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 2E03 and Dramatic Arts 2E03.

COMP LIT 2C06 TOPICS IN THE STUDY OF LONGER LITERARY FORMS
1987-88: The European Novel in Translation
An introductory study of some of the major works of Russian, French, Italian, Spanish and German fiction, primarily of the nineteenth and twentieth centuries.
3 lects.; two terms
Prerequisite: Registration in Level II or above. Not available to students with credit in Comparative Literature 3C06.

Comparative Literature 2C06 may be repeated, if on a different topic, to a total of 12 units.

COMP LIT 2D03 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.

Same as English 2D03.

COMP LIT 2G03 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 2V03.
COMP LIT 3A06 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 1A06 with a grade of at least B, and permission of the instructor.
Same as Arts and Science 3A06.

COMP LIT 3B06 FROM ROMANTICISM TO MODERNISM
An introduction to the major intellectual and aesthetic currents in Europe from the beginning of the nineteenth century to approximately 1920.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of any programme in the Faculty of Humanities.
Same as Humanities 3B06.

COMP LIT 3D03 TOPICS IN LITERARY GENRES
Detailed textual and formal study of important literary genres in poetry, drama and fiction.
Seminar (2 hrs.); one term
Prerequisite: Registration in Level III or IV of the Comparative Literature and Literary Theory programme; or permission of the Co-ordinator.
Not offered in 1987-88. Comparative Literature 3D03 may be repeated, if on a different topic, to a total of 6 units.

COMP LIT 3E03 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 1A06; or permission of the instructor.
Same as Dramatic Arts 3C03.

COMP LIT 3F03 THE SPANISH AMERICAN NOVEL: THE BOOM GENERATION
An examination of the themes and trends of the Spanish American novel of the Boom generation including works by García Márquez, Donoso, Fuentes, and Corazón, in English translation.
3 lects.; one term
Prerequisite: Open to students in Level III or IV of any programme, with the permission of the instructor.
Same as Spanish 4E03.

COMP LIT 3I03 TOPICS IN GREEK AND ROMAN LITERATURE 1967-88: The Poet and Society
An examination of the role of the poet in Greek and Roman society. The topics surveyed include the poet as artist, teacher, critic, propagandist, panegyrist, moralist, and popular entertainer.
3 lects.; one term
Prerequisite: Six units of Classical Civilization; or permission of the Department of Classics.
Same as Classical Civilization 3I03.
Comparative Literature 3I03 may be repeated, if on a different topic, to a total of 6 units.

COMP LIT 3J03 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 a Comparative Literature or English programme; or permission of the Department of English.
Same as English 3J03.

COMP LIT 3K03 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.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a Comparative Literature or English programme; or permission of the Department of English. Not available to students with credit in English 4K03.
Same as English 3K03.

COMP LIT 3Q03 MODERN CRITICAL THEORY
The theory and practice of literary criticism from Eliot to the present.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a Comparative Literature or English programme; or permission of the Department of English.
Same as English 3Q03.

COMP LIT 4A03 THE METHODOLOGY OF COMPARATIVE LITERATURE
A study of the range of theories of general and comparative literature.
Seminar (2 hrs.); one term
Prerequisite: Registration in Levels III or IV of the Comparative Literature and Literary Theory programme; or permission of the Co-ordinator.
COMPUTER SCIENCE AND SYSTEMS

Professors
Gerald L. Keach/ B.A.Sc. (Toronto), M.Sc, Ph.D. (McMaster)/Director
IPACS
Peter E. Laufer/B.A. (Alabama), M.A. (Emory), Ph.D. (Queen's, Belfast)
Patrick J. Ryan/ B.Sc. (Toronto), Ph.D. (Brown)

Associate Professors
William H. Fleming/B.Sc., M.Sc., Ph.D. (McMaster)
Derek J. Kenworthy/B.A., M.A., D.Phil. (Oxford)
Kenneth A. Redish/B.Sc. (London), F.B.C.S.
William F. Smyth/B.A. (Toronto), M.Sc. (Ottawa)

Norman Soltseff/B.Sc., Ph.D. (Sydney)

Assistant Professors
Ivan Bnha/Ing. (CVUT, Prague), RNDr (Charles, Prague), C.Sc (CVUT, Prague)
Frantisek Frankel/M.Sc., RNDr (Charles, Prague), Ph.D. (Toronto)
Stanislaw Jarzabek/M.Sc., Ph.D. (Warsaw)
W.F. Skipper Poehlman/B.S. (Niagara), B.Sc. (Brock), M.Sc., Ph.D. (McMaster)

Norman P. Archer/ B.Sc. (Alberta), M.S. (New York), Ph.D. (McMaster)
Hoda A. ElMaraghby/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Ali R. Montazeri/H.N.D. (Teeside Polytechnic, U.K.), M.Sc. (Southampton), Ph.D. (Waterloo)
Evelyn M. Nelson/B.Sc., B.Sc., Ph.D. (McMaster)

Department Notes:
1. Because of resource limitations, enrolment in Computer Science and all joint programmes involving Computer Science may be limited. Students intending to enter any Computer Science programme should consult the Department of Computer Science and Systems.

2. The following are suggested Computer Science options available to students not in Computer Science Programmes:

For Science-oriented students: Computer Science 1MA3 or 1MB3, 2MF3 or 1C03, and either 2P03, 3D03, 3F03, 3T03, 4W03 or 2N03.

For Business-oriented students: Computer Science 1BA3, 2ME3 or 2A03, 2P03, 3I03, 4IO3.

Social Sciences and Humanities students: Computer Science 1ZA3, provides an introduction to computer use.

COMP SCI 1ZA3 INTRODUCTION TO COMPUTING & COMPUTER USE FOR BUSINESS
Organization and characteristics of stored programme computers; introduction to word processing; analytical and logical skill development using structured BASIC; computer programming techniques for business applications; introduction to descriptive statistics, and business problem solving with electronic spread sheets.
3 lects., 1 tut.; one term

Prerequisite: One Grade 13 Mathematics credit, or Mathematics 1K03, 1L03, or 1M03, and registration in the Faculty of Business. Not open to students who are registered in, or have received credit for, any Computer Science 1A03, 1B03, 1H03, 1M03, 1A3, Engineering 1D03.

COMP SCI 1MA3 INTRODUCTION TO COMPUTER PROGRAMMING
Organization and characteristics of computers; algorithmic development, stepwise refinement, modularization, searching and sorting methods, problem solving; data types, arithmetic/logical expressions, looping, arrays, subprograms, input/output, style, and program testing.
3 lects., 1 tut.; one term

Prerequisite: Two Grade 13 Mathematics credits, or one Grade 13 Mathematics credit and one of Mathematics 1K03, 1L03, or both Mathematics 1K03 and 1L03, or Mathematics 1M03. Not open to students who are registered in or have received credit for any of Computer Science 1A03, 1B03, 1H03, 1M03, 1A3, Engineering 1D03.

COMP SCI 1MB3 INTRODUCTION TO COMPUTER SCIENCE
Programming style, program testing, formal specification techniques of problem/program modules; recursion and recursion relations, structured and scalar data types, structured programming, analysis of algorithms, and computational complexity, searching and sorting methods; introduction of a structured language.
3 lects.; one term

Prerequisite: One of Computer Science 1A03, 1B03, 1H03, 1M03, 1A3, Engineering 1D03; and credit for, or concurrent registration in, one of Mathematics 1A06, 1B03, 1H05. Not open to students who are registered in, or have credit for, Computer Science 2B03. Students having credit in 2P03 or 2ZB3 will lose that credit.

COMP SCI 12A3 INTRODUCTION TO COMPUTING & COMPUTER USE:
Organization and characteristics of computers; operating system facilities, text-editors, wordprocessing, spreadsheets, office automation, and database management systems; principles of computer use, system design, software development, and computer programming.
3 lects., 1 tut.; one term

Prerequisite: One Grade 13 Mathematics credit, or Mathematics 1K03, 1L03, or 1M03. Not open to students who are registered in the Faculty of Business, or who are registered in, or have received credit for, any of Computer Science 1A03, 1B03, 1H03, 1M03, 1A3, Engineering 1D03.

COMP SCI 2B03 INTRODUCTION TO COMPUTER SCIENCE
Program testing, programming style, recursion, analysis of algorithms, computational complexity, sorting and searching methods. The programming language Pascal is introduced.
3 lects.; one term

Prerequisite: One of Computer Science 1A03, 1B03, 1H03, or Engineering 1D03 and, concurrent registration in Computer Science 2L03.

COMP SCI 2L03 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 2B03 and registration in a Computer Science, Computer Engineering or Computer Engineering and Management programme. Enrolment is limited.

COMP SCI 2M03 DESIGN OF INFORMATION SYSTEMS I
Introduction to "structured approach" to systems analysis, with emphasis on program development process; program design, data representation, structured tools for systems analysis and design, organization of data and files, data entry and audit techniques, report organization. COBOL will be applied within a microcomputer environment.
3 lects.; one term

Prerequisite: One of Computer Science 1M03, 2ZB3, 2B03, 2P03. Not open to students with credit in Computer Science 2A03.

COMP SCI 2MF3 INTRODUCTION TO COMPUTER ARCHITECTURE
Introduction to the structure of computer systems; organization of central processing units, memory subsystems, and input/output devices; introduction to machine language, assembler programming, and system software.
3 lects.; one term

Prerequisite: One of Computer Science 1M03, 2ZB3, 2B03, 2P03. Not open to students with credit in Computer Science 1C03. Students in Level III or IV who have not attempted any of Computer Science 1M03, 2ZB3, 2B03, or 2P03 may seek permission from the instructor.

COMP SCI 2N03 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 1A03, 1B03, 1H03, and one of Mathematics 1A06, 1B03, 1B04, 1F06, 1G06, 1M03, or Engineering 1D03 and Mathematics 1N06. 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 2P03.

Computer Science 2L03, 2N03, and 2P03 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 2N03 prior to 1983, and who wish to upgrade to Computer Science 2P03 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P03.

COMP SCI 2P03 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, data structures.
3 lects.; one term

Prerequisite: One of Computer Science 1A03, 1B03, 1H03, and one of Mathematics 1A06, 1B03, 1B04, 1F06, 1G06, 1M03, or Engineering 1D03 and Mathematics 1N06. Not open to students who have completed or are registered in Computer Science 2L03.

Computer Science 2L03, 2N03, and 2P03 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 2N03 prior to 1983, and who wish to upgrade to Computer Science 2P03 for the purpose of taking further courses may do so, but will receive only 1 unit of credit for Computer Science 2P03.

COMP SCI 3A03 DATA STRUCTURES
Indices, arrays, queues, stacks, lists, graphs, trees, and search trees. Applications to memory management, pattern matching, indexed sequential files, etc.
3 lects.; one term

Prerequisite: Computer Science 2L03 and registration in a Computer Science or Computer Engineering degree programme.

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COMPSCI 3B03: ORGANIZATION OF PROGRAMMING LANGUAGES
An applied course in programming-language concepts emphasizing the run-time behaviour of programs; a comparative study of several major programming languages; an introduction to some formal aspects of language definition and analysis.
3 lects.; one term
Prerequisite: Computer Science 3A03 and registration in a Computer Science or Computer Engineering degree programme. Not open to students with credit in Computer Science 4M03.

COMPSCI 3C03: 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 3A03 and 3D03; or Computer Science 3D03 or Electrical Engineering 3B04, and registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management, and permission of the instructor.

COMPSCI 3D03: COMPUTER SYSTEMS ARCHITECTURE
Study of a computer system involving hardware and software components; control, storage, and input/output systems; assemblers, loaders, compilers; operating systems and virtual memory techniques.
3 lects.; one term
Prerequisite: Computer Science 1C03 and one of Computer Science 2L03, 2P03, or registration in Level IV Electrical Engineering or Level V Electrical Engineering and Management.

COMPSCI 3E03: INTRODUCTION TO SOFTWARE ENGINEERING
Problem specification, program design, implementation, and testing to produce a reliable and maintainable system using state-of-the-art programming methodology. Application of these techniques through a term project for medium-sized teams.
2 lects., 1 lab.(2); one term
Prerequisite: Computer Science 2L03 and registration in a Computer Science or Computer Engineering degree programme.

COMPSCI 3J03: 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 management information systems.
3 lects.; one term
Prerequisite: One of Computer Science 2L03, 2P03 and completion of, or registration in Computer Science 2A03.

COMPSCI 3L03: SYMBOLIC COMPUTATION
Practical study of processing techniques and theoretical constructs that form a foundation for artificial intelligence systems. Combinatorial explosion, search spaces, propositional and predicate logic, grammars, logic programming, goal-state transitions, and concurrent systems. AI-oriented languages such as LISP, PROLOG, and FORTRAN will be studied.
3 lects.; one term
Prerequisite: Computer Science 2M03 or 3A03.

COMPSCI 3M03: SCIENTIFIC DATA PROCESSING
Basic techniques of constructing large scientific data processing systems, file organisation, and data base techniques for managing large volumes of data. Computer graphics, data representation and systems design will be discussed.
3 lects.; one term
Prerequisite: Computer Science 2L03, or 2P03.

COMPSCI 3N06: PROJECT
The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Computer Science 2L03 and registration in Level III of the B.Sc. programme in Computer Science.

COMPSCI 3T03: 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 3D03.

COMPSCI 4B03: COMPILERS
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.

COMPSCI 4C06: 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 4G06 is specified and completion of one of Computer Science 3A03, 3I03. Not open to students who are registered in or have completed Computer Science 3R06.

COMPSCI 4I03: 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 3I03.

COMPSCI 4I13: INTRODUCTION TO ARTIFICIAL INTELLIGENCE
Broad survey of major areas of artificial intelligence. Problem spaces and problem-solving, search techniques including back-tracking, perception and pattern recognition including scene analysis and natural language understanding, inference, reasoning expert systems.
3 lects.; one term
Prerequisite: Computer Science 3I03.

COMPSCI 4I23: THE ARCHITECTURE OF EXPERT SYSTEMS
Design of knowledge-based systems used to apply human expertise to specific areas of problem-solving. Components of consultation systems, tools and languages, development engines, knowledge engineering, and knowledge-based programming. Commercial packages and current research trends are examined.
3 lects.; one term
Prerequisite: Computer Science 4I13 or 4S03.

COMPSCI 4J03: INTRODUCTION TO FORMAL LANGUAGE THEORY
The mathematical properties of context-free grammars and languages.
3 lects.; one term
Prerequisite: Computer Science 3A03, and one of Mathematics 2F04, 2J06. Offered in 1988/89, alternating with Computer Science 4X03.

COMPSCI 4L03: 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 2A03 and 3A03 or, registration in Computer Engineering or Computer Engineering and Management.

COMPSCI 4W03: 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 2L03, 2N03, 2P03.

COMPSCI 4X03: 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 3A03, and Mathematics 2F04, 2J06. Offered in 1987/88, alternating with Computer Science 4J03.

COMPSCI 4Z03: DIRECTED READINGS
Directed readings in an area of computer science of interest to the student and the instructor.
Prerequisite: Registration in Level IV of an Honours programme and permission of the Chairman of the Department.

Dramatic Arts
Courses and programmes in Dramatic Arts and Film at McMaster University are supervised and co-ordinated by an interdisciplinary Committee on Dramatic Arts. Students who plan to register in a programme in Dramatic Arts must consult the Chairman of the Committee before selecting courses.

Committee of Instruction
A. Hammond (English)/Chairman
L. Braswell (English)
A. Brennan (English)
J. Coldwell (English)
D. Duncan (English)
T. Hoey (Classics)
E. Inman (Acting)
M. Mili (French)
F. Minelli (Modern Languages - Spanish)
V. Moore (Dance)
E. Nardocchio (French)
G. Petrie (Film)
B. Pocknell (French)
C. Rouben (French)
T. Shrive (Technical)
G. Thomas (Modern Languages - Russian)
R. Van Dusen (Modern Languages - German)
R. Vince (English)
D. Wilson (Dance)

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DRAM ART 1A06 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 2A06 DRAMA IN PERFORMANCE: INTRODUCTION TO ACTING
Contemporary methods of acting. Study and presentation of scenes from modern drama. Basic skills of voice, speech and movement. Participation in campus drama by arrangement with the instructor.
2 studio practice(2 1/2 hrs.); two terms
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the instructor after audition.

DRAM ART 2B06 THE DEVELOPMENT OF ENGLISH DRAMA
English drama from the medieval period to the close of the 18th century (excluding Shakespeare). 3 lects.; two terms
Prerequisite: Registration in a programme in Dramatic Arts or English; or permission of the English Department.
Same as English 2B06.

DRAM ART 2C03 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 of the Committee on Dramatic Arts.

DRAM ART 2E03 GREEK AND ROMAN DRAMA
Reading of selected Greek and Roman tragedies and comedies. Lectures on 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 2E03 and Comparative Literature 2B03.

DRAM ART 2F03 OPERA
An analysis of selected operatic works in their historical context, with a view to exploring the nature of opera as a theatrical and musical form.
3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts or Music; or permission of the instructor.
Not offered in 1987-88. Alternates with Dramatic Arts 2FF3.

DRAM ART 2FF3 STUDIES IN OPERA
1987-88: Opera on Record
An examination of the dramatic, historical, and musical importance of the legacy of operatic recordings from 1900 to the present.
3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts or Music; or permission of the instructor.
Alternates with Dramatic Arts 2F03.

DRAM ART 2F03 may be repeated, if on a different topic, to a total of six units.

DRAM ART 3A06 GERMAN DRAMA IN TRANSLATION
A study of selected plays from the early nineteenth century to the early 1970's (Büchner to Handke).
3 lects.; 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.
Same as German 2/03.

DRAM ART 3X06 THE ART OF THE FILM
An introduction to film style and technique through a detailed critical analysis of major works from the silent period to the present day.
2 lects. plus one weekly film screening; two terms
Prerequisite: 6 units of Humanities, preferably Dramatic Arts 1A06; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. Enrolment is limited.

DRAM ART 3A06 DRAMA IN PERFORMANCE: STYLES OF ACTING
Study and presentation of scenes from Greek, Medieval, Shakespearean and Restoration drama. Extension of acting skills to include stylistic versatility. Participation in campus drama by arrangement with the instructor.
Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 2A06; or permission of the instructor.

DRAM ART 3BB3 CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dube and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F03 or 2FF3; or permission of the French Department. Note that texts and instruction are in French. Students taking this course as Dramatic Arts 3BB3 must be registered in a programme in Dramatic Arts, and may offer written work in English.
Same as French 3BB3.

DRAM ART 3C03 MODERN EUROPEAN DRAMA IN ENGLISH TRANSLATION
A study of representative plays by modern European dramatists from Ibsen to the present.
1 seminar(2 hrs.), plus playreadings; one term
Prerequisite: Dramatic Arts 1A06; or permission of the instructor.
Same as Comparative Literature 3E03.

DRAM ART 3D03 TECHNICAL ASPECTS OF THE THEATRE
A survey of the theory and practice of all the technical skills involved in a theatrical production: set design, set construction, lighting, sound, carpentry, properties, costumes. Technical assistance with Dramatic Arts productions.
2 hrs. first term; 1 hr. (workshop) second term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman, Committee on Dramatic Arts.

DRAM ART 3D03 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.
Offered in alternate years.
Same as Russian 3D03.

DRAM ART 3K06 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 3K06.

DRAM ART 3P03 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 1A06, or one of English 1A06, 1B06, 1D06.
Same as English 3P03.

DRAM ART 3Q03 SEVENTEENTH-CENTURY FRENCH DRAMA
A study of selected plays of Corneille, Moliere and Racine.
3 lects.; one term
Prerequisite: Dramatic Arts 1A06 and French 1A06 or 1B06; or permission of the Department of French. Note that texts and instruction are in French. Students taking this course must be registered in a programme in Dramatic Arts and may offer written work in English.
Same as French 3Q03.

DRAM ART 3R03 THE AMERICAN CINEMA I
A survey of some of the predominant features of the American Cinema from its beginning to 1940. Emphasis will be placed both on the artistic value of the films and on their social significance and impact.
2 lects.; plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X06; or permission of the instructor, or the Chairman of the Committee of Instruction on Dramatic Arts. Not available to students with credit in Dramatic Arts 3R06.

DRAM ART 3R03 THE AMERICAN CINEMA II
A survey of some of the predominant features of the American Cinema from 1940 to the present day. Emphasis will be placed both on the artistic value of the films and on their social significance and impact.
2 lects., plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X06; or permission of the instructor, or the Chairman of the Committee of Instruction on Dramatic Arts. Not available to students with credit in Dramatic Arts 3R06.

DRAM ART 3X03 TOPICS IN 20TH-CENTURY DRAMA
1987-88: British Drama 1950 to the Present
The emergence of an important group of playwrights in post-war British theatre will be traced through the reading of representative works.
3 lects.; one term
Prerequisite: Dramatic Arts 1A06, or one of English 1A06, 1B06, 1D06.
Dramatic Arts 3X03 may be repeated, if on a different topic, to a total of 6 units.
Same as English 3X03.

DRAM ART 3Y03 FRENCH CINEMA
A survey of French Cinema from its beginnings to the present, through detailed critical analysis of major works.
2 lects., plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X06, or French 1A06 or 1B06; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts.
Same as French 3Y03.

DRAM ART 4A06 PRINCIPLES OF STAGE DIRECTING
Play analysis, schedule planning, rehearsal techniques, technical stagecraft required to bring a play to performance. Direction of a play for performance under the supervision of the instructor.
Class meets twice a week, total 5 hrs.; two terms
Prerequisite: Dramatic Arts 3A06 and registration in an Honours programme in Dramatic Arts; or permission of the instructor.
DRAM ART 4B03  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 of the Committee on Dramatic Arts.

DRAM ART 4B83  TOPICS IN THEATRE HISTORY: INDEPENDENT STUDY II
Students who wish to undertake independent study in one of the following areas, which must be different from that selected for 4B03, 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 of the Committee on Dramatic Arts.

ECONOMICS

ECONOMICS

ECON ART 4D03  SPECIAL STUDIES IN DRAMATIC ARTS I
1987-88: The Medieval Theatre of England and France
A study of representative plays together with a consideration of medieval technicals of staging.
1 lect., 1 tut. (2 hrs.); one term
Prerequisite: Open to students in Level II and above.
Same as English 4D03 in 1987-88.

ECON ART 4D03  SPANISH THEATRE OF THE GOLDEN AGE
A study of plays by major Spanish playwrights of the period 1550-1680, including works by Cervantes, Lope, Tirso and Calderon, in English translation.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Not offered in 1987-88. Offered in alternate years.
Same as Spanish 4BB3.

ECON ART 4E03  THEORY OF DRAMA AND THEATRE
A study of the major theoretical documents from the Greeks to the present.
3 lects.; one term
Prerequisite: Registration in a programme in Dramatic Arts; or permission of the Chairman of the Committee on Dramatic Arts.
Not offered in 1987-88. Alternates with Dramatic Arts 4F03.

ECON ART 4F03  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 of the Committee on Dramatic Arts. Not available to students with credit in Dramatic Arts 3G06. Alternates with Dramatic Arts 4E03.

ECON ART 4H03  LITERATURE AND FILM
An examination of the particular characteristics of both literature and film and the inter-relationships between them through a detailed study of selected novels, short stories and plays and the films that have been based on them.
3 lects., plus one weekly film screening; one term
Prerequisite: Registration in Level II or IV of a programme in Dramatic Arts or Literature; or permission of the instructor or the Chairman of the Committee on Dramatic Arts. It is recommended that students should already have taken Dramatic Arts 2X06.
Same as English 4H03.

ECON ART 4J03  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 lects. (3 hrs., seminars); one term
Prerequisite: Permission of the instructor.
Same as Physical Education 4J03.

ECON ART 4K03  FILM COMEDY
A study of the tradition of film comedy within a framework of comic theory in general and especially in its application to drama.
2 lects., plus one weekly film screening; one term
Prerequisite: Dramatic Arts 2X06; or permission of the instructor, or the Chairman of the Committee on Dramatic Arts. Not available to students with credit for this topic taken under Dramatic Arts 4K03.

Economics

Faculty as of January 15, 1986
Stuart Mestelman/Chairman
John B. Burbidge/Associate Chairman

Professors Emeriti
R. Craig McIvor/B.A. (Western), M.A., Ph.D. (Chicago), F.R.S.C.
William R. Scammell/B.Comm.Sc. (Queen's, Belfast), Ph.D. (Wales)
Robert W. Thompson/B.A. (Toronto), M.A. (Queen's), Ph.D. (London)

Professors
Syed Ahmad/M.A., L.L.B. (Aligarh), M.Sc. (Econ.), D.Sc. (Econ.) (London)
Martin J. Browning/B.Sc., M.Sc. (London)
John B. Burbidge/B.A., Ph.D. (McGill)
Frank T. Dcnton/M.A. (Toronto), F.R.S.C.
Peter J. George/B.A., M.A., Ph.D. (Toronto)
James A. Johnson/M.A., Ph.D. (Minnesota)
Attil A. Kubursi/B.A., (American University, Beirut), M.A., Ph.D. (Purdue)
Stuart Mestelman/B.A. (Pittsburgh), M.S., Ph.D. (Purdue)
Ernest H. Okanen/A.M. (Michigan), B.A., Ph.D. (Queen's)
William M. Scarth/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)
F.R.S.C.

Associate Professors
David W. Butterfield/B.S., M.S. Eng. (Calif. Inst. of Tech.), J.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.
Martin D. Dooley/B.A. (Indiana), M.S., Ph.D. (Wiscson-Madison)
Alan J. Harrison/B.A., M.A., Ph.D. (Essex)
Melvin L. Kliman/B.A. (Manitoba), M.A. (Queen's), Ph.D. (Minnesota)
R. Andrew Muller/B.A. (McGill), M.A., Ph.D. (Toronto)
Martin J. Osborne/B.A. (Cambridge), Ph.D. (Stanford)
A. Leslie Robb/M.A. (British Columbia), Ph.D. (Essex)
Michael R. Veall/B.A. (McMaster), M.A. (Western), Ph.D. (M.I.T.)
Jon D. Welland/B.A. (McMaster), M.A., Ph.D. (Minnesota)

Assistant Professors
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., Ph.D. (Western)
Peter J. McCabe/A.B. (Boston College) Ph.D. (Northwestern)

Associate Members
Jeff L. Callen/(Business) B.A. (York), M.B.A., Ph.D. (Toronto)
M. Luke Chan/(Business) B.Sc. (University of Prince Edward Island), M.A., Ph.D. (McMaster)
I. Kritsky/(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. Stoddard/(Epidemiology and Biostatistics) B.A. (Western), Ph.D. (British Columbia)

Department Notes:
1. Not all the Economics courses listed in this Calendar are taught every year. Students are advised to consult the timetable published by the Office of the Registrar, or the Department handbook for information on current offerings.
2. Students with strong academic records, particularly those from other departments, may be permitted to enrol in courses for which they have not completed all prerequisites. Such students must have the permission of the instructor.
3. Registration in all courses marked ** listed as selected topics, independent research, individual readings, and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in this Calendar in the section Sessional Dates.

ECON 1A06  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.

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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: Registration in an Economics or Commerce programme, or Economics 1Ao.6 and Mathematics 1Ko.3 and 1Lo.3 with an average of at least 4.0, including at least C- in Economics 1Ao.6. Not open to students with credit or concurrent registration in Economics 2Lo.6.

ECON 2K03
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: Registration in Economics or Commerce; or Economics 1Ao.6 and Mathematics 1Ko.3 and 1Lo.3 with an average of at least 4.0, including at least C- in Economics 1Ao.6. Not open to students with credit or concurrent registration in Economics 2Mo.6.

ECON 2K06
INTERNATIONAL MONETARY ECONOMICS
Balance of payments and economic problems of an open economy with special reference to Canada; the international financial system and proposals for its reform.
3 hrs.; two terms
Prerequisite: Economics 2G03 or 2K03.

ECON 3H03
INTERNATIONAL TRADE
Real theory of international trade; interregional and international specialization; effect of commercial and industrial policies.
3 hrs.; one term
Prerequisite: Economics 2G03 or 2K03.

ECON 3H03
ECONOMIC HISTORY OF THE UNITED STATES
Economic analysis of the development of the U.S. economy. Topics include the colonial economy, slavery, transportation, income distribution, foreign trade, technical and institutional change and the Great Depression.
3 lects.; one term
Prerequisite: Economics 2G03 or 2Lo.6; or permission of the instructor. Economics 2H03 or 2M06 is recommended.

ECON 3J06
ECONOMIC DEVELOPMENT
Analysis of economies of less developed countries. Topics include structural change, dual economies, agriculture, population, savings, financial development, income distribution, trade, and policy.
3 hrs.; two terms
Prerequisite: Economics 2G03 or 2Lo.6, and Economics 2H03 or 2M06.

ECON 3K06
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 2G03 or 2Lo.6, and Economics 2H03 or 2M06. A student with credit for Commerce 2FA3 may receive only 3 additional units of credit for Economics 3K06.

ECON 3L03
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 2G03 or 2Lo.6.

ECON 3L13
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 2G03 or 2Lo.6; Economics 2H03 or 2M06. Not open to students with credit in Economics 4C06.

ECON 3M06
INDUSTRIAL ORGANIZATION AND PUBLIC POLICY
The structure, conduct and performance of industrial markets, with emphasis upon the problems and methods of maintaining effective competition.
3 hrs.; two terms
Prerequisite: Economics 2G03 or 2Lo.6.

ECON 3M06
ECONOMIC STATISTICS
Statistical analysis as a basic research technique in economics, emphasizing estimation and statistical inferences, including linear regression models. Applications are drawn from micro and macroeconomics.
3 lects.; two terms
Prerequisite: Economics 2G03 or 2Lo.6, and Economics 2H03 or 2M06. Not open to students with credit or concurrent registration in Statistics 3D06. Students with credit in Economics 2B03 or in other statistics courses (except Statistics 2D03) may receive only 3 additional units of credit for Economics 3M06.

ECON 3R03
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 1Ao.6.
ECON 3503 INDUSTRIAL ORGANIZATION
A study of the structure, conduct and performance of industrial markets.
3 hrs.; one term
Prerequisite: Economics 2G03 or 2L06. Not open to students receiving credit for Economics 3N06.

ECON 3103 ANALYSIS OF ECONOMIC DATA II
Elaboration of regression techniques developed in Economics 2B03. Problems of inference and interpretation in the analysis of economic data. Introduction to forecasting in economics.
3 hrs.; one term
Prerequisite: Economics 2G03 or 2L06, and Economics 2H03 or 2M06, and Economics 2B03, or an equivalent course in statistics with permission of the instructor. Not open to students with credit or concurrent registration in Economics 4G03.

ECON 3V03 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 2G03 or 2L06.

ECON 3W03 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 2G03 or 2L06, and Mathematics 1M03; or permission of the instructor.

ECON 3X03 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. This course may be repeated if on a different topic.

ECON 3Y03 SELECTED TOPICS II
As for Economics 3X03. 3 hrs.; one term
Prerequisite: Permission of the Department.

ECONOMICS 3Z03 HEALTH ECONOMICS
Analysis of allocation of resources in health care. Topics include markets for health care, insurance, biomedical research, technology assessment, organization, and public policy.
3 hrs.; one term
Prerequisite: Economics 2G03 or 2L06. Economics 2B03 or another course in statistics is recommended.

ECON 4E03 TOPICS IN MICROECONOMICS
Applications of advanced microeconomic theory.
3 hrs.; one term
Prerequisite: At least C- in Economics 3A03.

ECON 4F03 TOPICS IN MACROECONOMICS
Applications of advanced macroeconomic theory.
3 hrs.; one term
Prerequisite: At least C- in Economics 3A03.

ECON 4G03 ECONOMETRICS I
Development of regression models appropriate to economics. Illustrations from applied micro- and macroeconomics.
3 hrs.; one term
Prerequisite: Economics 2G03 or 2L06, and Economics 2H03 or 2M06, and at least C- in Economics 3G06 or Statistics 3D06; or permission of the instructor.

ECON 4GG3 ECONOMETRICS II
Special topics in econometrics, including identification in simultaneous equations models in micro- and macroeconomics and topics in the analysis of time series.
3 hrs.; one term
Prerequisite: Economics 4G03.

ECON 4H03 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 1L03, 1M03 (or equivalent Mathematics), Economics 2G03 or 2L06, and Economics 2H03 or 2M06.

ECON 4M06.** 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 4N03.** DIRECTED RESEARCH II
As for Economics 4M06.
Prerequisite: Permission of the Department.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Eighteenth-Century Studies

There is no B.A. programme in Eighteenth-Century Studies, but students wishing to make a special study of the field may elect courses 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 2N03 Italian Baroque Art and Architecture
English 2R03 Topics in Restoration and 18th-Century Literature
English 4B06 English Literature 1660-1800
English 4L03 Romantic Poetry
French 3K03 Eighteenth-Century French Literature I
French 3K04 Eighteenth-Century French Literature
French 4F03 Topics in Eighteenth-Century French Literature

German 3A03 Baroque and Enlightenment Literature
History 2M06 European Society from Absolutism to Democracy
History 2N06 British History 1500 to the Present
History 4F06 Special Topics in the Age of the Enlightenment
Philosophy 3A06 From Kant to Hegel

Electrical and Computer Engineering

Faculty as of January 15, 1987

N.K. Sinha/Chairman

Professors Emeriti

Arthur S. Gladwin/D.Sc. (Glasgow), Ph.D. (London)

Professors

Raymond D. Findlay/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Simon Haykin/B.Sc., Ph.D., D.Sc. (Birmingham), F.R.S.C., F.I.E.E.
Reuven Kital/M.Sc., D.Sc. (Witwatersrand), F.I.E.E.
John Littau/B.Sc. (British Columbia), M.Sc., Ph.D. (Western Ontario)/Chair in Communications Antennas
Barna Szabados/Dipl.Eng. (Grenoble), M.Eng., Ph.D. (McMaster)
Desmond P. Taylor/B.Sc., M.Sc. (Queen's), Ph.D. (McMaster), F.E.I.C., P.Eng.

Associate Professors

Associate Professors

Professor

Stephen H. Chisholm/B.A.Sc. (Toronto), Ph.D. (London)
Mohamed A. El-Kady/M.Sc. (Eng.) (Cairo), Ph.D. (McMaster), P.Eng./part-time
Chandra M. Kudeja/B.Sc. (Delhi), B.E. (Bangalore), M.Eng. (McMaster), Ph.D. (Concordia), P.Eng./part-time
G.J. Rogers/B.Sc. (Southampton)/part-time

Assistant Professors

David W. Capson/B.Sc.Eng. (New Brunswick), M.Eng., Ph.D. (McMaster)
Terence D. Todd/B.Sc., M.Sc., Ph.D. (Waterloo)

Associate Member

Hubert deBruin/M.Eng., Ph.D. (McMaster), P.Eng.
Department Note: Enrolment in an Electrical Engineering course may be limited to those students for whom the course is a required course.

ELEC ENG 2B04 ELECTRICAL SCIENCE
Electrostatics and electromagnetic fields; electric and magnetic circuits; lumped parameter models; loop and nodal methods; circuit theorems; RL/CM circuits; transformers; conducting, insulating and magnetic materials.
3 lects., 1 lab. or tut.; one term
Prerequisite: Mathematics 1H05 Physics 1E04, and registration in a programme in Engineering or Electrical Engineering.

ELEC ENG 2D03 CIRCUITRY AND SYSTEMS I
Laplace transform methods; network functions; node and mesh analysis in frequency domain; transient and steady state response to step and sinusoidal inputs; frequency response; dependent sources; transformers; simple filters.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B04 and Mathematics 2P04.

ELEC ENG 2F03 ELECTRONICS I
Semiconductor physics; device physical electronics, models and characteristics; diode circuits; bipolar and field effect transistor; simple amplifier circuits; analog switches; operational amplifier characteristics, circuit models.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2B04.

ELEC ENG 2H03 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 2K03 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 2B04 and Mathematics 2P04.

ELEC ENG 3B04 CIRCUITS AND SYSTEMS II
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D03 and 2K03.

ELEC ENG 3C04 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 2D03 and 2K03.

ELEC ENG 3H03 DIGITAL SYSTEMS II
Principles of digital computers; register transfer logic; memory, operation, organization and control of central processor unit.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2H03.

ELEC ENG 3K04 SIMULATION AND OPTIMIZATION I
Simulation of circuits and systems. Sparse matrix applications; optimization techniques; adjoint systems and sensitivity; tolerance assignment; design centering; yield analysis. Microcomputer CAD systems.
2 lects., 1 lab.(3), 1 tut.(1); one term
Prerequisite: Electrical Engineering 2K03 and concurrent registration in Electrical Engineering 3B04, 3C04, Mathematics 3K03.

ELEC ENG 3N04 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 2B04, 2K03, 3C04, and Mathematics 2Q04.

ELEC ENG 3S03 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 3N04, or Engineering 3M03 with permission of the Department.

ELEC ENG 3T04 ELECTRONICS II
Advanced treatment of semiconductor device physical electronics, circuit models and characteristics; transistor amplifiers, frequency response; feedback amplifiers, operational amplifiers; design compensation; computer-aided analysis and design.
3 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 2D03, 2F03.
Co-requisite: Electrical Engineering 3B04.

ELEC ENG 3U04 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 3T04.

ELEC ENG 3V03 SOFTWARE ENGINEERING DESIGN
Students work in teams on large-scale projects involving the design of software for specific problems. Emphasis is placed on software reliability and maintainability.
1 lect., 1 lab.(2); one term
Prerequisite: Computer Science 2L03, and registration in a programme in Computer Engineering.

ELEC ENG 4A04 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 3B04, Statistics 3X03.

ELEC ENG 4B04 TRANSMITTING AND RADIATING SYSTEMS
Principles of transmission lines, waveguides and antennas, matching, Smith chart applications, dipole and Yagi antennas, ground wave and sky wave propagation.
3 lects., 1 lab. or tut.(3); one term
Prerequisite: Electrical Engineering 3C04.

ELEC ENG 4C04 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 3B04, Mathematics 3K03.

ELEC ENG 4D04 COMPUTER COMMUNICATION NETWORKS
An introduction to modern data communication networks; switching techniques; architecture and protocols; design of communication subnetworks; local area networks; interconnections; data communication services; electronic messaging; Teletex.
3 lects., 1 tut.; one term
Prerequisite: Electrical Engineering 4H04. Not open to students with credit in Electrical Engineering 4T04.

ELEC ENG 4F04 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 3I04.

ELEC ENG 4G04 DIGITAL COMMUNICATIONS
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 4A04, and Mathematics 3K03.

ELEC ENG 4H04 DIGITAL SYSTEMS III
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3I03. Not open to students with credit in Electrical Engineering 4S04.

ELEC ENG 4J04 THESIS PROJECT
An experimental investigation or design project to be carried out by the student, to test initiative, grasp of the subject, and capacity for independent work.
2 labs.(3); two terms
Prerequisite: Registration in the graduating session of a programme in Computer or Electrical Engineering.

ELEC ENG 4K04 SIMULATION AND OPTIMIZATION II
Analog IC and system simulation; advanced optimization techniques; yield optimization; postproduction tuning; network diagnosis; advanced modeling of active and passive devices. Design and use of CAD systems.
2 lects., 1 lab.(3), 1 tut.(1); one term
Prerequisite: Electrical Engineering 3K04.

ELEC ENG 4L04 FILTER THEORY AND DESIGN
2 lects., 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3B04.
A first course in programming for engineers, using

ENGINEER 2M04 ELECTRONICS IV
Selected advanced topics in physical electronics of semiconductor devices; inte-
grated circuit fabrication technology; integrated circuit component design; analog
integrated circuits; computer-aided analysis and design.
2 lects. 2 labs. or tuts.; one term
Prerequisite: Electrical Engineering 3U04.

ENGINEER 4R04 ANTENNA THEORY AND DESIGN
Small antennas; radiation efficiency, transmission line loading; arrays, wire anten-
nas, travelling wave, half wave, folded dipole and Yagi antennas; aperture anten-
nas; receiving antennas, noise power, measurements.
2 lects., 1 lab. or tut.; one term
Prerequisite: Electrical Engineering 3C04.

ENGINEER 4S04 MICROCOMPUTER INTERFACING
Microcomputer architectures; timing; program controlled I/O; memory mapping,
handshaking, polling; interrupt controlled I/O; DMA; serial communication;
peripheral interfaces.
2 lects., 1 lab.(3), 2 tuts.(1); one term
Prerequisite: Electrical Engineering 3H03 and registration in a Computer Engi-
neering programme. Not open to students with credit in Electrical Engineering
4H04.

ENGINEER 4T04 MICROCOMPUTER SYSTEMS
Real time operating systems and design of controllers: assemblers, linkers,
compilers, file management utilities, software/hardware interaction. Mass storage.
2 lects., 1 lab.(3), 1 tut.(2); one term
Prerequisite: Electrical Engineering 3H03 and registration in a Computer Engi-
neering programme. Not open to students with credit in Electrical Engineering
4E04.

ENGINEER 4U04 BIOMEDICAL ELECTRONIC INSTRUMENTATION
Generation and nature of bio-electric potentials; bio-electrodes and transducers,
neurophysiological signals, ultrasonics, lasers, telemetry, electrical safety, elec-
tronic pacemakers, cardiovascular, pulmonary, gastrointestinal and neuromuscular
instrumentation.
3 lects., 1 tut., alternate weeks; one term
Prerequisite: Electrical Engineering 3U04 or Engineering 3N03 or Physics 3B06.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Engineering (General)

Department Note:
Enrolment in these courses by students in programmes other than Engi-
neering or Engineering and Management may be limited.

ENGINEER 1C04 ENGINEERING DESIGN
Graphical communication and problem solving techniques. Introduction to engi-
neering design. Projects on conceptual design in the different engineering disciplines.
1 lect., 1 lab.(4); first term 1 lect., 1 lab.(2); second term
Prerequisite: Registration in Engineering I.

ENGINEER 1D05 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 2C03 ELECTRICAL CIRCUITS AND MEASUREMENTS
Electrical quantities and circuit elements, Kirchhoff’s laws and network theory,
transient response of circuits, simple measurement devices and transducers, char-
acteristics of motors.
2 lects., 1 lab. or tut.; one term
Prerequisite: Physics 1E04, and registration in Mathematics 2M06, or 2P04 and
2Q04.

ENGINEER 2M04 ELECTRICAL SCIENCE
An introduction to electricity and magnetism covering electrostatics, electric cur-
rents, magnetism and electromagnetism, with applications in circuits and element-
ary devices.
3 lects., 1 lab. or tut.; one term
Prerequisite: Physics 1E04, and registration in Mathematics 2M06, or 2P04 and
2Q04.

ENGINEER 2Q03 STRUCTURE AND PROPERTIES OF ENGINEERING

MATERIALS
The relationships between the structure of solids and their properties are developed
by study of specific mechanical, electrical, magnetic and chemical properties, along
with the various levels of structural complexity exhibited by solid materials. Student

independent study is aided by audio-visual materials and regular tutorial
assistance. Self-paced study; one term
Prerequisite: Completion of at least 12 units of Level I Chemistry, Mathematics or
Physics. Not open to students who are registered in, or have completed, Materials
1A06, or 1A03 and 1B04.

ENGINEER 2P04 ENGINEERING MECHANICS A
Principles of statics as applied to deformable solid bodies. Stress and strain, elastic
and inelastic behaviour of simple members under axial force, bending and torsion.
Deformation of beams; statical indeterminacy.
3 lects., plus one unit comprising tutorials or lectures devoted to applications, at
the discretion of the instructor; one term
Prerequisite: Mathematics 1H05 and Physics 1D03.

ENGINEER 2Q04 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 comprising tutorials or lectures devoted to applications, at
the discretion of the instructor; one term
Prerequisite: Engineering 2P04.

ENGINEER 2R04 BASIC ENGINEERING MECHANICS
Statics: equivalent force systems, equilibrium of particles and rigid bodies.
Deformable body mechanics: stress, strain, deformation of members. Dynami-
cs: work, energy and momentum; dynamics of particles and planar motion of
rigid bodies.
2 lects.; two terms
Prerequisite: Mathematics 1H05 and Physics 1D03.

ENGINEER 2S03 MECHANICS FOR ELECTRICAL AND COMPUTER

ENGINEERING
Three dimensional statics. Equivalent force systems in statics and dynamics. Three
dimensional and planar kinematics. Principles of mechanics: momenta, work and
energy. Dynamics of particles and planar motion of solid bodies.
3 lects.; one term
Prerequisite: Mathematics 1H05 and Physics 1D03 and registration in a prog-
ramme in Computer or Electrical Engineering.

ENGINEER 2W04 ENGINEERING THERMODYNAMICS
An introduction to the principles of thermodynamics and their application to
engineering.
3 lects., 1 tut.; one term
Prerequisite: Chemistry 1A06 and Mathematics 2M06, or 2P04 and 2Q04, which
may be taken concurrently.

ENGINEER 3N03 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 2M04.

ENGINEER 3N03 ELECTRONICS AND INSTRUMENTATION
Semiconductor devices; diodes, transistors and silicon-controlled rectifiers. Tran-
sistor characteristic and load lines. Amplifier circuits with and without feedback.
Rectifier and filter circuits. Positive and negative feedback, with application to oscil-
lators and amplifiers. Operational amplifiers. Analogue computers. Digital circuits
digital and digital logic. Digital counter and timer circuits.
2 lects., 1 tut.(2) or 1 lab.(3); one term
Prerequisite: Engineering 2M04.

ENGINEER 3P03 MECHANICAL BEHAVIOUR OF MATERIALS
Phenomenological treatment of elastic and plastic deformation, creep, fatigue and
fracture; mechanics of engineering materials. Physical processes in metals, ceram-
cics, polymers, concrete, wood and composite materials. Application to mechanical
design of structures, welded components and materials selection deci-
sions. Test methods, including non-destructive inspection.
3 lects.; one term
Prerequisite: Mathematics 2M06 or 2P04 and 2Q04, and Engineering 2P04 or
2B04. Not open to students with credit in Materials 3P03.

ENGINEER 3Q03 ELECTRONIC PROPERTIES OF SOLIDS
A conceptual and quantitative study of how electronic properties of solids are
based upon microscopic theory. Basic quantum mechanics used as a tool to
explain electronic, magnetic and dielectric behaviour of metals, insulators and
semiconductors.
3 lects.; one term
Prerequisite: Engineering Physics 2A03, or Engineering 2M04, or Electrical Engi-
near 2B04.

ENGINEER 3R03 PROPERTIES AND SELECTION OF ENGINEERING

MATERIALS
Properties of engineering materials are related to production and fabrication meth-
ods and resultant microstructures. Materials processing, fabrication and selection
in engineering design.
3 lects.; one term
Prerequisite: Engineering 2003. Not open to students registered in a programme
administered by the Department of Materials Science and Engineering.

Offered in alternate years.

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ENGINEERING (GENERAL)

ENGINEERING 4B03  ENGINEERING ECONOMICS
Engineering criteria for decision-making, money flow, financial ventures, personal financing, total project investment, production and operations costs, economic analysis, financial attractiveness.
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 4N04. Not open to students registered in Engineering and Management programmes.

ENGINEER 4C03  REAL-TIME COMPUTER INTERFACING
Organization of real-time computers, instrumentation and interfacing for data acquisition and control; computer communication and local area networks; diagnostics for real-time operations.
2 lects., 1 lab. (3); one term
Prerequisite: Registration in the graduation session of a programme for which this is a required course. Not open to students with credit in Electrical Engineering 3H03 or Physics 4D06.

ENGINEER 4J03  METAL FORMING
Offered jointly by the Departments of Mechanical Engineering and Materials Science and Engineering. Engineering plasticity applied to rolling, forging, deep drawing, extrusion, wire drawing. The effect of solidification and mechanical working on the structure and properties of engineering alloys is exemplified by reviews of foundry practice, powder metallurgy, thermomechanical processing and non-destructive testing.
3 lects.; one term
Prerequisite: Engineering 2003, and Mechanical Engineering 3A03 or Engineering 3P03 or Materials 3P03.

ENGINEER 4U03  WATER AND WASTEWATER TREATMENT PROCESS DESIGN
Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. The process capabilities, hardware and design equations, of the physical, chemical and biological processes used to improve water. Emphasis on processes such as 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 2004, or Civil Engineering 3004, or Mechanical Engineering 3004, and registration in Level IV of a B.Eng. programme or Level V of a B.Eng.Mgt. programme.

ENGINEER 4X03  CONCEPTS IN BIOMEDICAL ENGINEERING
Engineering and physical science approach to human physiological systems, cardiovascular system, with specific organ circulations, respiratory systems, overall integration and control.
3 lects.; one term
Prerequisite: Completion of at least 30 units beyond Level I of an Honours or Major programme in Science or Engineering.

Engineering and Management

The six Engineering and Management Programmes are described in the Faculty of Engineering section of this Calendar. These programmes are administered jointly by the Faculties of Business and Engineering and lead to the B.Eng or B.Eng.Mgt. degree. An Industrial Advisory Council also participates in the education process.

Faculty on the Operating Committee, as of January 15, 1987:
D.R. Woods/Programme Director
R.T.H. Alden (Electrical and Computer Engineering)
E.A. Ballik (Engineering Physics)
M.B. Ives (Associate Dean of Engineering)
C.C.Y. Kwan (Business)
J.F. MacGregor (Chemical Engineering)
M. Parlar (Business)
S. Pietruszczak (Civil Engineering)
G.R. Purdy (Materials Science and Engineering)
A.W. Richardson (Associate Dean of Business)
G.F. Round (Mechanical Engineering)
E. Tihanyi (Business)
G.W. Torrance (Dean of Business)

Industrial Advisory Council Members 1986-87
M. Anyas-Weiss (Ontario Hydro)
S. Bhan (Acres Consulting)
G.J. Hoiboom (Westinghouse Canada Inc.)
R.G. Keen (Stelco Inc.)/Chairman
H. James (Shell Canada Products Ltd.)
J.R.G. Leach (Regional Municipality of Hamilton-Wentworth)
C. Loney (Greening Donald Co. Ltd.)
R.L. Reycraft (Proctor & Gamble)

G. Schneider (Hodgson Steel Inc.)
R.B.V. Simmons (Consultant)
R. Tomlucik (Tridon Environmental)
K. Wilson (Polysar Ltd.)

ENMG MGT 4A01  ENGINEERING AND MANAGEMENT SEMINAR
Communication, leadership, intrapreneurial and entrepreneurial skills, supervision, project management and contracts. A written report and oral presentation based on summer work experience and/or career development are required.
1 seminar, alternate weeks; two terms
Prerequisite: Registration in Level IV of an Engineering and Management programme.

ENMG MGT 5A01  ENGINEERING AND MANAGEMENT REPORT
Report on a topic related to career development is required of each student in an Engineering and Management programme; guidelines and evaluation procedures must be obtained from the Programme Director before the end of Level IV.
Prerequisite: Registration in Level V of an Engineering and Management programme.

ENMG MGT 5B03  ENGINEERING AND MANAGEMENT PROJECTS
Projects that integrate the engineering and business disciplines, employing case studies provided by the members of the Industrial Advisory Council.
1 lect., 2 tuts. (2); one term
Prerequisite: Registration in the graduating session of an Engineering and Management programme.

Engineering Physics

Faculty as of January 15, 1987
D.A. Thompson/Chairman

Professors
Alfred J. Alcock/B.A.Sc. (Toronto), Ph.D. (Oxford)/part-time
Edward A. Ballik/B.Sc. (Queen's), D.Phil. (Oxford), P.Eng.
H. Douglas Barber/B.Sc., M.Sc. (Saskatchewan), Ph.D. (London), P.Eng./part-time

Associate Professors
George T. Berezina/B.Eng. (Adelaide), M.Eng., Ph.D. (McMaster)/part-time
John A. Davies/B.A., M.A., Ph.D. (Toronto)/part-time
Brian K. Garside/B.A., M.A., Ph.D. (Oxford), P.Eng./part-time
David P. Jackson/B.Sc., M.A.Sc., Ph.D. (Toronto)/part-time
John P. Martin/B.Sc. (Budapest), Ph.D. (Western), P.Eng./part-time
John Reid/B.A. (Oxford), M.Sc., Ph.D. (McMaster)
David A. Thompson/B.Sc., Ph.D. (Reading)
Oleh A. Trojan/B.A.Sc., M.A., Ph.D. (Toronto), P.Eng./part-time

Assistant Professors
Alexandre A. Berezina/B.Sc., M.S.C., Ph.D. (Leningrad State)
Jen-Shih Chang/B.Ed., B.Eng., M.Eng. (Musashi Int. of Tech.), Ph.D. (York)
E. Jessop/B.Sc. (Waterloo), M.A., Ph.D. (Harvard)

Assistant Professors
Daniel L. Cassidy/M.Sc. (Queen's), B.Eng., Ph.D. (McMaster)
Adrian Rial/B.Eng. (McMaster), Ph.D. (Cornell)

ENG PHYS 2A03  ELECTRICAL SCIENCE I
An introduction to electricity and magnetism for Engineering Physics students.
2 lects., 1 lab. or tut. (3); one term
Prerequisite: Physics 1E04 and registration in Mathematics 2P04.

ENG PHYS 2E04  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 2A03.

ENG PHYS 3D03  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, radioactivity, fission and fusion reactors.
3 lects. (including demonstration experiments); one term
ENG PHYS 3E03 FUNDAMENTALS OF PHYSICAL OPTICS
Coherence, interference and diffraction; holography, reflection and refraction; optical constants of media; simple principles of lasers.
2 lects., 1 tut. or lab.(3); one term
Prerequisite: Engineering Physics 2A03, 2E04.

ENG PHYS 3F03 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 2A03 and 2E04.

ENG PHYS 3X03 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 Science programme.

ENG PHYS 4A04 THESIS OR DESIGN PROJECT
Thesis or design projects offered by any department in the Faculty of Engineering will be considered.
2 labs (3); two terms
Prerequisite: Permission of the Department.

ENG PHYS 4C2 SPECIAL TOPICS IN ENGINEERING PHYSICS
Selected topics in engineering physics. Oral and written presentations by students on current topics in engineering.
1 lect.; two terms
Prerequisite: Completion of 60 units beyond Level I in any Engineering programme.

ENG PHYS 4D03 NUCLEAR REACTOR ANALYSIS
Release and utilization of energy from nuclear process; steady state and dynamics of chain reactions; neutron distributions and nuclear fuel cycle analysis; systems analysis of various nuclear energy concepts.
3 lects. (including field trip); one term
Prerequisite: Engineering Physics 3D03.

ENG PHYS 4E03 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 3F03 or Engineering 3Q03.

ENG PHYS 4F03 SOLID STATE DEVICES II
Physical principles underlying operation of selected devices, and their characteristics; optical devices, avalanche devices, Gunn Effect devices, Read diodes, charge coupled devices, integrated circuits, Josephson junctions.
2 lects., 1 tut.; one term
Prerequisite: Engineering Physics 4E03.

ENG PHYS 4G03 OPTICAL INSTRUMENTATION
Design of optical equipment (including reflective and refractive optical systems, interferometers and spectrometers). Optical sources and power measurements. Detectors (photographic, photorelectric, etc.), including use in the infrared and ultraviolet, and at low intensity levels.
2 lects., 1 tut.; first term
Prerequisite: Physics 3N03, or Engineering Physics 3E03.

ENG PHYS 4H06 SPECIAL STUDIES IN ENGINEERING PHYSICS
A special programme of studies to be arranged by mutual consent of the professor, departmental chairman, and the student. A student elects to work with a professor carrying out literature surveys, experiments, theoretical investigations, etc. A written report is required.
2 tuts., 1 lab.(3); two terms
Prerequisite: Permission of the Department.

ENG PHYS 4K03 OPTICAL COMMUNICATIONS SYSTEMS
2 lects., 1 tut.; second term
Prerequisite: Completion of a minimum of 60 units beyond Level I in any Engineering or Physics programme.

ENG PHYS 4L03 NUCLEAR REACTOR THERMALHYDRAULICS
Introduction to two phase flow and nuclear reactor thermalhydraulics systems. Condensation and boiling phenomena and heat transfer mechanisms. Two phase flow apparatus and diagnostics techniques. Modelling of two phase flow by homogeneous and separated flow models.
2 lects., 1 lab.; one term
Prerequisite: Chemical Engineering 2004, or Mechanical Engineering 3004.
ENGLISH

Graham Petrie/M.A. (St. Andrews), B.Litt. (Oxford)
W. Graham Roebuck/B.A. (Durham), M.A. (McMaster), Ph.D. (London)
F. Nomura Shrei/C.D., B.A. (McMaster), M.A. (Toronto), Ph.D. (Queen's)
Ronald W. Vince/B.A. (McMaster), M.A. (Rice), Ph.D. (Northwestern)
Chauncey D. Wood/B.A. (Union College), M.A., Ph.D. (Princeton)

Associate Professors
James D. Brach/B.S. (State University of New York), M.A. (Cologne), Ph.D. (Wisconsin)
Anthony S. Brennan/B.A. (Oxford), M.A., Ph.D. (McMaster)
James Dale/B.A., M.A., Ph.D. (Cambridge)
Norman Rosenbloom/B.A. (Western), M.A. (McMaster), Ph.D. (Pittsburgh)
Joseph T. Sigman/B.A. (King's College, Wilkes-Barre), M.A., Ph.D. (Pittsburgh)

Assistant Professors
Peter Joseph Adamson/B.A. (Trent), M.A., Ph.D. (Toronto)
Donald C. Goellnicht/B.A. (Queen's), M.A., Ph.D. (McMaster)
Ronald Granofsky/B.A. (Trent), M.A. (Kent), Ph.D. (Queen's)
Roger L. Hyman/B.A. (York), M.A., Ph.D. (Toronto)
George E. Purnell/B.A. (Sir George Williams), M.A. (Alberta)

Sessional Assistant Professor
Mary E. O'Connor/B.A. (McGill), M.A., Ph.D. (Toronto)

Department Notes:
1. Students who do not meet the prerequisites for courses should consult the Department, since in some cases exceptions may be made.
2. Level III and IV courses, unless specifically restricted, are open as electives to Level II students with the stated prerequisites.
3. Courses open as electives to qualified students registered in any University programme.

English 2C03 Contemporary Canadian Fiction
English 2D03 Biblical Traditions in Literature
English 2F03 Studies in American Literature
English 2G03 Thematic Criticism
English 2H03 Topics in Restoration and 18th-Century Literature
English 3A03 Techniques of Expository Writing
English 3B03 Psychoanalytic Approaches to Literary Texts
English 3E03 Shakespeare: Selected Plays
English 3F03 Creativity and Human Interaction
English 3F05 Techniques of Creative Writing
English 3G03 Topics in 19th-Century Literature
English 3H03 Topics in Poetry
English 3I03 Topics in Fiction I
English 3J03 Topics in Fiction II
English 3K03 Topics in Critical Approaches
English 3P03 Modern Drama in English
English 3P05 Topics in World Literature in English
English 3X03 Topics in 20th-Century Literature I
English 3X03 Topics in 20th-Century Literature II
English 3Z03 Contemporary Canadian Poetry
English 4A03 The Classics and English Literature
English 4D03 Topics in Medieval and Renaissance Literature

ENGLISH 1D06 ENGLISH LITERATURE: FORMS AND APPROACHES
A selection of various areas of literary study (such as periods, genres, contexts, and approaches) will be examined, using texts from a wide variety of periods and forms of English literature. In this course considerable emphasis is placed on the development of critical skills in reading and writing.
2 lects., 1 tut.; two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 1A06, 1B06 or 2E06. Not available to students with credit for, or registration in, English 1C06.

ENGLISH 1C06 ESSENTIAL ENGLISH
Training in skills of critical reading, thinking and writing, combined with study of literary texts illustrating various modes of communication.
3 lects., two terms
Prerequisite: Grade 13 English; or permission of the Department. Not available to students with credit in English 1A06 or 1B06. Not available to students with credit for, or registration in, English 1D06.
This course is recommended for students registered, or intending to register, in programmes outside the Faculty of Humanities which require English.
Enrolment is limited.

ENGLISH 2B06 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 English or Dramatic Arts; or permission of the English Department.

ENGLISH 2C03 CONTEMPORARY CANADIAN FICTION
A study of the themes and structure of the contemporary Canadian novel, usually with emphasis upon the relationship of Canada's cultural patterns and its literature.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.

ENGLISH 2D03 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, tropes, doctrinal themes and narrative structures.
3 lects.; one term
Prerequisite: Open to students in Level II and above, except to students with credit for English 2P03.

ENGLISH 2F03 STUDIES IN AMERICAN LITERATURE
A study of some of the most important writers who developed American literature as a distinctive mode of writing in English.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.

ENGLISH 2G06 CANADIAN LITERATURE
Major aspects of the development of Canadian literature from the late 18th century to the mid-20th century. French-Canadian work in translation will be used for comparative purposes.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2H06 AMERICAN LITERATURE
A survey of significant American writers from the 18th century to the present, which emphasizes the interrelationship between the literature and its philosophical and historical background.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2I06 MODERN BRITISH LITERATURE
A study of representative literature by British writers of the 20th century. Through criticism of poems, plays and fiction, an attempt is made to relate modern British literature to its social, intellectual and cultural context.
3 lects.; two terms
Prerequisite: Registration in a programme in English; or permission of the Department.

ENGLISH 2M03 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; departmental permission slip required. Enrolment is limited.

ENGLISH 2R03 TOPICS IN RESTORATION AND 18TH-CENTURY LITERATURE
1987-88: Jane Austen
A close critical reading of the six completed novels: Sense and Sensibility, Pride and Prejudice, Northanger Abbey, Mansfield Park, Emma and Persuasion.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.

English 2R03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 2V06/2V06 THE ENGLISH LANGUAGE
An analysis of the way the English language works, 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.; two terms
Prerequisite: Registration in an English programme; or permission of the Department.

Students who wish to take English 2V06 in fulfillment of the language requirement in the Combined Honours English and Another Subject or the B.A. English programme must register in the course as English 2V06 in which case it may not be used to fulfill the English area requirements.

ENGLISH 3A03 TECHNIQUES OF EXPOSITORY WRITING
A course designed to provide practical training in the writing of clear, coherent, persuasive prose. Although there will be some study of contemporary prose models, the main work of the course will consist of regular exercises and writing assignments embracing the main types of exposition.
2 hrs. lect., 1 hr. tut.; one term
ENGLISH 3B03 PSYCHOANALYTIC APPROACHES TO LITERARY TEXTS
The basic assumptions and methods of psychoanalytic criticism will be studied with reference to selected texts in drama, fiction and poetry from Shakespeare to the present.
3 lects.; one term
Prerequisite: Registration in Level II and above. Not available to students with credit for this topic if taken as English 3K03.
Same as Sociology 2X03.

ENGLISH 3D03 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.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 3D03 BEOWULF
An exploration of the Old English epic Beowulf, supplemented by related poetic and prose texts.
3 lects.; one term
Prerequisite: English 3D03; or permission of the Department.

ENGLISH 3E03 SHAKESPEARE: SELECTED PLAYS
A study of a representative selection of plays.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06, or 1D06, or Dramatic Arts 1A06. Not open to students receiving credit for English/Dramatic Arts 3K06.

ENGLISH 3F03 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 with credit in this topic if taken as English 3K03.
Same as Social Science 3B03 and Sociology 3S03.

ENGLISH 3F03 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.

ENGLISH 3G03 TOPICS IN 19TH-CENTURY LITERATURE
1987-88: 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: One of English 1A06, 1B06 or 1D06; or permission of the Department.
ENGLISH 3G03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3H03 TOPICS IN POETRY
1987-88: 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, Adrienne Rich, Sylvia Plath, Anne Sexton, Dorothy Livesay, Margaret Atwood, P.K Page and Phyllis Webb.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.
ENGLISH 3H03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3I03 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 a programme in English or Comparative Literature; or permission of the Department.
Same as Comparative Literature 3I03.

ENGLISH 3I03 TOPICS IN FICTION I
1987-88: Ernest Hemingway
The major novels and short fiction of Ernest Hemingway in the light of recent critical re-evaluations of his work and influence.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.
ENGLISH 3I03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3J03 TOPICS IN FICTION II
1987-88: 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: One of English 1A06, 1B06 or 1D06; or permission of the Department.
ENGLISH 3J03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3K06 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 Department.
Same as Dramatic Arts 3K06.

ENGLISH 3K03 TOPICS IN CRITICAL APPROACHES
1987-88: The Bloomsbury Group
The literary focus of the course will be upon the novels of E.M. Forster and Virginia Woolf; but other aspects of Bloomsbury philosophy, art, politics and economics will also be considered.
Prerequisite: One of English 1A06, 1B06, 1D06; or permission of the Department.
Not available to students with credit for this topic taken as English 3XK3.
ENGLISH 3K03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3P03 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: One of English 1A06, 1B06 or 1D06, or Dramatic Arts 1A06.
Same as Dramatic Arts 3P03.

ENGLISH 3P03 TOPICS IN WORLD LITERATURE IN ENGLISH
1987-88: West Indian Literature
A study of some major modern West Indian writers, including V.S. Naipaul, Samuel Selvon and Derek Walcott.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.
ENGLISH 3P03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3Q03 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.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English or Comparative Literature; or permission of the Department.
Not available to students with credit in English 4C03.
Same as Comparative Literature 3Q03.

ENGLISH 3Q03 MODERN CRITICAL THEORY
The theory and practice of literary criticism from Eliot to the present.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English or Comparative Literature; or permission of the Department.
Same as Comparative Literature 3Q03.

ENGLISH 3T03 SPENSER
The main work of the course will be close study of The Faerie Queene, but The Shephearde's Calendar, Epithalamion and Prothalamion will also be read.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 3V06 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 3X03 TOPICS IN 20TH-CENTURY LITERATURE I
1987-88: Poetry of the First World War
A study of poetry by such major figures as Brooke, Sassoon, Owen, Rosenberg and David Jones, with some consideration of minor poets and prose memoirs.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.
Not available to students with credit for this topic taken as English 3H03.
ENGLISH 3X03 may be repeated, if on a different topic, to a total of six units.

ENGLISH 3X03 TOPICS IN 20TH-CENTURY LITERATURE II
1987-88: British Drama — 1950 to the Present
The emergence of an important group of playwrights in post-war British theatre will be traced through the reading of representative works.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or Dramatic Arts 1A06.
Same as Dramatic Arts 3X03.
ENGLISH 3X03 may be repeated, if on a different topic, to a total of six units.
ENGLISH 3203 CONTEMPORARY CANADIAN POETRY
The development of Canadian poetry from the 1904's to the present. Parallel developments in French-Canadian poetry (studied in translation) will also be considered.
3 lects.; one term
Prerequisite: One of English 1A06, 1B06 or 1D06; or permission of the Department.

ENGLISH 4A03 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 1987-88 and in alternate years.
Same as Classical Civilization 4A03 and Comparative Literature 4D03.

ENGLISH 4B06 ENGLISH LITERATURE (1660-1800)
A study of English literature during the period 1660-1800, with special attention to works by Dryden, Swift, Pope and Johnson.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 4D03 TOPICS IN MEDIEVAL AND RENAISSANCE LITERATURE
1987-88: 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.
Same as Dramatic Arts 4D03 in 1987-88.
English 4D03 may be repeated, if on a different topic, to a total of 6 units.

ENGLISH 4E06 CHAUCER AND HIS CONTEMPORARIES
A critical, mainly literary, course in the poetry of late 14th-century England. It will study the writings of Chaucer in some depth, before taking up examples of medieval romance, allegory and drama.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 4H03 LITERATURE AND FILM
An examination of the particular characteristics of both literature and film and the inter-relationships between them through a detailed study of selected novels, short stories and plays, and the films that have been based on them.
3 lects., plus one weekly film screening; one term
Prerequisite: Registration in Level III or IV of a programme in Dramatic Arts or Literature; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. It is recommended that students should already have taken Dramatic Arts 2X06.
Same as Dramatic Arts 4H03.

ENGLISH 4I03 ROMANTIC POETRY
A study of selected poems and, where appropriate, of the literary theory of the major Romantic poets. Special attention will be given to Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 4M03 VICTORIAN POETRY
A study of selected poems and, where appropriate, of the literary theory of the major Victorian poets. Special attention will be given to Tennyson, Browning, Arnold, Hopkins.
3 lects.; one term
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 4N06 THE BRITISH NOVEL
This course, in assessing and analysing approximately 12 novels, will trace the history of English fiction to the 20th century. The course focuses on the varieties of narrative forms, while also exploring the intellectual, cultural and psychological contexts of fiction.
3 lects.; two terms
Prerequisite: Registration in Level III or IV of a programme in English; or permission of the Department.

ENGLISH 4X03 INDEPENDENT STUDY
In consultation with members of the English Department, students will prepare an essay on an approved topic designed to bring together aspects of their work over the previous years.
Prerequisite: Registration in Level IV of an Honours programme in English.

For Graduate Courses see Calendar of School of Graduate Studies.
FRENCH 2C03  FRENCH LANGUAGE PRACTICE: ORAL
Development of conversational skills.
2 tuts.; two terms
Prerequisite: Registration in a programme in French; or permission of the Department. Departmental permission slip required.
Enrolment is limited.

FRENCH 2F03  THE CIVILIZATION OF FRENCH CANADA I
The study of the socio-political and religious evolution of early French Canada and the reflection of these factors in French-Canadian culture: journalism, music, architecture.
3 lects.; one term
Prerequisite: French 1A06 or 1B06; or permission of the Department.

FRENCH 2F03  THE CIVILIZATION OF FRENCH CANADA II
The study of the socio-political, cultural and linguistic evolution of contemporary French Canada and the reflection of these factors in French-Canadian literature, journalism, music and cinema.
3 lects.; one term
Prerequisite: French 1A06 or 1B06; or permission of the Department.

FRENCH 2G03  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 1A06 or a grade of at least B in French 1B06; or permission of the Department. Departmental permission slip required.
Enrolment is limited.

FRENCH 2H03  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 1A06 or 1B06.

FRENCH 2J03  NINETEENTH-CENTURY FRENCH LITERATURE I
Selected novels, plays and poems representative of the main currents of 19th-century French literature.
3 lects.; one term
Prerequisite: French 1A06 or 1B06.

FRENCH 2J03  NINETEENTH-CENTURY FRENCH LITERATURE II
Selected themes appearing in the works of the major French writers of the 19th century.
3 lects.; one term
Prerequisite: French 1A06 or 1B06.

FRENCH 2W03  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 1A06 or 1B06.

FRENCH 2W03  TWENTIETH-CENTURY FRENCH LITERATURE II
Aspects of the development of 20th-century literature since the Second World War.
3 lects.; one term
Prerequisite: French 1A06 or 1B06.

FRENCH 3A03  THE MODERN FRENCH-CANADIAN NOVEL
Representative novels by contemporary authors with emphasis upon the relationship between technique and meaning.
3 lects.; one term
Prerequisite: French 2F03 or 2FF3; or permission of the Department.

FRENCH 3B03  FRENCH SEMANTICS
An introduction to various theories of meaning, treating issues such as reference, synonymy, paraphrase, cultural overlap, distinctive features and lexicography.
3 lects.; one term
Prerequisite: French 2H03 and 2A03; or permission of the Department.
Not offered in 1987-88. Alternates with French 4C03.

FRENCH 3B03  CONTEMPORARY QUEBEC THEATRE
Contemporary experimental theatre, and representative playwrights such as Marcel Dube and Michel Tremblay.
3 lects.; one term
Prerequisite: French 2F03 or 2FF3; or permission of the Department.
Same as Dramatic Arts 3B03.

FRENCH 3C03  FRENCH LANGUAGE PRACTICE: WRITTEN
Advanced grammar and composition; introduction to stylics.
2 tuts.; two terms
Prerequisite: A grade of at least C– in French 2A03; or permission of the Department.

FRENCH 3C03  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 2G03; French 2A03; or permission of the Department. Departmental permission slip required.

Enrolment is limited.

FRENCH 3E03  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 2H03 and registration in a programme in French; or permission of the Department. Alternates with French 3I03.

FRENCH 3F03  FRENCH LANGUAGE PRACTICE: ORAL
This course includes discussion of modern French institutions and culture.
2 tuts.; two terms
Prerequisite: French 2C03 and registration in a programme in French; or permission of the Department.
Departmental permission slip required.
Enrolment is limited.

FRENCH 3G03  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 1A06 or 1B06; or permission of the Department.

FRENCH 3I03  FRENCH SOCIOLINGUISTICS
The study of linguistic variations within French-speaking communities with special reference to the Canadian situation.
3 lects.; one term
Prerequisite: French 2H03 and registration in a programme in French; or permission of the Department. Not offered in 1987-88. Alternates with French 3E03.

FRENCH 3K03  EIGHTEENTH-CENTURY FRENCH LITERATURE I
The early 18th century with emphasis on Montesquieu, Marivaux and Prevost, and on the early writings of Voltaire.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3K03  EIGHTEENTH-CENTURY FRENCH LITERATURE II
Texts representing the major aspects of Enlightenment thought and literature from the publication of the preliminary discourse of the Encyclopedie 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 3K03  EIGHTEENTH-CENTURY FRENCH NOVEL
A study of the genesis and themes of representative 18th-century novels.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3L03  SEVENTEENTH-CENTURY FRENCH LITERATURE I
A study of selected plays by Corneille, Moliere 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 3L03.

FRENCH 3L03  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 3R03  MEDIEVAL FRENCH LANGUAGE AND LITERATURE
An introduction to the Old French language and a study of selected medieval texts.
3 lects.; one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 3Y03  FRENCH CINEMA
A survey of French Cinema from its beginnings to the present, through detailed critical analysis of major works.
2 lects., plus one weekly film screening; one term.
Prerequisite: Dramatic Arts 2X06, or French 1A06 or 1B06; or permission of the instructor or the Chairman of the Committee of Instruction on Dramatic Arts. May be taken as an elective only by students in a programme in French. Same as Dramatic Arts 3Y03.

FRENCH 3Z03  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 1A06 or 1B06. Not available to students with credit for French 2Z03.

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FRENCH 4A03 FRENCH LANGUAGE PRACTICE
Advanced stylistics and composition.
2 tuts.; two terms
Prerequisite: A grade of at least B in French 3C03 or 3C04 and registration in an Honours programme in French; or permission of the Department.

FRENCH 4B03 FRENCH LANGUAGE PRACTICE: ADVANCED TRANSLATION
Practice in the translation into English of texts of a specialized nature (e.g., administration, business, politics).
3 tuts.; one term
Prerequisite: French 3CC3; or permission of the Department. Departmental permission slip required. Enrolment is limited.

FRENCH 4B03 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. Departmental permission slip required. Enrolment is limited.

FRENCH 4C03 FRENCH MORPHOLOGY AND SYNTAX
A study of articles treating various morphological and syntactic problems. Both functional and generative approaches will be examined.
3 lects.; one term
Prerequisite: 18 units of French including French 2H03 and registration in a programme in French; or permission of the Department. Alternates with French 3B03.

FRENCH 4E03 HISTORY OF THE FRENCH LANGUAGE AFTER 1600
Among the topics discussed will be vocabulary growth; loan words; slang, popular, literary and regional language; syntax and phonetic changes.
3 lects.; one term
Prerequisite: 18 units of French including French 2H03 and registration in a programme in French; or permission of the Department. French 4E03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4F03 TOPICS IN EIGHTEENTH-CENTURY FRENCH LITERATURE
1987-88: Eighteenth-Century French Thought
A study of the thought of the period as seen through the writings of selected authors.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including French 3K03 or 3K53 and registration in a programme in French; or permission of the Department. French 4F03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4I03 TOPICS IN FRENCH POETRY
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. Not offered in 1987-88.
French 4I03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4J03 FRENCH LITERATURE OF THE RENAISSANCE
Characteristic themes of Renaissance humanism as they appear in the works of Rabelais, Montaigne, and selected poets.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 4L13 TOPICS IN FRENCH AFRICAN AND CARIBBEAN LITERATURE
1987-88: The novels and short stories of the Senegalese writer Sembene Ousmane
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including 2203 or 3203, and registration in a programme in French; or permission of the Department. French 4L13 may be repeated, if on a different topic, to a total of six units.

FRENCH 4N03 TOPICS IN THE FRENCH NOVEL
1987-88: 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 4N03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4Q03 TOPICS IN SEVENTEENTH-CENTURY FRENCH LITERATURE
1987-88: French Classical Theatre
An exploration of the themes and techniques of classical dramaturgy in France. Seminar (2 hrs.); one term
Prerequisite: French 3Q03 and registration in a programme in French; or permission of the Department. French 4Q03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4R03 STUDIES IN MEDIEVAL FRENCH LITERATURE
A survey of medieval French literature: songs and poetry of the troubadours and trouvères; selections from the Chanson de Roland, Chrétien de Troyes' romances, and other narrative works (lais, Roman de la Rose, Roman de Renart, fabliaux), and from secular theatre. Modernized French versions will be used. Selected texts in Old French will be analyzed.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, and registration in a programme in French; or permission of the Department.

FRENCH 4T03 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 4T03 Committee.

FRENCH 4U03 TOPICS IN FRENCH-CANADIAN LITERATURE
Seminar (2 hrs.); one term
Prerequisite: 18 units of French, including 2F03 or 2F33 and registration in a programme in French; or permission of the Department. Not offered in 1987-88.
French 4U03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4X03 LINGUISTICS AND MODERN FRENCH LITERARY CRITICISM (FROM STRUCTURALISM TO SEMIOTICS)
General linguistics applied to literary analysis. Includes narrative structures, pragmatics and sign theory.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department.

FRENCH 4Y03 TOPICS IN TWENTIETH-CENTURY FRENCH LITERATURE
1987-88: Sartre and Existentialism
Selected readings from the works of Sartre.
Seminar (2 hrs.); one term
Prerequisite: 18 units of French and registration in a programme in French; or permission of the Department. French 4Y03 may be repeated, if on a different topic, to a total of six units.

FRENCH 4Z03 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. Not offered in 1987-88. Offered in alternate years. Same as Italian 4Z03 and Spanish 4Z03.

Film
(See Dramatic Arts 2X06, 3R06, 3Y03.) Film courses are not accepted for R-group credit for students in Honours or B.A. programmes in English.

Geography
Faculty as of January 15, 1987
S.B. McCann/Chairman
S.M. Taylor/Associate Chairman
Professor Emeritus
Lloyd G. Reeds/M.A., Ph.D (Toronto)
Professors
Brian T. Bunting/M.A. (Sheffield), Ph.D. (London)
Andrew F. Burghardt/A.B. (Harvard), M.A., Ph.D. (Wisconsin)
John A. Davies/B.A. (Bristol), M.Sc. (McGill), Ph.D. (London)
M.J. Dear/B.A. (Birmingham), M.Phil. (London), M.A., Ph.D., (Pennsylvania)
Derek C. Ford/M.A., D.Phil. (Oxford)
R. Louis Gentilcore/B.A. (Toronto), Ph.D. (Maryland)
Frederick L. Hail/A.B. (Amherst), M.Sc. (M.I.T.), Ph.D. (Chicago)/
Professor of Civil Engineering and Engineering Mechanics
Leslie J. King/M.A. (New Zealand), Ph.D. (Iowa)
S. Brian McCann/B.Sc. (McMaster)
Leslie J. King/MA
Ming-ko Woo/MA
Associate Member
Vera Anderson/MA, M.A. (Toronto), Ph.D. (McGill)
GEOG 1A06 PHYSICAL PROCESSES OF LANDFORMS AND ATMOSPHERES
The physical bases of geomorphology and climatology emphasizing processes on Earth.
2 lecs., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open.
GEOG 1B06 LOCATION, LAND USE AND CONFLICT
Urban development, land use and location theory: application to contemporary cities.
2 lecs., 1 lab.(2) alternate weeks, 1 tut.(1) alternate weeks; two terms
Prerequisite: Open.
GEOG 1C03 LOCATION THEORY
Theories of location of economic activities, including agriculture, industry and settlement.
3 lecs.; one term
Prerequisite: Geography 1A06 or 1B06, or permission of the instructor.
GEOG 1D03 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 lecs., 1 lab.(2); one term
Prerequisite: Open.
GEOG 2E03 CANADA
The geography of Canada emphasizing the economic and social geography of regions and current development issues.
3 lecs.; one term
Prerequisites:
Open. Not available to students who have received credit for Geography 2H03.
GEOG 2F03+ BOUNDARY LAYER CLIMATE
The energy and water balance at the earth's boundary layer as it applies to natural and man-modified landscapes.
2 lecs., 1 lab.(2); one term
Prerequisite: Geography 1A06, or permission of the instructor.
GEOG 2K03+ INTRODUCTION TO SOIL AND LAND USE STUDIES
The composition, morphology, and environmental relationships of the soils of the world and their use and abuse by man.
3 lecs.; one term
Prerequisite: Geography 1A06, or a Level I Science course, or permission of the instructor.
GEOG 2L03+ STATISTICAL ANALYSIS IN GEOGRAPHY
The use of geostatistical data in hypothesis testing and parameter estimation. Probability, distributions, significance tests, simple linear regression and error analysis.
Prerequisite: Geography 2L3 and registration in a Geography programme, or permission of the Department. Not available to students with credit in Geography 2L06.
GEOG 2P03 THE UNITED STATES OF AMERICA
The physical and economic geography of the United States.
3 lecs.; one term
Prerequisite: Open.
GEOG 2Q03 BEHAVIOURAL GEOGRAPHY
Introduction to environmental cognition and human spatial behaviour.
2 lecs., 1 lab.(2); one term
Prerequisite: Geography 1B06, or permission of the instructor.
GEOG 2S03+ FLUVIAL GEOMORPHOLOGY
Analysis of sediment transport by moving water and of the resulting erosional and depositional features.
2 lecs., 1 lab.(2); one term
Prerequisite: Geography 1A06, or one of Geography 1A03, 1C03 or 1A06, or permission of the instructor.
GEOG 2T03 ENERGY, ENVIRONMENT, AND SOCIETY
An introduction to the role of energy in contemporary society; a social, economic and geographical perspective on the availability of man-made and natural energy.
3 lecs.; one term
Prerequisite: Open.
GEOG 2W03+ HYDROLOGY IN CANADA
A discussion of fresh water resources, including both surface and groundwater.
3 lecs.; one term
Prerequisite: Geography 1A06, or one of Geography 1A03, 1C03 or 1A06.
GEOG 2Y03 URBAN AND REGIONAL DEVELOPMENT
Recent trends in urban and regional development, emphasizing issues of change in the spatial structure of central cities, suburbs and regions.
2 lecs., 1 tut.(1); one term
Prerequisite: Geography 1B06, or permission of instructor.
GEOG 3B03 EUROPE
The physical, economic, social, and political geography of Europe, past and present.
3 lecs.; one term
Prerequisite: Open.
GEOG 3D03+ HISTORICAL GEOGRAPHY OF CANADA
Major themes in the historical geography of Canada, with particular reference to settlement changes in the 19th century.
3 lecs.; one term
Prerequisite: One of Geography 2D03, 2E03, 2H03, or permission of the instructor.
GEOG 3E03 FIELD STUDY IN PHYSICAL GEOGRAPHY
Field study design, data collection methods and data processing. Offered in the summer following Level II. Details are announced in January.
Prerequisite: Geography 2L3 or 2L06, and permission of the Department.
GEOG 3F03 FIELD STUDY IN HUMAN GEOGRAPHY
Introduction to field study design, data collection methods and data processing. Offered in the summer following Level II. Details are announced in January.
Prerequisite: Geography 2L03 or 2L06, and permission of the Department.
GEOG 3G03+ RADIATION CLIMATOLOGY
The physical basis of large scale climate and mechanisms of climatic change.
2 lecs., 1 lab.(2); one term
Prerequisite: Geography 2F03, and Geography 2L3 or Computer Science 1B03 or 1MA3, and registration in a programme in the Faculty of Science.

GEOGRAPHY
GEOGRAPHY

GEOG 3G03 • POPULATION GROWTH AND DISTRIBUTION
Facts, theories, and major issues about the growth and distribution of human population.
3 lects.; one term
Prerequisite: Geography 1B06, or permission of the instructor.

GEOG 3I03* • 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 1A06, or one of Geology 1A03, 1C03, or 1A06, and completion of at least 12 units of Level II (or higher) Science courses; or permission of the instructor.

GEOG 3M03* • SOILS AND RURAL LAND USE IN CANADA
The development of the major soil forms in Canada, their classification, capability and conservation. The application of soils studies to land use planning.
2 lects.; 1 lab (2); one term
Prerequisite: Geography 2K03, or permission of the instructor.

GEOG 3N03* • MULTIVARIATE ANALYSIS IN GEOGRAPHY
Analysis of the variance of geographical data into those parts contributed by various factors and error components. Emphasis is on the integration of substantive, mathematical and statistical knowledge.
4 hrs. (lects. and lab.); one term
Prerequisite: Geography 2L03 or 2L06, and Mathematics 1A06 or 1M03, or permission of the instructor.

GEOG 3P03* • GLACIAL AND PERIGLACIAL GEOMORPHOLOGY
The nature and development of glacial and periglacial landforms.
2 lects., 1 lab (2); one term
Prerequisite: Geography 2T03, or permission of the instructor.

GEOG 3Q03 • 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 2K03, or permission of the instructor.

GEOG 3R03 • GEOGRAPHY OF A SELECTED WORLD REGION
The study of an area outside North America and Europe which will include topics in physical and human geography.
3 lects.; one term
Prerequisite: Open. Geography 3R03 may be repeated if on a different topic, with permission of the Department.

GEOG 3T03 • 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 2A03, 2B03, 2R03 or 2Y03; or permission of the instructor.

GEOG 3V03* • REMOTE SENSING
The physical principles of remote sensing, with emphasis on photographic systems. Visual interpretation procedures and their application in geographical studies.
2 lects., 1 lab (2); one term
Prerequisite: Level I Geography or one of Geology 1A03, 1C03, 1A06; or permission of the instructor.

GEOG 3W03* • HYDROLOGY
Principles of hydrology and their applications in physical geography.
2 lects., 1 lab (2); one term
Prerequisite: Geography 1A06, or permission of the instructor.

GEOG 3X03 • URBAN MODELS AND POLICY ANALYSIS
I
A survey of modern literature on urban spatial structure. Topics include morphology, adjustments to change, and such phenomena as sudden urban growth and the decline of central cities.
3 lects.; one term
Prerequisite: Geography 2B03, 2L03 or 2L06, or permission of the instructor.

GEOG 3Z03 • POLITICAL GEOGRAPHY
An introduction to the concepts and methods of political geography, with particular emphasis on the state and its administrative subdivisions.
3 lects.; one term
Prerequisite: Registration in a Level III or IV programme, or permission of the instructor.

GEOG 4A03* • KARST GEOMORPHOLOGY AND HYDROGEOLOGY
Karst rocks, equilibria and kinetics of their aqueous dissolution; cavern genesis and porosity in aquifers; speleothem chronology; features of surface landforms; practical applications.
3 lects.; one term
Prerequisite: Geography 2T03, or permission of the instructor.

GEOG 4C06 • 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 3P03, and registration in Level IV of an Honours programme in Geography.

GEOG 4D03* • COASTAL GEOMORPHOLOGY
The dynamics and morphology of the shore zone.
2 lects., 1 lab.; one term
Prerequisite: Geography 3M03, or permission of the instructor.

GEOG 4E03* • 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 4F03 • THEORIES OF URBAN AND REGIONAL DEVELOPMENT
Theoretical perspectives on the processes underlying urban and regional development.
3 lects.; one term
Prerequisite: Registration in a Level IV Geography programme, or permission of the instructor.

GEOG 4G03* • CONTEMPORARY PROBLEMS IN PHYSICAL GEOGRAPHY
Investigation of current research problems in physical geography, emphasizing the integration of the subfields of the discipline.
2 seminars (2); one term
Prerequisite: Any three of Geography 3P03, 3K03, 3M03, 3P03, 3V03, 3W03.

GEOG 4H03 • LAND USE AND TRANSPORTATION
A review of quantitative models used to predict transportation flows and land use patterns in urban areas; including gravity type models, the Lowry model and discrete choice models.
3 lects.; one term
Prerequisite: One of Geography 3N03, 2L03 or 2L06, or permission of the instructor.

GEOG 4I03 • URBAN BEHAVIOURAL GEOGRAPHY
An examination of selected topics in human spatial behaviour. Strong emphasis is on behavioural research and analysis methods.
2 lects., 1 lab (2); one term
Prerequisite: Geography 2K03 and 3P03, or permission of the instructor.

GEOG 4J03 • 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 2K03 or 3K03, or permission of the instructor.

GEOG 4K03* • PRINCIPLES OF GEOGRAPHICAL INFORMATION SYSTEMS
Methods of acquiring, relating, managing and displaying large geographical data bases. Computer cartography.
2 lects.; 1 lab (2); one term
Prerequisite: Geography 2L03, and registration in Level IV of an Honours programme in Geography.

GEOG 4L03 • ADVANCED BIOGEOGRAPHY
Selected topics and methods in biogeographical research. Emphasis is placed on the collection and quantitative analysis of modern and fossil phyto-geographical data.
2 lects., 1 lab (2); one term
Prerequisite: Geography 3P03, or Biology 2F03, or permission of the instructor. Offered 1988/89 and in alternate years.

GEOG 4M03 • 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 3P03, or permission of the instructor.

GEOG 4N03* • MODELS IN CLIMATOLOGY
Discussion of global climatic models and their application.
3 lects.; one term
Prerequisite: Geography 3P03 and a course in calculus, or permission of the instructor.
GEOG 4503 GEOGRAPHY OF HEALTH CARE
The environmental determinants of health and the spatial dimensions of health care delivery.
2 semian; one term
Prerequisite: Registration in Level IV of an Honours programme, or permission of the instructor.

GEOG 4T03 REGIONAL ANALYSIS AND PLANNING
The use of analytical methods in assessing the environmental and socio-economic impacts of regional planning policies with particular reference to developing countries.
2 lec., 1 lab (2); one term
Prerequisite: Geogrophy 3T03, or permission of the instructor.

GEOG 4U03 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 semian (2); one term
Prerequisite: Geography 4T03.

GEOG 4W03+ HYDROLOGIC MODELLING
Analyses and extension of hydrologic data, with a survey of deterministic and stochastic models in hydrology.
2 lec., 1 lab (2); one term
Prerequisite: Geography 3W03, or permission of the instructor.

GEOG 4X03 URBAN MODELS AND POLICY ANALYSIS II
A survey of modern literature on urban issues. Topics include welfare criteria, externalities, public goods, fiscal policies.
3 lec., one term
Prerequisite: Geography 3X03, or permission of the instructor.

GEOG 4203 THE URBAN LANDSCAPE
The role of culture in the Canadian urban community viewed through the study of the built environment in the Hamilton area.
2 semann (2); one term
Prerequisite: Registration in Level IV of any Honours programme, or permission of the instructor.

For Graduate Courses see Calendar of School of Graduate Studies.

Geology
Faculty as of January 15, 1987
R.H. McNutt/Chairman

Professors
Brian J. Burley/B.Sc. (London), M.Sc. (British Columbia), Ph.D. (McGill)
Paul M. Clifford/B.Sc. (Southampton), Ph.D. (London)
James H. Crockett/B.Sc. (New Brunswick, Oxford), Ph.D. (M.I.T.)
H. Douglas Grundy/B.Sc., B.D. (Manchester)
Robert H. McNutt/B.Sc. (New Brunswick), Ph.D. (M.I.T.)
Michael J. Risk/B.Sc. (Toronto), M.Sc. (Western), Ph.D. (Southern California, L.A.)
Henty P. Schwarzc/B.A. (Chicago), M.S., Ph.D. (California Institute of Technology), F.R.S.C.
Denis M. Shaw/M.A. (Cambridge), Ph.D. (Chicago), F.R.S.C.
Gerard E.G. Westermann/B.Sc. (Braunschweig), Dipl. Geol., Dr. rer. nat. (Tubingen)

Assistant Professors
Alan P. Dickin/M.A. (Cambridge), D. Phil. (Oxford)
Christopher J. Hale/B.Sc. (Toronto), M.A. (California, S.B.), Ph.D. (Toronto)

Department Note:
Enrolment is limited in all Geology courses at Level II and above.

GEOLOGY 1A03 SURVEY OF GEOLOGICAL SCIENCES
An introduction to the physical and chemical processes which are operative within and upon the earth. Laboratory work includes the study of minerals, rocks, fossils and geological maps.
2 lects., 1 lab (3); one term
Prerequisite: Open

GEOLOGY 1C03 EARTH PROCESSES
An introduction to geology through study of dynamic geological processes, particularly global plate tectonics.
2 lects., 1 lab (3); one term
Prerequisite: Open

GEOLOGY 2B04 OPTICAL CRYSTALLOGRAPHY AND MINERALOGY
Elementary optical theory with applications to, and descriptive study of, the common rock-forming minerals. The latter part of Geology 2B06.
2 lects., 1 lab (2); two terms
Prerequisite: Open only to students registered in Ceramic Engineering; or permission of instructor.

GEOLOGY 2B06 OPTICAL CRYSTALLOGRAPHY AND MINERALOGY
Elementary crystallography prerequisite to optical crystallography. Elementary optical theory with applications to, and descriptive study of, the common rock-forming minerals.
2 lects., 1 lab (2); two terms
Prerequisite: Registration in a Geology programme; or permission of the Department.

GEOLOGY 2C06 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 1A03 or 1C03; or permission of the instructor.

GEOLOGY 2D06 STRUCTURAL GEOLOGY I
A study of inherent and imposed structures in rocks, their inter-relationships, and their modes and environments of formation.
2 lects., 1 lab (3); two terms
Prerequisite: Geology 1A03 or 1C03.

GEOLOGY 2103 INTRODUCTION TO GEOPHYSICS
Introduction to the quantitative study of the earth. Origin of the earth, solar system, gravitation, geomagnetic field, terrestrial heat flow and elements of seismology.
3 lects.; one term
Prerequisite: One of Physics 1A06, 1B06, or 1C06, and registration in a Geology programme; or permission of the instructor.

GEOLOGY 3A03 APPLIED GEOPHYSICS A
Principles and uses of electrical, magnetic, electromagnetic and radioactivity-based techniques in exploration geophysics; borehole logging methods.
2 lects., 1 lab (2); one term
Prerequisite: Geology 2D03; or permission of the instructor.

Alternates with Geology 3B03. Offered in 1987-88.

GEOLOGY 3B03 APPLIED GEOPHYSICS B
Gravitational and seismic principles and methods and their use in exploration geophysics.
2 lects., one lab (2); one term
Prerequisite: Geology 2D03; or permission of the instructor.

Alternates with Geology 3A03. Offered in 1988-89.

GEOLOGY 3C06 PERTROGRAPHY
A sequel to Geology 2B06. 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 2B06.

GEOLOGY 3D06 INTRODUCTORY PALAEOONTOLOGY
Principles of palaeontology; the organization and evolution of life in the past, with emphasis on invertebrate fossils.
2 lects., 1 lab (3); two terms
Prerequisite: One of Geology 1A03 or 1C03, and one of Biology 2E03 or 1A06; or permission of the instructor.

GEOLOGY 3E02 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 3G04 CRYSTALLOGRAPHY AND MINERALOGY
Topics in X-ray crystallography; an introduction to crystal chemistry and mineralogy; laboratory studies in the physical and chemical properties of minerals.
3 lects., 1 lab (3); one term
Prerequisite: Geology 2B06.

GEOLOGY 3H03 GEOLOGICAL DATA PROCESSING
Nature of geological data; techniques of graphical presentation and data analysis, including use of microcomputers.
3 lects., one term
Prerequisite: Computer Science 1B05, which may be taken concurrently, and registration in a Geology programme; or permission of the instructor. Not open to students with credit in Geology 2H03.

GEOLOGY 3I03 PLANETARY AND LUNAR GEOLOGY AND GEOMORPHOLOGY
The geology and surface environment of planets and moons of the Solar System with particular reference to the rocky bodies. Comparative studies are emphasized.
3 lects.; one term
Prerequisite: Geophysics 1A06, or one of Geology 1A03 or 1C03, and completion of at least 12 units of Level II (or higher) Science courses.

Same as Geography 3I03.
GEOLOGY

GEOLOGY 4B03  IGNEOUS PETROLOGY
Advanced theory of igneous rocks.
3 lects., one term
Prerequisite: Geology 3C06, Materials 3D03; or permission of the instructor.

GEOLOGY 4B03  METAMORPHIC PETROLOGY
Advanced theory and practice on metamorphic rocks.
2 lects., one lab (3); one term
Prerequisite: Geology 3C06, Chemistry 2P06; or permission of the instructor.

GEOLOGY 4D03  ADVANCED PALAEOOLOGY I
Surveys of selected living and fossil marine communities; marine habitats.
2 lects., 1 seminar; one term
Prerequisite: Geology 3D06 or completion of at least 12 units of Level III Biology.

GEOLOGY 4E06  METALLIC MINERAL DEPOSITS
Geology, isotopic geochemistry, and mineralogy of ore deposits; ore genesis.
3 lects.; one term
Prerequisite: Registration in Level IV of a Geology programme; or permission of the instructor.

GEOLOGY 4F03  ADVANCED PALAEOOLOGY II
Functional morphology (autecology) of selected fossil invertebrates.
Lectures and seminars; one term
Prerequisite: Geology 3D06 or completion of at least 12 units of Level III Biology.

GEOLOGY 4G03  PHYSICAL PROCESSES IN GEOLOGY
An introduction to the physics of continuous media. Stress and strain analysis, dimensional analysis, behavioural models for materials and laws of fluid motion applied to geological problems.
3 lects.; one term
Prerequisite: Geology 3D06 or permission of the instructor.

GEOLOGY 4H06  GEOLOGY THESIS
Prerequisite: Open to students in Level IV of a Geology programme subject to the approval of the Chairman of the Department.

GEOLOGY 4M03  SEDIMENTOLOGY: PHYSICAL PROCESSES
A first course in the principles of physical sedimentology.
3 lects.; one term
Prerequisite: Geology 2C06; or permission of the instructor.

GEOLOGY 4M03  SEDIMENTOLOGY: CHEMICAL PROCESSES
A review of equilibrium models and surface reactions. Topics covered are weathering, carbonate systems, evaporites, clays, iron minerals, phosphates, and diagenesis.
3 lects.; one term
Prerequisite: Geology 2C06, and one of Chemistry 2P04, 2P06, 2T03, 2T05, 2T06; or permission of the instructor.

GEOLOGY 4P03  STRUCTURAL GEOLOGY II
Principles of rock deformation as inferred from theory and experiment. These principles are applied to the study of actual geological structures on all scales.
3 lects.; one term
Prerequisite: Geology 2D05 or 2D06 and completion of, or registration in Geology 3C06.
Offered in 1988-89. Alternates with Geology 4V03.

GEOLOGY 4Q03  GEOCHEMISTRY I
Geochemistry of the earth, rocks and magmas including earth composition, techniques of geochemical analysis, element distribution between crystals and magmas, geochronology, radiogenic and stable isotope geochemistry.
3 lects.; one term
Prerequisite: Chemistry 2P06, and completion of, or registration in Geology 3C06.

GEOLOGY 4Q03  GEOCHEMISTRY II
Thermodynamics and kinetic applications applied to the Earth's surface. Weathering, soil reactions, surface reactions, aqueous speciation, ocean chemistry, and global cycles are considered.
3 lects.; one term
Prerequisite: Chemistry 2P06 and completion of, or registration in Geology 3C06.

GEOLOGY 4S03  PHYSICAL OCEANOGRAPHY
Energy budget of the ocean; oceanic oceanography, ocean dynamics. Examples for the Great Lakes.
3 lects.; one term
Prerequisite: Completion of at least 15 units of Level III Science courses; or permission of the instructor.

GEOLOGY 4T03  PLATE TECTONICS
Principles of plate tectonics, with application to regional and historical geology.
3 lects.; one term
Prerequisite: Geology 2C06; completion of, or registration in Geology 3C06.

GEOLOGY 4U03  GEOLOGY OF FOSSIL FUELS
Organic matter in sediments and how it is converted into accumulations of coal or petroleum. Exploration and production techniques. Canadian case histories.
3 lects.; one term
Prerequisite: Geology 2C06

GEOLOGY 4V03  PHYSICAL VOLCANOLOGY
Physical modes of eruption of volcanoes and the products of such eruptions. Interpretation of ancient rocks in the light of modern volcanic rocks.
2 lects.; one term
Prerequisite: Completion of, or registration in Geology 3C06.

Offered in 1987-88. Alternates with Geology 4N03.

For Graduate Courses see Calendar of School of Graduate Studies.

German

Courses and programmes in German are administered within the Department of Modern Languages of the Faculty of Humanities.

Faculty as of January 15, 1987

Professors
Karl Denner/M.A. (Kentucky), Ph.D. (Johns Hopkins)
Gerhard Teuscher/Dipl.-Uebersetzer (Mainz-Germersheim), M.A.
(Toronto), Ph.D. (State University of New York, Buffalo)

Associate Professors
James B. Lawson/B.A. (New York State College for Teachers, Albany), M.A. (Johns Hopkins)
Hans H. Schulte/Staatsexamen: Stud.-Ref; Stud.-, Dr.phil. (Munich)
Robert L. Van Dusen/B.A. (Harvard), M.A., Ph.D. (Texas)
Fritz T. Widmaier/B.A. (Waterloo), A.M., Ph.D. (Southern California)

Department Notes:
1. Students are strongly advised to take History 3J06 as an elective.
2. German 1206, 2206, 3203, and 3Z23 constitute a series of intensive language courses. The 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 a good working knowledge of spoken and written German.

Beginners' Language Course

GERMAN 1206  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 is an integral part of the course.
4 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 12 or Grade 13 German. Students with prior knowledge of the language as determined by an interview may be required to take German 2206.
Enrolment may be limited.

Intermediate and Advanced Language and Literature Courses

GERMAN 1A06  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 (with a grade of at least 80%) or Grade 13 German, or German 1206 (with a grade of at least A -); or permission of the Department. Not available to students with credit in or registered in German 2V06. A required course for those intending to enter Alternative A of Combined Honours programmes in German.

GERMAN 2A03  MODERN GERMAN PROSE AND POETRY
German prose from Naturalismus to the 1960's (Hauptmann to Boll) will be emphasized. Following a short introduction to the mechanics and interpretation of lyric poetry, selected poems by major authors from Neo-Romanticism to post-Expressionism will be read.
3 lects.; one term
Prerequisite: German 1A06 or 2V06; or permission of the Department.

GERMAN 2E03  GERMAN-GRAMMAR
A systematic review, including translation and oral practice.
3 hrs.(including lab. practice); one term
Prerequisite: German 1A06 or 2V06; or permission of the Department.

GERMAN 2F03  MODERN GERMAN DRAMA FROM NATURALISM TO EXPRESSIONISM
The plays will be studied both as individual works and in the context of their historical and intellectual background.
3 lects.; one term
Prerequisite: German 1A06 or 2V06; or permission of the Department.

GERMAN 2G03  GERMAN LANGUAGE PRACTICE
A course designed for non-native speakers with emphasis on vocabulary building.
3 hrs.(including lab. practice); one term
Prerequisite: German 1A06 or 2V06, and permission of the Department.
GERMAN 2H03  GERMAN PROSE IN TRANSLATION
Eight representative pieces of 20th-century writing from the period framed by the two World Wars will be read and discussed within the context of German letters and culture. Particular attention will be given to two Nobel Prize winners: Mann and Boll.
3 lects.; 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 2J03  GERMAN DRAMA IN TRANSLATION
A study of selected plays from the early nineteenth century to the early 1970's (Buchner to Handke).
3 lects.; one term
Prerequisite: Open to students in Level II and above. Available, with permission of the Department, as an elective to students registered in a programme in German. Same as Dramatic Arts 2J03.

GERMAN 2K03  INTRODUCTORY GRAMMAR FOR READING GERMAN
An introductory course designed to give a working knowledge of German grammar for translating German into English. It will deal only with the written language. (Those interested in the spoken language should register for German 2K03.) The sequel to German 2K03 is German 2L03.
3 lects.; one term
Prerequisite: Open, except to native speakers or students with Grade 13 German or German 2L03.

GERMAN 2L03  GERMAN FOR ARTS AND SCIENCE STUDENTS
A reading course for students in Humanities, Social and Natural Sciences and Engineering. Reading and translation of scholarly and scientific prose, selected as far as possible in correlation with the student's field of study. It is strongly recom­mended that the student first complete German 2K03.
3 lects.; one term
Prerequisite: Grade 13 German, German 1206 or 2K03; or permission of the Department.

GERMAN 2M03  INTRODUCTION TO LITERARY CRITICISM
This course familiarizes the student with the nature, function, and materials of literary criticism and interpretation. After the main library resources are identified and examined, examples of the major schools of German literary criticism are analyzed to aid the student in developing a critical method.
2 lects., first term; 1 lect. second term
Prerequisite: German 1A06 or 2Y06 and permission of the Department. Not available to students with credit in German 3E04.

GERMAN 2Y06  THE GERMAN LITERARY TRADITION
Study and interpretation of texts from all periods of German literature. Papers in German and speech laboratory will allow further pursuit of grammatical and oral skills.
5 hrs. (2 lects., 3 tuts.); two terms
Prerequisite: German 1206 with a grade of at least A--; Not available to students with credit in or registered in German 1A06. A required course for those intending to enter Intermediate B of Combined Honours programmes in German.

GERMAN 2Z06  INTERMEDIATE INTENSIVE GERMAN
Conversation practice and writing assignments, review of grammatical structures, expansion of vocabulary, and extensive reading of original German texts. Laboratory practice is an integral part of the course. Small tutorial groups ensure maximum participation by each student.
4 hrs.; two terms
Prerequisite: Grade 12 German (with a grade less than 80%) or German 1206 (with a grade of at least B--); or permission of the Department.
Enrolment may be limited.

GERMAN 3A03  BAROQUE AND ENLIGHTENMENT LITERATURE
Discussion of selected works within their historical and intellectual contexts.
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3A04.

GERMAN 3B03  'STURM UND DRANG' AND CLASSICISM
The rise of German literature up through Classicism in the mature works of Schiller and Goethe.
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3B04.

GERMAN 3BB3  GOETHE
Selected works by Goethe, outside the range of German 3B03.
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3B04.

GERMAN 3D03  THE GERMAN NOVELLA
Analysis and discussion of the genre, based on representative works from major 19th-century literary movements.
3 lects.; one term
Prerequisite: 9 units of German; or permission of the Department. Not available to students with credit in German 2D03.

GERMAN 3H03  HISTORY OF THE GERMAN LANGUAGE: AN INTRODUCTION TO MIDDLE HIGH GERMAN
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 3H04.

GERMAN 3I03  ADVANCED ORAL AND WRITTEN LANGUAGE
A practically-oriented course designed to increase the student's facility in using German as a means of oral and written communication. Students will be required to express their views on a variety of topics in written assignments and subsequent class discussions. Extensive reading will expand the students' vocabulary and improve general language ability.
3 lects.; one term
Prerequisite: German 2L06, with a grade of at least A --, or 2E03 or permission of the Department. Not available to students with credit in German 3I04.

GERMAN 3J03  ADVANCED ORAL AND WRITTEN LANGUAGE
A continuation of the approach used in German 3I03.
3 lects.; one term
Prerequisite: German 3I03 (with a grade of at least B).

GERMAN 4A03  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 4A04.

GERMAN 4C03  ADVANCED LANGUAGE PRACTICE
The emphasis is on composition and oral expression.
3 hrs.; one term
Prerequisite: German 3203 or 3223; or permission of the Department. Not available to students with credit in German 4C04.

GERMAN 4C04  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 3203; or permission of the Department.

GERMAN 4F03  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: German 3203; or permission of the Department.

GERMAN 4G03  THE ROMANTIC MOVEMENT
The Blaue Blume of the earlier part of the 19th century (Novall's to Heine) and the transition to the Modern Age (Buchner to Fontane).
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4G04.

GERMAN 4H03  MEDIEVAL GERMAN LITERATURE
Selected texts from the major writers of the Middle and Old High German Periods.
3 lects.; one term
Prerequisite: German 3H03 or 3H04. Not available to students with credit in German 4H04.

GERMAN 4J03  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 4J04.

GERMAN 4M03  GOTHIC
An introduction to the Gothic language through close reading of selected texts.
3 lects.; one term
Prerequisite: 18 units of German; or permission of the Department. Not available to students with credit in German 4M04.

GERMAN 4X03  SPECIAL TOPICS IN GERMAN LITERATURE
1987-88: German Literature in Exile (1933-45)
Major authors of the period and the émigré experience in West and East.
3 lects.; one term
Prerequisite: Permission of the Department.

GERMAN 4X04  SPECIAL TOPICS IN APPLIED LINGUISTICS
A comparative analysis of the most important grammatical structures of English and German forms the background for discussions of methods and techniques of teaching German to speakers of English. The theoretical part of the course is combined with practical application in simulated teaching situations. Seminar (2 hrs.); two terms.
Prerequisite: Registration in Level IV of any Honours programme in German and permission of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.
GERONTOL 1A06 INTRODUCTION TO GERONTOLOGY
An introduction to gerontology as a multidisciplinary study of aging, focusing on the philosophical, historical, biological, physiological, psychological, economic, social and health care aspects, as well as social policies in respect to an aging population.
3 hrs. (lects. and discussions); two terms
Prerequisite: Open.

GERONTOL 2A03 MULTIDISCIPLINARY ISSUES IN GERONTOLOGY
The course focuses on issues and problems arising from the multidisciplinary nature of gerontological research and education. Special attention will be given to the contributions of the cognitive disciplines and the integration of gerontological knowledge.
3 hrs. (lects. and discussions); one term
Prerequisite: Gerontology 1A06 or Social Science 2G06, and registration in a Gerontology programme.

GERONTOL 2B03 BIOLOGICAL DIMENSIONS OF HUMAN AGING
An examination of age-related changes in human biological and physiological functioning. Attention will be given to prevention of deterioration of functioning, and the maintenance of optimal functioning.
3 hrs. (lects.); one term
Prerequisite: Gerontology 1A06 or Social Science 2G06, and enrollment in a Gerontology programme; or permission of the instructor.
Offered in 1988-89.

GERONTOL 3B03 GERONTOLOGY FIELD EXPERIENCE
Directed practicum of 36 hours in an approved gerontology field experience and a bi-weekly seminar focusing on integration of theoretical knowledge and practicum experience.
3 hrs. field experience per week, and 1 hr. bi-weekly seminar; one term
Prerequisite: Registration in Level III of a Gerontology programme.

GERONTOL 3C03 RESEARCH METHODS IN SOCIAL GERONTOLOGY
An overview of various approaches to the study of social issues relevant to aging, including questionnaire studies, laboratory experiments, and secondary analysis of archival data.
3 hrs. (lects. and discussion); one term
Prerequisite: Enrolment in a Gerontology programme, and completion of Gerontology 2A03 and 6 units of Gerontology Area courses.

GERONTOL 3D03 PSYCHOLOGICAL ASPECTS OF AGING
An examination of the cognitive and social-psychological aspects of aging: sensation, perception, attention, memory, intelligence, communication, personality, attitudes and mental health.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level III or IV of a Gerontology programme who have completed Gerontology 1A06 and Psychology 1A06; or permission of the instructor.

GERONTOL 3E03 INDEPENDENT STUDY IN GERONTOLOGY
The student will select a topic in gerontology for an in-depth investigation under the supervision of a faculty member and write a paper on findings.
Prerequisite: Registration in Level III or IV of a Gerontology programme. The study will normally extend over two terms.

GERONTOL 4A06 GERONTOLOGY THESIS
Students conduct research projects with individual faculty members. Students who write a thesis in the other subject of their combined programme, must arrange for six additional units of Gerontology or Gerontology Area course work.
Prerequisite: Registration in Level IV of an Honours Gerontology programme, and permission of course co-ordinator.

OTHER DESIGNATED GERONTOLGY AREA COURSES
Students should check the prerequisites for these courses in the Course Listings by Department section of the Calendar.
Religious Studies 2A06 Death and Dying in Human Experience
Anthropology 3Q03 Anthropological Approaches to the Study of Aging
Health Sciences 3B04 Science, Health and Society
Health Sciences 4C03 Advanced Clinical Study I
Health Sciences 4D03 Advanced Clinical Study II

Other courses may qualify as Gerontology Area courses. Students wishing to designate a course not on the list as an Area course must consult the Chairman of the Committee of Instruction, prior to registration.

Greek

(See Classics, Greek)

Health Sciences

Faculty Note:
The courses offered as Health Sciences cover three areas of study as follows:
† denotes Nursing (A and B Stream) courses.
‡ denotes B.H.Sc. Pre-Programme Phase courses.

HTH SCI 1A06: 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 hrs. 1 tut.; two terms
Prerequisite: Admission to the Nursing Programme; or permission of the instructor.

HTH SCI 1B07: HUMAN BIOLOGICAL SCIENCE I
Term I is an overview of human structure and function, including the metabolic and synthetic processes of cells and the role of chemical mediators on cell function; basic tissues and their developmental origins; the organization of the body; and the structure and function of the musculo-skeletal system.
Term II examines homeostasis. 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 or 3 hr. lect/week, 1 lab. (3 hrs.) alternating with 1 tut. (2 hrs.) each week; two terms

HTH SCI 2B08: 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 throughout the remainder of the course in a tutorial setting.
The second half of the term focuses on a study of the central and peripheral nervous system, including the special senses and neuroendocrine relationships. 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. Introductory skills in neurological assessment and drug actions on the nervous system are also considered.
The latter half of the second term is devoted to an examination of pharmacological principles.
HHTH SCI 4L04: PRINCIPLES AND METHODS OF RESEARCH
Advanced critical analysis of nursing and related literature. Principles of research methodology and statistics are used to examine systematically the literature in relation to selected topics. Students participate in an ongoing research study. 2 hrs. (lects., problem-based tut.) one term, and 4 hrs. (guided self-study) second term; two terms. Prerequisite: Health Sciences 3A04 or equivalent.

AREAS OF CLINICAL STUDY FOR HHTH SCI 4C03

Health Care and the Elderly: This course is designed to study the biological, psychological and sociological aspects of aging. It will include study of the aging process, the epidemiology of aging and of the disease processes particularly prevalent in elderly persons, especially those affecting ability to live independently. Study of therapeutic measures used in their treatment will also be undertaken. Community resources available to facilitate independence, and those available in institutions will also be studied which aim to improve function and quality of life.

Neurosciences: This course focuses on selected therapeutic approaches commonly used by occupational and physical therapy in the treatment of patients with neurological disorders. Neurodevelopmental therapy, sensory integration, behavioural medicine, motor skill acquisition and cognitive restructuring are studied from the contexts of their scientific bases, as well as their principles and techniques of practice.

Occupational Health: The course will be based on the role of the occupational/physiotherapist in occupational health. It will specifically look at:

a. prevention of illness/accident;
b. management of illness/accident;
c. return to work following illness/accident.

Psychosocial Rehabilitation: This course provides the student with a framework of observation and assessment of psychosocial issues in health care. Theoretical concepts from the clinical behavioural sciences' studies areas of individual, group, family, community, and the organization are presented and discussed by expert tutors. Psychosocial issues in clinical practice with physical and psychiatric health care problems are integrated, using an individual case study from the student's area of practice/interest.

Rehabilitation: The purpose of this course is to critically explore selected factors that influence the rehabilitation of a disabled individual. Through investigation of the literature, and the use of identified resource personnel, students consider the biological, behavioural, social, environmental, and economic factors that interest them in the rehabilitation process. A problem based learning format allows the student to analyse the impact of these elements on the provision of rehabilitation services. Small group discussions allow students to examine their attitudes about disability, and explore mental barriers to the integration of disabled persons into Canadian society. Small mixed-disciplinary group discussions are also used to promote the student's skills in facilitating group function with a view to applying these principles in a multidisciplinary rehabilitation team. During the course students have the opportunity to investigate community resources and evaluate their ability to meet the needs of disabled individuals.

All clinical study areas may be available each year. For further information contact the Programme Office.

Hebrew
(See Religious Studies, Hebrew)

History

Faculty as of January 15, 1987

C.J. Jago/Chairman

Professor Emeritus


Professors

A. Richard Aller/B.A. (Toronto), M.A. (Saskatchewan), Ph.D. (Duke)
Ezio Cappadocia/B.A., M.A. (Toronto), Ph.D. (Chicago)
Alan Cassels/M.A. (Oxford), Ph.D. (Michigan), F.R.H.S.
Paul S. Fritz/B.A. (Queen's), M.A. (Wisconsin), Ph.D. (Cambridge), F.R.H.S.
David F. Gagan/B.A., M.A. (Western), Ph.D. (Duke)
Daniel J. Geagan/B.A. (Boston), Ph.D. (Johns Hopkins)
Charles M. Johnston/B.A. (McMaster), M.A., Ph.D. (Pennsylvania)
Harvey A. Levenstein/B.A. (Toronto), M.S., Ph.D. (Wisconsin)
David J. Russo/B.A. (Massachusetts), M.A. Ph.D. (Yale)

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HISTORY

Richard J.A. Talbert/B.A., M.A., Ph.D. (Cambridge)
John H. Trueman/B.A., M.A. (Toronto), Ph.D. (Cornell)
John C. Weaver/B.A. (Queen's), M.A., Ph.D. (Duke)

Associate Professors
David P. Barrett/B.A., M.A., M.Phil. (Toronto), Ph.D. (London)
Edmond M. Beams/B.A. (Cornell), Ph.D. (Illinois)
John P. Campbell/M.A. (Glasgow), A.M., Ph.D. (Yale)
George J. Grinnell/B.S. (Columbia), M.A., Ph.D. (California)
Charles J. Jago/B.A. (Western), Ph.D. (Cambridge)
Robert H. Johnston/B.A. (Toronto), M.A., Ph.D. (Yale)
Bernice M. Kaczynski/B.A. (Pittsburgh), M.Phil., Ph.D. (Yale)
Harry E. Turner/B.A. (McMaster), M.A. (Toronto)
Thomas E. Willey/B.A. (Butler), M.A., Ph.D. (Yale)

Assistant Professors
James D. Alsop/B.A. (Winnipeg), M.A. (Western), Ph.D. (Cambridge)
W. Thomas Matthews/B.A. (Western), M.A., Ph.D. (McMaster)

Associate Members
Peter J. George/M.A., Ph.D. (Toronto) (Economics)
George Paul/M.A. (Oxford), Ph.D. (London) (Classics)
Charles G. Roland/B.Sc.(Med.), M.D. (Manitoba) (Family Medicine)

Department Notes:
1. The Department of History offers three Level I courses, each of which is designed to introduce the student to the study of History at the university level through the examination of an important aspect of the development of western civilization. Students will be admitted to B.A. or Honours programmes in History from any one of the three courses. Students may take only one of these courses.
2. Students in B.A. History may take a maximum of 12 units in any one field of Ancient, Asian, Canadian, British, and the Americas (excluding Canada), 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 the Americas (excluding Canada), and 30 units of European History, including Level I, but exclusive of electives.
3. In selecting courses students in B.A. and Honours History and in a Combined Honours programme including History must ensure that they take at least six units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British, and the Americas (excluding Canada). This requirement must be satisfied by the end of Level III.
4. Enrolment in any Level IV History course will be limited to twelve students. Preference will be given in order to students in the following categories: Level IV Honours History; Level IV Combined Honours in History and another subject; Continuing students taking a full course load; Level III Honours History; Level III Combined Honours in History and another subject; Level III B.A. in History; others.
5. In fulfilling the 12 units of Humanities requirement for the Honours and B.A. History degrees, students may not select history courses crosslisted in other departments. For example, Classical Civilization 2G06 cannot be used to meet the Humanities requirement, as it is also offered as History 2L06.
6. Students interested in Ancient History are advised to examine the courses in Classical Civilization offered by the Department of Classics.

LEVEL I COURSES

HISTORY 1C06 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 1D06 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

HISTORY 2A06 EARLY MODERN EUROPE 1400-1715
A study of the transition from late medieval to early modern civilization, with emphasis upon the breakdown 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 2B06 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 disruption of the imperial system through the rise of the Communist party to the building of the People's Republic of today.
3 lects.; two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2H06 UNITED STATES HISTORY
The history of the United States from the Colonial Era to the Second World War.
Prerequisite: Open to students in Level II and above.

HISTORY 2I06 EUROPE IN THE MIDDLE AGES
A survey of European History from A.D. 400-1400. Particular attention will be given to the status of the church and the development of the state, through the feudal system and on the social structures and ideologies which legitimized and maintained the empires.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2J06 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 2K06 THE HISTORY OF SCIENCE
Historical explorations into such issues as science 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 2L06 THE HISTORY OF GREECE AND ROME
Society from the rise of the city-states to Alexander; Rome from the Middle Republic through the early Empire. Attention will be given to the role of the Italian political, military and social developments in the light of both literary and archaeological evidence.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2M06 EUROPEAN SOCIETY FROM ABSOLUTISM TO DEMOCRACY
An examination of the political, social, and cultural forces shaping European Society from 1740 to 1815. The course will focus on the formation of modern political institutions, social classes and ideologies.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 2N06 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.

LEVEL II COURSES

HISTORY 3A03 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 3A23 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 3B06 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 disruption 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.
HISTORY 3B03 MODERN JAPAN
A survey of nineteenth and twentieth century Japan, with emphasis on political developments, social change, and Japan's relations with East Asia. 3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3B83 THE TOWN IN UNITED STATES HISTORY
A study of the political, economic, social, cultural and intellectual aspects of town life, as well as an examination of the relationship of the town to American society as a whole. 3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3C03 THE INDIAN IN EASTERN CANADA
A history of the Indian in Ontario, Quebec, and the Maritimes, from the earliest days of Indian-white contact to the 20th century. 3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

HISTORY 3C33 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.
Offered in alternate years.

HISTORY 3D03 THE FRENCH REVOLUTION
A study of the origins, nature and impact of the French Revolution, and of the legacy of the Revolutionary-Napoleonic period. 3 hrs. (lects. and discussion); one term
Prerequisites: One of History 1D06, 2A06, 2M06; or permission of the Department.
Offered in alternate years.

HISTORY 3D33 IMPERIAL CHINA: SELECTED TOPICS IN THE HISTORY OF CHINA FROM 221 B.C. TO THE 18TH CENTURY
Government, social structure, internal politics and China's relations with the outside world during the imperial age. 3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

HISTORY 3E06 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 2I06; or permission of the Department.

HISTORY 3E33 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 3F03 MEDIEVAL SOCIETY
An examination of rural, aristocratic, urban and monastic communities of the Middle Ages. Attention will be given to patterns of social organization as well as to such particular themes as marriage, family and death. 3 hrs. (lects. and discussion group); one term
Prerequisite: One of History 1A06, 1D06, 2I06; or permission of the Department.

HISTORY 3F33 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: History 1C06; or permission of the instructor.
Offered in alternate years.
Same as Political Science 3703.

HISTORY 3G06 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 3H03 THE INTERNATIONAL RELATIONS OF THE EUROPEAN POWERS, 1815-1914
An examination of the post-Napoleonic settlement of 1815; its breakdown and the triumph of the national unification movements; the causes of World War I. 3 lects.; one term
Prerequisite: Open to students in Level II and above.
Alternates with History 3I03.

HISTORY 3H06 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 3I03 THE INTERNATIONAL RELATIONS OF THE EUROPEAN POWERS, 1914-1945
An examination of the "German problem"; the post World War I settlement and its failure to prevent another world war; the shaping of present-day Europe by World War II. 3 lects.; one term
Prerequisite: Open to students in Level II and above.
Alternates with History 3J03.

HISTORY 3J06 THE HISTORY OF WARFARE, 1865-1945
A survey of the development of military, naval, and air doctrine and technology before the start of the nuclear age, with particular emphasis on the relationship between prewar theory and wartime experience during the two World Wars. 3 lects.; two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3J06 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 3J33 CRIME, CRIMINAL JUSTICE AND PUNISHMENT IN MODERN HISTORY
A study of the changing face of the institutions of criminal justice, and of criminal behaviour, as revealed in statistical and conventional historical works. The focus will be on North America, Great Britain and France. 3 lects.; one term
Prerequisite: Open to students in Level II and above, with a minimum of 6 units of History.
Offered in alternate years.

HISTORY 3K03 THE LIBERAL TRADITION IN THE 19TH CENTURY
The utilitarian and the natural right schools of liberalism, classical liberalism and nationalism, the traditionalist and Marxist critiques, the Catholic Church and liberalism. 3 lects.; one term
Prerequisite: One of History 1C06, 1D06, 2M06; or Political Science 1A06; or permission of the Department.

HISTORY 3K06 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 3L03 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: Open to students in Level II and above. Not available to students with credit in History 3L06.
Offered in alternate years.
Same as Classical Civilization 3L03.

HISTORY 3M03 THE ROMAN EMPIRE
Rome, Italy, and the provinces from the creation of an autocracy by Augustus until the end of the 2nd century A.D.: developments in government, society, defense and economy; the Romanization of the provinces. Archaeological evidence and new approaches to problems will be considered. 3 hrs. (lects. and discussion groups); one term
Prerequisite: History 1I06 or 2I06, or 6 units of Classical Civilization; or permission of the Department. Not available to students with credit in History 3D06.
Offered in alternate years.
Same as Classical Civilization 3M03.

HISTORY 3N03 THE NEWTONIAN REVOLUTION
A study of the relationship between science and liberalism since the time of Newton. 3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.
Alternates with History 3O03.

HISTORY 3O03 THE CITY IN NORTH ATLANTIC DEVELOPMENT
This course examines the material culture of the North American city, including town planning, housing, commercial and industrial architecture and transportation with select comparison made between the European and North American city. 3 lects.; one term
Prerequisite: History 2J06 or 2H06; or permission of the Department. Not available to students with credit in History 3O06.
Offered in alternate years.
HISTORY

HISTORY 3P03 RELIGION AND SOCIETY IN CANADA
This course will examine the origin, nature and development of the major Cana­
dian religious denominations from the 17th to the mid-20th Century.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

HISTORY 3PP3 CHANGE AND CONTINUITY: THEMES IN VICTORIAN BRITAIN
An examination of the main political, social and cultural developments with par­
ticular reference to the Liberal and Radical movements and the persistence of anti­
tocratic power.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 3Y06.

HISTORY 3QQ3 THE DARWINIAN REVOLUTION
The evolutionist/creationist debate since the time of Darwin as seen from social,
political, religious and scientific perspectives.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.
Alternates with History 3NN3.

HISTORY 3R03 RELIGION AND POLITICS IN THE AGE OF THE REFORMATION
An examination of the different Protestant and Catholic movements of the 16th century with
particular attention to their political and social implications.
3 lects.; one term
Prerequisite: Open to students in Level II and above.

HISTORY 3R13 WAR AND SOCIETY IN 20TH CENTURY BRITAIN
A comparison of the impact of World War I on Britain with that of World War II.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3S03 ASPECTS OF THE CULTURAL HISTORY OF ENGLAND, 1500-1688
An introduction to courtly, urban, and rural culture from pre-Reformation humanism through to the Restoration era, with emphasis upon social, political and reli­
gious influences.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3T03 THE VICTORIAN EMPIRE
A study of the nature, development, and diversity of British expansion in the nine­
teenth century.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

HISTORY 3T13 MATERIAL LIFE AND MATERIAL CULTURE IN ENGLAND, 1500-1800
Among topics covered will be: food and drink, clothing, costume and fashion, lodging, health and medicine, architecture of towns and cities, technology, capitalism and the emergence of a consumer society.
3 hrs. (lects. and discussion groups); one term
Prerequisite: Open to students in Level II and above.

HISTORY 3U03 ASPECTS OF FRENCH CANADIAN HISTORY
Emphasis will be placed on Quebec from the 18th to mid-20th Century.
3 hrs. (lects. and discussion groups); one term
Prerequisite: History 2J06; or permission of the Department. Not available to stu­
dents with credit in History 3Z06.
Offered in alternate years.

HISTORY 3U13 SOCIAL LIFE AND THOUGHT IN PERICLEAN ATHENS
A description and analysis of selected aspects of social life in Athens in the
second half of the 5th century B.C., based upon contemporary literature, docu­
ments, and artifacts. Lectures will deal in greater depth with topics introduced in
Classical Civilization 2U03, as well as others peculiar to Periclean Athens: work
and leisure, education, religion, marriage and family life, the roles of women, war
and peace, social structure, and social mobility.
3 lects.; one term
Prerequisite: History 1J06 or 2J06, or Classical Civilization 2U03 and 3 additional units of Classical Civilization; or Classical Civilization 2G06; or permission of the Department. Not available to students with credit in Classical Civilization 3N03.
Alternates with History 3V03.
Same as Classical Civilization 3U03.

HISTORY 3V06 THE PEOPLE OF ONTARIO, 1790-1940: AN INTRODUCTION TO REGIONAL SOCIAL HISTORY
A survey of the development of society in Ontario stressing the interplay of social,
economic and demographic factors in the transition from an agrarian to an urban
industrial society.
3 hrs. (lects. and discussion groups); two terms
Prerequisite: Open to students in Level II and above.

HISTORY 3V13 SOCIAL LIFE AND THOUGHT IN AUGUSTAN ROME
A description and analysis of selected aspects of social life of Rome at the end of
the 1st century B.C. based upon contemporarY literature, documents, and artifacts.
Lectures will deal in greater depth with topics introduced in Classical Civilization
2V03, 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 struc­
ture, and social mobility.
3 lects.; one term
Prerequisite: History 1L06 or 2L06, or Classical Civilization 2V03 and 3 additional units of Classical Civilization; or Classical Civilization 2G06; or permission of the Department. Not available to students with credit in Classical Civilization 4N03.
Alternates with History 3U03.
Same as Classical Civilization 3V03.

HISTORY 3W03 THE SOCIALIST TRADITION IN MODERN EUROPE
An examination of major developments in social thought in Modern Europe: early socialism, Marxism, anarchism, syndicalism, revisionism, Leninism; the con­
flfct between libertarian socialism, communism and democratic socialism in the
twentieth century.
3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

HISTORY 3X03 EARLY LATIN AMERICA
From the Amerindian cultures to 1823. The course will deal with the pre-Colum­
bian civilizations, the Spanish conquest and its consequences until the wars for independence from Spain.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 2C06.

HISTORY 3Y03 MODERN LATIN AMERICA SINCE 1820
Liberalism, nationalism, militarism and the various revolutions will be covered as well as the U.S. role in Latin America and the Caribbean.
3 lects.; one term
Prerequisite: Open to students in Level II and above. Not available to students with credit in History 2C06.

LEVEL IV COURSES

HISTORY 4A06 SPECIAL TOPICS IN BRITISH HISTORY (1688-1830)
Seminar (2 hrs.); two terms
Prerequisite: History 2N06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4A16 SPECIAL STUDIES IN THE HISTORY OF TUDOR AND STUART BRITAIN
Studies in the political, religious, intellectual and social life of Tudor and Stuart
England.
Seminar (2 hrs.); two terms
Prerequisite: History 2N06 and registration in Level IV of any Honours programme in History with a History Cumulative Area Average of at least 9.0; or permission of the Department.
Enrolment is limited.

HISTORY 4C06 SPECIAL TOPICS IN THE HISTORY OF MODERN EUROPE
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 4D06 SPECIAL TOPICS IN GREEK HISTORY
Investigations into Greek social history and its interpretation.
Seminar (2 hrs.); two terms
Prerequisite: Six units from History 1J06, 2J06, 3J03, 3N03, Classical Civilization 1A06, and registration in Level III or IV of any Honours programme in History, Classics, Classical Studies or Greek; or permission of the Department.
Same as Classical Civilization 4N06.
Enrolment is limited.

HISTORY 4E06 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 2N06 and registration in Level III or IV of any Honours pro­gramme in History; or permission of the Department.
Enrolment is limited.

HISTORY 4E16 SOCIETY AND THE MEDICAL PROFESSION IN 19TH- AND 20TH-CENTURY NORTH AMERICA
Selected topics in the history of professional medicine in Canada and the U.S.A.
such as medical education, theory and practice, institutions, and the role of gov­
ernment in medicine.
Seminar (2 hrs.); two terms
Prerequisite: One of History 2H06, 2J06, 3E06, 3EE3, 3KK5 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4F06 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: History 2M06, and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4G06 THE REVOLUTIONARY MOVEMENT IN MODERN CHINA
A history of 20th-century China with the focus on the political movements that have been the agents of change.
Seminar (2 hrs.); two terms
Prerequisite: History 2B06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4H06 SPECIAL TOPICS IN ROMAN HISTORY
The central theme will be development and change throughout the Roman Empire in the 3rd and 4th centuries A.D.
Seminar (2 hrs.); two terms
Prerequisite: Six units in History 2L06, 3M03, 3V03, Classical Civilization 2V03, and registration in Level III or IV of any Honours programme in History, Classics, Classical Studies or Latin; or permission of the Department.

Same as Classical Civilization 4H06.

Enrolment is limited.

HISTORY 4I06 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES IN THE 20TH CENTURY
Seminar (2 hrs.); two terms
Prerequisite: One of History 1K06, 2H06 or 3E06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4J06 LABOUR AND THE LEFT IN MODERN EUROPE
An examination of the workers' movement in Europe since 1889. Topics include national variations in ideology and in the organization and practice of trade unions and political parties, as well as problems and strategies of international action.
Seminar (2 hrs.); two terms
Prerequisite: One of History 1C06, 2M06, 2N06, 3H06, 3J06, and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4L06 SPECIAL TOPICS IN THE HISTORY OF THE UNITED STATES BEFORE 1865
Seminar (2 hrs.); two terms
Prerequisite: History 1K06 or 2H06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4L6 THEMES IN ANCIENT HISTORY
An examination of at least two selected themes in Ancient History, particularly the history of the Greco-Roman world, with emphasis on the use of source materials, primary and secondary, literary and non-literary.
Seminar (2 hrs.); two terms
Prerequisite: Six units from History 2L06, 3L03, 3M03, 3U03, 3V03, and registration in Level IV of any Honours programme in History, Classics, Classical Studies, Greek or Latin with a Cumulative Average Grade of at least 9.0; or permission of the Department.

Same as Classical Civilization 4L6.

Enrolment is limited.

HISTORY 4M06 SPECIAL TOPICS IN THE HISTORY OF THE RENAISSANCE AND THE REFORMATION
Seminar (2 hrs.); two terms
Prerequisite: One of History 1A06, 1B06, 1D06, 2A06, 2B06, 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 4N06 CANADIAN HISTORIOGRAPHY
A study of the ideas of the major historians of Canada.
Seminar (2 hrs.); two terms
Prerequisite: History 2J06 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 4H06, 4V06, 4W06 and 4Z06.

Enrolment is limited.

HISTORY 4O06 RUSSIA AND REVOLUTION
The impact of modernization upon the Soviet state and society.
Seminar (2 hrs.); two terms
Prerequisite: History 3I06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4P06 CONTEMPORARY EUROPE
Topics in the history of Europe during the 20th century.
Seminar (2 hrs.); two terms
Prerequisite: Six units from History 2M06, 3A03, 3F03, 3J06, 3K03, and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4Q06 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 1A06, 1D06, 2I06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4R06 ENGLISH MEDIEVAL HISTORY
Selected themes in the history of Medieval England.
Seminar (2 hrs.); two terms
Prerequisite: One of History 1A06, 1D06, 2I06 and registration in Level III or IV of any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4S06 INDEPENDENT RESEARCH
A reading and/or research programme under the supervision of at least two members of the Department. A major paper is required, as well as a formal oral examination.
Prerequisite: Open to students in Level IV of any Honours programme in History with a History Average of at least 10.0 and permission of the Department.

Enrolment is limited.

HISTORY 4T06 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 2I06 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 4N06, 4V06, 4W06 and 4Z06.

Enrolment is limited.

HISTORY 4U06 SPECIAL TOPICS IN THE HISTORY OF MODERN SCIENCE
A study of the scientific revolution and its impact on western culture in the 19th and 20th centuries.
Seminar (2 hrs.); two terms
Prerequisite: Registration in Level III or IV of any Honours Programme; or permission of the Department.

Enrolment is limited.

HISTORY 4V06 SOCIETY AND CULTURE IN 17TH CENTURY EUROPE
A study of the social and economic structure of Europe, 1600-1715, and of the cultural changes associated with this period.
Seminar (2 hrs.); two terms
Prerequisite: One of History 2A06, 2M06, 2N06, 3A03, 3B03, and registration in any Honours programme in History; or permission of the Department.

Enrolment is limited.

HISTORY 4W06 INTRODUCTION TO SOCIAL HISTORY
An introduction to theories of societal analysis and the historiography of the new social history with specific reference to their application to Canadian social history.
Seminar (2 hrs.); two terms
Prerequisite: Registration in Level III or IV of any Honours programme in History; or permission of the Department.

Students may take only two of History 4N06, 4V06, 4W06 and 4Z06.

Enrolment is limited.

The following courses in the field of History are offered by the Department of Classics:
Classical Civilization 2J03 Social Life and Thought of the Greeks
Classical Civilization 2V03 Social Life and Thought of the Romans

For Graduate Courses see Calendar of School of Graduate Studies.

Humanities (General)

HUMANITIES 1C03 CRITICAL THINKING
This course aims to improve skills in analyzing and evaluating arguments and presentations found in everyday life and academic contexts, and to improve critical judgment.
2 lecs., one tut.; one term
Prerequisite: Open. Not available to students with credit in or registered in Humanities 1A06, Humanities 2A06, Arts and Science 1B06, Philosophy 2A03 or Philosophy 2R03. Not to be used by Humanities I students as an R-group course.
Enrolment is limited.
ITALIAN

HUMAN 2B06 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 lcts.; 1 tut.; two terms
Prerequisite: Open. Not available to students with credit in Humanities 1B06. Further information regarding this course may be obtained from Dr. G. Roebuck (English) and Prof. S. Azenstar (Philosophy).

HUMANITIES 3B06 FROM ROMANTICISM TO MODERNISM
An introduction to the major intellectual and aesthetic currents in Europe from the beginning of the nineteenth century to approximately 1920.
3 lcts.; two terms
Prerequisite: Registration in Level III or IV of any programme in the Faculty of Humanities.
Same as Comparative Literature 3B06.

Italian

Courses and programmes in Italian are administered within the Department of Modern Languages of the Faculty of Humanities.

Faculty as of January 15, 1987

Professors
Antonio G. Alessio/D. Litt. (Genoa)
Stello Cro/L en L. (Buenos Aires), Dott. Ling. e Lett. (Venice)

Associate Professor
Gabriele Erasmil/B.A. (Yale), M.A., Ph.D. (Minnesota)

Assistant Professors
Vittoria Cecchetto/B.A., M.A., Ph.D. (Toronto)
L. Diane Dyner/B.A., M.A., B.L.S., Phil.M. (Toronto)

Department Note:
Italian 2106 is taught in English and is open as an elective to students in Level II and above of any programme except Italian.

Beginners' Language Courses
ITALIAN 1A06 BEGINNERS' INTENSIVE ITALIAN
An intensive beginners' course designed for students with no prior knowledge of the language. This course gives the student a basic knowledge of Italian grammar, while emphasizing spoken Italian.
5 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 13 Italian, or students with credit in or registered in Italian 1Z06.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
Enrolment is limited.

ITALIAN 1Z26 BEGINNERS' INTENSIVE ITALIAN FOR DIALECT SPEAKERS
An intensive beginners' course designed for students who understand an Italian dialect or Standard Italian. The course gives the student a basic knowledge of Italian grammar while emphasizing spoken Italian.
5 hrs.; two terms
Prerequisite: Open, except to graduates of Grade 13 Italian, or students receiving credit for, or registered in, Italian 1Z06.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.
Enrolment is limited.

Intermediate and Advanced Language and Literature Courses
ITALIAN 1A86 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 2206.

ITALIAN 2A03 INTENSIVE ORAL PRACTICE IN ITALIAN
A conversation course designed to improve oral and aural proficiency in Italian.
2 hrs.; two terms
Prerequisite: One of Italian 2Z06, 1ZZ6, 1A06, or 2Z06. Departmental permission slip required. For students registered in a programme in Italian, this course may be used as an elective only.
Enrolment is limited.

ITALIAN 2D06 ADVANCED ITALIAN
Designed to improve and increase the student's oral and written proficiency through intensive exercises, compositions, and analysis of authentic linguistic data.
3 hrs.; two terms
Prerequisite: Italian 1A06 or 2Z06 with a grade of at least C+ - or permission of the Department.

ITALIAN 2E06 INTRODUCTION TO ITALIAN LITERATURE
A study of the development of Italian literature from its beginnings to the 20th century with emphasis on major authors and works.
3 lcts.; two terms
Prerequisite: Italian 1A06; or registration in, or completion of Italian 2Z06; or permission of the Department.

ITALIAN 2I06 ITALIAN LITERATURE IN TRANSLATION
A survey course exploring the major Italian writers from Dante to the present. Texts will be read in English translation.
3 lcts.; two terms
Prerequisite: Open to students in Level II and above, except those in an Italian programme.
A reading knowledge of Italian is not required.
Not offered in 1987-88; offered in alternate years.

ITALIAN 2Z06 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 1Z06 or Italian 2206; or permission of the Department. Not available to students registered in or with credit in Italian 1A06.

ITALIAN 3A03 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 lcts.; one term
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of the Department.
Alternates with Italian 3G03.

ITALIAN 3D04 ITALIAN STYLISTICS & ORAL PRACTICE
An introduction to the study of Italian stylistics through an intensive and systematic analysis of Italian clause, sentence and discourse structure.
2 hrs.; two terms
Prerequisite: Italian 2D06 with a grade of at least B - or permission of the Department.

ITALIAN 3G03 ITALIAN ROMANTIC POETRY
A study of the poetry of the Romantic Era with special emphasis on the works of Foscolo, Manzoni, Leopardi.
3 lcts.; one term
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of the Department.
Not offered in 1987-88. Alternates with Italian 3A03.

ITALIAN 3L03 ITALIAN HUMANISM
An analytical and comparative study of the scientific and literary ideas of the 14th, 15th and 16th centuries.
3 lcts.; one term
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of the Department.
Alternates with Italian 3J03.

ITALIAN 3M03 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 lcts.; one term
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of Department.

ITALIAN 3Q03 ITALIAN RENAISSANCE LITERATURE
An introduction to the study of the Italian epic with special emphasis on the works of Ariosto and Tasso.
3 lcts.; one term
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of Department.

ITALIAN 3R06 ITALIAN THEATRE OF THE 14TH AND 20TH CENTURIES
A study of Italian Theatre from the 16th to the 20th century with special emphasis on Commedia dell'arte, Goldoni and Alfieri.
3 lcts.; one term
Prerequisite: Italian 1A06 or 2206, Italian 2E06; or permission of Department.
Not offered in 1987-88. Alternates with Italian 3P03.

ITALIAN 3T06 THE ITALIAN TRECENTO
The historical background of the 14th century. A study of the major works of Dante, Petrarch and Boccaccio.
3 lcts.; two terms
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of Department.
ITIAN 4A03  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 1A06 or 2206; Italian 2E06; or permission of Department.
Not offered 1987-88. Alternates with Italian 4C03 and 4I03.

ITALIAN 4C03  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 1A06 or 2206; Italian 2E06; or permission of Department.
Not offered in 1987-88. Alternates with Italian 4A03 and 4I03.

ITALIAN 4J03  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 1A06 or 2206; Italian 2E06; or permission of Department.
Alternates with Italian 4A03 and 4C03.

ITALIAN 4L04  INTRODUCTION TO ITALIAN LINGUISTICS
An introduction to the study of synchronic and diachronic Italian linguistics, to the problem of dialect fragmentation, to the Question della Lingua and to early documents of Italian.
2 lects.; two terms
Prerequisite: Italian 1A06 or 2206; Italian 2E06; or permission of Department.

ITALIAN 4M04  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.
3 lects.; one term
Prerequisite: A grade of at least B - in Italian 3D04, and registration in Level IV of an Italian programme; or permission of the Department.

ITALIAN 4P03  DANTE
The vision of Dante: a study of Paradiso and readings from the Vita Nuova, and the Convivio.
3 lects.; one term
Prerequisite: Italian 3B06; or permission of the Department.

ITALIAN 4Z03  THE DEVELOPMENT OF THE ROMANCE LANGUAGES
A general introduction to the history and present state of the principal Romance Languages (French, Italian and Spanish). The course will trace the evolution of sound systems (phonology), forms (morphology) and sentence structures (syntax) through a study of representative texts.
3 lects.; one term
Prerequisite: Completion of 60 or more units and registration in an Italian programme.
Not offered in 1987-88. Offered in alternate years. Same as French 4Z03 and Spanish 4Z03.

Japanese

Japanese courses are administered within the Department of Modern Languages of the Faculty of Humanities. When supplemented by other courses in Japanese history, society, and culture, this sequence of language courses will enable students to develop a substantial minor area of concentration in Japanese studies.

Information and counselling may be obtained from the instructor, Mr. Yoichi Hanuta.

JAPANESE 1206  BEGINNERS' INTENSIVE JAPANESE
This course is designed to give students basic conversational skills in Japanese, while reading and writing exercises help to reinforce their understanding of the language.
5 hrs. (including lab. practice); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

JAPANESE 2206  INTERMEDIATE INTENSIVE JAPANESE
This course aims to develop students' communicative skills in Japanese through speaking, listening, reading and writing practice. Emphasis is on a more refined knowledge of Japanese grammar and expansion of vocabulary.
5 hrs.; two terms
Prerequisite: Japanese 1206, with a grade of at least B-; or permission of the Department of Modern Languages.

Labour Studies

The Honours B.A. Programme and the B.A. Programme in Labour Studies are supervised and co-ordinated by an interdisciplinary Committee of Instruction consisting of:

F. Jones (Labour Studies/Chairman)
N. Agarwal (Business)
M. Basadar (Business)
M. Browning (Economics)
H. Jain (Business)
P. George (ex officio)
J. Jones (Social Work)
W. Lewchuk (Labour Studies/Economics)
R. Storey (Labour Studies/Sociology)

LABR ST 1A03  AN INTRODUCTION TO LABOUR STUDIES
An introduction to the basic subject area on issues associated with Labour Studies. Topics included are: the nature of work, the evolution of labour-management relations and the role of government. Lectures and discussions; one term
Prerequisite: Open.

LABR ST 1A03  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: Registration in the B.A. programme in Labour Studies; or permission of the instructor.

LABR ST 2A03  TRADE UNIONISM: ORGANIZATION, PROCEDURES AND PRACTICES
An overview of the functioning of contemporary unions in 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 2A06  TRADE UNIONS
An overview of the functioning of contemporary unions in Canada. Areas studied will include: union administration, union policy and the impact of unions on working conditions and on Canadian society.
Lectures and discussions; two terms
Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 2A03.

LABR ST 2B03  SOCIAL WELFARE
An examination of social welfare policy and the income security system in Canada in historical perspective.
Lectures and discussion; one term
Prerequisite: Registration in a Labour Studies programme.
Same as Term I of Social Work 2B06. (Students not in a Social Work programme must register for this course as Labour Studies 2B03.)

LABR ST 2C03  THEORETICAL FOUNDATIONS OF THE LABOUR MOVEMENT
An examination of political, sociological and economic explanations of labour behaviour in industrial society. The focus will be on attempts to explain why labour has tended to organize as well as the different strategies which labour has pursued to achieve its goals.
Lectures and discussion; one term
Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 2B03.

LABR ST 3A03  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 discussions; one term
Prerequisite: Registration in the B.A. Programme in Labour Studies; or permission of the instructor.

LABR ST 3A06  CURRENT LABOUR ISSUES
An analysis of contemporary issues such as technology, industrial democracy, work-sharing and part-time work. Topics will be discussed in relation to current and proposed public policies.
Lectures and discussion; one term
Prerequisite: Registration in a Labour Studies programme. Not available to students with credit in Labour Studies 3A03.

LABR ST 3B03  ECONOMICS OF TRADE UNIONISM AND LABOUR
Topics will include the economics of the labour market, of trade unionism, of work, the impact of trade unions on the labour market, economic theories of strikes and trade unions and the state.
Lectures and discussion; one term
Prerequisite: Economics 1A06.
LABOUR STUDIES

LABR ST 3C03 LABOUR LAW AND POLICY
An analysis of the concepts and fundamentals of Canadian labour law and an analysis of Canadian labour policy.
Lectures; one term
Prerequisite: Registration in a Labour Studies programme.

LABR ST 3D03 OCCUPATIONAL HEALTH AND SAFETY
An analysis of issues and problems associated with occupational health and safety in Canada and other industrialized countries. Topics will be examined from social, political, economic, legal and medical perspectives.
Lectures and discussion; one term
Prerequisite: Registration in a Labour Studies programme.
Offered in alternate years.

LABR ST 3E03 WOMEN, WORK AND TRADE UNIONISM
An examination of the historical and contemporary relations between women and work, and women and trade unionism. Topics will include the evolution and structure of the gender division of labour, women and the labour market, and the relationship of women to the labour movement.
Lectures and discussion; one term
Prerequisite: Registration in a Labour Studies programme.
Offered in alternate years.

LABR ST 3I03 THE SOCIOLOGY OF ORGANIZATIONS
A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.
Lectures and discussion; one term
Prerequisite: Sociology 1A06, or permission of the instructor. Not open to those students with credit in Sociology 3P03 prior to 1973-74.
Same as Sociology 2I03.

LABR ST 4A06 FIELD EXPERIENCE
Combined field experience and seminars to develop practice and research skills relating to labour issues. Students spend a minimum of the equivalent of one day per week in a labour union, government agency or other appropriate organization.
Seminar; two terms
Prerequisite: Registration in Level IV Honours B.A. in Labour Studies.

LABR ST 4B03 HONOURS SEMINAR
The seminar will provide an opportunity for in-depth study of selected topics relating to labour issues.
Seminar; one term
Prerequisite: Registration in Level IV Honours B.A. in Labour Studies.

LABR ST 4C03 PUBLIC SECTOR COLLECTIVE BARGAINING
This course examines unionization and collective bargaining for employees in the public, and para-public sectors. The topics covered include the origin and growth of public sector unions, models of public sector bargaining, legal aspects of bargaining rights and impasse resolution, bargaining issues and bargaining outcomes, and empirical studies of the effectiveness of dispute resolution procedures.
Lectures and discussion; one term
Prerequisite: Commerce 4BC3, and registration in a Labour Studies programme. Open, as an elective, to Level IV Commerce students with the permission of the instructor, and the Chairman of the Labour Studies Committee of Instruction.

LABR ST 4D03 COMPARATIVE INDUSTRIAL RELATIONS
A discussion of industrial relations, policies and practices in several selected countries. Topics will include the development, structure, objectives and strategies of labour and management organizations.
Lectures and discussion; one term
Prerequisite: Completion of the Level II required courses in a Labour Studies programme. Open, as an elective, to Level IV Commerce students with the permission of the instructor and the Chairman of the Committee of Instruction.

Latin
(See Classics, Latin)

Linguistics
Linguistics is the study of language as a system of human communication. As a discipline it combines the methods of traditional scholarship and philosophy with those of observational and experimental science in order to investigate the nature, structure and development of languages everywhere in the world and of language as a uniquely human faculty.

Students may complete a degree in Linguistics in one of three ways:

a. A new Honours B.A. programme in Modern Languages and Linguistics will begin in 1988-89, contingent upon approval by the Ontario Council on University Affairs. Details of this programme may be found in the section Faculty of Humanities, Department of Modern Languages in this Calendar. Information and counselling may be obtained from Dr. G. Thomas, the Co-ordinator of the Honours Modern Languages and Linguistics programme, in the Department of Modern Languages (Togo Salmon Hall, Room 611).

b. A thematic study of Linguistics is available through the Humanities Interdisciplinary B.A. programme. Details of this programme may be found in the section Faculty of Humanities, Humanities Interdisciplinary B.A. in this Calendar. Information and counselling may be obtained at the Office of the Associate Dean (Studies), Faculty of Humanities (Chester New Hall, Room 112).

c. Intensive study in Linguistics as a sub-discipline (30 units) may also be obtained through a concentration in Anthropology. The emphasis is on theoretical linguistics, covering all main branches of the field, along with intensive exposure to a broad range of languages, both Indo-European and non-Indo-European. The resulting B.A. will prepare the student for graduate work either in pure theoretical linguistics, or in language-oriented anthropological linguistics.

Note: Those students interested in pursuing graduate work in Linguistics would do well to take a substantial amount of language study as follows: 12 or more units of a modern European language; 6 additional units of a classical Indo-European language (Latin, Greek, or Sanskrit); and at least 3 units of a non-Indo-European language (Chinese, Japanese, Hebrew, Circassian, Ubykh or Abaza). Such a language background will allow them to meet the language requirement of many graduate programmes in linguistics. (See Other Language Study at the end of the course descriptions in this section.)

LINGUIST 1A06 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.
3 lects.; one term
Prerequisite: Open. (Not to be used by Humanities I students as a R-group course.)
Same as Anthropology 1B06.

LINGUIST 2A06 THE ORIGIN AND DEVELOPMENT OF THE MODERN EUROPEAN LANGUAGES
An introduction to the historical-comparative method in linguistics, with information on the history of English, French, German, Italian, Russian and Spanish. Other topics dealt with are the common lexical, morphological and syntactic features of the European languages, the European migrations, and etymology.
3 lects.; two terms
Prerequisite: Open to students in Level II and above.
Not offered in 1987-88.

LINGUIST 2L03 PHONETICS
A study of the sounds of language and the articulatory capabilities of man.
3 lects.; one term
Prerequisite: Open.
Same as Anthropology 2L03.

LINGUIST 2M03 PHONOLOGY
A study of the patterns of distinctive sounds in the world's languages.
3 lects.; one term
Prerequisite: Anthropology or Linguistics 2L03; or permission of the instructor.
Same as Anthropology 2M03.

LINGUIST 2Q03 LINGUISTICS AND THE STUDY OF CULTURE
A study of the role of cultural analysis in linguistics, with attention to the use of such thinking in structural linguistics, and its extension to structuralism as practiced in anthropology and other disciplines. The work of Lévi-Strauss will be examined. 3 hrs. (lects. and discussion); one term
Prerequisite: Open to students in Level II and above.
Same as Anthropology 2Q03.

LINGUIST 2T03 SELECTED TOPICS IN ANTHROPOLOGICAL LINGUISTICS
An examination of Chomsky's generative theory of language and a critical assessment of its prospects as a new paradigm for mind and culture.
3 lects.; one term
Prerequisite: Linguistics 2Q03; or permission of the instructor.
Same as Anthropology 2T03.

LINGUIST 3A06 THE SOCIAL SITUATION OF THE MODERN EUROPEAN LANGUAGES
A survey of the social functions, changes in status and attendant linguistic problems of the languages of Europe. Among the topics covered are the growth of standard languages, modernization, dialects and dialect levelling, language planning, lan-
LINGUISTICS

LINGUIST 3I03 SYNTAX
A study of the capacity of man to form words into sentences. The emphasis will be upon generative transformational grammar.
3 lects.; one term
Prerequisite: Open.
Same as Anthropology 3I03.

LINGUIST 3M03 MORPHOLOGY AND SEMANTICS
The study of word formation and patterns of meaning in language.
3 lects.; one term
Prerequisite: Anthropology or Linguistics 3I03; or permission of the instructor.
Same as Anthropology 3M03.

LINGUIST 3Y03 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 2L03 and 2M03; or permission of the instructor.
Same as Anthropology 3Y03.

LINGUIST 4A06 THE APPLICATIONS OF LINGUISTICS
Topics discussed include: prescriptive linguistics, language policy making, language and computers, theory of translation, literary theory, language pathology, foreign language pedagogy, language and culture, the philosophy of language, linguistics and mathematics, human communication, language in cognitive human development, and semiotics.
Seminar (2 hrs.); two terms
Prerequisite: Linguistics 2A06 or 3A06, and registration in the Modern Languages and Linguistics programme; or permission of the Programme Co-ordinator.
Not offered in 1987-88.

LINGUIST 4K03 ADVANCED TOPICS IN LINGUISTICS
An advanced course covering many areas of linguistic theory through the intensive examination of 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 4K03.

OTHER RELATED COURSES
The following courses are related to the study of Linguistics, as well as courses in the history of specific languages.
For course descriptions and prerequisites, see the listings under each department.

English 2V06/2V06  The English Language
French 2H03  Introduction to French Linguistics
French 3B03  Semantics
French 3E03  Applied Linguistics and Second-Language Learning
French 3G03  General and Comparative Phonetics
French 3I03  Sociolinguistics
French 4C03  French Morphology and Syntax
French 4E03  History of the French Language After 1600
French 4K03  Linguistics and Modern French Literary Criticism (From Structuralism to Semiotics)
French 4L03/Italian 4L03/Spanish 4L03  Development of the Romance Languages
Italian 4L04  Introduction to Italian Linguistics
Psychology 3G03  Development During Infancy
Psychology 3H03  Intellectual Development After Infancy
Russian 4J03  Topics in Russian Language I
Russian 4K03  Topics in Russian Language II

OTHER LANGUAGE STUDY
Offered by the Department of Classics:
Greek 1Z06  Beginners' Intensive Greek
Latin 1Z06  Beginners' Intensive Latin
Offered by the Department of Religious Studies:
Hebrew 2A06  Hebrew
Hebrew 3A06  Intermediate Hebrew
Sanskrit 3A06  Introduction to Sanskrit Grammar
Sanskrit 4B06  Readings in Sanskrit Texts
Offered by the Department of Modern Languages:
Chinese 1Z06  Beginners' Intensive Chinese
Japanese 1Z06  Beginners' Intensive Japanese
Japanese 2Z06  Intermediate Intensive Japanese

Manufacturing Engineering
(See Mechanical Engineering, Manufacturing Engineering)

Materials Science and Engineering

Faculty as of January 15, 1987
J.D. Embury/Acting Chairman

Professors
Dante Cosma/B.Eng., Ph.D. (Bucharest)/part-time
J. David Embury/B.Sc. (Manchester), Ph.D. (Cambridge), P.Eng.
M. Brian Ives/B.Sc., Ph.D. (Bristol), F.A.S.M., P.Eng.
Guan G. Johari/B.Sc., M.Sc., Ph.D. (Gorakhpur)/Chair of Glass Science and Technology
D. Alan R. Kay/B.Sc., Ph.D. (Glasgow)
Wei-Kao Lu/B.S. (Chen-Kung), Ph.D. (Minnesota)/The Stelco Chair in Metallurgy
G. Robert Piercy/M.A.Sc. (British Columbia), Ph.D. (Birmingham), P.Eng.
S.V. Subramanian/B.Sc. (Banaras), M.Met., Ph.D. (Sheffield)/part-time

Associate Professors
Gordon A. Irons/B.A.Sc. (Toronto), Ph.D. (McGill), P.Eng.
Stuart R. MacEwen/B.A.Sc., M.A.Sc., Ph.D. (Toronto)/part-time
P. Ross Underhill/B.Sc. (Trent), P.Eng.

Assistant Professor
Adrian Kitts/B.Sc. (McMaster), Ph.D. (Cornell)

CERAMICS

CERAMICS 3A04  CERAMIC AND GLASS TECHNOLOGY
Ceramics: powder synthesis and characterization; surface electrochemistry; shaping and sintering. Glasses: melting, forming and quality control; annealing and tempering; ceramic and metallic glazes.
2 lects.; two terms
Prerequisites: Chemistry 2T05 or 2T06; Materials 2C04 or Metallurgy 2C03.

CERAMICS 4L04  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: Materials 3B04, 3D06, Ceramics 3A04.

CERAMICS 4R03  CERAMIC SCIENCE
Microstructural development and properties of traditional ceramics. Acidic, basic, neutral and nonoxidizing refractories; ceramic and metallic glazes; heat-treatment and sintering; ceramic and metallic glazes.
3 lects., one term.
Prerequisite: Materials 3D06, 3E06.

CERAMICS 4S03  GLASS SCIENCE
Theoretical and experiential aspects of silicate glasses, ceramics and glass-ceramics. Glass-forming and application of non-crystalline solids.
3 lects., one term.
Prerequisite: Materials 3D06, 3E06.
MATERIALS

MATS 1A03 INTRODUCTION TO MATERIALS
Introduction to fundamental concepts of bonding and atomic structure of condensed materials, with applications to silicate minerals, glasses, polymeric materials, and elementary metals and alloys. 
2 lects., 1 tut.; one term.
Prerequisite: Registration in or completion of Natural Sciences I. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 2003.

MATS 1B03 INTRODUCTION TO PROPERTIES OF MATERIALS
The structure of materials, its control and effect on properties; crystallography, stiffness and strength, plastic flow and fracture. 
2 lects., 1 tut.; one term.
Prerequisite: Materials 1A03. Not open to students who are registered in Engineering or who are registered in or have completed Engineering 2003.

MATS 2C04 INTRODUCTION TO MATERIALS PROCESSING
The application of chemical principles to materials processing, including metals, ceramics, plastics and electronic materials. Thermostochemistry of oxides, sulphides and halides; electrochemistry; kinetics of heterogeneous reactions; interfacial phenomena. 
3 lects., 1 tut. or lect.; one term.
Prerequisite: Chemistry 2T05 or 2T06, which may be taken concurrently. Not open to students who have completed Metallurgy 2C03.

MATS 2F03 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 1B03 or 1MA3 or Engineering 1D03, and Chemistry 1A06, and registration in a programme administered by the Department of Materials Science and Engineering.

MATS 3B04 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); two terms.
Prerequisite: Materials 2F03.

MATS 3D06 THERMODYNAMICS OF MATERIALS I
Foundations of thermodynamics from classical, statistical, quantum mechanical and quasichemical points of view.
3 lects.; two terms.
Prerequisite: Materials 2C04, and one of Chemistry 2P04, 2P06, 2T05, 2T06, Engineering 2W04, Physics 2H03, or Chemical Engineering 2D04 and 2F04.

MATS 3D07 THERMODYNAMICS OF MATERIALS II
The first half of Materials 3D06, with emphasis on 'classical' topics such as equilibrium, solid solutions and phase diagrams.
3 lects.; one term.
Prerequisite: One of Chemistry 2P04, 2P06, 2T05, 2T06, Engineering 2W04, Physics 2H03, or Chemical Engineering 2D04 and 2F04.

MATS 3E06 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: Materials 2C04, and one of Mathematics 2M06 or 2P04 and 2Q04 or 2G03 and 2003, and Materials 2C04.

MATS 3H03 THERMODYNAMICS OF MATERIALS II
The second half of Materials 3D06, with emphasis on 'atomistic' topics such as statistical mechanics, ordering, interfaces and defects.
3 lects.; one term.
Prerequisite: One of Chemistry 2P04, 2P06, 2T5, 2T06, Engineering 2W04, Physics 2H03, or Chemical Engineering 2D04 and 2F04.

MATS 3P03 MECHANICAL BEHAVIOUR OF MATERIALS
Phenomenological treatment of elastic and plastic deformation, creep, fatigue and fracture of engineering materials. Application to mechanical design. Microstructural descriptions of flow and fracture in crystalline and amorphous materials. Offered partly in common with Engineering 3P03.
3 lects.; one term.
Prerequisite: Engineering 2003, and 2P04 or 2R04.

MATS 4A1 INDUSTRIAL PROJECTS
Plant visits and the preparation of a report based on summer experience and/or industrial visits. The report will be defended orally. The Chairman should be consulted for detailed requirements, in the Spring of Level III.
Prerequisite: Registration in Level IV Ceramic, Materials or Metallurgical Engineering, Honours Materials Science or Materials Science Major.

MATS 4D03 CORROSION
The oxidation of metals and alloys; electrochemical principles and methods applied to aqueous corrosion and its control.
3 lects.; one term.
Prerequisite: One of Chemistry 2P04, 2P06, 2T05, 2T06, Chemical Engineering 2F04.

MATS 4E03 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, aluminium alloys and non-metallic materials.
3 lects.; one term.
Prerequisite: Materials 3D03 or 3D06, and 3E06.

MATS 4K04 SENIOR THESIS
Each student will have an individual experimental problem. A preliminary report is required at the end of the first term. The thesis is defended orally. A minimum of six unscheduled hours each week, two terms.
Prerequisite: Registration in Level IV of Honours Materials Science, Ceramic Engineering, Metallurgical Engineering or Engineering Physics.

MATS 4M03 DISLOCATION THEORY
3 lects.; one term.
Prerequisite: Engineering 2P04 and Materials 3B04.

MATS 4Q03 CASE STUDIES
Analysis of current industrial problems, involving background science, cost analysis and process design.
2 lects., 1 tut.; one term.
Prerequisite: Materials 3B04, 3D06, 3E06.

METALLURGY

METALL 3C03 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 aluminium and magnesium, halide metallurgy. Heat and mass balance calculations.
2 lects.; 1 lab.(3); one term.
Prerequisite: One of Chemistry 2P04, 2P06, 2T05, 2T06, Engineering 2W04.

METALL 4C04 CHEMICAL METALLURGY II
A sequel to Metallurgy 3C03. Physical chemistry of ironmaking and steelmaking processes; modern analytical techniques; refractories and their application.
2 lects.; two terms.
Prerequisite: Metallurgy 3C03, or completion of at least 60 units of the Ceramic Engineering programme beyond Level I.

METALL 4L04 GENERAL LABORATORY AND SEMINAR
Major laboratory exercises drawing upon a broad spectrum of material covered in other metallurgical courses; student seminars in the second term.
2 labs.(3); two terms.
Prerequisite: Materials 3B04 and 3D06.

METALL 4N03 KINETICS AND REACTOR ANALYSIS IN METALLURGICAL SYSTEMS
3 lects.; one term.
Prerequisite: Materials 3E06, which may be taken concurrently with the permission of the instructor.

RELEVANT ENGINEERING COURSES
See Engineering (General) for course descriptions.

Engineer 2C03 Structure and Properties of Engineering Materials
Engineer 3P03 Mechanical Behaviour of Materials
Engineer 3Q03 Electronic Properties of Solids
Engineer 3R03 Properties and Selection of Engineering Materials
Engineer 4J03 Metal Forming

For Graduate courses, see the Calendar of the School of Graduate Studies.

Mathematics and Statistics

Faculty as of January 15, 1986

B. Banaschewski/Chairman
I.Z. Chomyko/Associate Chairman

Professors Emeriti

Ernest A. Behrens/D.Phil.(Hamburg)
William J. McCaillion/B.A., M.A. (McMaster)
MATH I003  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 IA06, IF06, IM03, IN06. Normally not open to students who have completed Grade 13 Calculus.

MATH I013  LINEAR ALGEBRA AND PROBABILITY FOR BUSINESS AND THE SOCIAL SCIENCES
An introduction to vectors, matrices, determinants, probability theory.
3 lects., 1 tut.; one term
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have credit in, any of Mathematics IB03, IB04, IF06, IG04.

MATH I063  CALCULUS FOR BUSINESS AND THE SOCIAL SCIENCES
Differential and integral calculus.
3 lects., 1 tut.; one term
Prerequisite: Mathematics I003, or Grade 13 Calculus. Not open to students who are registered or have credit in, one of Mathematics IA06, IF06, IN06.

MATH I066  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 2A06  CALCULUS II
Partial differentiation and differentiability of functions of several variables, extremal problems with constraints, implicit function theorem, multiple integrals, line and surface integrals, Green's, Gauss', Stokes' Theorems and Systems of Differential Equations.
3 lects.; two terms
Prerequisite: Mathematics IA06, and one of Mathematics IB03, IB04, IG04. Not open to students who are registered in, or have credit in, Mathematics 2G03.

MATH 2B06  LINEAR ALGEBRA II
Vector spaces, linear transformations, polynomials, determinants, canonical forms, Jordan forms, innerproduct spaces, bilinear forms, introduction to groups of linear transformations.
3 lects.; two terms
Prerequisite: Mathematics IA06 and one of Mathematics IB03, IB04, IG04. Not open to students who are registered in, or have credit in, Mathematics 2A06.

MATH 2C03  DIFFERENTIAL EQUATIONS
3 lects.; one term
Prerequisite: Mathematics IA06 or IN06, and one of Mathematics IB03, IB04, IG04. Not open to students who are registered in, or have credit in, Mathematics 2G03.

MATH 2F03  SETS AND NUMBERS
Elementary operations on sets, relations, functions, equivalence relations and partitions, partially ordered sets, equivalence relations and partitions.
3 lects.; one term
Prerequisite: Registration in an Honours programme in Mathematics; or permission of the Instructor. Not open to students who are registered in, or have credit in, Mathematics 2G06.

MATH 2G03  INTERMEDIATE CALCULUS
Differential calculus of several variables, multiple integrals, line and surface integrals.
3 lects.; one term
Prerequisite: Mathematics IA06 and one of Mathematics IB03, IB04, IG04. Not open to students who are registered in, or have credit in, Mathematics 2A06 or 2G06.

MATH 2H03  IDEAS IN MATHEMATICS
Selected topics from: set theory, non-Euclidean and projective geometries, number theory, probability and statistics, algebraic systems. No specific background in mathematics is assumed.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV of a non-Science programme.

MATH 2J06  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 IA06, and one of Mathematics IB03, IB04, IG04. Not open to students who are registered in, or have credit in, Mathematics 2B04, 2G06, 2P03, 2P04.

MATH 2K03  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
MATH 2L03 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 1A06, 1F06, 1M03; or permission of the instructor.

MATH 2M06 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 1N06 and 1H05.

MATH 2N03 INTERMEDIATE MATHEMATICS FOR CHEMISTRY
Three dimensional analytic geometry and vectors, partial derivatives, multiple integrals, first order differential equations, linear differential equations.
3 lects.; one term
Prerequisite: Mathematics 1A06, and one of 1B03, 1B04 or 1G04, and registration in a Chemistry Programme. Not open to students who are registered in, or have credit for, Mathematics 2A05, 2A06, 2C03, 2C04, 2G03, 2Z03, 2N03.

MATH 2Z03 DIFFERENTIAL EQUATIONS
Ordinary differential equations with constant co-efficients, series solutions, special methods; Laplace transforms, Fourier series, introduction to partial differential equations.
3 lects.; one term
Prerequisite: Mathematics 1A06 or 1N06, and one of Mathematics 1B03, 1B04, 1G04, 1H05. Not open to students who are registered in, or have credit for, Mathematics 2A05, 2A06, 2C03, 2C04, 2G03, 2L03, 2Z03.

MATH 2P04 DIFFERENTIAL EQUATIONS FOR ENGINEERS
4 lects. or 3 lects. and 1 tut., every other week; one term
Prerequisite: Mathematics 1N06 and 1H05.

MATH 2Q04 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 1N06 and 1H05.

MATH 3A06 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 2A05 or 2A06, and 2B04 or 2B06.

MATH 3B03 FOUNDATIONS OF GEOMETRY
Topics chosen from affine, projective, spherical or hyperbolic geometry, curves and surfaces in 3-space.
3 lects.; one term
Prerequisite: Mathematics 2B04 or 2B06, and 2F03 or 2F04, or a grade of at least C in Mathematics 2A06.

MATH 3C03 MATHEMATICAL PHYSICS I
Linear algebra and eigenvalue problems; partial differential equations, orthogonal functions, Fourier series, Legendre functions, spherical harmonics.
3 lects.; one term
Prerequisite: Mathematics 2A05 or 2A06, and 2C03 or 2C04, or 2G03 and 2G03, and 2P04 and 2Q04, and Physics 2C05 or 2G03. Not open to students who are registered in, or have credit for, Mathematics 3J04, 3K03, 3V06.

MATH 3D03 MATHEMATICAL PHYSICS II
Functions of a complex variable, probability and statistics, boundary value problems, Bessel functions.
3 lects.; one term
Prerequisite: Mathematics 3C03. Not open to students who have credit in or are registered in Mathematics 3J04, 3K03, 3V06.

MATH 3E06 ALGEBRA I
Selected topics from: monoids, quotient monoids, groups, rings, including Sylow theorems, the fundamental theorem of finitely generated Abelian groups, Wedderburn Theorems.
3 lects.; two terms
Prerequisite: Mathematics 2F03 or 2F04, or at least a grade of C in Mathematics 2J06.

MATH 3F06 ADVANCED DIFFERENTIAL EQUATIONS
3 lects.; two terms
Prerequisite: Mathematics 2A05 or 2A06, and 2C03 or 2C04.

MATH 3G03+ PROBLEM SOLVING
Principles of problem solving and application to solutions of mathematical problems. Practice in developing problem-solving skills on problems from various areas of mathematics.
3 lects.; one term
Prerequisite: Completion of at least 12 units of Level II Mathematics or Statistics, and the permission of the instructor.

MATH 3H03+ NUMBER THEORY
Selected topics from: congruences and residues, continued fractions, approximation of irrationalals, arithmetic in selected quadratic number fields, Diophantine equations, partitions, geometry of numbers, quadratic reciprocity.
3 lects.; one term
Prerequisite: Permission of the instructor.

MATH 3J04 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for civil engineering, including probability and statistics, partial differential equations, numerical analysis, and matrix algebra.
4 hrs.; one term
Prerequisite: Mathematics 2M06.

MATH 3K03 ENGINEERING MATHEMATICS III
Complex variable theory with applications to electrical and computing engineering.
3 lects.; one term
Prerequisite: Mathematics 2P04 and 2Q04. Not open to students who have credit in Mathematics 3K05.

MATH 3L04+ MATHEMATICAL LOGIC AND BOOLEAN ALGEBRA
The Axiom of Choice and its equivalents, ordinal numbers, cardinal numbers and the basics of transfinite arithmetic, Boolean algebras, Heyting algebras and possibly other algebras relevant for logic, classical and nonclassical propositional logics with emphasis on completeness, compactness and decidability.
3 lects.; two terms
Prerequisite: Mathematics 2F03 or 2F04, or at least a grade of B in Mathematics 2J06; or permission of the instructor.

MATH 3M06 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 lects.; two terms
Prerequisite: One of Mathematics 2A05, 2A06, 2G03.

MATH 3P03 GENERAL TOPOLOGY
Introduction to basic notions of general topology, various modes of defining topological spaces, continuity, convergence, separation axioms, compactness, connectedness.
3 lects.; one term
Prerequisite: Mathematics 2F03 or 2F04, or at least a grade of C in Mathematics 2J06.

MATH 3Q03 NUMERICAL ANALYSIS I
An introduction to the methods of numerical analysis, including methods for interpolation, numerical differentiation and integration, and the solution of transcendental and differential matrix equations.
3 lects.; one term
Prerequisite: Mathematics 2A05 or 2A06 or 2M06, and 2C03 or 2C04, or 2G03 and 2G03, or 2P04 and 2Q04, and one of Computer Science 1B03 or 1M03, 1H03 or 1Z03, or Engineering 1D03.

MATH 3R03 LINEAR PROGRAMMING
The general linear programming problem, simplex procedures, dual problems, degeneracy procedures, parametric linear programming, additional procedures and applications.
3 lects.; one term
Prerequisite: Mathematics 1A06, and one of Mathematics 1B03, 1B04, 1G04.

MATH 3S03 OPTIMIZATION
Non-linear programming methods, integer programming, quadratic programming, stochastic programming, and dynamic programming.
3 lects.; one term
Prerequisite: One of Mathematics 2A05, 2A06, 2G03, 2N03, and Mathematics 3R03.

MATH 3T03 COMPLEX ANALYSIS I
Analytic functions, power series, elementary conformal mappings, Cauchy’s Theorems, residue calculus.
3 lects.; one term
Prerequisite: One of Mathematics 2A05, 2A06, 2G03.

MATH 3V06 ENGINEERING MATHEMATICS III
Topics in mathematics of interest for mechanical, metallurgical and ceramic engineering, including probability and statistics, partial differential equations, numerical analysis.
2 hrs., first term; 4 hrs., second term
Prerequisite: Mathematics 2M06 or equivalent.

MATH 3W03+ DIRECTED READING
Directed reading in areas of mathematics of interest to the student and instructor. Prerequisite: Permission of the Chair of the Department.

MATH 3X03+  LIFE CONTINGENCIES I
Single life functions and probabilities, forces of mortality, commutation functions, life annuities, insurance benefits, premium reserves.
3 lects.; one term
Prerequisite: Statistics 2D03 or 2D04, and Mathematics 2K03; or permission of the instructor.

MATH 3Y03+  LIFE CONTINGENCIES II
Joint life and last survivor functions and probabilities, contingent functions, stationary population theory, multiple decrement theory.
3 lects.; one term
Prerequisite: Mathematics 3X03.

MATH 3Z03  HISTORY OF MATHEMATICS
An introduction to the history of mathematics, including interaction with other phases of culture, with special emphasis on the past three centuries.
3 lects.; one term
Prerequisite: At least two Level II Mathematics or Statistics courses other than Mathematics 2G03, 2H03, 2I06, 2J03, 2L03.

MATH 4A06  FUNCTIONS OF A COMPLEX VARIABLE
Study of analytic functions, their various representations, and their properties.
3 lects.; two terms
Prerequisite: Mathematics 3A06. Not open to students who are registered or have credit in Mathematics 4003.

MATH 4B06+  DIFFERENTIABLE MANIFOLDS
Introduction to differentiable manifolds, differentiable forms, integration on manifolds, topics in differential geometry.
3 lects.; one term
Prerequisite: Mathematics 3P03 or 3P04; or permission of the instructor.

MATH 4C03+  COMBINATORICS
Inversion formulae, systems of distinct representatives, block designs and other configurations; and other topics.
3 lects.; one term
Prerequisite: One of Mathematics 2A05, 2A06, 2G03, and one of Mathematics 2B04, 2B06, 2J06; or permission of the instructor.

MATH 4D03  MATHEMATICAL PHYSICS III
Some mathematical techniques and their applications to physics and engineering. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations, hydrodynamics, elasticity, general relativity, field theory.
3 lects.; one term
Prerequisite: One of Mathematics 3C06, 3D03, or 3J03, and registration in an Honours or Engineering programme.

MATH 4E03  ALGEBRA II
Group theory, polynomial and group rings, ideal theory, Galois Theory.
3 lects.; one term
Prerequisite: Mathematics 3E04 or 3E06.

MATH 4G03  THEORY OF GAMES
Two person zero sum and non-zero sum games, n-person games; other topics.
3 lects.; one term
Prerequisite: Mathematics 3A06 or 3S06.

MATH 4I03+  BANACH AND HILBERT SPACES
An introduction to $\mathbb{L}_p$ Banach and Hilbert spaces, bounded linear operators, functional analysis, open mapping and closed graph theorems, duality, Riesz representation theorems; and other topics.
3 lects.; one term
Prerequisite: Mathematics 4K03 or 4K04; or permission of the instructor.

MATH 4J03  GRAPH THEORY
Graphs, trees, bipartite graphs, connectivity, graph colouring, matrix representations, applications.
3 lects.; one term
Prerequisite: One of Mathematics 2A05, 2A06, 2G03, and one of Mathematics 2B04, 2B06, 2J06.

MATH 4K03  MEASURE THEORY AND PROBABILITY
Introduction to the theory of measure and integration with applications to probability theory.
3 lects.; one term
Prerequisite: Mathematics 3A06 or 3S06.

MATH 4L03  COMPLEX ANALYSIS II
Consequences of Cauchy's theorem; entire functions; analytic continuation; theory of conformal mapping; and other selected topics.
3 lects.; one term
Prerequisite: Mathematics 3T03. Not open to students who are registered or have credit in Mathematics 4A06.

MATH 4M06  NUMERICAL ANALYSIS II
A detailed study including underlying hypotheses, convergence and stability methods available for the solution of ordinary and quasilinear partial differential equations.
2 lects., 1 lab.(3) every other week; two terms
Prerequisite: Mathematics 3Q03 or 3Q04.

MATH 4S03+  FINITE AUTOMATA AND COMPUTABILITY
Finite automata, deterministic automata, regular languages, Turing machines, recursive functions, primitive recursive functions, decidability and undecidability with applications to formal language theory.
3 lects.; one term
Prerequisite: One of Mathematics 2F03, 2F04, 2J06.

MATH 4V06  APPLIED MATHEMATICAL ANALYSIS
Lebesgue integration, distribution theory, Fourier Analysis, partial differential equations, integral equations, calculus of variations; additional topics.
3 lects.; two terms
Prerequisite: Mathematics 3D03 or 3F06; or permission of the instructor.

MATH 4W03  DIRECTED READING
Directed reading in areas of mathematics of interest to the student and the instructor.
3 lects.; one term
Prerequisite: Registration in Level IV of an Honours Mathematical Sciences Programme and permission of the Chairman of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.

STATISTICS

STATS 2D03  PROBABILITY THEORY I
Elementary theory of probability; random variables; discrete and continuous distributions including binomial, Poisson, hypergeometric, uniform, normal, exponential, Poisson, hypergeometric, uniform, normal, $\chi^2$ distribution; moment-generating functions, limiting distributions, central limit theorem; applications.
3 lects.; one term
Prerequisite: One of Mathematics 1A06, 1M03, and one of Mathematics 1B03, 1B04, 1C04, 1L03.

STATS 2M03  STATISTICAL METHODS
Introduction to statistical methods and applications.
3 lects.; one term
Prerequisite: Mathematics 1A06 or 1F06, or a grade of at least B in Mathematics 1K03 and 1L03. Not open to students who have completed any of Commerce 2Q3A, Economics 2B03, Psychology 2R06, Statistics 2R06.

STATS 2R06  INTRODUCTORY STATISTICS WITH APPLICATIONS
Descriptive statistics, plotting data, computation of measures for data, probability, random variables, hypothesis testing, parameter estimation, analysis of variance, chi-square tests, distribution-free tests.
3 lects.; two terms
Prerequisite: Grade 13 Calculus or Mathematics 1K03. Not open to students who have completed any Commerce 2Q3A, Statistics 2D03, 2D04, 2M03, 3M03, Psychology 2R06, Economics 2B03.

STATS 3D06  MATHEMATICAL STATISTICS I
The multivariate normal distribution, point and interval estimation, sampling distributions, tests of hypotheses, elementary linear regression, and other topics.
3 lects.; two terms
Prerequisite: Statistics 2D03 or 2D04, and one of Mathematics 2A05, 2A06, 2G03, 2J06.

STATS 3N03  STATISTICAL METHODS FOR ENGINEERS
Introduction to statistical methods and applications: data analysis and statistical methods.
3 lects.; one term
Prerequisite: Registration in, or completion of, Levels III, IV or V Engineering.

STATS 3S03+  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 2D03 or 2D04, and Statistics 2M03 or 3M03; or permission of the instructor.

STATS 3U03  STOCHASTIC PROCESSES I
3 lects.; one term
Prerequisite: Statistics 2D03 or 2D04, and one of Mathematics 2A05, 2A06, 2G03.

STATS 3X03  ENGINEERING MATHEMATICS IV
Further topics of interest for electrical engineering, emphasizing probability theory.
3 lects.; one term
Prerequisite: Mathematics 2P04 and 2Q04.

STATS 3Y03+  MULTIPLE REGRESSION AND NON-PARAMETRIC METHODS
Multiple linear regression model, tests on coefficients, interpretation and applications; autoregression models and time series; nonparametric tests such as goodness-of-fit, Wilcoxon tests and others.
3 lects.; one term
Prerequisite: One of Statistics 3M03, 3N03, 3X03, Mathematics 3J04, 3V06, and registration in an Engineering and Management programme; or permission of the instructor.

MATH 3K03  LINEAR PROGRAMMING
Linear programming, the simplex method, duality and sensitivity analysis, transportation and assignment problems, network analysis, integer programming, minimum cost flow problems, and other topics.
3 lects.; two terms
Prerequisite: Mathematics 3P03 or 3P04; or permission of the instructor.

MATH 3L03  MATHEMATICAL PHYSICS II
Some mathematical techniques and their applications to the sciences. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations, hydrodynamics, elasticity, general relativity, field theory.
3 lects.; one term
Prerequisite: One of Mathematics 3C06, 3D03, or 3J03, and registration in an Honours or Engineering programme.

MATH 3M03  ALGEBRA I
Group theory, polynomial and group rings, ideal theory, Galois Theory.
3 lects.; one term
Prerequisite: Mathematics 3E04 or 3E06.

MATH 3N03  THEORY OF GAMES
Two person zero sum and non-zero sum games, n-person games; other topics.
3 lects.; one term
Prerequisite: Mathematics 3A06 or 3S06.

MATH 3P03+  COMPLEX ANALYSIS I
Consequences of Cauchy's theorem; entire functions; analytic continuation; theory of conformal mapping; and other selected topics.
3 lects.; one term
Prerequisite: Mathematics 3T03. Not open to students who are registered or have credit in Mathematics 4A06.

MATH 3Q03+  NUMERICAL ANALYSIS I
A detailed study including underlying hypotheses, convergence and stability methods available for the solution of ordinary and quasilinear partial differential equations.
2 lects., 1 lab.(3) every other week; two terms
Prerequisite: Mathematics 3Q03 or 3Q04.

MATH 3S03+  PROBABILITY THEORY II
Advanced probability theory; random variables; discrete and continuous distributions including binomial, Poisson, hypergeometric, uniform, normal, exponential, $\chi^2$, $t$, $F$ distributions; moment-generating functions, limiting distributions, central limit theorem; applications.
3 lects.; one term
Prerequisite: One of Mathematics 2F03, 2F04, 2J06.
MATHEMATICS AND STATISTICS

STATS 4H03 OPERATIONS RESEARCH
Network models and algorithms, dynamic models, queuing models and other topics.
3 lects.; one term
Prerequisite: Mathematics 3R03, and Statistics 2D03 or 2D04.

STATS 4K03 STATISTICAL DECISION THEORY
Decision theory and applications; Bayes, admissible and minimax rules; multiple decision problems.
3 lects.; one term
Prerequisite: Statistics 3D06.

STATS 4M03 MULTIVARIATE ANALYSIS
Multivariate distributions: Normal, Wishart, T2 and others; regression, correlation, factor analysis, general linear hypothesis.
3 lects.; one term
Prerequisite: Statistics 3D06, and one of Mathematics 2B04, 2B06, 2I06.

STATS 4R03 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 3D06.

STATS 4T03 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 3D06; or permission of the instructor.

STATS 4U03+ NONPARAMETRIC METHODS IN STATISTICS
Rank tests and non-parametric methods; rank correlation; comparisons with parametric methods.
3 lects.; one term
Prerequisite: Statistics 3D06; or permission of the instructor.

STATS 4V03 INDUSTRIAL STATISTICS
Topics selected from sequential methods, quality control, reliability theory.
3 lects.; one term
Prerequisite: Statistics 3D06.

For Graduate Courses see Calendar of School of Graduate Studies.

Mechanical Engineering

Faculty as of January 15, 1987
D.S. Weaver/Chairman

Professor Emeritus

Professors
Mohammed A. Dokainish/B.Sc. (Cairo), M.A.Sc., Ph.D. (Toronto), P.Eng.
Robert L. Judd/B.E.Sc. (Western), M.Eng. (McMaster), Ph.D. (Michigan), P.Eng.
David S. Weaver/M.A.Sc. (Toronto), Ph.D. (Waterloo), P.Eng.

Associate Professors
Hoda A. Elmanemy/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Mamdouh Shoukri/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.
Ian Yellowly/B.Sc. (Nottingham), M.Sc., Ph.D. (Manchester), P.Eng.

Assistant Professor
Vincent M. Sowa/B.Sc. (Illinois), M.A. (Purdue), Ph.D. (Waterloo)/Part-time

Lecturers
Richard A. Huschpith/B.Eng. (McMaster), P.Eng./part-time
Robert C. Huschpith/B.Eng., M.Eng. (McMaster), P.Eng./part-time

Associate Members
Dhanjoo N. Ghista/Ph.D. (Stanford)

Department Note:
Enrolment in Mechanical Engineering courses by students in programmes other than those administered by the Department may be limited.

MANUFACTURING ENGINEERING

MANUFACT 2C03 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 year; one term
Prerequisite: Engineering 1C04, 1D03 and 2P04.

MANUFACT 3M03 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, measurements and solid mechanics.
2 labs.(4.5); two terms
Prerequisite: Registration in Manufacturing Engineering.

MANUFACT 4A03 COMPUTER AIDED MANUFACTURING
3 lects.; one term
Prerequisite: Mechanical Engineering 3C03; and registration in Manufacturing Engineering, or permission of the Department.

MANUFACT 4M04 PROJECT
A major project in the area of manufacturing engineering. It may be of a design or experimental nature.
1 lab.(3), first term, 3 labs.(3); second term
Prerequisite: Registration in Level IV of Manufacturing Engineering.

MANUFACT 4P02 MANUFACTURING LABORATORY
Laboratory exercises in metalworking practices, solid mechanics and controls.
1 lab.(3); two terms
Prerequisite: Manufacturing Engineering 3M03.

MECHANICAL ENGINEERING

MECH ENG 2A03 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 1H05, 1N06, Physics 1D03.

MECH ENG 2B03 MECHANICAL ENGINEERING MEASUREMENTS
Introduction to the theory and practice of engineering measuring techniques. Theory of measurements, precision shop measurements and optical tools; measuring units 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 1H05, Physics 1D03.

MECH ENG 2C03 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 1C04, 1D03 and 2P04.

MECH ENG 3A03 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 2P04.

MECH ENG 3C03 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 3D03 MECHANICAL ENGINEERING THERMODYNAMICS
The thermodynamic laws, as developed in Engineering 2W04, 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 2W04.
MECH ENG 3E04  ENGINEERING DESIGN III
Introduction to elements of mechanical analysis. Static and dynamic analysis of machine elements, members and mechanical systems. The laboratory consists of problems and case studies.
3 lects., 1 lab.(3); one term
Prerequisite: Engineering 2P04, 2Q04, and Mechanical Engineering 3A03.

MECH ENG 3M02  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 3Q04  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 incompressible flows.
3 lects.; two labs.; one term
Prerequisite: Mathematics 2M06 or 2P04, 2Q04; and Engineering 2W04.

MECH ENG 3R03  HEAT TRANSFER
3 lects.; one term
Prerequisite: Mathematics 2M06, Engineering 2W04, Mechanical Engineering 3Q04.

MECH ENG 4A03  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 3A03 or equivalent.

MECH ENG 4C03  INDUSTRIAL ENGINEERING
3 lects.; one term
Prerequisite: Mathematics 3V06.

MECH ENG 4D03  MANUFACTURING PROCESSES (METAL REMOVAL)
3 lects.; one term
Prerequisite: Mechanical Engineering 3C03.

MECH ENG 4F03  ENGINEERING ACOUSTICS
3 lects.; one term
Prerequisite: Mechanical Engineering 3D03, 4E04 and 3004.
Offered in alternate years.

MECH ENG 4G03  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 3V06.

MECH ENG 4I03  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 2C03, and 3E04.

MECH ENG 4M04  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: Registration in Level IV Mechanical Engineering, or in Level V Mechanical Engineering and Management.

MECH ENG 4P02  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 3M02; registration in Mechanical Engineering or Mechanical Engineering and Management.

MECH ENG 4Q03  MECHANICAL VIBRATIONS
2 lects., 1 lect./tut.; one term
Prerequisite: Mathematics 2M06, 3V06, Engineering 2Q04, Mechanical Engineering 3A03 or equivalent.

MECH ENG 4R03  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 3V06.

MECH ENG 4503  FLUID MECHANICS
A sequel to Mechanical Engineering 3Q04. Laminar and turbulent flows, boundary layers, unsteady flows, turbomachinery.
2 lects., 1 lect./tut.; one term
Prerequisite: Mechanical Engineering 3Q04 or equivalent.

MECH ENG 4703  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 4Q03.

MECH ENG 4V03  THERMO-FLUIDS SYSTEMS DESIGN AND ANALYSIS
The analysis and synthesis of realistic thermo-fluid devices and systems, including choice of failure modes and engineering modeling of performance. Emphasis is on applications.
3 lects.; one term
Prerequisite: Mechanical Engineering 3R03, 3D03 and 4S03.

MECH ENG 4W03  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 2W04 and Mechanical Engineering 3Q04.

MECH ENG 4X03  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 2Q03 and Mechanical Engineering 3A03 or equivalent.

MECH ENG 4Y03  ADVANCED KINETICS 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 2Q04 and Mechanical Engineering 2A03.

MECH ENG 4Z03  COMPUTER AIDED DESIGN
Use of computer library subroutines, computer graphics in design, advanced programming methods for computer-aided design, interactive programming, design of computer-aided design packages, some numerical methods particularly relevant to computer-aided design, computer control of machines.
2 lects., 1 lab.(3); one term
Prerequisite: Mechanical Engineering 3E04 and Mechanical Engineering 2C03 or Manufacturing Engineering 2C03.

ENGINEER 4J03  METAL FORMING
Offered jointly by the Departments of Mechanical Engineering and Materials Science and Engineering. See Engineering (General) for course description.

For Graduate courses, see the Calendar of the School of Graduate Studies.

Modern Languages
The Department of Modern Languages comes into existence on July 1, 1987. The department offers courses and Combined Honours programmes in German, Italian, Russian, and Spanish; courses and Single Honours programmes, beginning in 1988-89, in Comparative Literature and Literary Theory, and in Modern Languages and Linguistics (pending approval by the Ontario Council on University Affairs); and courses in
Molecular Biology

Chinese, Japanese and Slavic Studies (Polish, Serbo-Croatian, Ukrainian).

The Department of Modern Languages is located in Togo Salmon Hall, Room 611.

Course descriptions are provided under the separate subject headings in the alphabetical listings in the Courses by Departments section of this Calendar.

Programme descriptions are in the Faculty of Humanities, Modern Languages section in this Calendar.

Faculty as of January 15, 1987

J.B. Lawson/Chairman

Professor Emeritus
Louis J. Sheln/D.B.A. (Dubuque), M.A., Ph.D. (Toronto), B.D. Honors
Causa (Knox College, Toronto)

Professors
Antonio G. Alessio/D.Litt. (Genoa) (Italian)
Samuel D. Coran/B.A. (McMaster), Ph.D. (Toronto) (Slavic Studies)
Stelio Cro/L. en L. (Buenos Aires), Dott. Ling. e Lett. (Venice) (Italian)
Karla Diller/M.A. (Kentucky), Ph.D. (Johns Hopkins) (German)
Gerhart Teuscher/Dipl.-Uebersetzer (Mainz-Germersheim), M.A.
(Toronto), Ph.D. (State University of New York, Buffalo) (German)
George Thomas/B.A., Ph.D. (London) (Slavic Studies)

Associate Professors
John D. Browning/B.A., M.Phil. (London), Ph.D. (Essex) (Spanish)
Gerald Chapple/B.A. (McMaster), A.M., Ph.D. (Harvard) (German)
Gabriele Erasmi/B.A. (Ualie), M.A., Ph.D. (Minnesota) (Italian)
Nina S. Kolesnikoff/M.A. (Moscow State), Ph.D. (Alberta) (Slavic Studies)

James B. Lawson/B.A. (New York State College for Teachers,
Albany), M.A. (Johns Hopkins) (German)
Pilar Martinez/B.A., M.S., Chem. (Madrid), M.A. (Middlebury), Ph.D.
(Madrid) (Spanish)
Fiongjo Minelli/B.A., M.A. (Western), Ph.D. (Brom) (Spanish)
Hans H. Schulte/Staatsexamen;Stud.-Ref.; Stud.-, Dr. phil. (Munich)
(German)

Walter Smyrnis/B.A. (McMaster), M.A., Ph.D. (Toronto) (Slavic Studies)

Robert L. Van Dusen/B.A. (Harvard), M.A., Ph.D. (Texas) (German)
Fritz T. Widmaier/B.A. (Waterloo), A.M., Ph.D. (Southern California)

Assistant Professors
Vittorio Cecchetto/B.A., M.A., Ph.D. (Toronto) (Italian)
Marta Del C. Cerezo/B.A. (Puerto Rico), M.A. (McGill), Ph.D.
(Toronto) (Spanish)

L. Diane Dyer/B.A., M.A., B.L.S., Phil. M. (Toronto) (Italian)

Sessional Lecturer
Yoichi Haruta (Japanese)

Part-time Lecturer
May Zhai (Chinese)

Metallurgy

(See Materials Science and Engineering, Metallurgy)

Molecular Biology

These courses are administered, within the Faculty of Science, jointly by the Departments of Biochemistry, Biology and Pathology, through a Committee of Instruction, and also draw on the McMaster Institute for Molecular Biology and Biotechnology, established July 1, 1986, as a teaching resource. Information and counselling may be obtained from the Programme Co-ordinator of the Molecular Biology and Biotechnology programme.

MOL BIO 3A06 LABORATORY IN MOLECULAR BIOLOGY
Part of this course is common with Biochemistry 3L06. The remainder consists of basic experiments in molecular biology and microbial genetics.
2 labs.; two terms
Prerequisite: Credit or registration in Biochemistry 3B03 or 3G06, and registration in Honours Molecular Biology and Biotechnology; or permission of the instructor.

MOL BIO 4A03 LABORATORY IN MOLECULAR BIOLOGY AND BIOTECHNOLOGY
Cloning, engineered mutagenesis, DNA sequencing, characterization and expression of genes and fermentation.
3 labs.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06. Open to students in Honours Molecular Biology and Biotechnology. For students in Honours Biochemistry and Honours Biology, a C.A.A. of at least 8.0 and permission of the programme co-ordinator is required.
Offered in 1988-89.
Enrolment is limited

MOL BIO 4B03 BIOTECHNOLOGY AND GENETIC ENGINEERING
Theory, methods and applications in genetic engineering and biotechnology with emphasis on recombinant DNA, hybridomas, engineered organisms and fermentation processes.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06.
Offered in 1988-89.
Same as Biochemistry 4D03.

MOL BIO 4C03 GENE EXPRESSION
An advanced course covering molecular aspects of gene expression in prokaryotes and eukaryotes: control of transcription, RNA processing and transport, translation, protein processing and targeting.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06.
Offered in 1988-89.

MOL BIO 4D03 MOLECULAR ASPECTS OF EUKARYOTIC CHROMOSOMES
Chromatin structure, repeated DNA sequences, concerted evolution of gene families, telomeres, centromeres, gene transfer, oncogenes, transposable elements.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06, Biology 3D03.
Offered in 1988-89.

MOL BIO 4E03 REPLICATION AND RECOMBINATION
Replication, recombination, repair and mutagenesis of DNA.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06, Biology 3D03.
Offered in 1988-89.

MOL BIO 4F03 MOLECULAR ASPECTS OF DEVELOPMENT
Topics include genetic and non-genetic determinants of early embryonic development, cell determination, and differentiation.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06, Biology 3N06.
Offered in 1988-89.

MOL BIO 4G03 PLANT MOLECULAR BIOLOGY
Molecular aspects of special features of plant cells and their organelles, cell growth, regeneration and development, protoplast fusion, plant viruses and host-vector systems.
3 lects.; one term
Prerequisite: Completion of Biochemistry 3C03 or 3G06, Biology 2D03 and registration in or completion of Biology 4B03 or 4H03.
Offered in 1988-89.

Music

Faculty as of January 15, 1987

Hugh Hartwell/Chairman

Professors
Marta Hidy/Dipl. Perf. (Budapest), F.R.H.C.M. (Hon.)
Alan Walker/B.Mus., D.Mus. (Durham), A.R.C.M., L.G.S.M., F.G.S.M.
(Hon.)
William Wallace/B.Mus., Ph.D. (Utah)

Associate Professors
Frederick Hall/Assoc. Dipl., B.Mus. (McGill), M.A., Ph.D. (Toronto)
Hugh Hartwell/Assoc. Dipl., B.Mus. (McGill), A.M., Ph.D.
(Pennsylvania)
Zdenek Konicek/Dipl., M.A. (Prague) (part-time)
Paul Rapoport/A.B. (Michigan), M.Mus., Ph.D. (Illinois)
Valerie Tryon/L.R.A.M., F.R.A.M., A.R.C.M.
Assistant Professors
Matthew Airhart/B.A. (Whitman), M.M. (Northwestern)
Sharyn Hall/A.Mus., B.A., M.A., Ph.D. (Toronto) (part-time)

Lecturers (part-time)
Roger Flock
Beverly Hicks/B.Mus. (McMaster)
Wayne Strongman/Mus.Bac. (Toronto), M.A. (Toronto)

Instructors (part-time)
Richard Biney-Smith/harpsichord
Renée Boutho/Dipl. Perf., M.M. (Toronto) voice
Alla Zaccarelli/piano
Marc Donatelle/trombone
Dennis Driscoll/A.R.C.C.O. Dipl/organ
Cécile Béard-Dunn/B.Mus. (Collège Marie de l’Incarnation), M.M. (Montréal)/piano
Paula Elliott/B.Mus., M.M./flute
Mike Farquharson/jazz double bass
Roger Flock/percussion
George Greer/double bass
Robert Grim/Mus.Bac., M.A./trumpet
Jean-Norman Iadeluca/percussion
Gregory B. Irvine/Mus.Bac./tuba
Gary Kidd/Mus.Bac./clarinet
Pat LaBarbera/jazz saxophone
Peter Lutek/bassoon
Peter McAlister/classical guitar
Jon Peterson/Dipl. (Curtis)/oboe
John Price/B.Mus./saxophone
Kevin Read/trombone
Suzanne Shulman/flute
Rick Tait/B.Mus. (Alberta)/jazz band
Valerie Tryon/piano

Artists-in-residence
Mark Childs (viola)
Rudolf Kalup (violin)
Zdenek Konicek (cello)

Department Notes:
1. The following courses may be taken by undergraduates not in a Music programme, subject to the stated prerequisites: Music 1A06, 2A06, 3A03, 3A0A, 3T03, 3U03.
2. The following courses may be taken by undergraduates not in a Music programme, with conditions as noted.
   Music 1B06, 1C02, 1CC2, 1DD0, 1DD2: subject to successful completion of qualifying tests administered by the Department and to enrolment limitations. (Priority is given to students in a Music programme.)
   Music 2B03, 2B3, 2C02, 2CC3, 2D02, 2DD2, 2H04: subject to the stated course prerequisites and to enrolment limitations. (Priority is given to students in a Music programme.)
Because of the enrolment limitations, students are urged to complete the qualifying tests as soon as possible.

MUSIC 1A06 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 lec.; two terms
Prerequisite: Open. No previous musical knowledge required. Not available to students registered in Honours Music.

MUSIC 1B06 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 lec.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1C02 COUNTERPOINT
The analysis and writing of modal counterpoint in the style of the late renaissance.
1 lec.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1D02 HARMONY
The analysis and writing of functional harmony. Includes study of music by J.S. Bach and others.
1 lec.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1D02 AURAL TRAINING AND GENERAL MUSICIANSHIP
1 lec.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1D02 KEYBOARD SKILLS
18th-century harmony applied to the keyboard. (Students with a deficiency in keyboard skills will enrol in a special section.)
1 lec.; two terms
Prerequisite: Registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 1E04 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 1E06 PRACTICAL STUDY
The technique and repertoire of the student’s major instrument (piano or standard orchestral woodwind, brass, or string instrument).
1 hour lesson weekly; two terms
Prerequisite: Registration in Music I (Performance). Not available to students with credit in Music 1E04.

MUSIC 1F03 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital.
1 hour; two terms
Prerequisite: Registration in Music I (Performance).

MUSIC 1G02 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 2A06 HISTORY OF MUSIC
A detailed study of music from ca. 1700 to the present.
3 lec.; two terms
Prerequisite: Music 1A06; or permission of the Department. Not available to students registered in Honours Music.

MUSIC 2B03 HISTORY OF MUSIC (CA. 1750-1880)
A survey of classical and romantic music.
3 lec.; one term
Prerequisite: Music 1B06, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2B3 HISTORY OF MUSIC (CA.1880 TO THE PRESENT)
A survey of post-romantic and 20th-century music.
3 lec.; one term
Prerequisite: Music 2B03, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2C02 COUNTERPOINT
A continuation of Music 1C02. Imitative counterpoint in the style of the late renaissance. Includes study of music by composers such as Palestrina and Lasso.
2 lec.; one term
Prerequisite: Music 1C02, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2CC3 HARMONY
A continuation of Music 1CC2. Chromatic harmony and the completed major-minor system.
1 lec., term one; 2 lec., term two
Prerequisite: Music 1C02, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.) Not available to students with credit in Music 2CC2.

MUSIC 2D02 AURAL TRAINING AND GENERAL MUSICIANSHIP
A continuation of Music 1D02.
1 lec.; two terms
Prerequisite: Music 1D02, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2D02 KEYBOARD SKILLS
A continuation of Music 1D02. Includes transposing at sight and score reading.
1 lec.; two terms
Prerequisite: Music 1D02, and registration in a Music programme; or permission of the Department. (See Department Notes, 2, above.)

MUSIC 2E04 PRACTICAL STUDY
A continuation of Music 1E04.
1 half-hour lesson weekly; two terms
Prerequisite: Music 1E04, and registration in a Music programme.
MUSIC

MUSIC 2E06 PRACTICAL STUDY
A continuation of Music 1E06.
1 hour lesson weekly; two terms
Prerequisite: Music 1E06, and registration in Honours Music (Performance). Not available to students with credit in Music 2E04.

MUSIC 2F03 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital.
1 hour; two terms
Prerequisite: Registration in Honours Music (Performance).

MUSIC 2G02 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 2H04 ANALYSIS
The traditional forms of music as found in works by composers such as Bach, Mozart, Beethoven, and Brahms.
1 hour lesson weekly; two terms
Prerequisite: Music 1E06, and registration in Honours Music (Performance). Not available to students registered in a Music programme.
The Department.

MUSIC 3A03 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 1A06, or 2A06; or permission of the Department. Not available to students registered in Honours Music.

MUSIC 3B03 TOPICS IN MUSIC HISTORY: EARLY MUSIC (MEDIEVAL TO BAROQUE)
Seminar (2 hrs.); one term
Prerequisite: Music 2B03, and registration in a Music programme.
Not offered in 1987-88. Alternates with Music 3BB3.
Music 3B03 may be repeated, if on a different topic, to a total of 6 units.

MUSIC 3BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE ROMANTIC ERA
1987-88: 19th-Century Piano Music
Seminar (2 hrs.); one term
Prerequisite: Music 2B03, and registration in a Music programme.
Alternates with Music 3B03.
Music 3BB3 may be repeated, if on a different topic, to a total of 6 units.

MUSIC 3C04 HARMONY AND COUNTERPOINT
Advanced studies in baroque music. Invention and fugue.
2 lects.; two terms
Prerequisite: Music 2C02, and either 2CC2 or 2CC3, and registration in a Music programme.

MUSIC 3E04 PRACTICAL STUDY
A continuation of Music 2E04.
1 half-hour lesson weekly; two terms
Prerequisite: Music 2E04, and registration in a Music programme.

MUSIC 3E06 PRACTICAL STUDY
A continuation of Music 2E06.
1 hour lesson weekly; two terms
Prerequisite: Music 2E06, and registration in Honours Music (Performance). Not available to students with credit in Music 3E04.

MUSIC 3E06 MASTER CLASS/RECITAL
Seminar in the study and performance of selected solo works for the student's major instrument, culminating in a solo recital of approximately 45 minutes. repertoire will differ from that chosen in Music 3E06 and 4E06.
Seminar (1 hr.); two terms
Prerequisite: Music 2E06, registration in Honours Music (Performance), and permission of the Department.

MUSIC 3F03 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital.
1 hour; two terms
Prerequisite: Music 2F03, and registration in Honours Music (Performance).

MUSIC 3G02 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 3H04 ANALYSIS
Techniques of analysis applied to selected works of the 20th century.
2 lects.; two terms
Prerequisite: Music 2B03, 2H04, and either 2CC2 or 2CC3, and registration in a Music programme.

MUSIC 3J04 ORCHESTRA
A study of the instruments of the orchestra. The scoring of music for symphony orchestra and for concert band.
2 lects.; two terms
Prerequisite: Music 2D02, and either 2CC2 or 2CC3, and registration in a Music programme.

MUSIC 3K03 BRASS METHODS
A study of the basic techniques of playing brass instruments. Brass literature for various educational levels. No previous study of brass required.
1 lect., 1 lab.; two terms
Prerequisite: Registration in a Music programme.

MUSIC 3L03 WOODWIND METHODS
A study of the basic techniques of playing woodwind instruments. Woodwind literature for various educational levels. No previous study of woodwinds required.
1 lect., 1 lab.; two terms
Prerequisite: Registration in a Music programme.

MUSIC 3M04 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 3N03 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 3O03 CONDUCTING
Fundamental conducting techniques applied to works selected from the standard repertoire.
2 lects., term one; 1 lect., term two
Prerequisite: Music 1C02, and registration in a Music programme.

MUSIC 3P03 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 1A06 or completion of 18 units of Music including Music 1B05; or permission of the Department.
Not offered in 1987-88. Offered in alternate years.

MUSIC 3Q03 LITERATURE AND PEDAGOGY
Survey and application of teaching methods for the repertoire of the student's major instrument.
Seminar (2 hrs.); one term
Prerequisite: Music 2E06, and registration in Honours Music (Performance).

MUSIC 3R03 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 2B03, and registration in a Music programme.

MUSIC 3T03 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 1A06 or completion of 18 units of Music including Music 1B05; or permission of the Department.
Not offered in 1987-88. Offered in alternate years.

MUSIC 4B03 TOPICS IN MUSIC HISTORY: MUSIC OF THE CLASSICAL ERA
Seminar (2 hrs.); one term
Prerequisite: Music 2B03, and registration in a Music programme.
Not offered in 1987-88. Alternates with Music 4BB3.
Music 4B03 may be repeated, if on a different topic, to a total of 6 units.

MUSIC 4BB3 TOPICS IN MUSIC HISTORY: MUSIC OF THE 20TH CENTURY
1987-88: The Evolution of the Avant-Garde
Seminar (2 hrs.); one term
Prerequisite: Music 2B03, and registration in a Music programme.
Alternates with Music 4B03.
Music 4BB3 may be repeated, if on a different topic, to a total of 6 units.

MUSIC 4C04 HARMONY AND COUNTERPOINT
Advanced studies in classical and romantic music. Variations, sonata, and character pieces.
2 lects.; two terms
Prerequisite: Music 3C04, and registration in a Music programme.

MUSIC 4E04 PRACTICAL STUDY
A continuation of Music 3E04.
1 half-hour lesson weekly; two terms
Prerequisite: Music 3E04, and registration in a Music programme.
MUSIC 4E06 PRACTICAL STUDY
A continuation of Music 3E06.
1 hour lesson weekly; two terms
Prerequisite: Music 3E06, and registration in Honours Music (Performance). Not available to students with credit in Music 3E04.

MUSIC 4E08 MASTER CLASS/RECITAL
Seminar in the study and performance of selected solo works for the student's major instrument, culminating in a solo recital of approximately 1 hour. Repertoire will differ from that chosen in Music 3E06 and 4E06.
Seminar (1 hr.); two terms
Prerequisite: Music 3E06 and 3E33, registration in Honours Music (Performance), and permission of the Department.

MUSIC 4F03 CHAMBER ENSEMBLE
Study and performance of selected chamber music, culminating in a recital. 1 hr.; two terms
Prerequisite: Music 3F03, and registration in Honours Music (Performance).

MUSIC 4G02 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 4H03 ANALYSIS
Advanced studies in analysis.
Seminar (2 hrs.); one term
Prerequisite: Music 2B03, 3H04, and either 2CC2 or 2CC3, and registration in a Music programme.
Offered in 1987-88. Offered in alternate years.

MUSIC 4I03 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 2A06 or 2BB3, and registration in a Music programme.
Offered in 1987-88 and in alternate years.

MUSIC 4K03 BRASS METHODS
A continuation of Music 3K03.
1 lect., 1 lab.; two terms
Prerequisite: Music 3K03, and registration in a Music programme.

MUSIC 4L03 WOODWIND METHODS
A continuation of Music 3L03.
1 lect., 1 lab.; two terms
Prerequisite: Music 3L03, and registration in a Music programme.

MUSIC 4M04 STRING METHODS
A continuation of Music 3M04.
2 lects.; two terms
Prerequisite: Music 3M04, and registration in a Music programme.

MUSIC 4N03 VOCAL METHODS
A continuation of Music 3N03.
1 lect.; two terms
Prerequisite: Music 3N03, and registration in a Music programme.

MUSIC 4O03 CONDUCTING
A continuation of Music 3O03.
2 lects., term one; 1 lect., term two
Prerequisite: Music 3O03, and registration in a Music programme.

MUSIC 4P03 PERCUSSION METHODS
A study of the basic techniques of playing percussion instruments. Percussion literature for various educational levels. No previous study of percussion is required.
2 lects.; one term
Prerequisite: Registration in a Music programme.

MUSIC 4Q03 LITERATURE AND PEDAGOGY
A continuation of Music 3Q03.
Seminar (2 hrs.); one term
Prerequisite: Music 3Q03, and registration as a piano major in Honours Music (Performance).

MUSIC 4Q03 ORCHESTRAL REPertoire
Study and performance of selected orchestral excerpts for the student's major instrument.
2 hrs.; one term
Prerequisite: Music 2E06, and registration as an orchestral-instrument major in Honours Music (Performance).

MUSIC 4S03 SPECIAL STUDIES
Advanced supervised study in any area offered and approved by the Department.
Times to be arranged between the student and instructor; one term
Prerequisite: A Level III or IV course in the student's proposed area of study, permission of the Department, and registration in an Honours Music programme.

MUSIC 4Z03 COMPOSITION
The composition of various instrumental or vocal works.
Times to be arranged between the student and instructor; one term
Prerequisite: Registration in a Music programme and permission of the instructor.

MUSIC 4Z23 ADVANCED COMPOSITION
The composition of various instrumental or vocal works.
Times to be arranged between the student and instructor; one term
Prerequisite: Music 4Z03, registration in a Music programme, and permission of the instructor.

Nursing

CURRICULUM Basic (A) Stream

NURSING 1F07 INTRODUCTION TO NURSING
An introduction to the study of nursing. The focus is on the health of individuals and the role of the nurse in the maintenance and promotion of health. Understanding of the nursing process and beginning level skills in assessment, communication and interviewing are emphasized.
4 hrs. (clin., lab.); 2 hrs. (lect., problem-based tut.); two terms

NURSING 2M05 NURSING CONCEPTS IN HEALTH AND ILLNESS I
Integration of biological, psychological and social sciences and nursing theory are developed through work in problem-based tutorials, in which students apply concepts related to nursing, teaching-learning and communication processes to a variety of patient situations. Through independent study, students apply theoretical knowledge to a chosen clinical topic.
2 1/2 hrs. (lect./problem-based tut.); two terms
Prerequisite: Nursing 1F07, or equivalent. Normally to be taken concurrently with Nursing 2L06.

NURSING 2L06 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, concepts related to patient situations and community concepts related to the promotion of health, prevention of illness, early diagnosis and treatment, rehabilitation, and maintenance. 8 hrs. (clin., lab. including tut.); one term
Prerequisite: Nursing 1F07, or equivalent.

NURSING 2M04 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 situations.
24 hrs. (clin., lab., including tut.) per week for 4 weeks; third term
Prerequisite: Nursing 2L06, 2M05, or equivalent.

NURSING 3S08 NURSING CONCEPTS IN HEALTH AND ILLNESS II
Models of nursing intervention using a variety of theoretical bases are applied to health care situations through problem-based learning. Recurring themes such as crisis, loss, anxiety, identity, immobility, and pain are studied in a framework related to the health of individuals across the life-cycle and along the health-illness continuum. 4 hrs. (lect./problem-based tut.); two terms

NURSING 3X07 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, interpersonal, technical and teaching skills necessary to implement and evaluate nursing care in institutional and ambulatory community settings. Nursing of individuals and families is studied in the context of the nurse-patient relationship, with the family and the community. Concepts basic to nursing are examined as they relate to maturational and situational stress. 21 hrs. (clin., lab. including tut.); 13 weeks
Prerequisite: Normally taken concurrently with Nursing 3S08.

NURSING 3Y07 GUIDED NURSING PRACTICE IV
A continuation of Nursing 3X07.
21 hrs. (clin. lab. including tut.); 13 weeks
Prerequisite: Normally taken concurrently with Nursing 3S08.

NURSING 4A02 CURRENT TRENDS AND ISSUES IN NURSING
Issues facing the profession, and the implications of current changes in the health field for future nursing practice. 2 lects. every week; one term

NURSING 4E06 CONCEPTS IN HEALTH AND ILLNESS III
A problem based tutorial course in which students integrate theories and concepts related to patient care and leadership with their clinical experience. Student participation includes selecting appropriate clinical situations for study and leading the group problem solving. 3 hrs. (lect./problem-based tut.) per week; two terms

NURSING 4J07 GUIDED NURSING PRACTICE V
This course focuses on the application of theory and concepts to clinical practice, including the introduction to the leader/manager role in patient care. Students are individually placed in a variety of health care settings.
24 hrs. (clin. lab./including tut.); 12 weeks
Prerequisite: Normally to be taken concurrently with Nursing 4E06.
CURRICULUM Diploma Registered Nursing (B) Stream
In addition to Nursing 3S08, 4A02, 4E06, the following courses are required:

NURSING 3L05 GUIDED NURSING PRACTICE I
Planned and guided practice experiences for primary health care settings. Major emphasis is given to 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 3S08.

NURSING 3M05 GUIDED NURSING PRACTICE II
A continuation of Nursing 3L05. 15 hrs. (clin. lab., including tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 3S08.

NURSING 3N08 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. 24 hrs. (clin. lab.), 4 hrs. (independent study), 3 hrs. (tut.); 6 weeks (normally offered in May-June).
Prerequisite: Nursing 3L05, 3M05, and 3S08.

NURSING 4G05 GUIDED NURSING PRACTICE IV
An applied nursing practice course in which the focus is on the integration of theory and concepts in a variety of interdependent health care settings. 12 hrs. (clin. lab.), 1 hr. (tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E06. Last time offered 1987-88.

NURSING 4G06 GUIDED NURSING PRACTICE IV
An applied nursing practice course in which the focus is on the integration of theory and concepts in a variety of interdependent health care settings. This course will allow the development of independent decision-making capacity in an area of special interest. 12 hrs. (clin. lab.), 2 hrs. (tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E06. Nursing 4G06 will be available as an alternative to Nursing 4G05 in 1987-88.

NURSING 4T05 GUIDED NURSING PRACTICE V
A continuation of Nursing 4G05.
12 hrs. (clin. lab.), 1 hr. (tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E06. Last time offered 1987-88.

NURSING 4T06 GUIDED NURSING PRACTICE V
A continuation of Nursing 4G06.
12 hrs. (clin. lab.), 2 hrs. (tut.); 13 weeks.
Prerequisite: Normally to be taken concurrently with Nursing 4E06. Nursing 4T06 will be available as an alternative to Nursing 4T05 in 1987-88.

NURSING 4Z02 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.
24 hrs. (clin. lab.), 4 hrs. (independent study), 3 hrs. (tut.); 6 weeks (normally offered in May-June).
Last time offered 1987-88.

Peace Studies

While there is no B.A. programme in Peace Studies, students wishing to concentrate in this area should be aware of the following courses offered by various departments. The Faculty of Social Sciences offers an introductory course, Social Sciences 2B05. Those desiring further information on specific courses should consult the departmental listings in the Calendar. Note should be taken of the fact that some of these courses have prerequisites.

Students wishing to pursue Peace Studies may obtain further information from Dr. P. Dekar (Divinity College), Dr. Graeme MacQueen (Religious Studies), or Dr. R. Rempel (History).
Iosophy, concentrating principally on the thought of K'erkegaard and Nietzsche.

PHILOS 3B03 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 3A06 and registration in Level III or IV of any programme; or permission of the Department.
Offered in alternate years.

PHILOS 3F03 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 Lowenheim-Skolem Theorems and Godel's Theorem.
3 lects.; one term
Prerequisite: Philosophy 2B03; or permission of the Department.
Offered in alternate years.

PHILOS 3G03 ETHICS
An introduction to the major types of ethical theory and the problem of their justification.
3 lects.; one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of any programme; or permission of the Department.

PHILOS 3H03 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 3J03 ARISTOTLE
A systematic study of Aristotle's major doctrines.
1 seminar (2 1/2 hrs.); one term
Prerequisite: Philosophy 2A06 and registration in Level III or IV of any programme; or permission of the Department.
Offered in alternate years.

PHILOS 3K03 PHILOSOPHY OF EDUCATION
An introduction to the philosophy of education and its role in dealing with contemporary educational issues, such as equality of educational opportunity and students' rights.
2 lects., 1 tut.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3M03 PHILOSOPHY OF BIOLOGY
Introduction to philosophical problems arising from Biology: the nature of biological laws and explanations, the presuppositions of taxonomy, the status of sociobiology and evolutionary theory.
2 lects., 1 tut.; one term
Prerequisite: One course in Biology or Philosophy 2M03; or permission of the instructor. Not available to students with credit in Philosophy 2G03.

PHILOS 3N06 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 3P03 THEORY OF KNOWLEDGE
An examination of the justification of human beliefs and the role of sensory experience in knowledge.
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 3Q03 PHILOSOPHY OF LAW
An investigation of the nature of law and of issues arising within legal systems. These issues include legal reasoning, equality, legal immortality, punishment, and the Charter of Rights and Freedoms.
3 lects.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3R03 PHILOSOPHIES OF WAR AND PEACE
A philosophical appraisal of the rationality and morality of the conduct of war and proposals for fostering peace among nations.
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 3S03 PHILOSOPHY OF LAW
An investigation of the nature of law and of issues arising within legal systems. These issues include legal reasoning, equality, legal immortality, punishment, and the Charter of Rights and Freedoms.
3 lects.; one term
Prerequisite: One previous course in Philosophy; or permission of the Department.

PHILOS 3T03 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
PHILOSOPHY

the Department prior to the term in which the course is to be taken. (This requirement
does not apply to students in a programme combining Philosophy and Biology.)

PHILOS 4A03  CARTESIANISM
A study of Cartesianism (including the views of Leibniz) as a response to 16th-
Century mechanism.
Seminar (2 1/2 hrs.); one term
Prerequisite: Philosophy 2C06 or 2F03 and registration in Level III or IV of any
programme, or permission of the Department.
Offered in alternate years.

PHILOS 4B03  THEORY OF VALUE
A study of human practices of evaluation in morality, politics, art, religion, and
economics.
Seminar (2 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or per-
mission of the Department.
Offered in alternate years.

PHILOS 4D03  TWENTIETH-CENTURY ANALYTIC PHILOSOPHY
A study of some main currents of 20th-century philosophy, including the work of
such figures as Wittgenstein, Quine, and Davidson.
Seminar (2 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or per-
mission of the Department.
Offered in alternate years.

PHILOS 4E03  EXISTENTIALISM AND PHENOMENOLOGY
A study of selected texts of major existential and phenomenological philosophers in
the 20th-century, such as Camus, Heidegger, Jaspers, Marcell.
Seminar (2 1/2 hrs.); one term
Prerequisite: One previous course in Philosophy and registration in Level III or IV of
any programme; or permission of the Department.

PHILOS 4F03  RECENT EUROPEAN PHILOSOPHY
Contemporary trends in European Philosophy as represented by such writers as
Derrida, Foucault, and Habermass.
Seminar (2 1/2 hrs.); one term
Prerequisite: Registration in Level III or IV of a programme in Philosophy; or per-
mission of the Department.
Offered in alternate years.

PHILOS 4H03  METAPHYSICS
An investigation of metaphysical concepts, such as substance, individuation, iden-
tity, essence, quality, process, mind, time and causality. Some contemporary crit-
icisms 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 per-
mission of the Department.

PHILOS 4I03  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 2A06 or 3E03 or 3J03 and registration in Level III or IV
of any programme; or permission of the Department.
Offered in alternate years.

PHILOS 4L03  LOGICAL THEORY
The course deals with applications of logic within philosophy and philosophical
issues within logic. Topics which can be included are modal logic, deontic logics,
formal semantics, free logics, many-valued logics, and such concepts as truth, ref-
erence, logical form, and bivalence.
3 lects.; one term
Prerequisite: Philosophy 2B03; or permission of the Department.
Offered in alternate years.

PHILOS 4W03  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 require-
ment does not apply to students in a programme combining Philosophy and Biol-
ogy.) Not available to students in Philosophy 4206.

PHILOS 4Z06  THESIS
Reading and research under the supervision of at least two members of the Depart-
ment. 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 4W03.

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. Gowtze/B.S. (Boston), M.Ed. (North Carolina), Ph.D. (Wisconsin)
Raymond B. Johnson/B.A. (Western), M.Ed. (SUNY, Buffalo), Ph.D. (Temple)
Mary E. Keys/B.A., M.A. (Western), Ph.D. (Ohio State), Director,
School of Physical Education and Athletics
Fredrick A. Moyes/Dip. P.E. (Jordanhill), M.Ed. (Leicester)
Digby G. Sale/B.P.H.E. (Toronto), M.A. (Western), Ph.D. (McMaster)

Assistant Professors
Cameron J. Blimkie/ B.A. B.P.E. (McMaster), M.A., Ph.D. (Western)
Nicholas Cipriano/B.P.H.E., M.Sc. (Lakehead)
Peter Donnelly/Dip.Ed. (City of Birmingham College), B.A. (Hunter
College, N.Y.), M.S., Ph.D. (Massachusetts)
J. Digby Elliott/B.Sc., M.Sc., Ph.D (Waterloo)
Susan E. Inglis/B.P.E., M.A. (Alberta)
Timothy D. Lee/B.H.K., M.A. (Windsor), Ph. D. (Louisiana State)
Neil McCartney/B.Ed. (St. Luke's College), Ph.D. (McMaster)
Cindy Riech/B.A., B.P.H.E., B.Ed., M.A. (Queen's), Ph.D. (Waterloo)
Janet L. Starks/B.A. (Western), M.Sc., Ph.D. (Waterloo)

Lecturers
Michael Cain/B.A. (York)
John C. Edwards/B.P.E. (McMaster), M.A. (Western)
Robert J. Henderson/B.P.E. (McMaster), M.A. (Alberta)
Susan J. Lindley/B.Sc. (Guelph), M.Sc. (McMaster)
Andrea M. Mann/B.A., B.P.E. (McMaster), M.Sc. (Dalhousie)
Brian K.V. Mara/B.P.E. (McMaster), M.A. (Western)
Thérèse A. Quigley/B.A. (Western), B.Ed. (Western), M.A. (Alberta)
Phillip G. White/B.Sc. (London U.), M.Sc. (Waterloo)
David C. Wilson/B.Ed. (St. Paul's Cheltenham)

Instructors
Barry M. Phillips/B.Sc., B.Ed. (Acadia)
Gaye Stratten/B.P.H.E. (Toronto)

Associate Member
Oded Bar-Or/Pediatrics/M.D. (Hebrew U., Jerusalem)
Scott Gamier/Medicine/B.Sc. (Med.) (Manitoba), M.D. (Manitoba)

School Notes:
1. Not all Physical Education courses listed in this Calendar are taught
every year. Students are advised to consult the time-table which is
published annually by the Registrar's Office to determine whether a
course is offered.

2. The following courses may be taken as electives for B.A. credit by undergraduates not
in Physical Education 3J03, 3P03, 3Q03, 4E03, 4J03, 4L03, 4M03, 4Q03.
All other Physical Education courses are open only to students
registered in the Bachelor of Physical Education programme.

3. Required Area theory courses are: Physical Education 1A06,
1B03, 1E03, 1F03, 2A03, 2B03, 2C06, 2D03, 2F03, and Biology
1J03.

Required Area practicum courses are: PRO2 (Gymnastics),
PRO3 (Track), PRO4 (Games), PRO5 (Dance), PRO6 (Fitness).
Students must also fulfill the swimming requirement. (See the section
Faculty of Social Sciences, School of Physical Education, Pro-
gramme Notes).

Area Electives: All other Physical Education courses listed or
offered.

Physical Education

Faculty as of January 15, 1986
W.H. Fowles/ Chairman
Professor Emeritus
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Enrolment Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS ED 1A06</td>
<td>HUMAN ANATOMY</td>
<td>3 hrs.</td>
<td></td>
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<tr>
<td>PHYS ED 1B03</td>
<td>SOCIOLOGY OF SPORT</td>
<td>3 hrs.</td>
<td></td>
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<tr>
<td>PHYS ED 1E03</td>
<td>MOTOR DEVELOPMENT</td>
<td>3 hrs.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 1F03</td>
<td>KINESIOLOGY I</td>
<td>3 hrs.</td>
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<tr>
<td>PHYS ED 2A03</td>
<td>KINESIOLOGY II</td>
<td>1 lect.</td>
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<tr>
<td>PHYS ED 2B03</td>
<td>PSYCHO-MOTOR ASPECTS OF PHYSICAL ACTIVITY</td>
<td>2 lects.</td>
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<tr>
<td>PHYS ED 2C06</td>
<td>PHYSIOLOGY OF EXERCISE</td>
<td>2 lects.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 2D03</td>
<td>PHILOSOPHY OF PHYSICAL EDUCATION AND SPORT</td>
<td>3 hrs.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 2F03</td>
<td>HISTORY OF PHYSICAL EDUCATION AND SPORT IN CANADA</td>
<td>3 hrs.</td>
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<tr>
<td>PHYS ED 3B03</td>
<td>ADAPTED PHYSICAL ACTIVITY AND MOVEMENT</td>
<td>3 lects.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 3F03</td>
<td>SPORT AND PHYSICAL EDUCATION ADMINISTRATION</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 3G03</td>
<td>BEHAVIOURAL ASPECTS OF PLAY AND GAME INVOLVEMENT</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 3H03</td>
<td>HISTORICAL INTERPRETATIONS OF PHYSICAL ACTIVITY</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 3K03</td>
<td>SPORTS INJURIES</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 3L03</td>
<td>SPORT AND PHYSICAL EDUCATION ADMINISTRATION II</td>
<td>3 hrs.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 4A06</td>
<td>BIOMECHANICS OF HUMAN MOVEMENT</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 4B03</td>
<td>PHYSICAL ACTIVITY AND CORONARY HEART DISEASE</td>
<td>3 hrs.</td>
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<tr>
<td>PHYS ED 4C06</td>
<td>HUMAN PERFORMANCE PHYSIOLOGY</td>
<td>2 lects.</td>
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<tr>
<td>PHYS ED 4D06</td>
<td>FOUNDATIONS IN OUTDOOR EDUCATION</td>
<td>3 hrs.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 4E03</td>
<td>MOTOR CONTROL</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
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<tr>
<td>PHYS ED 4R03</td>
<td>EMPLOYEE FITNESS</td>
<td>3 hrs.</td>
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<td>Limited.</td>
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<tr>
<td>PHYS ED 4S03</td>
<td>CONCEPTUAL-MOTOR BEHAVIOUR - AN INTEGRATIVE ANALYSIS</td>
<td>3 hrs.</td>
<td></td>
<td>Limited.</td>
</tr>
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</table>
PHYSICAL EDUCATION

PHYS ED 4L03 COMPARATIVE PHYSICAL EDUCATION AND SPORT
(Selected Topics)
Contemporary physical education in selected countries, with special attention
given to international sports competition.
2 lects., 1 seminar; one term
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 4M03 PSYCHO-SOCIAL ASPECTS OF SKILL
Perceptual and social-psychological principles applied to specific problems in skill
development. Research on motivation, arousal perception, personality and com-
petition is discussed.
2 lects., 1 lab; one term
With permission of the instructor, this course may be taken as an elective for B.A.
credit by undergraduates not in Physical Education.

PHYS ED 4P03 HEALTH SCIENCE: PHYSICAL AND ENVIRONMENTAL
Selected transactions between the individual, the environs and disease agents are
explored as these transactions influence human diseases.
3 hrs. (lects., seminars); one term

PHYS ED 4P03** 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

PHYS ED 4Q03 PEDIATRIC EXERCISE PHYSIOLOGY
Physiologic aspects of physical activity in children and adolescents in health and
disease.
2 lects., 1 lab; one term
With permission of the instructor this course may be taken as an elective for B.A.
credit by undergraduates not in Physical Education.
Enrolment is limited.

PHYS ED 4R03** INDIVIDUAL STUDY PROJECT
Investigation on a selected theoretical or applied problem mutually acceptable to
instructor and student.
Prerequisite: Permission of the Chair and supervising instructor. Open to Level
IV B.P.E. students.

PHYS ED 4S03 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.
lec.s., seminars, labs., fieldwork; one term
Prerequisite: Physical Education 3B03.

PRACTICUM COURSES
In the four levels of the B.P.E. programme, each student must complete a mini-
mum of 13 units of practicum.
One unit of practicum will normally comprise 24 hours; these hours may be
compressed into one week (Camp or Orientation Week), spread over a term (Field
Work Placement) or, more usually, extend over a 6 week period of 4 hours per
week.
In Levels III and IV a variety of Basic and Advanced practicum courses are
offered.

Selection and Required Achievement in Practicum Classes
All practicum courses, in all Levels, must be completed with a minimum grade of
D— in each.

Level I: 1 unit
Level I students normally take the McMaster Basic Swimming Test and
PRO2 Basic Gymnastics.

Level II: 4 units
Level II students normally take PRO3 Track and Field, PRO4 Games,
PRO5 Dance, and PRO6 Fitness.

Levels III and IV: 8 units
Level III and IV students normally take four (4) units per Level.
See the Practicum Calendar (available directly from the School of Physical Edu-
cation) 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 13 units required by the Department.

3. Any students wishing to take more than 2 units of Field Work practicum may
do so in addition to the minimum of 13 units.

4. A student wishing to take more than four courses per Level, or more than
one course per session, must obtain permission from the Chairman of the
Department.

Outdoor Activity Courses
Courses in outdoor activities, e.g., canoe tripping, skiing, rock climbing, etc. may
be offered outside the regular time-tabled programme and in off-campus settings.
It is not compulsory to take a course from the outdoor activity area, but interested
students will receive comparable recognition for satisfactory completion of such
courses, that is: one unit credit for each 24-hour course completed with at least a
D— grade. A course fee is normally required in these offerings.

Field Work Practicum
Practica may also be offered in the form of field work or leadership experiences,
e.g., Cardiac Rehabilitation, Outdoor Education, Recreation/Athletic Administra-
tion.
The Field Work practicum occurs outside the normal time-tabled schedule, and
requires permission from the supervising instructor.

Physics

Faculty of January 15, 1987
C.V. Stager/Chairman
D.A. Goodings/Associate Chairman

Professors Emeriti
Bertram N. Brockhouse/BA (British Columbia), M.A., Ph.D. (Toronto), D.Sc (Waterloo, McMaster), F.R.S.C., F.R.S.
Martin W. Johns/M.A. (McMaster), Ph.D. (Toronto), D.Sc. (Brandon), F.R.S.C.
Carman C. McMullen/M.Sc., Ph.D. (McMaster)
Melvin A. Preston/B.A., M.A. (Toronto), Ph.D. (Birmingham), D.Sc. (McMaster), C.D., F.R.S.C.

Professors
Edward A. Ballik/B.Sc. (Queen’s), D.Phil. (Oxford)
A. John Bertlinsky/B.Sc. (Fordham), M.Sc., Ph.D. (Pennsylvania)
Rajat K. Bhaduri/M.Sc. (Carleton), Ph.D. (McMaster)
I. David Brown/B.Sc., Ph.D. (London)
Dennis G. Burke/B.E., M.Sc. (Saskatchewan), Ph.D. (McMaster)
John A. Cameron/B.A. (Toronto), Ph.D. (McMaster)
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)
W. Ross Dansa/M.Sc. (McMaster), Ph.D. (Wisconsin), F.R.S.C.
Brian K. Garside/B.A. (Toronto), D.Phil. (Oxford)/part-time
David A. Goodings/B.A. (Toronto), Ph.D. (Cambridge)
William E. Harris/B.Sc. (Alberta), M.Sc., Ph.D. (Toronto)
Terence J. Kennett/M.Sc., Ph.D. (McMaster)
John A. Kuehner/B.Sc. (Bishop’s), M.A. (Queen’s), Ph.D. (Liverpool), F.R.S.C.
Yukihisa nogami/B.Sc., D.Sc. (Kyoto)
William V. Frewbach/B.Sc, Ph.D. (McMaster)
Donald W. L. Spring/B.A. (Toronto), Ph.D., D.Sc. (Birmingham), F.R.S.C.
Carl V. Stager/B.Sc. (McMaster), Ph.D. (M.I.T.)
Robert G. Summers-Gill/M.A. (Saskatchewan), Ph.D. (California)
Peter G. Sutherland/B.Sc. (McGill), M.S., Ph.D. (Illinois)
David W. Taylor/B.A., D.Phil. (Oxford)
Thomas Timusk/B.A. (Toronto), Ph.D. (Cornell)
Anatole B. Volkov/B.S. (North Carolina), M.S., Ph.D. (Wisconsin)
James C. Waddington/B.Sc. (Queen’s), Ph.D. (McMaster)
Derek Walton/B.Sc. (Toronto), Ph.D. (Harvard)

Assistant Professors
Anton M. Jopko/M.Sc., Ph.D. (McMaster)/part-time
Catherine Kallin/B.Sc. (British Columbia), A.M., Ph.D. (Harvard)
Ralph E. Pudritz/B.Sc. (British Columbia), M.Sc. (Toronto), Ph.D. (British Columbia)

Associate Members
C. Ross Himling/B.Sc. (Calgary), Ph.D. (McMaster)/part-time
Michael S. Patterson/B.Sc. (Queen’s), M.Sc. (McMaster), Ph.D. (Mathematics)
David A. Thompson/B.Sc., Ph.D. (Reading) (Engineering Physics)
Brian C. Wilson/B.Sc., Ph.D. (Glasgow) (Radio)
PHYSICS IA06 MECHANICS, WAVE MOTION, OPTICS, AND ELECTRICITY
A course, organized in sections of approximately 100 students, consisting of lectures, demonstrations, and laboratory work in general physics with stress on mechanics, wave motion, optics, electricity. Primarily intended for students proceeding in the physical sciences.
3 lects., 1 lab.(3) every other week; two terms
Prerequisite: At least 60% in Grade 13 Physics, and registration in Mathematics 1A06 or Arts and Science 1D06, and Mathematics 1B03.

PHYSICS IB06 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 IA06. 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 1A06 or Arts and Science 1D06.

PHYSICS IC06 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 1A06 or Arts and Science 1D06.

PHYSICS ID03 MECHANICS
A course for Engineering students. Topics will include statics, kinematics, Newtonian dynamics, energy and momentum.
3 lects.; one term
Prerequisite: Registration in Level 1 Engineering.

PHYSICS IE04 WAVE MOTION AND ELECTRICITY
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 1 Engineering.

PHYSICS IA03 GENERAL PHYSICS II
A sequel to Physics IB06. Electricity and magnetism. Intended primarily for students proceeding in the life sciences.
3 lects.; one term
Prerequisite: One of Physics 1A06, 1A07, 1B06, 1B07, 1C06, 1C07, and Mathematics 1A06 or 1F06 or Arts and Science 1D06. Not open to students in Honours Chemistry and Physics, Honours Physics, Honours Applied Physics, Physics Major, or B.Sc. in Physics.

PHYSICS IB06 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 1A06, 1A07, 1B06, 1B07, 1C06, 1C07, and concurrent registration in Mathematics 2G03 and 2C03, or 2A06 and 2C03.

PHYSICS IC05 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 2C05 is required or is a specified option. Not open to students who are registered or have credit in, Physics 2G03.

PHYSICS IE06 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 1A06, 1A07, 1B06, 1B07, 1C06, 1C07, and Mathematics 1A06 or 1F06 or Arts and Science 1D06.

PHYSICS IG03 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 1A06, 1A07, 1B06, 1B07, 1C06, 1C07, and Mathematics 1B03 or 1G04, or registration in Mathematics 2G03. Not open to students who are registered or have credit in, Physics 2C05.
PHYSICS

PHYSICS 3X03 STARS AND STELLAR SYSTEMS
Observational properties of stars. Distance measurement in space. Galactic structure; properties of Galaxies, and cosmology.
3 lectures and occasional lab. periods; one term
Prerequisite: Physics 2C05 or 2G03, Physics 2B06 and 2H03, Computer Science 1B03 or 1MA3; or permission of the instructor.
Offered in 1987-88, alternating with Physics 3Y03.

PHYSICS 3Y03 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 lectures; one term
Prerequisite: Physics 2C05 or 2G03, Physics 2B06 and 2H03, Computer Science 1B03 or 1MA3; or permission of the instructor.
Offered in 1987-88, alternating with Physics 3X03.

MATH 3C03 MATHEMATICAL PHYSICS
Linear algebra and eigenvalue problems, partial differential equations, orthogonal functions, Fourier series, Legendre functions, spherical harmonics.
3 lectures; one term
Prerequisite: Mathematics 2A05 or 2A06, and 2C03 or 2C04 or 2G03 and 2G05 or 2P04 and 2Q04, and Physics 2C05 or 2G03. Not open to students who have credit for, or are registered in, Mathematics 3J04, 3K03, or 3V06.

MATH 3D03 MATHEMATICAL PHYSICS II
Functions of a complex variable, probability and statistics, boundary value problems, Bessel functions.
3 lectures; one term
Prerequisite: Mathematics 3C03. Not open to students who have credit in, or are registered in, Mathematics 3J04, 3K03, 3K05, 3V06.

PHYSICS 4A02 SPECIAL TOPICS
Independent study of the scientific literature, including the preparation of seminars on assigned topics.
2 lectures, or seminars; two terms
Prerequisite: Registration in a programme in which Physics 4A02 is required or is a specified option.

PHYSICS 4B04 ELECTROMAGNETIC THEORY
Development of Maxwell's equations; multipole series solutions, special relativity and radiation from dipoles.
2 lectures; two terms
Prerequisite: Physics 2B06, or Engineering Physics 2A03 and 2E04, and Mathematics 3C06 or 3D03.

PHYSICS 4C03 ANALYTICAL MECHANICS
Variational principles, Lagrange's equations, small oscillations, Hamilton's equations, canonical transformations, Hamilton-Jacobi theory, canonical perturbation theory, continuous systems and fields.
3 lectures; one term
Prerequisite: Mathematics 3C06, or completion of, or registration in Mathematics 3D03, and registration in an Honours or Engineering programme; or permission of the instructor.
Offered in 1987-88 and in alternate years.

PHYSICS 4D06 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 lectures, 1 lab (3); two terms
Prerequisite: Physics 2B06, or Engineering Physics 2A03 and 2E04.

PHYSICS 4E03 NUCLEAR PHYSICS
Nuclear masses and stability; radioactivity and nuclear reactions; elementary nuclear models.
3 lectures; one term
Prerequisite: Physics 3M06, or 3Q03 (with a grade of at least B – ); or registration in Level IV Physics Major (Health and Radiation Option).

PHYSICS 4F03 QUANTUM MECHANICS
A sequel to Physics 3M06, including general structure of quantum mechanics, matrix mechanics, perturbation theory, and the variational method.
3 lectures; one term
Prerequisite: Physics 3M06, and Mathematics 3C06 or 3D03.

PHYSICS 4G04 ADVANCED LABORATORY
Projects in atomic, nuclear and solid state physics. Three or four projects are required, one of which may be associated with a faculty research programme.
1 lab (3); two terms
Prerequisite: Registration in a programme in which Physics 4G04 is required or is a specified option; or permission of Chairman of Department.

PHYSICS 4K03 SOLID STATE PHYSICS
Crystal structure and binding; lattice vibrations; electron energy bands; metals and semiconductors; magnetism.
3 lectures; one term
Prerequisite: Physics 3M06, or a grade of at least B – in 3K03 or 3P03, and 3Q03, and registration in Honours Physics or Physics Major.

PHYSICS 4Q04 RESEARCH PROJECT
An experimental or theoretical project to be carried out under the supervision of a faculty member. A report will be required.
lab (6); two terms
Prerequisite: Registration in Level IV of a Health and Radiation Physics programme; or registration in Level IV of a Physics programme, a C.A.A. of at least 10.0, and permission of the Chairman of the Department.

PHYSICS 4R03 RADIATION AND RADIOISOTOPE METHODOLOGY
Lectures and laboratory work in the techniques and theory of the measurement of radiation. Topics include radioactivity and radioactive decay, solid state dosimetry, principles of radioactive detectors, counting statistics and data reduction, advanced multidetector systems.
1 lecture, 1 lab (3) every other week; two terms
Prerequisite: Physics 2B06, or Engineering Physics 2A03 and 2E04, and permission of the instructor.

PHYSICS 4S03 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 lectures; one term
Prerequisite: Physics 2B06, or Engineering Physics 2A03 and 2E04, and Mathematics 2G03 and 2H03, or 2A05 and 2C04, or 2A06 and 2C03; or permission of the instructor.
Offered in 1987-88 and alternate years.

PHYSICS 4T03 TOPICS IN RADIOLOGICAL PHYSICS
Analysis of current techniques in radiation protection, medical imaging and therapy.
3 lectures; one term
Prerequisite: Physics 3T03, or Engineering Physics 3D03, and Mathematics 2G03 and 2H03, or 2A05 and 2C04, or 2A06 and 2C03.

PHYSICS 4U03 PARTICLE PHYSICS
Mesons and baryons, quark model, local gauge invariance; symmetries; the electromagnetic, weak and strong interactions.
3 lectures; one term
Prerequisite: Physics 4F03, or permission of the instructor.

MATH 4D03 MATHEMATICAL PHYSICS III
Some mathematical techniques and their applications to physics and engineering. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations; hydrodynamics, elasticity, general relativity, field theory.
3 lectures; one term
Prerequisite: One of Mathematics 3C06, 3D03, or 3Q03, and registration in an Honours or Engineering programme.

For Graduate Courses see Calendar of School of Graduate Studies.

Polish

(See Slavic Studies, Polish)

Political Science

Faculty as of January 15, 1987
Michael J. Atkinson/Chairman

Professors Emeriti
Derry Novak/B.A. (Toronto)
Thomas C. Truman/B.A. (Melbourne), M.A. (Queensland)

Professors
Adam Bromke/M.A. (St. Andrews), Ph.D. (Montreal and McGill)
Marshall N. Goldstein/B.A. (Florida), Ph.D. (North Carolina)
Gordon P. Means/B.A. (Reed College), M.A., Ph.D. (Washington)
Peter J. Potichnev/B.A. (Temple), M.A., Ph.D. (Columbia)
Klaus H. Pringsheim/B.A. (California, Los Angeles), M.A. (Columbia)
Masoud Sproule-Jones/B.Sc. (London), M.A., Ph.D., (Indiana)/V.K. Copp Chair in Urban Studies
Michael B. Stein/B.A. (McGill), M.A., Ph.D. (Princeton)

Associate Professors
Howard Aster/B.A. (McGill), M.A. (Yale), Ph.D. (London)
Michael M. Atkinson/B.A. (Alberta), M.A., Ph.D. (Carleton)
George B. Breckenridge/M.A. (Glasgow and Duke), Ph.D. (Duke)
William M. Chandler/B.A. (Cornell), Ph.D. (North Carolina)
William D. Coleman/B.A. (Carleton), A.M., Ph.D. (Chicago)
Henry J. Jaccob/B.S.S. (Fairfield), M.A., Ph.D. (Georgetown)
Thomas J. Lewis/B.A. (Carleton), M.A., Ph.D. (SUNY, Buffalo)
Roman R. Mach/B.A. (Manitoba), M.A. (Carleton), Ph.D. (Indiana)
Kim Richard Nossal/B.A., M.A., Ph.D. (Toronto)
POLITICAL SCIENCE

POL SCI 2M06 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 2O06 INTRODUCTION TO POLITICAL THEORY
An introduction to modes of thinking theoretically about politics, expressed in political philosophy, ethical theory, history of political thought, political science, and structuralism.
3 hrs. (lects.); two terms
Prerequisite: Open.

POL SCI 2P06 POLITICS IN WESTERN EUROPE
An introduction to comparative political analysis with an emphasis on the politics of France, West Germany, Italy, and Great Britain.
3 hrs. (lects.); two terms
Prerequisite: Open, except to students registered in Political Science 3PP3, 3QQ3, or 3RR3.

POL SCI 3A06 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 3A16 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 2E06.

POL SCI 3B06 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.

POL SCI 3B08 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 2E06.

POL SCI 3C06 INTERNATIONAL ORGANIZATIONS
An analysis of the principles, structure, and functions of the United Nations and affiliated international organizations.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E06.

POL SCI 3D03 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 3D06 POLITICAL PARTICIPATION AND ELITIST POLITICS IN CANADA
An analysis of the impact of social structure, ideology, and political culture on structures of political participation and elitist politics in Canada.
3 hrs. (lects. and seminars); two terms
Prerequisite: Political Science 2006.

POL SCI 3EE3 THE FOREIGN POLICY PROCESS IN CANADA
An examination of the influences on foreign policy decision-making in Canada and the elements of Canadian foreign policy.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E06 or 2G06.

POL SCI 3FF3 ISSUES IN CANADIAN FOREIGN POLICY
An analysis of recent issues in Canada's external relations designed to indicate themes, problems and constraints in the making and execution of foreign policy in Canada.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2E06 or permission of the instructor.

POL SCI 3G03 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 2006; or permission of the instructor.
POLITICAL SCIENCE

POL SCI 3H03  STATISTICAL APPLICATIONS
This course builds upon the concepts taught in Political Science 3G03, and examines how statistical techniques can be used to analyze political problems.
3 hrs. (lects and seminars); one term
Prerequisite: Political Science 2F06, or permission of the instructor.

POL SCI 3H13  INTERGOVERNMENTAL RELATIONS IN CANADA
An analysis of selected policy areas focussing on governmental resources, strategies, tactics and the outcomes of bargaining between governments in Canada.
3 hrs. (lects. and seminars); one term
Prerequisite: Political Science 2G06.

POL SCI 3J06  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 2G06.

POL SCI 3J13  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 2G06.

POL SCI 3JJ3  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 2G06.

POL SCI 3K06  MARK'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: Political Science 2K06 or a course in Political Theory or Philosophy.

POL SCI 3L06  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 3U06.

POL SCI 3M06  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 3M06  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 lect.; two terms
Prerequisite: Permission of the instructor.

POL SCI 3N06  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 2G06.

POL SCI 3O06  MODERN POLITICAL THOUGHT
A critical analysis of modern political ideas, from the early nineteenth century to the present time, with special emphasis on the theories of modern conservatism, liberalism, socialism, fascism, and democracy.
3 lects.; two terms
Prerequisite: A previous course in Social Science or Philosophy.

POL SCI 3P03  POLITICS IN GERMANY
A study of the development of the German political system, including analysis of political culture, ideological traditions, parties, elites and the policy process.
3 hrs. (lects. and seminars); one term
Prerequisite: A previous course in Political Science. Not open to students enrolled in Political Science 2P06.

POL SCI 3Q06  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 with credit in Political Science 2N06.
Offered in alternate years.

POL SCI 3Q3  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 enrolled in Political Science 2P06.

POL SCI 3R06  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 3R06  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 in Political Science 2P06.

POL SCI 3S03  LOCAL GOVERNMENT AND POLITICS IN CANADA
A description of the laws and institutions of local government; examination of relationships with citizens and other levels of government; the dynamics of local politics.
3 hrs. (lects. and discussion); one term
Prerequisite: Open

POL SCI 3S53  URBAN SERVICE DELIVERY
An examination of the formation, decision making and delivery of public policies to urban areas. Some public policies will be studied at length, along with aspects of others.
3 hrs. (lects. and discussion); one term
Prerequisite: Political Science 3S03

POL SCI 3T03  MODERN POLAND 1863-1970
An examination of the development of Poland since the failure of the crucial rebellion of 1863-64. Emphasis will be on the struggle for national independence and on social and industrial modernization.
3 hrs. (lects. and discussion); one term
Prerequisite: History 1C06, or permission of the instructor.
Offered in alternate years.
Same as History 3F03.

POL SCI 3U03  RESEARCH TECHNIQUES
A practical examination of topics in research design including questionnaire construction and interviewing procedures.
3 hrs. (lects.); one term
Prerequisite: Political Science 2F06. Not open to students with credit in Political Science 3U06.

POL SCI 3W06  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 3Y06  COMPARATIVE LEGISLATURES
An institutional and behavioural analysis of legislative bodies and executive-legislative relations in Canada, the United Kingdom, France, West Germany and the United States.
3 hrs. (lects. and seminars); two terms
Prerequisite: A previous course in Political Science.

POL SCI 3Z06  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 2G06, and one other Political Science course.

POL SCI 4A06  PROBLEMS IN AMERICAN POLITICS
An examination in depth of one of the important dimensions of the American political system.
3 hrs. (seminars); two terms
Prerequisite: Political Science 2B06; or permission of the instructor.
Offered in alternate years.

POL SCI 4BB  THE TRIAL OF Socrates
Plato's understanding of the status of philosophy with respect to politics and rhetoric on the basis of the dialogues thematically connected to the trial and death of Socrates.
3 hrs. (seminars); two terms
Prerequisite: Open only to Level IV students.

POL SCI 4CC  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 2B06, 2P06, 3X06, and 3Z06 are recommended.

POL SCI 4DD06  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 4D06.
POL SCI 40D6 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 3K66, or a comparable course in either Sociology or Philosophy; or permission of the instructor.

POL SCI 4E06 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 4F06 HUMAN RIGHTS: INTERNATIONAL AND NATIONAL
An examination of the concept of human rights as reflected in international and national declarations and practices. The focus will be on ‘liberal’ and ‘Marxist-Leninist’ interpretations and the specific content of human rights.
3 hrs. (seminar); two terms
Prerequisite: A previous course in International or Comparative politics.

POL SCI 4G06 COMPARATIVE PUBLIC POLICY
A critical analysis of the formation, content and impact of public policy within advanced industrial societies.
3 hrs. (seminar); two terms
Prerequisite: A previous course in Comparative or Canadian Politics. Not open to students with credit in Political Science 3K66.

POL SCI 4H06 THE POLITICS AND ADMINISTRATION OF PUBLIC ENTERPRISE
An examination of the origins, development and challenges to public enterprise; the management and control of such organizations; Canadian focus in the context of the United States and Europe.
3 hrs. (seminar); two terms
Prerequisite: Registration in Level IV Honours Political Science.

POL SCI 4I06** DIRECTED READINGS AND INDEPENDENT RESEARCH FOR HONOURS STUDENTS
Directed reading assignments and independent study of a research problem through published materials and/or field inquiry. Students will be required to formulate the result of theory inquiry in scholarly fashion. The subject matter is to be different from that covered in 4Z06 if the student is enrolled in both courses.
2 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 4J06 COMPARATIVE POLITICS: COMMUNIST POLITICAL SYSTEMS
A comparative analysis of the political ideologies, institutions, and practices of communist political systems.
Seminar; two terms
Prerequisite: Permission of the instructor. Offered in alternate years.

POL SCI 4K06 ADVANCED TOPICS IN PUBLIC ADMINISTRATION
An examination in depth of one or more of the important topics, problems, or perspectives in the study of public administration.
3 hrs. (seminar); two terms
Prerequisite: Political Science 3Z06; open only to Level IV students.

POL SCI 4M06 ISSUES IN INTERNATIONAL POLITICS
An examination of selected topics in international politics and foreign policy.
2 hrs. (seminar); two terms
Prerequisite: Permission of the Instructor.

POL SCI 4N06 CANADIAN PUBLIC POLICY
An examination of the patterns of public policy in Canada and a critical evaluation of several types of explanation.
Seminar(s); two terms
Prerequisite: Political Science 2006, and another course in Political Science beyond Level I. Open only to Level IV students.

POL SCI 4P03 POLITICAL PARTIES
An examination of the role of political parties in various societies, and a critical evaluation of approaches to study them. The focus will be primarily on Western political systems.
3 hrs. (seminar); one term
Prerequisite: A previous course in Comparative or Canadian Politics.

POL SCI 4Q06 CANADIAN POLITICAL THEORY
An investigation into the character of Canadian liberalism and the various critiques of liberalism found in the works of G.P. Grant, C.B. Macpherson, George Woodcock and other Canadian political theorists.
3 hrs. (seminar); two terms
Prerequisite: Permission of the instructor.

POL SCI 4T06 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.
PSYCHOLOGY

Department Notes:
1. The University reserves the right to limit enrolment in any course. Where priorities have to be established, first consideration will be given to Honours B.Sc. and Honours B.A. Psychology students.
2. Registration in all courses marked ** listed as selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

PSYCH 1A06 GENERAL PSYCHOLOGY
A broad survey of the subject matter of psychology. Topics covered include psychological, perception, learning, animal behaviour, development, cognition, psychopathology, and social psychology.
3 hrs., (lects. and tuts.); two terms
Prerequisite: Open.

PSYCH 2A03 THEORIES OF HUMAN DEVELOPMENT
A general survey of human development with an emphasis on the childhood years.
3 hrs.; one term
Prerequisite: Psychology 1A06. Not open to students who have credit for, or are registered in, Psychology 3G03 or 3M06.

PSYCH 2B03 PERSONALITY
An introduction to the scientific study of personality which will consider theory, assessment and research in five approaches to personality: psychodynamic, biological, trait, behavioural and humanistic.
3 hrs.; one term
Prerequisite: Psychology 1A06.

PSYCH 2C03 INTRODUCTION TO SOCIAL PSYCHOLOGY
An overview of research and theory in areas such as social perception, attitude and attitude change, social influence, interpersonal attraction, altruism, aggression, small group processes.
2 hrs., 1 tut.; one term
Prerequisite: Psychology 1A06.

PSYCH 2D06 SENSATION AND PERCEPTION
An intensive study of sensory and perceptual processes. The emphasis is on experimental findings, theoretical explanations, and methods employed in the study of these processes.
3 hrs.; two terms
Prerequisite: Psychology 1A06. Not open to students registered in an Honours Programme in Psychology.

PSYCH 2G03 PSYCHOLOGICAL STATISTICS
An introduction to descriptive statistics and to the logic of statistical inference. This course is intended to provide an understanding of statistical procedures commonly found in the psychological literature.
3 hrs.; one term
Prerequisite: Mathematics 1L03, or any other 3 units of Mathematics, and registration in B.A. Psychology. Not open to students who are registered in, or have received credit for, Mathematics 1F06, or Psychology 2B06, or Statistics 2R06, or equivalent.

PSYCH 2H03 HUMAN LEARNING AND COGNITION
The psychological study of knowledge and how people use it. Topics include pattern recognition, remembering and reasoning.
3 hrs.; one term
Prerequisite: Psychology 1A06.

PSYCH 2R06 RESEARCH DESIGN AND STATISTICS FOR PSYCHOLOGISTS
Statistical principles in the design and analysis of experiments in psychology. Parametric and non-parametric techniques for single sample, two sample and multi-sample designs.
3 hrs.; two terms
Prerequisite: One of Mathematics 1A06, 1F06, 1M03, 1N06 and registration in a Psychology programme. Not open to students who have completed Statistics 2D03, 2D04, 2M03, 2R06 or 3N03. A student receiving credit for Psychology 2G03 may receive only three additional units credit for Psychology 2R06.

PSYCH 2T03 PRINCIPLES OF CONDITIONING
An experimental survey of conditioning processes based on the study of animal behaviour.
3 hrs.; one term
Prerequisite: Psychology 1A06.

PSYCH 2U03 LABORATORY IN ANIMAL CONDITIONING
Students undertake experimental exercises intended to demonstrate principles of simple learning. Experiments are conducted at times of the students' choosing within normal hours of operation. Tuts., lab. by appointment; one term
Prerequisite: Psychology 2T03. Permission of the department must be obtained by March 1.
Enrolment is limited.

PSYCH 2W06 NEUROPSYCHOLOGY
Neural organization and the relationship between human brain function and behaviour.
3 hrs.; two terms
Prerequisite: Psychology 1A06.

PSYCH 3A03 AUDITION
An introduction to auditory perception. The emphasis is on the application of classical and modern psychoacoustical methods to the development of theories of hearing.
3 hrs.; one term
Prerequisite: Registration in Honours or B.Sc. Psychology, or permission of the instructor.

PSYCH 3B03 DEVELOPMENTAL PSYCHOPATHOLOGY
A study of the etiology of abnormal human behaviour, including a survey of behavioural abnormalities and adjustment problems specific to children.
3 hrs.; one term
Prerequisite: Credit, or registration in Psychology 3N06; or permission of the instructor.

PSYCH 3C06 SOCIAL PSYCHOLOGY LABORATORY
Students collect, analyse and interpret data, and in the second term carry out a research project of their own design.
2 hrs., 1 lab.(3); two terms
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 2C03, and Psychology 2R06 or Statistics 2R06; or permission of the instructor.
Enrolment is limited.

PSYCH 3D03 SELECTED TOPICS IN SOCIAL PSYCHOLOGY
Topics will include interpersonal and cross-cultural communication, equity and social exchange, inter-group relations. Topics may change year to year.
2 hrs., 1 tut.; one term
Prerequisite: Psychology 2C03.
Not offered in 1987-88.

PSYCH 3D33 PSYCHOLOGICAL ASPECTS OF AGING
An examination of the cognitive and social-psychological aspects of aging: sensation, perception, attention, memory, intelligence, communication, personality, attitudes and mental health.
3 hrs. (lects. and seminar); one term
Prerequisite: Psychology 1A06 and Gerontology 1A06 or Social Science 2G06; or permission of the instructor.
Same as Gerontology 3D03.
Students in a Psychology programme (except those in Gerontology and Psychology) must register for this course as Psychology 3D33.

PSYCH 3E03 AUDITION LABORATORY
Experimental investigation of the role of auditory processes in the perception of music. The emphasis is on all phases of experimentation including report writing.
1 lab.(3); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 3A03, and Psychology 2R06 or Statistics 2R06; or permission of the instructor.
Enrolment is limited.

PSYCH 3F05 PHYSIOLOGICAL PSYCHOLOGY I
Topics include membrane physiology, neurochemistry, sensory and motor functions, and the physiology of motivation, learning, and memory. Designed particularly for students in the Faculty of Science.
3 hrs.; two terms
Prerequisite: Registration in Honours or B.Sc. Psychology, or registration in Level III or IV of a Biology or Biochemistry programme; or permission of the instructor.

PSYCH 3G03 DEVELOPMENT DURING INFANCY
Social and cognitive development in the first two years of life. Topics include fetal development, development of perception, memory and concepts.
3 hrs.; one term
Prerequisite: Registration in Level III or IV of a Psychology programme; or permission of the instructor. Not open to students with credit in Psychology 3M06.

PSYCH 3H03 INTELLECTUAL DEVELOPMENT AFTER INFANCY
The development of perception, memory, language and concepts after infancy.
3 hrs.; one term
Prerequisite: Psychology 3G03, and completion of registration in Psychology 2G03 or 2R06. Not open to students with credit in Psychology 3M06.

PSYCH 3K03 PSYCHOLOGICAL MEASUREMENT
Theory of psychological testing and measurement. Topics include the statistical bases and assumptions of measurement, test validity and reliability and the measurement of human characteristics.
3 hrs.; one term
Prerequisite: Psychology 1A06, and Psychology 2G03, or 2R06 or Statistics 2R06; or permission of the instructor. Students with grades less than B- in Psychology 2G03 are advised not to enroll in this course.

PSYCH 3N06 ABNORMAL PSYCHOLOGY
Topics basic to clinical psychology, including models of behavioural disorder, classification of abnormal behaviour, evaluation of diagnostic practice, and determinants and treatment of mental illness.
3 hrs.; two terms
Prerequisite: Credit or registration in one of Psychology 2T03, 2W06, or 3F06; or registration in Level III or IV of Nursing; or permission of the instructor.

PSYCH 3P03 PSYCHOLOGICAL TOPICS IN THINKING
Areas to be covered include human inference, decision making, and creative problem solving.
3 lect.; one term
Prerequisite: Psychology 2H03.

PSYCH 3Q03** 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 coordinator. Permission of the course coordinator. Not open to students who are registered in, or who have received credit for Psychology 3Q03.
3 lects.; one term
Prerequisite: Permission of the course coordinator. Not open to students who are registered in, or who have received credit for Psychology 3Q03.

PSYCH 3R03 INTRODUCTION TO ANIMAL BEHAVIOUR
The development, stimulus control, and function of behaviour as seen in evolutionary perspective. Instinctive behaviour, learned behaviour, and their interactions.
3 lects.; one term
Prerequisite: Registration in a Psychology programme, or in a four-level programme in Biochemistry or Biology, or permission of the instructor.

PSYCH 3S03 ANIMAL BEHAVIOUR LABORATORY
Experiments involving a wide variety of animal species, both vertebrate and invertebrate.
1 lab (3); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 3R03, and registration in a four-level programme in Psychology or Biology, or permission of the instructor.
Enrolment is limited.

PSYCH 3T03 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 2D03, 2E03, Biology 2C03, 3J03, Psychology 3R03.

PSYCH 3U03 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 2H03 and registration in Level III or IV of a Psychology programme, or permission of the instructor.

PSYCH 3V03 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 hrs); one term
Prerequisite: Permission of the department which must be obtained by March 1, and Psychology 3U03, and credit or registration in Psychology 2R06 or Statistics 2R06.
Enrolment is limited.

PSYCH 3W06 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.; one term
Prerequisite: Credit or registration in Psychology 2G03 or 2R06, or Statistics 2R06; or permission of the instructor.

PSYCH 3X03 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 2T03, and registration in a Psychology programme, or permission of the instructor.

PSYCH 3Y03 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 2T03, and registration in a Psychology programme. Psychology 3Y03 may be repeated, for a total of six units credit, if on a different topic and with permission of the instructor.

PSYCH 3Z03 RESEARCH METHODS IN PSYCHOLOGY
An advanced course examining the principles and techniques of research and data analysis in psychology.
3 lects.; one term
Prerequisite: Psychology 2R06, and registration in Honours Psychology.

PSYCH 4A03 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 4B03 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 4D06 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, which must be obtained by March 1. If Psychology 3Q03, 3Q03, 4Q03, or 4Q03 is taken concurrently with Psychology 4D06, a different faculty member must supervise each course.

PSYCH 4F03 NEURAL MECHANISMS I
Neurobiology at an advanced level. Topics include membrane biophysics, electrophysiology and pharmacology of excitable cells, synaptic and dendritic mechanisms and neural plasticity.
3 lects.; one term
Prerequisite: Psychology 3P06 or Biology 3U06, and registration in Level IV of Honours Psychology, Biology or Biology/Psychology, or permission of the instructor. Not open to students who have completed Psychology 4E07.

PSYCH 4G03 NEURAL MECHANISMS II
Seminars and laboratory experience in current problems in neurobiology.
2 hrs. seminar, 3 hrs. lab.; one term
Prerequisite: Permission of the Department which must be obtained by March 1, and Psychology 4F03, or permission of the instructor. Not open to students who have completed Psychology 4E07.
Enrolment is limited.

PSYCH 4H03 PHYSIOLOGICAL PSYCHOLOGY II
A critical examination of current issues in physiological psychology.
3 hrs. (lect. or seminar); one term
Prerequisite: Psychology 3P06, and registration in Level IV Honours Psychology or Biology/Psychology, or permission of the instructor.

PSYCH 4I03** 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. Permission of the course co-ordinator. Open only to students in Level IV of an Honours Psychology programme. Not open to students who are registered in, or who have received credit for, Psychology 4I03.

PSYCH 4J03** INDIVIDUAL STUDY II
A laboratory project that may extend over both terms. Students intending to register must first consult a faculty member and the course co-ordinator. Permission of the course co-ordinator. Open only to students in Level IV of an Honours Psychology programme. Not open to students who are registered in, or who have received credit for, Psychology 4J03.

For Graduate Courses see Calendar of School of Graduate Studies.

Religious Studies

Faculty as of January 15, 1987
J. Robertson/Chairman

Professors
John G. Annapure/B.A. (Swarren College, and Bishop's College, College), S.T.M. (Union Theological Seminary), M.A., Ph.D. (Columbia)
A. Eugene Combs/B.A. (Trinity, San Antonio), M.Div. (Union Theological Seminary), Ph.D. (Columbia)
Phyllis Grant/B.A. (Radcliffe College), Ph.D. (Harvard)
Yun-hua Jan/M.A., Ph.D. (Visva-Bharat)
Ben F. Meyer/B.A. (Colgate), 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) (Part-time)
Krishna Swaranman/M.A. (Annamalai, Madras), Ph.D. (Banas)
Gerard Vallée/B.A. (Laval), M.A. (Montreal), Ph.D. (Münster)
Paul Younger/A.B. (LaFayette), M.A. (Banaras), B.D. (Sharpe), Th.M., M.A., Ph.D. (Princeton)

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RELG ST 2BB3 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 hermeneutics from among different religious traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2C03 MORAL ISSUES
An introduction to moral philosophy accenting biomedical ethics. Issues such as abortion, human experimentation, euthanasia, and genetic screening will be investigated in cooperation with members of the Faculty of Health Sciences.
2 lects., 1 tut.; one term
Prerequisite: Open to students in Level II and above.
Same as Philosophy 2D03.

RELG ST 2CC3 SPECIALISTS IN THE SACRED
A study of common religious types: shamans, mystics, priests, and saints, and an attempt to discern their distinctive characteristics.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2D06 THE BIBLICAL WORLD: AN INTRODUCTION TO THE BACKGROUND OF THE OLD TESTAMENT
The social and political world of the Old Testament period (second millennium to 300 B.C.E.). Special attention will be given to the nature of the physical environment and to the results of archaeology.
2 lects., 1 tut.; two terms
Prerequisite: Open.

RELG ST 2DD3 THE FIVE BOOKS OF MOSES
The central teachings of the Pentateuch (Genesis-Deuteronomy) in the religious life and history of ancient Israel and in Western thought.
2 lects., 1 tut.; one term
Prerequisite: Open. For a study of the whole Hebrew Bible, Religious Studies 2G06, 2D03, 2E03, 3G03 are recommended.

RELG ST 2E06 INTRODUCTION TO THE STUDY OF THE NEW TESTAMENT
A survey of early Christian history and New Testament literature. Attention is paid to the Jewish background to Christianity and to the contemporary Jewish and Christian worlds.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2G06 may not take this course for credit.

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 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 tut.; two terms
Prerequisite: Open.

RELG ST 2GG3 RELIGIOUS TRADITIONS OF THE EAST
A broad survey of major themes and problems in the study of the religions of the East.
2 lects., 1 tut.; one term
Prerequisite: Open. A Level I Religious Studies course is recommended. Not available to students with credit in Religious Studies 2G03.

RELG ST 2IH3 ISSUES IN WAR AND PEACE
Religious thinking and practice on militarism, the restraint of war and paths to peace, including just war, nonviolence, pacifism, and revolution.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELG ST 2III3 CHRISTIANITY IN THE PATRIARCIAL PERIOD (100-800)
The development of Christianity in the first centuries C.E. in relation to competing alternatives such as Judaism, Graeco-Roman cults and philosophies.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 2H16 may not take this course for credit. Not Offered in 1987-88.

RELG ST 2III3F LA PENSEE CHRETIENNE A L'EPOQUE PATRIARCHE (100-800)
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. Not Offered in 1987-88. Same as Religious Studies 2III3.

RELG ST 2J06 INDIA: ITS CULTURE, SOCIAL HISTORY, RELIGION AND PHILOSOPHY
A systematic study of the intellectual and spiritual traditions of India. The course will include the political, economic and social thought, as well as religion and philosophy.
RELIGIOUS STUDIES

REUG ST 22J3 CHRISTIANITY IN THE MEDIEVAL PERIOD (800-1500)
The development of Christianity in the Middle Ages and its relation to the political and intellectual context. Primary texts will illustrate typical aspects of medieval religion, learned and popular. 2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 2006 may not take this course for credit.

REUG ST 22K3 CHRISTIANITY IN THE 16TH CENTURY
The place of the Reformation movement in the development of Christianity, its background, context, and sequels. Attention given to the life and thought of Martin Luther and his impact on Western culture. 2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3KQ3 may not take this course for credit.

REUG ST 22L3 CHRISTIANITY AFTER 1600
The development of Christianity (Protestant and Catholic) from the 17th to the 20th centuries. Attention is given to the interaction between secular and religious movements, and to Christianity's reaction to world-wide challenges. 2 lects., 1 tut.; one term
Prerequisite: Open.

REUG ST 2MM6 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 2006 may not take this course for credit.

Not Offered in 1987-88.

REUG ST 2NN3 RELIGIOUS TRADITIONS OF THE WEST
A broad survey of major themes and problems in the study of the religions of the West. 2 lects., 1 tut.; one term
Prerequisite: Open. A Level I Religious Studies course is recommended.

REUG ST 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 brainwashing and to the deprogramming controversy. 2 lects., 1 tut.; one term
Prerequisite: Open.

REUG ST 2RO6 DIVINE JUSTICE
A study of the concept of the just God and the problem of evil with primary reference to the treatment of the issue in biblical, classical, and modern thought. 2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 2R03 may not take this course for credit. Students with credit in Religious Studies 2NN3 in 1986/87 must obtain permission of the instructor.

REUG ST 2RR3 RELIGIOUS THOUGHT IN THE NOVELS OF TOLSTOY AND DOSTOEVSKY
A critical examination of the treatment of religious thought in the major novels of Tolstoy and Dostoevsky. 3 lects.; 1 term
Prerequisite: Open to students in Level II and above. Offered in alternate years. Same as Russian 2RR3.

REUG ST 2SO6 MODERN JUDAISM
A survey of the most important trends in Jewish life and thought from the Middle Ages to the present. These include religious movements, Zionism, and responses to the holocaust. 2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 3M06 may not take this course for credit.
RELIGIOUS STUDIES

Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.

Same as Sociology 3R83.

RELIG ST 3C03 DIVINATION AND PHILOSOPHY OF I-CHING OR THE BOOK OF CHANGES
An exploration of I-Ching's divination techniques and its philosophical interpretation of man, the world, and the cosmos.
2 lects., 1 tut.; one term
Prerequisite: Open.
Not offered in 1987/88.

RELIG ST 3D03 GOD, REASON AND EVIL
An examination of religious understandings of the nature of reason and evil, and the issues these concepts raise for those holding religious beliefs.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3D06 may not take this course for credit.

RELIG ST 3F03 APPROACHES TO THE STUDY OF RELIGION
A study of the various ways religious phenomena can be studied, e.g. psychologically, sociologically, philosophically, theologically, comparatively, etc. Attention is also given to the history of the discipline of religious studies.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2N33, 2D03, 2G03; or permission of the instructor.

RELIG ST 3I03 STORYTELLING IN INDIAN RELIGION
A survey of some of the many stories that were told by Buddhists, Jains and Hindus as a form of popular religious instruction and of the various uses made of humor and wit in religious teaching.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 3J06 RELIGION AND MODERN SOCIETY
An introduction to the thoughts and theories of scholars who have studied the relation between religion and society. In the first term, the emphasis will be on pre-World War II writings. In the second term, the empirical materials of the sociology of religion since World War II will be surveyed.
2 lects., 1 tut.; two terms
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies or Sociology.
Same as Sociology 3M06.

RELIG ST 3J16 PRIMITIVE RELIGIONS
A critical examination of major anthropological and psychological theories of primitive religion and primitive modes of classification.
2 lects., 1 tut.; two terms
Prerequisite: Open.
Same as Anthropology 3J16.

RELIG ST 3K03 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 2N33, 2E06, 2F06, 2G06, 2K03, 2K03, 2G06; or permission of the instructor.

RELIG ST 3K33 RECENT DEVELOPMENTS IN CHRISTIAN THEOLOGY
A study of some major Christian thinkers who have been saying recently about the meaning of Christ in the modern world.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 3L13 RELIGION AND HUMAN NATURE
What is the nature of human nature and its fulfillment? A study of recent philosophical and religious anthropology.
2 lects., 1 tut.; one term
Prerequisite: Open.

RELIG ST 3M03 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 2N33, or 2D03 or 2E03; or permission of the instructor.

RELIG ST 3M33 SCEPTICISM, ATHEISM, AND RELIGIOUS FAITH
Is religious faith essential to, intrinsic to, or irrelevant to authentic human existence? A study of Nietzsche and Kierkegaard.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3J06 may not take this course for credit.
Not offered in 1987/88.

RELIG ST 3N03 THE INDIVIDUAL AND SOCIETY IN JAPANESE TRADITION
An examination of the Japanese social order and the place of the individual within it. Examples will be drawn from Japanese religion and culture.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3K06 may not take this course for credit.

RELIG ST 3N03 THE ENCOUNTER OF SCIENCE AND RELIGION
The study of the history of the encounter since the 17th century, especially issues related to Darwin's theory of evolution, and to the development of the scientific method.
2 lects., 1 tut.; one term
Prerequisite: Open. Students with credit in Religious Studies 3J06 may not take this course for credit.
Not offered in 1987/88.

RELIG ST 3O03 THE FOURTH GOSPEL
An examination of the historical and literary backgrounds of the Gospel of John followed by a study of its context, major themes, and distinctive contribution to Christian thought.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2N33, 2E06, 2G06, 2R06; or permission of the instructor.

RELIG ST 3P03 INDIAN PHILOSOPHY
A concise, connected account of Indian philosophy using Hindu, Buddhist and Jaina canonical writings as well as later philosophical writings.
2 lects., 1 tut.; two terms
Prerequisite: Open. Students with credit in Religious Studies 3P06 may not take this course for credit.

RELIG ST 3Q06 THE BUDDHIST TRADITION
An historical and philosophical study of Buddhism in India, China and Japan.
2 lects., 1 tut.; two terms
Prerequisite: One of Religious Studies 2O03, or 2G03, 2G06, 2M06, 2R06; or permission of the instructor.
Not offered in 1987/88.

RELIG ST 3R03 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 3R03.

RELIG ST 3S03 MONKS AND MAGICIANS: APPROACHES TO THE STUDY OF RELIGIOUS BIOGRAPHIES
Students will read selections of major religious biographies from the Christian, Hindu, Buddhist, and Taoist traditions.
2 lects., 1 tut.; one term
Prerequisite: Open.
Not offered in 1987/88.

RELIG ST 3T03 MODERN RESEARCH IN THE LIFE AND TEACHINGS OF JESUS
An examination of the views of representative modern scholars with an analysis of the texts on which their views rest, along with a consideration of the problem of the relationship between faith and historical events.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2N33, 2E06, 2G06, 2R06; or permission of the instructor.

RELIG ST 3X03 THE LETTERS OF PAUL
An examination of the principal themes in Paul's letters, with special emphasis on his Christology, anthropology, and soteriology. Modern scholarly views will be considered.
2 lects., 1 tut.; one term
Prerequisite: One of Religious Studies 2N33, 2E06, 2G06, 2R06; or permission of the instructor.

RELIG ST 3X33 CIVIL RELIGIONS, EAST AND WEST
An analysis and critique of the concept of civil religion through a comparative study of selected theologico-political writings, with particular attention to the place and function of primary religious texts and authority in such civil form.
Lecture and seminar; one term
Prerequisite: Open. Students are encouraged to take or to have taken Religious Studies 2X3X as a complement to this course, as well as a course in Political Science and/or Philosophy.

RELIG ST 3Y03 RELIGION IN THE CHINESE NOVEL MONKEY (hsi-yu-chi)
A study of the religious dimension in Wu Ch'eng-en's (c. 1500-1582) popular novel. The journey in search of the scripture will be treated as an allegory for the Buddhist and Taoist spiritual quest.
2 lects., 1 tut.; one term
Prerequisite: Open.

REQUIRED LEVEL IV COURSES FOR HONOURS STUDENTS

RELIG ST 4F03 APPROACHES TO THE STUDY OF RELIGION
A seminar in which important works representing different methodologies for the study of religion will be examined and discussed in detail.
1 (2 hr.) seminar; one term
Prerequisite: Religious Studies 3F03, and enrolment in Honours Religious Studies.

RELIG ST 4G03 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.
ADVANCED STUDY COURSES

RELIG ST 4AA6++ Advanced Study in Hindu Religious History
RELIG ST 4BB6++ Advanced Study in Buddhist and East Asian Religious History
RELIG ST 4CC6++ Advanced Study in Early Jewish and Christian Sources
RELIG ST 4DD6++ Advanced Study in Religion and Western Thought
RELIG ST 4EE6++ Advanced Study in Indian Philosophy
RELIG ST 4EE6++ Advanced Study in Religion and Western Society
RELIG ST 4F06++ Advanced Study in Hebrew Bible and Interpretation
RELIG ST 4F06++ Advanced Study of Religion

SANSKRIT

SANSKRIT 3A06 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 4B06 READINGS IN SANSKRIT TEXTS
Intermediate course with readings in selected texts.
3 lects.; two terms
Prerequisite: Sanskrit 3A06 or equivalent.

HEBREW

HEBREW 2A06 HEBREW
The inductive study of the Hebrew language, leading to the mastery of the general principles of grammar and syntax. Prose work throughout the year.
3 lects.; two terms
Prerequisite: Open.
HEBREW 3A06 INTERMEDIATE HEBREW
Extensive readings in Biblical prose (selections from some or all of the following: The Pentateuch, Former Prophets, Ruth and Esther), and some readings in the second term in Rabbinic literature (Mishna and Aggada).
2 lects.
Prerequisite: Hebrew 2A06 or Equivalent.

CHINESE

CHINESE 1206 BEGINNER’S INTENSIVE CHINESE
An intensive beginner’s course in modern Chinese designed for students from a non-Chinese background. This course gives the student a basic knowledge of Chinese grammar, while emphasizing spoken Chinese.
4 hours; two terms
Prerequisite: Open. Students who either speak Mandarin or dialect Chinese or read written Chinese may not register in this course

For Graduate Courses, see Calendar of School of Graduate Studies.

Russian

(See Slavic Studies, Russian)

Sanskrit

(See Religious Studies, Sanskrit)

Science

These Science courses are primarily designed for students in the Humanities and Social Sciences, to give an appreciation of important areas of modern science. These courses do not assume any specific background in science. Enrollment in each is limited to 100 students, but most of the courses are not oversubscribed.

Other Science courses that may be of interest to students in the Humanities and Social Sciences are offered by Department. They are:

- Biochemistry 2E03 Introductory Biochemistry
- Biology 1G06 Introduction to Biology
- Chemistry 1B06 General Chemistry
- Chemistry 2D03 Introductory Organic Chemistry
- Geography 1A06 Physical Geography
- Mathematics 2H03 Ideas in Mathematics
- Physics 2J03 Physics of Musical Sound
- Physics 2M03 Mechanics

SCIENCE

SCIENCE 2A03 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 2C03 CONTINENTAL DRIFT AND PLATE TECTONICS
A review of modern ideas of crustal movement, the origin of volcanoes and earthquakes and the construction of mountain belts, as portions of the crust drift and collide.
2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV of a non-science programme. Not open to students who are registered or have credit in, Geology 1A03, 1A06, or 1C03.

SCIENCE 2D03 ASTRONOMY
A survey of modern and historical concepts in astronomy. Light and the telescope; distance measurement in space; the structure and evolution of stars, galaxies, and comets.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV of a non-science programme. Grade 12 Mathematics required.

SCIENCE 2G03 MAN’S SUPPLY OF FOOD
Man’s food requirements; how food is produced; alternative approaches to alleviating world hunger.
3 lects. or 2 lects., 1 tut.; one term
Prerequisite: Registration in Level II, III, or IV of any programme.

SCIENCE 2H03 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 any non-science programme.

SCIENCE 2J03 PHYSICS AND THE ENERGY PROBLEM
Kinetic and potential energy; renewable and non-renewable sources of power and their distribution; entropy production. Conservation, storage and efficient use of energy waste.
3 lects.; one term
Prerequisite: Registration in Level II, III, or IV of a non-science programme. Grade 12 mathematics required.
Offered in 1987-88 and in alternate years.

SCIENCE 2K03 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 2L03 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 or have credit in, Geology 1A03, 1A06 or 1C03.

Slavic Studies

Courses and programmes in Slavic Studies are administered within the Department of Modern Languages of the Faculty of Humanities.

Faculty as of January 15, 1987

Professor Emeritus
Louis J. Stein/B.A. (Dubuque), M.A., Ph.D. (Toronto), B.D. (Honoris Causa), Knox College (Toronto)

Professors
Samuel D. Cioran/B.A. (McMaster), Ph.D. (Toronto)
George Thomas/B.A., Ph.D. (London)
SLAVIC STUDIES

Associate Professors
Nina S. Kolesnikoff/M.A. (Moscow State), Ph.D. (Alberta)
Walter Smyrniw/B.A. (McMaster), M.A., Ph.D. (Toronto)

Department Notes:
The following courses are taught in English and are open as electives to qualified students registered in any University programme.

Russian 2A06 Nineteenth-Century Russian Literature in Translation
Russian 2RR3 Religious Thought in the Novels of Tolstoy and Dostoevsky
Russian 3D03 Russian Drama Since 1800
Russian 3E03 Studies in the Russian Novel: Dostoevsky
Russian 3K06 Twentieth-Century Russian Literature in Translation
Russian 3T03 Studies in the Russian Novel: Tolstoy

POLISH

POLISH 1Z06 BEGINNERS' POLISH
An introduction to basic conversational and written Polish, teaching the skills of listening, speaking, reading, and writing.
3 hrs. (lect. and lab. practice); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

POLISH 2Z06 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 1Z06 or permission of the Department.

RUSSIAN

Beginners' Language Course
RUSSIAN 1Z06 BEGINNERS' INTENSIVE RUSSIAN
An introduction to basic conversational Russian. 4 hrs. (lect. and lab. practice); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

Intermediate and Advanced Language, Literature and Civilization Courses

RUSSIAN 2A06 NINETEENTH-CENTURY RUSSIAN LITERATURE IN TRANSLATION
A survey with special concentration on Gogol, Turgeney, Tolstoy, and Dostojevsky.
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 2C06 INTERMEDIATE LANGUAGE STUDY
3 lects., 1 lab.; two terms
Prerequisite: Grade 13 Russian, or Russian 1Z06; or permission of the Department.

RUSSIAN 2RR3 RELIGIOUS THOUGHT IN THE NOVELS OF TOLSTOY
AND DOSTOEVSKY
A critical examination of the treatment of religious thought in the major novels of Tolstoy and Dostojevsky.
3 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

RUSSIAN 3C06 ADVANCED LANGUAGE STUDY
3 lects., 1 lab.; two terms
Prerequisite: Russian 2C06.

RUSSIAN 3D03 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.
Offered in alternate years.

RUSSIAN 3E03 STUDIES IN THE RUSSIAN NOVEL: DOSTOEVSKY
A detailed study in translation of the major novels of Feodor Dostoevsky, with particular emphasis on the literary and philosophical problems encountered in his work.
2 lects.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

RUSSIAN 3K06 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 3T03 STUDIES IN THE RUSSIAN NOVEL: TOLSTOY
A detailed study of the major novels of Lev Tolstoy in translation, with particular emphasis on the literary and philosophical problems encountered in his work.
2 lects.; 1 tut.; one term
Prerequisite: Open to students in Level II and above.
Offered in alternate years.

RUSSIAN 4C06 CONVERSATION AND ADVANCED COMPOSITION
3 lects.; two terms
Prerequisite: Russian 3C06.

RUSSIAN 4G03 TOPICS IN RUSSIAN LITERATURE I
1987-88: Soviet Short Stories
Readings in the original language.
1 lect., 1 tut.; one term
Prerequisite: Russian 2C06.
Russian 4G03 may be repeated, if on a different topic, to a total of six units.

RUSSIAN 4H06 INDEPENDENT RESEARCH
A reading and research course under the supervision of a member of the Department. A major paper is required together with a formal oral examination by three faculty members.
Prerequisite: Open to Level IV students with a weighted average of at least 8.0 and 24 units of previous work in Russian beyond Level I and permission of the Chairman of the Department.

RUSSIAN 4I03 TOPICS IN RUSSIAN LITERATURE II
1987-88: 19th-Century Lyric Poetry
Readings in the original language.
1 lect., 1 tut.; one term
Prerequisite: Russian 2C06.
Russian 4I03 may be repeated, if on a different topic, to a total of six units.

RUSSIAN 4J03 TOPICS IN RUSSIAN LANGUAGE I
1987-88: The Study of Russian Vocabulary
Readings in the original language.
3 lects.; one term
Prerequisite: Russian 2C06; or permission of the Department.
Offered in alternate years.

RUSSIAN 4K03 TOPICS IN RUSSIAN LANGUAGE II
1987-88: The Structure of the Russian Sentence
Readings in the original language.
3 lects.; one term
Prerequisite: Russian 2C06.
Russian 4K03 may be repeated, if on a different topic, to a total of six units.

SERBO-CROATIAN

SERBO CR 1Z06 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.(lect. and lab. practice); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

SERBO CR 2Z06 INTERMEDIATE SERBO-CROATIAN
Review of grammar, oral practice and compositions; readings in the original language from 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 1Z06; or permission of the Department.

UKRAINIAN

UKRAIN 1Z06 INTRODUCTION TO UKRAINIAN
An introduction to conversational and written Ukrainian, basic elements of grammar, elementary composition, selected readings.
4 hrs.(including lab.); two terms
Prerequisite: Open. Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

UKRAIN 2A06 INTERMEDIATE UKRAINIAN
Review of grammar, oral practice, and compositions; readings in the original language from representative authors.
4 hrs.(including lab.); two terms
Prerequisite: Ukrainian 1Z06; or permission of the Department.

Social Science

SOC SCI 2B06 INTRODUCTION TO THE STUDY OF PEACE
The concept of peace; an analysis of contemporary war and of conditions for peace, grounded in specific case studies; the roles of values, ideologies and strategies in the attainment of peace; peace research as a discipline.
3 hrs.(lects. and discussions); two terms
Prerequisite: Open
SOC SCI 2E03  SELECTED TOPICS IN INTERDISCIPLINARY STUDIES I
An interdisciplinary examination of selected topics of current interest to social scientists. Topics will vary from year to year.
3 hrs. (lects. and seminars); one term.
Prerequisite: Open. Students interested in this course should consult the Office of the Associate Dean (Studies) of the Faculty of Social Sciences concerning the topics to be examined in any year.

SOC SCI 2F03  SELECTED TOPICS IN INTERDISCIPLINARY STUDIES II
An interdisciplinary examination of selected topics of current interest to social scientists. Topics will vary from year to year. (This course should not normally be considered as an extension of Social Science 2E03.)
3 hrs. (lects. and seminars); one term.
Prerequisite: Open. Students interested in this course should consult the Office of the Associate Dean (Studies) of the Faculty of Social Sciences concerning the topics to be examined in any year.

SOC SCI 3B03  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 with credit in English 3103, or Sociology 2B03 or 2C03.
Same as English 3F03 and Sociology 3B03.

SOC SCI 3L06  MAKING A CONSTITUTION: THE CANADIAN EXPERIENCE
An examination of the socio-economic and legal aspects of Canada's constitutional crisis in 1980-81. Emphasis will be placed on the federal/provincial accord leading to the patriation of the Constitution, the adoption of an amending formula, and the entrenchment of the Charter of Rights and Freedoms.
Prerequisite: Registration in any Level III programme or above.
Not offered 1987/88

Social Work
Faculty as of January 15, 1987
J. McEwan MacIntyre/Director

Professors Emeriti
Cyril Greenland/M.Sc. (North Wales), Ph.D. (Birmingham)
Harry L. Penny/Dip. Theol. (Union College, British Columbia), B.A., M.S.W. (British Columbia)

Professor

Associate Professors
Jean M. Jones/B.A. (Western), M.S.W. (McGill)
Kalervo I. 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 Mishra/B.Sc., Ph.D. (London)
James J. Rice/B.A. (Sir George Williams), B.S.W., M.S.W. (Calgary), Ph.D. (Exeter)
David J. Tucker/B.A. (New Brunswick), M.S.W. (McGill), D.S.W. (Toronto)

Assistant Professors
Ralph A. Brown/B.A., M.S.W. (Waterloo), D.S.W. (UCLA)
Loma F. Hurl/B.A. (Calgary), B.Soc.Admin (Flinders), M.S.W. (Manitoba), Ph.D. (Toronto)
L. William Lee/B.A. (St. Thomas, Texas), M.S.W., Adv. Dip. S.W. (Toronto)
Sally Palmer/B.A. (Western), B.S.W., M.S.W., Ph.D (Toronto)
Shalla Sammon/B.A. (Nazareth College of Rochester, N.Y.), M.S.W. (Toronto)
Muriel Santilli/B.A. (Hunter College), M.A. (Columbia), M.S.W. (SUNY, Buffalo)
Boris Stepe/B.A., M.S.W. (McGill)

Associate Members
N.C. Agarwal/B.A., M.A. (Delhi), Ph.D. (Minneapolis), (Faculty of Business)
J.A. Byler/B.A. (Western), M.S.W. (Toronto), D.S.W. (Washington), (Dept. of Psychiatry)
M.J. Dear/B.A. (Birmingham), M.Ph. (London), M.A., Ph.D. (Pennsylvania), (Dept. of Geography)
J.A. Johnson, M.A., Ph.D. (Minnesota), (Dept. of Economics)

Department Notes:
1. Except when designated as * these courses are open only to students registered in the Combined B.A./B.S.W. Programme, or the B.S.W. programme for a second degree.

SOC WORK 2B06  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.
Term I of this course is the same as Labour Studies 2B03. Students in a Social Work programme must register for this course as Social Work 2B06.

SOC WORK 2C03  THEORY FOR SOCIAL WORK PRACTICE
Knowledge base; social work values, fields of practice and types of intervention. Lectures, films, discussions, small task-groups; one term.
Prerequisite: Not available to students with credit in Social Work 2C06.

SOC WORK 2D03**  INTERPERSONAL COMMUNICATION AND INTERVIEWING
Theories of interpersonal communication. Basic skills in interpersonal communication and interviewing.
Lectures, discussions, exercises; one term.
Prerequisite: Permission of the School of Social Work is required.
Enrolment is limited.

SOC WORK 2E03  HUMAN GROWTH AND DEVELOPMENT IN THE SOCIAL ENVIRONMENT
Human development throughout the life span with emphasis on the interaction between the person and social contexts and social work concerns at each developmental stage.
Lectures and discussion (3 hrs.); one term.
Prerequisite: Completion of or registration in Psychology 2A03.

SOC WORK 3C03**  SOCIAL ASPECTS OF HEALTH AND DISEASE*
Exploration of the meaning of health and sickness in our society. Organization and delivery of health care. Consideration of ethical and other issues.
Lectures, discussion and selective use of community resources; one term.
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK 3D09  THE PRACTICE OF GENERAL SOCIAL WORK
Social work intervention processes; interviewing; development of basic skills in formulation 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.
Prerequisite: Social Work 2B06, 2C03, 2D03, 2E03.
Enrolment is limited.

SOC WORK 3G03**  SOCIAL WELFARE POLICY AND PROCESS*
Role of values and assumptions in the development of welfare policies. Analysis of key concepts in policy planning. Study of policy and programmes in selected areas.
Lectures and seminars; one term.
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK 3H03**  JUSTICE AND SOCIAL WELFARE*
Human rights and the role of law in enhancing civil liberties in Canada. Social work, law and social change. Study of selected issues and review of administrative discretion.
Seminars; one term.
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. or B.H.Sc. credit by undergraduates not in Social Work.
Enrolment is limited.
SOCIAL WORK

SOC WORK 3J03** TECHNOLOGY AND SOCIAL WELFARE†
Problems of social policy posed by the impact of technology in such areas as work and leisure, income maintenance, participation in decision making and social planning.
Seminars; one term
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK 3N03 SELECTED THEORIES OF SOCIAL WORK INTERVENTION
Examination and analysis of strategies of intervention in working with individuals and groups in social work.
Seminars; one term
Prerequisite: Enrolment in, or completion of, Social Work 2E03. Not available to students with credit in Social Work 4N03.

SOC WORK 3P03** 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 3P05** 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 3R03 SOCIAL WORK WITH GROUPS
This course will provide a theoretical knowledge of group practice models for social work within an historical and didactic social work framework.
Lectures, discussions and tutorials; one term
Enrolment is limited.

SOC WORK 4D12 THE PRACTICE OF GENERAL SOCIAL WORK II
Combined field experiences and seminars to deepen understanding and refine practice skills. Students spend the equivalent of two days per week in social agencies, or with other organizations, in supervised practice.
Seminars, group supervision, field practice; two terms. Option of equivalent block placement.
Prerequisite: Social Work 3D09.
Enrolment is limited.

SOC WORK 4G03** 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 by all students.
This course may be repeated if on a different topic.
Enrolment is limited.

SOC WORK 4H03 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 4J03** SOCIAL CHANGE AND SOCIAL WELFARE†
Critical examination of the meaning of social change as a concept and event. Review of strategies of social change and of attempts to effect social change.
Seminars; one term
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK 4K03** 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 4M03** 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
Prerequisite: Permission of the School of Social Work is required by all students.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

SOC WORK 4O03 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 is expected.
Seminars; one term

Prerequisite: Registration or credit in Social Work 3D09; or permission of the instructor.

SOC WORK 4P03 PROFESSIONAL ISSUES
A seminar focusing on the status, roles and values of the professional social worker in contemporary society.
Seminars; one term
Prerequisite: Registration or credit in Social Work 3D09.

SOC WORK 4T03 SOCIAL WORK PRACTICE WITH WOMEN
Study of feminist and non-sexist social work practice (individuals, groups and in the community) and implications for women of selected social policies.
Seminars; one term

SOC WORK 4V03 SOCIAL WORK PRACTICE WITH THE AGED
A critical analysis of the social context in which the aged live, and an examination of social work methods as they apply to the aged.
Seminars; one term

SOC WORK 4W03 CHILD WELFARE
This course analyzes the Canadian child welfare system, its policies and programs and teaches skills for working with children, families and substitute caregivers.
Lectures, discussions, skills development; one term.
Prerequisite: Social Work 2B06, 2C03, 2D03 and 2E03.

SOC WORK 4X03 FAMILY IN SOCIAL WORK PRACTICE
Examination of relevant aspects of family theory for social work practice; models of family intervention and therapy.
Seminars; one term
Prerequisite: Registration in, or credit in, Social Work 3D09; or permission of the instructor.
Not available to students with credit in Social Work 3K03.

For Graduate Courses see Calendar School of Graduate Studies.

Sociology

Faculty as of January 15, 1987
A.A. Hunter/Chairman
Professor Emeritus
Professors
Howard M. Brotz/B.A., M.A. (Chicago), Ph.D. (London)
Carl J. Cuneo/B.A., M.A., Ph.D. (Waterloo)
Alfred Hunter/B.A. (UBC), M.A., Ph.D. (Wiscowins)
D. Ralph L. Matthews/B.A. (Memorial), M.A., Ph.D. (Minnesota)
Peter C. Pnieo/B.A. (University of British Columbia), M.A. (McGill), Ph.D. (Chicago)
William B. Shaffir/B.A., M.A., Ph.D. (McGill)

Associate Professors
W. Peter Archibald/B.A. (Mt. Allison), M.A. (University of British Columbia), Ph.D. (University of Michigan)
Robert E. Blumstock/B.A., M.A. (City College, N.Y.), Ph.D. (Oregon)
Richard A. Brymer/B.A., M.A. (Texas), Ph.D. (Michigan State)
Jack W. Haas/B.S. (SUNY, Brockport), Ph.D. (Syracuse)
Franklin W. Hanby/Ph.B. (Marquette), M.A., Ph.D. (Catholic University of America)
Roy W. Hornsby/B.S.P., M.A. (University of British Columbia), Ph.D. (SUNY, Buffalo)
Rhoda E. Howard/B.A., M.A., Ph.D. (McGill)
Graham K. Knights/B.A. (Kent), M.A., Ph.D. (Carleton)
Cyril H. Levitt/B.A., M.A. (Waterloo), Ph.D. (Freie Universität, Berlin)

Gerald Rosenblum/AB. (California, Berkeley), M.S. (Oregon), A.M., Ph.D. (Princeton)
Dusky L. Smith/B.A. (Oklahoma), M.A. (Ohio State), Ph.D. (SUNY, Buffalo)
Jane Synge/M.A. (Aberdeen), Ph.D. (London)
Vivienne Walters/B.A., M.A. (Sheffield), Ph.D. (McGill)
Assistant Professors
Rhonda Lenton/B.A., M.A. (Winnipeg)
Charlene Miil/B.A. (Ottawa), M.A. (Calgary), Ph.D. (York)
Jack Richardson/B.A., M.A., Ph.D. (Toronto)
R.H. Storey/B.A. (Toronto), M.A. (Dalhousie), Ph.D. (Toronto)

Associate Members
P. Donnelly/(Physical Education) B.A. (N.Y.), M.A., Ph.D. (Massachusetts)
L. Greenspan/(Religious Studies) M.A. (Dalhousie), Ph.D. (Brandeis)
J. Moi/(Religious Studies) B.D. (Union Theological Seminary), M.A., Ph.D. (Columbia)

Department Notes:
1. Students should consult the Department’s Handbook for Undergraduates, 1987-88 which will be available prior to registration, for fuller course descriptions and any changes in the list of courses offered in 1987-88. Students should check the Department’s Handbook in order to find the term in which “one term” courses are offered.
2. Sociology 1A06 and several other courses are divided into independent sections. For more information, see the Sociology Department’s Handbook for Undergraduates. This booklet gives course descriptions for the various Sociology 1A06 sections.
3. Registration in all courses marked ** listed as selected topics, independent research, individual readings and honours essays requires written permission of the Department. Registration with appropriate permission must be completed no later than the last day for registration as stated in the Calendar under Sessional Dates.

SOCIOLOGY 1A06  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 lcts., 1 tut., two terms
Prerequisite: Open.

SOCIOLOGY 2C06  DEVIANCENOUVRANCE
An analysis of deviant behaviour and conformity in relation to social structure and processes, and a discussion of problems of control within the social system.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 2D06  THE HUMAN GROUP
An examination of the individual in social interaction, with emphasis upon relationships between this and social structure.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 2E06  RACIAL AND ETHNIC GROUP RELATIONS
The course deals with the study of racial and ethnic group relations in Canada and the United States.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 2H06  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.

SOCIOLOGY 2I03  THE SOCIOLOGY OF ORGANIZATIONS I
A theoretical and empirical analysis of formal and informal organizational structures and processes in the major sectors of modern industrial society.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A06; or permission of the instructor. Not open to those students with credit in Sociology 3P03 prior to 1973-74.
Same as Labour Studies 3103.

SOCIOLOGY 2J03  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 1A06; or permission of the instructor.

SOCIOLOGY 2K03  CURRENT PROBLEMS IN SOCIOLOGICAL ANALYSIS
Same as Sociology 2J03.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 2L06  INDUSTRIALIZATION AND DEVELOPMENT
Introduction to theories of modernization and underdevelopment with comparative empirical content.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 2M06  SOCIAL STRATIFICATION
A broad comparative study of social class and social mobility.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 2P06  THE SOCIOLOGY OF EDUCATION
A comprehensive analysis of educational institutions in modern society.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 2Q06  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 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 2S06  INTRODUCTION TO SOCIOLOGICAL THEORY
An introduction to the foundations, rise and development of sociological theory.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor. Not open to students with credit in Sociology 2S03 or 3A06.

SOCIOLOGY 2U06  SOCIOLOGY OF THE FAMILY
An analysis of kinship and family units in comparative, historical, and contemporary perspectives.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 2V06  OCCUPATIONS AND PROFESSIONS
An examination of the occupational structure of industrial society, the changing nature of work, and problems associated with such change.
3 hrs.(lects. and discussion); two terms
Prerequisite: Sociology 1A06; or permission of the instructor. Not open to students with credit in Sociology 3Q03 taken prior to 1980-82.

SOCIOLOGY 2X03  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: Registration in Level II and above. Not open to students with credit for this topic if taken as English 3K03.

SOCIOLOGY 2Y03  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: Sociology 1A06; or permission of the instructor. Not open to students who are registered in, or have received credit for, a statistics course.
Enrolment is limited.

SOCIOLOGY 2Z03  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, or Honour Anthropology, or Social Work; or permission of the instructor. Not open to students who are registered in, or have received credit for, a statistics course.
Enrolment is limited.

SOCIOLOGY 3A03  EUROPEAN SOCIOLOGICAL THEORY
An advanced examination of classical and contemporary European sociological theory.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 2S03 or 2Z06; or permission of instructor. Not open to students with credit in Sociology 3A06.

SOCIOLOGY 3A03  THE SOCIOLOGY OF MASS MEDIA
The development of the mass media (the press, magazines, radio, television), with particular attention to their social organization, how information and news are produced, and effects upon social attitudes and behaviour.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 3B03  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.
SOCIOLOGY

SOCIOLOGY 3B83 MAJOR DENOMINATIONS IN CANADA
A study of the major denominations in Canada, their history and their relation to national, regional and class identity.
Prerequisite: Any Level I course in Anthropology, Philosophy, Religious Studies, Sociology.
Same as Religious Studies 3B83

SOCIOLOGY 3C06 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 1987-88 the course will focus on Africa.
Prerequisites: At least 18 units of Sociology, or any Level II course in Political Science, or permission of the instructor.
Same as Political Science 3C06.

SOCIOLOGY 3D03 SPECIAL TOPICS IN THE SOCIOLOGY OF THE FAMILY
An advanced course allowing detailed study of selected topics in the Sociology of the Family.
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 3D03 SPORT AND SOCIAL PROCESSES
Macro-analysis of sport in society: investigation of the relationship between sport and other social institutions.
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 3F06 POLITICAL SOCIOLOGY
A survey of social and state institutions, focussing on current debates in the field.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3G02 SOCIOLOGY OF HEALTH CARE
The social determinants of illness and of the organization of the health care sector.
Prerequisite: Sociology 1A06; or permission of the instructor.
Enrolment is limited.

SOCIOLOGY 3G03 SPECIAL TOPICS IN THE SOCIOLOGY OF DEVIANCE
An advanced course allowing detailed study of selected topics in the Sociology of Deviance.
Topics will vary from year to year.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3H06 RESEARCH TECHNIQUES AND DATA ANALYSIS
A comprehensive introduction to the principles of research methods and data analysis in the social sciences.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3I03 SOCIOLOGICAL INQUIRY
A comprehensive examination of the issues of explanation that separate positivist sociology from subjectivist-historical sociology and critical-maoist sociology. The course focuses on the issues which link social theory and methodology.
Prerequisite: Registration in Honours Sociology, or permission of the instructor.

SOCIOLOGY 3J03 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS I
An examination of selected topics of contemporary interest to sociologists. Students should consult the Department concerning the topics to be examined.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3K03 SPECIAL TOPICS IN SOCIOLOGICAL ANALYSIS II
Same as Sociology 3J03.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3L03 SELECTED TOPICS IN OCCUPATIONAL SOCIOLOGY
An advanced course allowing detailed study of one or more topics of special interest.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3M06 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 material of the sociology of religion since World War II will be surveyed.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3N03 THE SOCIOLOGY OF KNOWLEDGE AND CULTURE
An analysis of the origins, development and functions of ideas, images, and other cultural representations through which knowledge about society, its institutions and practices is formed, distributed and used.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3P03 AMERICAN SOCIOLOGICAL THEORY
An advanced examination of classical and contemporary American sociological theory.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3Q03 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.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3R03 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.
Prerequisite: Open.

SOCIOLOGY 3S03 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.
Prerequisite: Permission of the instructor.

SOCIOLOGY 3T03 THE SOCIOLOGY OF URBAN AREAS
Sociological analysis of urban structure and development, and the social consequences of urbanization.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3U06 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.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3V03 SELECTED TOPICS IN 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.
Prerequisite: At least 18 units of Sociology; or permission of the instructor.

SOCIOLOGY 3W03 HISTORICAL METHODS IN SOCIOLOGY
An examination of methods for incorporating historical data and archival sources into sociological argument.
Prerequisite: Sociology 1A06; or permission of the instructor.

SOCIOLOGY 3X03 SOCIOLOGY OF AGING
This course deals with changing population structure, economic support of the aged, family of later life, the sociology of retirement, widowhood, death, bereavement, and institutionalization.
Prerequisite: Sociology 1A06; or permission of the instructor.
SOCIOLOGY

SOCIOLOGY OF ORGANIZATIONS

SOCIOLOGY OF THE ORGANIZATIONS II
An advanced course which allows detailed examination of relevant theories and research, including those to which the student was introduced in Sociology 2003.
3 hrs.(lect. and discussion); one term
Prerequisite: Sociology 2103; or permission of the instructor.

SOCIOLOGY 3203 ETHNIC RELATIONS
An analysis of political, social and economic change in selected locales.
3 hrs.(lects. and discussion); one term
Prerequisite: Sociology 1AD6; or permission of the instructor.

SOCIOLOGY 4B06 FIELD STUDY METHODOLOGY
This course provides students an opportunity to engage in first-hand sociological research using field study methods, particularly participant observation.
3 hrs.(seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology; or permission of instructor.

SOCIOLOGY 4C06 SELECTED PROBLEMS IN SOCIOLOGICAL RESEARCH
Students will undertake a class project which involves quantitative materials.
3 hrs.(seminar); two terms
Prerequisite: Sociology 3H06.

SOCIOLOGY 4D03 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 2503 or 2506; or permission of the instructor.

SOCIOLOGY 4F03 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH I
A critical discussion, centering 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 2M06; or permission of the instructor.

SOCIOLOGY 4H03 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 2103; or permission of the instructor.

SOCIOLOGY 4J03 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 2503 or 2506, and registration in Level IV Honours Sociology; or permission of the instructor.

SOCIOLOGY 4J03 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 the instructor.

SOCIOLOGY 4K03 SELECTED TOPICS IN SOCIOLOGY II
Same as Sociology 4J03.
3 hrs.(seminar); one term
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

SOCIOLOGY 4L03 SPECIAL TOPICS IN COMPARATIVE SOCIOLOGICAL RESEARCH II
Same as Sociology 4L03.
3 hrs.(seminar); one term

SOCIOLOGY 4M03** DIRECTED RESEARCH I FOR HONOURS STUDENTS
Directed study of a research problem through published materials and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form.
One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIOLOGY 4N03** DIRECTED RESEARCH II FOR HONOURS STUDENTS
Same as Sociology 4M03.
One term
Prerequisite: Permission of the instructor and registration in Level IV Honours Sociology; or permission of the Department.

SOCIOLOGY 4O03 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 2H06; or permission of the instructor.

SOCIOLOGY 4P03 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.

SOCIOLOGY 4P03 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.

SOCIOLOGY 4R03 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.

SOCIOLOGY 4T03 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.

SOCIOLOGY 4U06 SPECIAL TOPICS IN RACIAL AND ETHNIC RELATIONS
A study of the impingement of ethnic and racial factors upon the political process in comparative contexts, but focussing principally on South Africa.
3 hrs.(seminar); two terms
Prerequisite: Registration in Level IV Honours Sociology; or permission of the instructor.

For Graduate Courses see Calendar, School of Graduate Studies.

Spanish

Spanish courses and programs are administered within the Department of Modern Languages of the Faculty of Humanities.

Faculty as of January 15, 1987

Associate Professors
John D. Brown, B.A., M.Phil. (London), Ph.D. (Essex)
Pilar Martinez, B.A., M.S., Chem. (Madrid), M.A. (Middlebury), Ph.D. (Madrid)
Florigo Minelli, B.A. (Western), Ph.D. (Brown)

Assistant Professor
Maria Del C. Cerezo, B.A. (Puerto Rico), M.A. (McGill), Ph.D. (Toronto)

Department Note:
The completion of Spanish 1A06, 2A04, and 3A04, with a weighted average of at least 10.0 (A−) will result in a transcript notation indicating that the student has acquired a good working knowledge of spoken and written Spanish.

Beginner's Language Course

SPANISH 1206 BEGINNERS' INTENSIVE SPANISH
A course designed to cover the rudiments of the language in both written and oral forms. This course also provides preparation for more advanced work in Spanish.
4 hrs.; two terms
Prerequisite: Open, except to students with credit in Grade 12 or Grade 13 Spanish or equivalent.

Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

Enrolment is limited.
SPANISH

Intermediate and Advanced Language and Literature Courses

SPANISH 1A06  INTERMEDIATE SPANISH
A course designed to further the student's command of the language in its oral and written forms. There will be some review of basic grammar, but emphasis will be upon composition, expansion of vocabulary, and the more advanced aspects of the language.
4 hrs.; two terms
Prerequisite: Grade 12 or Grade 13 Spanish, Spanish 1Z06; or permission of the Department.
Students with prior knowledge of the language as determined by a placement test may be required to take an appropriate alternative.

SPANISH 2A04  LANGUAGE PRACTICE
A course devoted to the expansion of vocabulary, the improvement of comprehension, the development of style in written Spanish, and the achievement of greater confidence in the spoken language.
2 tuts.; two terms
Prerequisite: Spanish 1A06; or permission of the Department.

SPANISH 2B03  INTRODUCTION TO THE CULTURE OF SPAIN
A course which surveys the development of Spanish art, literature, and politics from the earliest times.
3 lects.; one term
Prerequisite: Spanish 1A06 or 1Z06; or permission of the Department.

SPANISH 2C03  INTRODUCTION TO THE CULTURE OF SPANISH AMERICA
A survey of the development of Spanish America from Maya times to the present day.
3 lects.; one term
Prerequisite: Spanish 1A06 or 1Z06; or permission of the Department.

SPANISH 2E06  CRITICAL APPROACHES TO LITERATURE IN SPANISH
A course which acquaints the student with some of the critical techniques involved in the appreciation of literature in Spanish, and which provides practice in essay writing.
3 lects.; two terms
Prerequisite: Spanish 1A06.

SPANISH 3A04  ADVANCED LANGUAGE PRACTICE
A course which provides opportunities to develop a deeper awareness of style and a greater command of the spoken and written language. Elements of syntax and translation will be included.
2 tuts.; two terms
Prerequisite: Spanish 1A06.

SPANISH 4A04  STYLISTICS
The study of basic stylistic concepts applied to literary texts.
2 tuts.; two terms
Not offered in 1987-88. Offered in alternate years.

SPANISH 4B03  MODERN SPANISH THEATRE
A study of plays by Spanish playwrights of the 20th century, including Benavente, Lorca, Buen Vallejo, and Casanova.
3 lects.; one term
Prerequisite: Spanish 2E06.

SPANISH 4BB3  SPANISH THEATRE OF THE GOLDEN AGE
A study of plays by major Spanish playwrights of the period 1550-1680, including works by Cervantes, Lope, Tirso, and Calderon, in English translation.
Prerequisite: Spanish 2E06
Not offered in 1987-88. Offered in alternate years. Same as Dramatic Arts 4DD3.

SPANISH 4C03  GOLDEN AGE PROSE
1987-88: El Quijote
An analytical study of Cervantes' masterpiece with some consideration of the interpretations and viewpoints of major critics.
3 lects.; one term
Prerequisite: Spanish 2E06.
Spanish 4C03 may be repeated, if on a different topic, to a total of six units.

SPANISH 4E03  THE SPANISH AMERICAN NOVEL BEFORE 1950
A study of the development of the Spanish American Novel up to the middle of the 20th century.
3 lects.; one term
Prerequisite: Spanish 2E06
Not offered in 1987-88. Offered in alternate years.

SPANISH 4EE3  THE SPANISH AMERICAN NOVEL: THE BOOM GENERATION
An examination of the themes and trends of the Spanish American novel of the boom generation including works by Garcia Márquez, Donoso, Fuentes, and Cortázar in English translation.
3 lects.; one term
Prerequisite: Spanish 2E06.
Same as Comparative Literature 3F03.

SPANISH 4I03  MODERN SPANISH NOVEL
1987-88: 19th Century
A study of the novel of the second half of the 19th century in the context of the stylistic trends and intellectual history of the period.
3 lects.; one term
Prerequisite: Spanish 2E06.
Spanish 4I03 may be repeated, if on a different topic, to a total of six units.

SPANISH 4J03  MODERN SPANISH NOVEL
1987-88: Medieval Spanish Literature
A survey of the major trends. Such poets as Ruben Dario, Vallejo and Neruda will be included.
3 lects.; one term
Prerequisite: Spanish 2E06.
Spanish 4J03 may be repeated, if on a different topic, to a total of six units.

SPANISH 4K03  MODERN SPANISH NOVEL
1987-88: Medieval Spanish Literature
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 3A04.

SPANISH 4L03  MODERN SPANISH NOVEL
1987-88: 20th Century
A study of the novel of the second half of the 20th century in the context of the stylistic trends and intellectual history of the period.
3 lects.; one term
Prerequisite: Spanish 2E06.
Spanish 4L03 may be repeated, if on a different topic, to a total of six units.

SPANISH 4M03  MODERN SPANISH NOVEL
1987-88: 20th Century
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: Spanish 2E06.

SPANISH 4N03  MODERN SPANISH NOVEL
3 lects.; one term
Prerequisite: Spanish 2E06.

SPANISH 4O03  MODERN SPANISH NOVEL
1987-88: Medieval Spanish literature
A survey of the major trends. Such poets as Ruben Dario, Vallejo and Neruda will be included.
3 lects.; one term
Prerequisite: Spanish 2E06.

SPANISH 4P03  MODERN SPANISH NOVEL
1987-88: Medieval Spanish literature
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 3A04.

SPANISH 4Q03  MODERN SPANISH NOVEL
1987-88: 20th Century
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: Spanish 2E06.

For Graduate courses see Calendar of School of Graduate Studies.

Statistics
(See Mathematics and Statistics)

Ukrainian
(See Slavic Studies)
Academic Services and Research Facilities

Academic Services

THE UNIVERSITY LIBRARY

G.R. Hill, B.A./Newcastle), M.A.(Lancaster), M.L.S.(Western)/University Librarian

The University Library System consists of Mills Memorial Library (Arts), the Innis Room in Kenneth Taylor Hall which contains a collection of Business materials, the H.G. Thode Library of Science and Engineering, the Lloyd Reeds Map Library/Urban Documentation Centre 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 1986 contained over 1,400,000 volumes, over 1,000,000 microform items, over 165,000 non-print items and over 2,000 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 William Ready Division of Archives and Research Collections in Mills Library contains rare books, manuscripts, and special book and archival collections which afford many opportunities for original research. Of outstanding interest are the Bertrand Russell Archives, a massive collection of correspondence and manuscripts supported by books, journal articles, secondary literature, tapes, films and personal memorabilia. The 28,000 volume collection of eighteenth-century British material is one of the major Canadian collections in the field, and has been complemented for over twenty years by the lectures, seminars and publications of the McMaster Association for Eighteenth-Century Studies. Library fellowships in Eighteenth-Century Studies will be offered beginning in 1987. Among more modern materials are the papers of Vera Brittain, Marian Engel, Anthony Burgess, Pierre Berton, Farley Mowat, Peter Newman, Matt Cohen and many others. Business interests are reflected in such files as the General Steel Wares Archives, the Macmillan of Canada Archives, and the McClelland and Stewart Archives. Canadian social and political interests are documented in papers from the Canadian Union of Students, the Canadian Youth Congress, the SUPA/CUCNLD papers, and other related collections. There are holdings of the records of a number of labour unions including U.S.W.A. Local 1005, U.S.W.A. District 6, United Glass and Ceramic Workers (Canada), and the Hamilton and District Labour Council.

Publications

McMaster University Library Research News

Russell, the Journal of the Bertrand Russell Archives

Monographs with the imprint of the McMaster University Library Press.

Staff

Baker, Lynda, B.A. (Univ. of California (Berkley)), M.L.S. (Toronto) Librarian, Reference Services, Health Sciences Library

Ball, Kathryn, B.A. (Laurentian), M.L.S. (Western)/Librarian, Reference Services

Bayley, Elizabeth Grace, B.A. (McMaster), M.L.S. (Western) Cataloguing Librarian, Health Sciences Library

Benidig, Regina, B.A. (Toronto), M.L.S. (Toronto)/Librarian, Processing Services

Blackwell, Kenneth Milton, B.A. (Victoria), M.L.S. (Western), M.A. (McMaster), Ph.D. (Guelph)/Russell Archivist

Chan, Ruby M.C., B.S.S. (Ottawa), B.L.S. (Toronto)/Librarian, Processing Services

Cook, David E., B.A., M.L.S. (Toronto)/Documents Librarian

Drynan, Marju, B.A. (McMaster), M.S. (Columbia)/Associate University Librarian For Systems Development

Fitzgerald, Dorothy A., B.A. (Mt. St. Vincent), M.L.S. (Dalhousie)/Health Sciences Librarian

Flemming, Thomas Leslie, B.A. (St. Mary's University), M.A., M.L.S. (Dalhousie)/Head of Public Services, Health Sciences

Haslett, Mark, B.A. (Toronto), M.L.S. (Western)/Acquisitions Librarian, Collections

Hayton, Elizabeth Elise, B.Sc. (McGill), M.L.S. (Toronto)/Coordinator, Circulation Services

Hill, Graham Roderick, B.A. (Newcastle), M.A. (Lancaster), M.L.S. (Western)/University Librarian

Hurst, Jean McEwen, B.A. (Saskatchewan), M.L.S. (Toronto)/Librarian, Processing Services

Koger, Merike, B.A. (McMaster), M.L.S. (Toronto)/Librarian, Reference Services

Lawrence, Arthur, A.I.B./Budget and Accounts Officer

Majors, Margaret Liddell, B.A. (McMaster), M.A. (Glasgow), A.L.A./Associate University Librarian, Reader Services

Mazur, Carol Mary, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Reference Services

McPherson, Myrna, B.A., M.L.S. (Toronto)/Librarian, Processing Services

McIntyre, Linda Rose, B.A. (McMaster), M.L.S. (Western)/Librarian, Reference Services

Morley, Judith, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Processing Services

Moulder, Cathy, B.A. (McMaster)/Documentalist, Lloyd Reeds Map Library/Urban Documentation Centre

Nunn, Victor, B.A. (York), M.L.S. (Western)/Assistant University Librarian for Collections Management and Development

Panton, Linda W., B.A. (Mount Allison), M.L.S. (Western)/Coordinator of Hospital Libraries

Parke, Valerie Jeanette, B.A., M.L.S. (Western)/Librarian, Reference Services

Patt, Narendranath, M.A. (Punjabi), M.L.S. (Delhi and Toronto)/Head of Reference Services

Pepper, Sheila Letitia, B.A., M.A. (McMaster), B.L.S. (Toronto)/Business Librarian

Pickett, Beatrice Marion, B.A. (McMaster), B.L.S. (Toronto)/Librarian, Processing Services

Potter, Anne, B.A. (Principia College), M.L.S. (Toronto)/Interlibrary Loan Librarian

Racheter, Carol, B.A., B.L.S., M.L.S. (Toronto)/Director of Processing Services

Reid, J.A. Stuart, B.Sc. (McMaster)/Library Personnel Officer

Ridley, A. Michael, B.A. (Guelph), M.A. (New Brunswick), M.L.S. (Toronto)/Head of Special Services, Health Sciences

Sroczynski, Harold, M.Sc. (McMaster), M.S. in I.S. (Columbia)/Associate University Librarian, Science & Engineering

Spadoni, Carl, B.A. (Wilfrid Laurier), M.A. (McMaster), Ph.D. (Waterloo), M.L.S. (Toronto)/Archivist, Health Sciences

Spence, Tatjla A., M.A. (Glasgow), B.L.S. (Toronto)/Serials Librarian

Stewart, Charlotte A., B.A. (Toronto), M.L.S. (Western)/Director of Archives and 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

Whiteman, D. Bruce, B.A. (Trent), M.A., M.L.S. (Toronto)/Librarian, Research Collections

Winston, John/Library Preservation Specialist

COMPUTER SERVICES: IPACS

(Information Processing & Academic Computing Services)

Keech, Gerald L., B.A.Sc., M.Sc., Ph.D./Director, IPACS

Blanche Carlen/Control & Accounting Supervisor, ACS
ACADEMIC AND RESEARCH FACILITIES

Bryce, James T., B.Sc./Manager, Central Academic Computing Service
Fleming, William H., M.Sc., Ph.D./Associate Director, Special Systems, Academic
Gowland, Douglas M., C.A., C.M.C./Associate Director, IPS
Griffin, Robin E., B.Sc., Ph.D./Manager, Applications and Planning, AGS
Hicks, Graham J.G., M.Sc., P.Eng./Manager, Communications and Systems Engineering
Kenworthy, Derek J., B.A., D.Phil./Computing Consultant
Matson, Richard P./Operations Supervisor, ACS
O’Day, Patrick J./Manager, Operations and Technical Services, IPS
Redish, Kenneth A., B.Sc./Manager, Computing Consultant
Shepard, Robert K./Manager, Regional Academic Computing
Yacobino, Barbara/Administrative Co-ordinator

IPACS provides computing services in support of both academic and non-academic applications. The facilities available for academic use include a VAX 8600, an IBM model 4381 computer with a FPS 264 processor, two Vax 11/780 and one Vax 11/785, as well as several smaller computers. Student time-sharing terminal and microcomputer areas are located in the Burke Sciences Building, Rooms 240-245, The John Hodgins Engineering Building, Room 234A, Senior Sciences Building, Room 131 and in Kenneth Taylor Hall, Room B110.

User-assistance is available during the Fall and Winter terms in each of these terminal areas. Assistance is also available, year round, in the main User Services office located in Burke Sciences Building, Room 246, for Science and Engineering, and in Kenneth Taylor Hall, Room B123, for Business, Humanities, Social Sciences and Health Sciences. Elective courses for credit are offered by the Department of Computer Science. IPACS provides seminars and short non-credit courses.

In addition to the facilities operated by IPACS, there are numerous minicomputers and micro-processors located in Departments to support the academic programme needs for the study and use of computers.

THE INSTRUCTIONAL DEVELOPMENT CENTRE

A.C. Blizzard, B.Sc., M.Sc., Ph.D./Director
D.E. Roy, B.A., M.A./Educational Consultant
D.J. MacLellan, B.S.W., M.S.W./Educational Consultant

The Instructional Development Centre (IDC) is a resource centre for people who teach at McMaster: individual faculty members and teaching assistants (tutors, demonstrators, markers) as well as departments and other groups. The Centre works closely with the University Committee on Teaching and Learning. This group, which includes a representative of the M.S.U. Teaching Awards Committee, two graduate students and faculty members from all six Faculties, provides policy guidance for the Centre, makes recommendations to the University on issues affecting teaching and learning conditions and provides grants for teaching and learning development projects. The following represents some of the Centre’s activities.

Teaching and Learning Grants: The IDC consults with applicants on their proposals and assists them with projects. It also provides administrative services for the Grants program.

Programs for Teaching Assistants: The Centre plans and organizes Teaching and Learning. This centre is open daily except Mondays and Saturdays. Call Local 30081 for further information.

Research Facilities

THE ACCOUNTING RESEARCH AND EDUCATION CENTRE

Haim Falk, B.A., M.B.A., Ph.D., C.P.A./Director

The Accounting Research and Education Centre was established in May 1985 and is jointly funded by the Certified General Accountants Association of Ontario and McMaster University.

It is located in Kenneth Taylor Hall, Room 109 and directed by Dr. Haim Falk, the holder of the Distinguished Professorial Chair in Accounting. The routine operation of the Centre is governed by its Operating Committee which consists of the Dean of the Faculty of Business, the Chairman of the Accounting Area, and the Director.

The Centre is extensively engaged in activities which are aimed to enhance quality research in the field of accounting. It provides direct and indirect research support to members of the Faculty of Business. The Centre also sponsors an annual Distinguished Speaker Series, to which noted academics, and renowned professionals are invited to give public lectures.

The Centre actively supports seminars and research conferences such as the annual conference of Contemporary Accounting Research, the scholarly journal of the Canadian Academic Accounting Association. The Journal’s editor is a member of the Accounting Area in the Faculty of Business. As a service to the professional accounting community the Centre provides summaries of published articles to members of the Certified General Accountants Association of Ontario.

McMaster University and the Accounting Research and Education Centre are deeply committed to increasing the excellence of accounting research and education.
CENTRE FOR FLEXIBLE MANUFACTURING RESEARCH AND DEVELOPMENT
Dr. Hoda A. ElMaraghy, B.Eng., M.Eng., Ph.D., P.Eng./Director
Flexible automation is a key factor in improving manufacturing productivity, competitiveness and product quality, and reducing production cost. It increases the flexibility and ability of companies to respond to changing market demands and product design. The Centre for Flexible Manufacturing Research and Development was established at McMaster University in recognition of the strategic importance of flexible automation to the Canadian discrete parts manufacturing sector. A contribution of $500,000 was granted in August 1984 by the Canadian Federal Government, as part of the Centres of Specialization Fund, to launch the project.

The activities of the Centre are multi-disciplinary which combine mechanical and electrical engineering, computing, and management expertise. The mandate of the Centre is to conduct basic and applied research in flexible manufacturing, develop human resources through graduate and undergraduate education and cooperate with industry for effective technology transfer.

The Centre contains a flexible assembly cell with two robots, computer controlled material handling, computer vision system, force and tactile sensors, laser inspection system and various computing facilities. Researchers in the Centre are involved in various industry and government supported research projects for design and simulation of flexible manufacturing systems, product design for ease of assembly, computer vision applications, sensory based robotic assembly, expert systems and artificial intelligence, modelling, control and off-line programming of robots, production scheduling and automated inspection.

COMMUNICATIONS RESEARCH LABORATORY
The Communications Research Laboratory (CRL) operates in the Faculty of Engineering. It has a membership of 12 full-time and 2 part-time faculty members, administrative assistant, a full-time staff of 10 research engineers, and 2 technologists, and a graduate student population of over 30 students.

The research programme of the CRL is devoted to microwaves, optics, transmission networks, radar, and sonar. It has pioneered many new theoretical concepts and system designs with practical applications. Indeed, the CRL has established itself as one of the leading centres of research in signal processing and digital communications, for which it is recognized both nationally and internationally.

The CRL has established invaluable links with many government research laboratories and companies. It derives its funding from research grants awarded by the Natural Sciences and Engineering Research Council, and research contracts. Its total revenue is in excess of 1 million dollars per annum.

In the formation of its research programmes and activities, the CRL is assisted by an Advisory Committee with membership drawn from government agencies and the electronics and telecommunications industry of Canada.

McMASTER MANAGEMENT OF TECHNOLOGY INSTITUTE
Douglas S. Greig, C.Eng., M.I.Mech E./Interim Director
The McMaster Management of Technology Institute is a co-operative industry/university centre focusing on the management of technology. The Institute has been created as a resource centre of expertise in management instruction will be via in-company seminars, open-to-the-public executive seminars, and degree programs at the graduate and undergraduate levels;

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2. research into the processes which underlie successful new product and new process development, commercialization and implementation. Such research will focus on topics that are judged to be relevant to Canadian business managers;
3. collection of knowledge, skills and resources from abroad and their dissemination to Canadian business. The Institute will act as the Canadian link to similar centres in Europe, the U.S., and the Far East. McMaster University was selected as the preferred location for the Institute for a number of reasons. These include: the existing core of faculty members, in both engineering and business; existing programs, including a co-op M.B.A. an Engineering/Management programme; and an executive seminar programme; the University’s commitment to research, to professional faculties, and to developing relations between the business and university communities; and the strategic geographic location of McMaster.

THE R. SAMUEL MCLAUGHLIN CENTRE FOR GERONTOLOGICAL HEALTH RESEARCH
Larry W. Chambers, Ph.D./Director
The objective of The R. Samuel McLaughlin Centre for Gerontological Health Research are as follows:
1. support research training of persons with expertise in caring for the elderly and to recruit research faculty for the Faculty of Health Sciences;
2. initiate research activities aimed at improving health care for the elderly in Canada that include promotion of health and preventive care;
3. sponsor educational conferences with guest speakers which will integrate non-proprietary and proprietary health care providers and government health care perspectives. (University faculty, health care managers, service providers and government officials will be invited to participate);
4. publish periodic reports on the Centre’s activities, and distribute these to supporters of the Centre, health care agencies, and government divisions which have a gerontological health care interest;
5. disseminate new knowledge about gerontological health care through publications, professional conferences, workshops and other forms of continuing education.

The R. Samuel McLaughlin Centre for Gerontological Health Research consists of an Executive Committee that oversees the activities of the Centre, a Fellowship Committee that selects research Fellows, and a Faculty Recruitment Committee that makes recommendations for new faculty researchers to the Faculty of Health Sciences. Faculty members on these committees are from those Departments in the Faculty of Health Sciences that have begun to develop a resource pool of researchers in gerontology. The Centre works cooperatively with the Office of Gerontological Studies on a number of joint projects.

McMASTER INSTITUTE FOR ENERGY STUDIES
Dr. M.L. Kliman/Director
The Institute was established in 1980 by a group of engineers, scientists and social scientists at McMaster who recognized the inter-disciplinary nature of the problems involved in efficiently providing our society with usable energy. Its purpose is to coordinate, promote and support energy research and energy education. The MIES office collects and disseminates information on economic, political, scientific and technological developments relating to energy; provides aid in the organization and finance of interdisciplinary research projects; organizes seminars and conferences; and publishes the Energy Newsletter three times yearly.

McMASTER INSTITUTE FOR MATERIALS RESEARCH
A.J. Berlinsky, M.Sc., Ph.D./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 ten academic departments in the faculties of science and engineering, as well as graduate students and research fellows associated with them, share research space and facilities in the John Hodgins Engineering and Senior Sciences Buildings. The facilities maintained by the Institute include a high temperature crystal growth lab, single-crystal and powder X-ray diffrac-
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tometers, an extensive collection of analytic instruments (DTA, TGA, DSC, etc.) and an array of modern electron microscopes (SEM, TEM, STEM, and SAM).

INSTITUTE FOR MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Dr. S.T. Bayley, B.Sc., Ph.D./Interim Director

The purpose of the Institute is to promote and strengthen research and teaching in molecular biology at the University, and to develop links with industry so that research ideas can be exploited commercially. Research in molecular biology is an active focus for faculty members in departments within the Faculties of Science, and Health Sciences and includes: regulation of gene expression, differentiation, membrane and organelle biogenesis, viral oncology and modes of viral replication, and applied topics such as development of monoclonal antibodies and recombinant DNA techniques for diagnostic purposes. The Institute brings faculty members in these research areas together to exchange ideas and techniques. It also allows the development of new areas of research and serves to foster the research of biologists not at present using the techniques of molecular biology. As a part of these roles, the Institute operates a core research facility and serves as a teaching resource for graduate and senior undergraduate courses in molecular biology and biotechnology.

McMASTER INSTITUTE FOR POLYMER PRODUCTION TECHNOLOGY

Dr. A.E. Hamielec/Director
Dr. J.F. MacGregor/Associate Director

Polymers are found in products which affect every aspect of our lives: synthetic fibres; latex in paints and adhesives; specialty polymer coatings; synthetic rubbers; contact lenses; bio-medical implants; baby diapers.

The McMaster Institute for Polymer Production Technology (MFFPT) is a research institute that places a major emphasis on reaction engineering and computer process control of industrial polymer production processes. This has resulted in a current roster of industrial members which includes 16 of the world’s leading polymer companies: Akzo Chemie (Netherlands); Alkali Chemicals; Avery International; Canadian Oxy Chemicals; E.I. Du Pont de Nemours; Esso Chemical Canada; GenCorp (formerly General Tire); Goodyear; ICI (British parent company of CIL); S.C. Johnson & Son; Monsanto Plastics & Resins; Nalco Chemical; Neste Oy (Finland); Polysar; Rohm & Haas; Union Carbide.

18 faculty members from the departments of chemical engineering, chemistry and the faculty of business are associated with the Institute as well as 10 graduate students, 4 post doctoral fellows, 2 visiting scientists, 2 research associates, and 6 support staff.

The Institute facilities include: a fully instrumented, computer controlled pilot plant with several stainless-steel reactor vessels; local control computers and access to a VAX for computer control and computer simulation studies; advanced analytical facilities that allow the complete characterization of polymer samples; an amnpeau laboratory in which small-scale studies are performed.

There are currently 32 research projects underway in the areas of: mathematical modelling for the purpose of predicting the behaviour of industrial processes and thereby developing improved or completely new processes; industrial control of polymer plants; studies of water soluble polymers (for example, for fines retention in the pulp and paper industry); fundamental studies of a replacement for styrenes; research on a novel high temperature process invented by Dr. Hamielec for the production of specialty copolymers used in the coatings industry; development of polymer reactor models for safety calculations; an investigation of reaction injection moulding (RIM) of thermoplastics as an alternative to the traditional methods of producing molded polymer parts (such as for the automobile industry); methods development for the characterization of polymers.

MCMASTER NUCLEAR REACTOR (MNR)

Butler, Michael Paul, B.Eng., M.Eng., P.Eng./Chief Reactor Supervisor
Copley, John R. D., M.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
Smith, Donald R., B.Sc., Ph.D./Director, MNR, and Professor (part-time) of Chemistry and Engineering Physics

The McMaster Nuclear Reactor (MNR), which has been operating on the McMaster campus since 1959, is the only medium power research reactor in Canada. MNR is also the only reactor at a Canadian university with adequate power to enable scientists and engineers to explore the many types of research requiring neutron or gamma radiation: nuclear science, applications of nuclear methods, neutron scattering, neutron radiography, high flux activation analysis, isotope production, applications of radioisotopes, and many other areas.

MNR is a MTR open pool-type reactor producing neutron fluxes up to 1 x 10^11 neutrons/cm^2/second when operating at a power output of 5 megawatts (thermal). It utilizes plate-type enriched uranium 93% in U235 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 and government laboratories.

OFFICE OF GERONTOLOGICAL STUDIES

Dr. Ellen B. Ryan, B.A, M.A., Ph.D./Director
Professor Karl Kinanen, Dipl.S.W., B.A., M.S.W./Associate Director

This office co-ordinates multi-disciplinary and multi-faculty initiatives in education and research in gerontology. 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.

The office’s activities are supported by University funding, while specific projects are funded by public agencies and private foundations.

The Honours B.A. and B.A. programmes in Gerontology and Another Subject are administered by this office. Students may contact the Office for information on education and research in gerontology, and health and social services available for an aging population.

PROGRAM FOR QUANTITATIVE STUDIES IN ECONOMICS AND POPULATION

Mr. Frank T. Denton, B.A., M.A., F.R.S.C./Director

The Program for Quantitative Studies in Economics and Population is an interdisciplinary program based in the Faculty of Social Sciences. Its purpose is to encourage and facilitate faculty research in economics and other areas of the social sciences, with special emphasis on the analysis of population and the relationships between population change and changes in the economy and the society. The Program’s Research Associate number about forty faculty members from various departments of the University and interdisciplinary cooperation is encouraged. The Program issues a series of reports known as QSEP Research Reports and are authored by Individual Research Associates; these reports, or abstracts of them, are distributed widely, both in North America and in other parts of the world. The Program is also responsible for a continuing series of seminars with invited speakers from other universities or non-university research centres, as well as from within McMaster. The Program has been in existence since 1981.
Student Services and Organizations

Dean of Student Affairs

R. Heinz/Dean

The Dean of Student Affairs heads a variety of specialized student service offices. These offices include the Director of Residences, Student Counselling Service, the International Students' Advisor, Student Health Services, Student Financial Aid and Conference Services.

The Dean is happy to meet with individuals and representatives of student organizations with problems, concerns, questions or suggestions on any matter relating to student life and services on campus. The Dean's Office is located in Hamilton Hall, Room 312, telephone extension 4649.

RESIDENCES

Dr. J. Metford/Director of Residences
Ms. R.J. MacDonald/Manager of Residence Admissions and Facilities

The University owns and operates nine on-campus residences accommodating 2391 students. The eight traditional-style residences consist of three women's residences (762), two men's residences (346) and three co-educational residences (780). These residences are for single undergraduate students and are provided with staple articles of furniture including desks, chairs, beds, mattresses, pillows and bedding. Students provide their own towels and are responsible for the cleanliness of their individual rooms although a linen change is made weekly.

Sixty per cent of the traditional spaces are reserved for freshmen students and admission is based on academic standing. All students in these eight residences are required to take the food plan which provides for lunch and dinner (Monday to Friday) for the full academic year (Christmas holidays excluded).

In addition, an apartment-style residence (Bates Residence) accommodates five hundred and three (503) men and women students. The apartments are unfurnished (except for a stove, refrigerator, carpeting and drapes) and are set aside for upperclass students including a limited number of graduate and transfer students and special cases. The food plan is optional.

The University does not provide any on-campus facilities for married students. Students in this category may wish to use the services of the Off-Campus Housing Office.

The responsibility for the overall administration of the University Residence System lies with the Director of Residences. The Director determines policy and develops programs. For each Residence, the Director appoints one Hallmaster from the University community to serve as a mentor and leadership figure within the Residence. The Director of Residences works with resident student government and Hallmasters 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 student government and students on collective projects and individual personal concerns. The office of the Director of Residences is located in the Commons Building, Room 101A, telephone ext. 4223.

The Manager of Residence Admissions and Facilities is responsible for admission systems, withdrawals, waiting lists and the maintenance and upkeep of all 9 residences. The Manager reports to the Director of Residences. Enquiries for residence information should be directed to the Residence Admissions and Facilities Office in the Commons Building, Room 101C, telephone ext. 4371.

Students applying to McMaster will receive a letter of instruction concerning application for residence. Letters of Acceptance from the Director of Residences are required to confirm residence. Students receiving these letters must apply directly to the Residence Office, Commons Building, Room 115. Applications and advance reservations are available from March 1 each year.

OFF-CAMPUS HOUSING

This office maintains a daily, updated listing of available accommodation in the Hamilton and surrounding areas and provides brochures and maps for the area. During the Winter Session, these listings are posted on a bulletin board located in the Commons Building Lobby, adjacent to the Off-Campus Housing Office in the Commons Building, Room 101C, telephone extension 40086.

During the summer, the service moves to McKay Hall, first floor. A special grant obtained by the MSU allows increased service during this period. Free phones for local calls are provided in the Commons Building in early September and in McKay Hall in the summer.

The Off-Campus Housing Office is part of the Residence Office and is administered by the Manager, Residence Admissions and Facilities.

STUDENT COUNSELLING SERVICE

Dr. W. Wilkinson/Director
P. Heron/Counselling Psychologist
D. Jameson/Counsellor
D. Lawson/Career Counsellor
Dr. D. Palmer/Academic Skills Counsellor
V. Reid/Career Counsellor

The Student Counselling Service is a resource provided by the University to promote the personal, academic and career development of McMaster students.

Many counselling, assessment and information services and programs are offered by the counselling staff to help students deal with their problems, clarify and achieve their goals and gain the most from their university experience.

Problems which students wish to discuss with counsellors often concern social, family and peer relationships, or feelings such as anxiety or depression which interfere with their academic and personal effectiveness. Many students seek help in defining their interests and abilities in order to make important decisions about their academic programmes and careers. Some experience difficulties with their studies, or wish to maximize their efficiency in studying. Others want to improve their interpersonal and communication skills. Still others ask for help in writing their resumes and in preparing to look for employment.

In addition to individual counselling services, comprehensive group programmes are presented regularly in such areas as educational and career planning, communication and assertiveness skills, 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 library containing material which is available for reference use to all members of the University community and the general public.

The office also acts as an administrative centre for such frequently required academic tests as the Graduate Record Examinations, the Law School Admission Test, the Medical College Admission Test, and the Miller Analogies Test.

Contacts and transactions between students and counsellors are made under voluntary, private and confidential conditions. Whenever required, students are given assistance in locating other specialized helping sources both on and off campus.

Students who wish to talk with a counsellor are invited to visit the office in Hamilton Hall, Room 302, or telephone extension 4711.

INTERNATIONAL STUDENTS' ADVISOR

Patrick J. Fernando/Advisor

The office is available to all foreign students for consultation, advice and direction in numerous areas of concern, providing information regarding immigration matters, accommodation, orientation, etc. The office is located in Hamilton Hall Room 401, telephone ext. 4748.
STUDENT SERV. AND ORGS.

STUDENT HEALTH SERVICE
Dr. H.H. Lee/Director of Medical Services
Mrs. H. Linkert, B.Sc.N./Director of Nursing Services

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.

Services provided include medical consultations and appropriate referrals, diagnostic tests, allergy injections, immunizations, health counseling and first aid.

The facility is located in McKay Hall Residence on the ground floor, south end, telephone number 525-9140 ext. 4441, 4442.

CONFERENCE SERVICES
Mrs. J. Gowland/Manager

All non-academic events, meeting space, parties, receptions etc. for students, faculty and staff are handled by Conference Services.

During the summer months, accommodation, food services and meeting facilities are available on campus for conferences, conventions and touring groups in addition to residence for summer students and transient visitors.

The Front Desk, located in the Commons Building, is open 7:00 a.m. to 12:00 midnight daily, May 1 to August 31. Contact Conference Services, Commons Building, Room 115, telephone ext. 4781.

STUDENT FINANCIAL AID
Please refer to the description of services in the section Financial Information in this Calendar.

McMaster University Alumni Association

Giving and receiving. These are the twin facets of the role of members of the McMaster University Alumni Association, which seeks to serve its members, and seeks ways and means for its members to serve their University. Founded in 1895, just eight years after McMaster was incorporated, the association now includes more than 50,000 alumni.

The affairs of the association are managed by its council, which includes elected officers and representatives, and the alumni representatives on McMaster’s Board of Governors and Senate. Between the four regular meetings of this council each year, the association is directed by an executive committee which includes the officers and selected councillors.

At the grassroots level, several geographic branches operate; but what’s earning emphasis nowadays is the growing number of academic based chapters which include alumni who shared a common discipline while at McMaster; nursing, medicine, divinity, social work, geography, commerce and MBA chapters currently are active.

The link between the association and the University is provided by the Office of Alumni Affairs, located on the second floor of the Alumni Memorial Hall. Initiating and coordinating alumni activities, and providing the association, its branches and committees, with support services, this office has the continuous task of maintaining up-to-date records of all graduates and former students.

Together, this office and the association attempt to be responsive to the many and diverse interests of the alumni by providing continuing education programmes, supplying material for the University’s magazine for its graduates, arranging for alumni access to many University facilities and functions, sponsoring an annual Grad’s Day (when all alumni are encouraged to return to campus for reunions), among other activities.

In turn, the association works to benefit alma mater by encouraging alumni to acquaint worthy students with the advantages of attending their University and to serve as informal public relations representatives for McMaster in their own communities, by electing able representatives to the University Board of Governors and Senate, by inviting alumni to give financial support to the University, and in other ways.

Of course, such efforts represent only the tip of the iceberg: there is much more of value that can be accomplished in the future through the energetic involvement of more alumni.

Athletics
Dr. M.E. Keyes/Director

The School of Physical Education and Athletics offers a variety of programmes so that all students have the opportunity to keep fit, compete in athletics at their own level, and enjoy sports of their choosing.

For those 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.

Student Government and Activities

The McMaster Students Union’s purpose is to represent the concerns, and service the needs of over 9,800 full-time students. Every undergraduate student who is registered in 18 units or more, is a member of the McMaster Students Union (MSU), and as such is entitled to all its benefits and services.

The MSU is governed by the Student Representative Assembly (SRA), a council of up to 35 of its full-time members. All but two are elected in March by their fellow students in various faculties; each has a proportionate number of seats relating directly to the size of the faculty. The President and Treasurer are the remaining two members of the SRA. The President is elected in February by the entire student body and the Treasurer is elected by the SRA from the general student body. Students who have questions about student government, or wish to bring a matter before the SRA, should contact their representative, the President, or the Vice-President.

The duties of the SRA are: to set policy for the MSU; to approve annual budgets; and to make decisions on capital purchases.

Under the direction of the SRA, committees have been established in the areas of academics, teaching awards, student services, finances, external affairs, and special events. The committees are composed of assembly members, and interested MSU members-at-large. Undergraduate student involvement is encouraged at the committee level. Vacancies are announced in the student newspaper, The Silhouette.

The McMaster Students Union Inc. operates a variety of services for students, including a grocery store, Day Care Centre, Games Room, two full-time pubs, Emergency First Response Team, and Sexual Education Centre. The MSU staffs an Ombudsman Office to help students with problems, either internal or external to the University, and a Research Department to handle research into a variety of student-related concerns. The Programming Department organizes Orientation, Homecoming, Winter Carnival and major concerts. The Silhouette and the campus radio station CFMU, 903.3, are both owned and operated by the McMaster Students Union Inc. The MSU funds over 80 clubs and societies which encompass a kaleidoscope of areas/topics including academic, political, religious, cultural and general interest.

Information about the MSU and its services can be found in the student handbook (the Mac Almanac), the MSU Info Office (room 226, Hamilton Hall), and at the MSU General Offices (room 217, Hamilton Hall, 525-9140, ext. 2003).

Full-time undergraduates are urged to visit Hamilton Hall and to participate in the many student organizations and services.

(Through their membership in the MSU, full-time undergraduate students are also affiliated with the Canadian Federation of Students, and the Ontario Federation of Students (CFS/OFS). For information about both of these organizations, contact the MSU)
McMaster Association of Part-time Students (MAPS)

MAPS exists to look after the special interests of part-time degree or certificate 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 to 9:30 pm Monday to Thursday, 10:00 am to 2:00 pm Friday, when classes are in session. MAPS Executive Director, Ms. Judy Worsley, is available to help students. If you have a question pertaining to university procedure or a problem of any kind, Judy or the MAPS staff 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, transferability of credits and equality under the tax laws for part-time students. MAPS is a member of this group of universities.

If you are a part-time student, MAPS is for you. It is a way to bridge the gap between you and the University, by helping you feel a part of McMaster’s student body. We urge you to participate as often as possible in the academic and social events which will be available to you at McMaster.

The MAPS lounge and office are located in Kenneth Taylor Hall, Room 102, telephone 525-9140, ext 2021. Phone or visit

Services to Students

UNIVERSITY CHAPLAINS

Catholic and Protestant chaplains on campus provide a wide range of student services in worship, discussion groups, pastoral counselling, and social action. At least one of the chaplains is available during the day in the office, and students can always call the chaplain’s residences for appointments at other times. The chaplains support many student activities as well as care for personal and religious needs. Their office is in Wentworth House, Room 1008; telephone extension 4207.

Chapel Services:

There is a chapel service at 10:30 a.m. in the University Chapel, on Mondays, Tuesdays, Wednesdays and Fridays during the Winter Session. These services are conducted by members of the student body or by members of the faculty. There is also a weekly communion in the Chapel on Thursdays at 12:30 p.m. followed by a lunch at 1:00 p.m. The Chapel is open for private devotions each weekday from 8:15 a.m. to approximately 10 p.m. After 5 p.m. it may be necessary to enter the chapel through the Divinity College building.

STUDENT PLACEMENT SERVICE

The Student Placement Office (Canada Employment Centre) operates on a year-round basis to facilitate hiring of graduates, undergraduates, and recent alumni of all disciplines into permanent, temporary and part-time employment. Located in Hamilton Hall, Room 409, office hours are 8:30 a.m. to 4:30 p.m., Monday to Friday, telephone 525-9140, extension 4253.

Major national employers conduct on-campus interviews from October to March for career and summer employment. In co-ordinating this recruitment program, the Student Placement Office posts announcements on its own and departmental bulletin boards; provides the standardized University and College Placement Association application forms; and possesses the facilities for on-campus interviewing and posting of job and employer reference material; schedules employment interviews. Students should register at the Placement Office in September to prepare for this program.

A direct referral service to more immediate part-time and career jobs also operates throughout the calendar year. Bulletin boards should be checked regularly.

In addition, Student Placement maintains a library of reference material on a large number of potential private and public sector employers. Staff are available to meet students on an individual basis to offer job referral assistance and to discuss career-related concerns such as resume development, preparing for interviews and conducting an effective job search.

FOOD SERVICES

The University operates a number of eating places on campus serving a variety of food items. Dining rooms for the use of students registered in residence 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. Supplemented these facilities are vending machines at many locations about the campus.

PARKING

Travel to and from the University on foot, by public transportation and in car pools is encouraged in order to minimize the accumulation of motor vehicles on Campus. Since many people find it necessary to use their motor vehicle, however, the University operates a parking service which is available to faculty, staff, students and visitors.

Limited parking facilities are available on campus, for which parking permits are required. These may be obtained from the Parking Office in the E.T. Clarke Centre upon payment of the prevailing parking fee and upon presentation of a current student identification card and vehicle registration. Special arrangements can be made for disabled parking privileges.

Drivers are responsible for becoming familiar with parking regulations. Violations are subject to fine. Disregard of violation charges may result in suspension of parking privileges, tow-away at owner’s expense, and/or prosecution under the general law, including the Highway Traffic Act, the Trespass to Property Act and the City of Hamilton Private Parking By-law No. 75-155.

BOOKSTORE

The University Bookstore, owned and operated by the University, is located in the lower level of Gilmour Hall. A Health Sciences Branch is located in the McMaster University Medical Centre. In addition to course books, the Bookstore maintains a wide range of supplementary reading materials, both academic and general. Stationery supplies and other items are also stocked. Charge accounts may be opened after registration.

POST OFFICE

Located in the basement of Gilmour Hall, the Post Office offers full postal service.
Undergraduate Academic Awards

The University Senate, acting on behalf of generous benefactors and donors to the University, bestows academic awards on entering, in-course and graduating students in order to encourage and recognize high levels of scholarship. In recognizing such 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.

TERMINOLOGY
(A complete explanation of the terminology used to describe Academic Awards is provided in the sections of the Calendar described below.)

The Winter Session is the period from September to April as defined in the Sessional Dates on pages 4 and 5.

Baccalaureate degrees are those listed under Degrees and Programmes, the abbreviations of which start with the letter 'B'.

Continuing, Occasional, and Post-degree Students are defined under Admission Requirements and are students not registered in degree programmes.

University Average (UA), Cumulative Area Average (CAA), Graduation Average (GA), Level, and Reviewing Period are defined under Academic Regulations.

The Sessional Average is the weighted average of the grades in all courses (excluding any designated 'Extra') taken during the Winter Session immediately prior to the May review.

A full load is the number of units specified in the Calendar for an individual level of a programme (e.g., Honours Biology and Psychology, Level II: 33 units) or, if the Calendar does not specify the programme work by individual levels, the average number of units per level.

1. General Conditions Relating to All Academic Award Recipients

1.1 The University Academic Awards listed below are provided exclusively for students entering, registered in, or graduating from their first baccalaureate degree programme at McMaster University, Students registered in a second undergraduate degree programme, Continuing Students, Occasional Students, and Post-degree Students are not eligible for these awards.

1.2 A student may be named the winner of an unlimited number of University Academic Awards but may retain the monetary benefits of:
   a. travel scholarships and awards such as books and medals; and
   b. awards continued from a previous year (including entrance scholarships), except as provided by the particular terms of an award; and
   c. either one award greater than or equal to the value of a Senate Scholarship and one award of less than the value of a Senate Scholarship, or two awards of less than the value of a Senate Scholarship.

When a student is named the winner of an award but may not retain the monetary benefits because of the conditions listed above, the next student eligible to receive both the award and its monetary benefits will be named the winner of the award.

1.3 All awards for which a student is named the winner and receives the monetary benefits will be shown on the student's official record; all awards for which a student is named the winner but does not retain the monetary benefits will be shown on the student's official record honoris causa.

1.4 The monetary benefits of travel scholarships, awards won by part-time students and graduating students, and awards such as books and medals will be disbursed directly to the student.

1.5 The monetary benefits of other awards will be disbursed only if the recipient is then registered as a full-time student in a baccalaureate degree programme at McMaster University in the next Winter Session after the award was earned and then will be allocated in the following manner:
   a. first the monetary benefits will be credited to the student's academic fees account up to the value of the academic fees prescribed for a full-load of work specified in the Calendar for the level and programme in which the student is registered;
   b. then amounts in excess of the above will be disbursed directly to the student in November.

1.6 Awards credited to the student's fees account are not refundable in cash under any circumstances.

1.7 Awards credited to the student's academic fees account may be used only to defray academic fees for baccalaureate degree courses taken during the Winter Session in which the account is credited with the awards. Students wishing to defray the benefits of an award to a later session should apply to the Academic Awards Officer. Approval of applications is not automatic, and deferrals are not normally granted for more than one calendar year.

1.8 Students holding four-year full-fees scholarships who choose to accelerate their programme and to complete their degree earlier than normal by completing Summer Session courses and who wish to employ the benefits of their award to defray the academic fees for such courses should apply to the Academic Awards Officer. Approval of applications is not automatic.

1.9 The University reserves the right not to grant an award in the absence of a suitable candidate, and to limit the number of awards when there are too few suitable candidates. The University also reserves the right to withdraw, or amend the terms of, any award.

1.10 The particular terms for University Academic Awards are listed below in the following sections:

SECTION 2. AWARDS FOR ENTERING STUDENTS
   - The McMaster Scholars Programme
   - Other Scholarships Open to Canadian Students
   - Scholarships Open to Ontario Students
   - Merit Awards Open to Ontario Students

SECTION 3. AWARDS FOR FULL-TIME IN-COURSE STUDENTS
   - Medal
   - General Scholarships and Prizes
   - Senate Scholarships
   - Residence Scholarships
   - Travel Scholarships

SECTION 4. SINGLE ACHIEVEMENT AWARDS FOR FULL-TIME AND PART-TIME STUDENTS

SECTION 5. AWARDS FOR PART-TIME IN-COURSE STUDENTS

SECTION 6. AWARDS FOR GRADUATING STUDENTS
   - Medals
   - Ring
   - Scholarships and Prizes

INDEX OF ACADEMIC AWARDS

In order to find a specific award, use the Index for Academic Awards.

2. Academic Awards for Entering Students

2.1 These awards are provided exclusively for students qualifying for admission to Level I of a baccalaureate degree programme.
2.2 In order to be considered for an entrance scholarship, students must obtain at least a first-class average in the secondary school credits required for University admission. All students who meet this requirement and who apply for early admission to the University within not more than two years of completion of their secondary school studies will automatically be considered as applicants for entrance scholarships, unless a separate application is explicitly required by the particular terms of the award.

2.3 In addition to meeting the General Conditions listed in Section 1, entrance scholarship recipients will begin their studies in the next Winter Session. Students wishing to defer the benefits of an award to a later session should apply to the Academic Awards Officer. Approval of applications is not automatic, and deferments are not normally granted for more than one calendar year.

2.4 Unless otherwise specified, recipients may retain an entrance scholarship which provides for awards beyond Level I while registered in a baccalaureate degree programme and until graduation or for four years (five years if registered in a five-level programme), whichever is less. In order to retain such scholarships, students must complete during each successive Winter Session at the University a full load corresponding at least to:

a. either the minimum number of units specified in the Calendar for their level and programme;

b. or, if the Calendar does not specify the programme work by individual levels, the average number of units per level;

and must maintain a University Average of at least 9.5 and obtain no F grades.

THE McMaster Scholars Programme

Each year up to five students who are Canadians or landed immigrants and entering from a secondary school may be awarded the title McMaster Scholar. At any time there may be no more than 16 McMaster Scholars registered in undergraduate programmes. Applications are required and must be submitted not later than March 31. Applicants will be asked to provide a resume, an essay and letters of recommendation. Details may be obtained from the Academic Awards Officer.

Value: $10,000 each ($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: Up to four years' academic fees each.

THE LILLIAN AND LENNOY PAGE SCHOLARSHIP
Established in 1982 by donation of the Lillian and Lennoy 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 CANADIAN STUDENTS
Open to Canadian students from any province or territory of Canada.

THE ALUMNI ASSOCIATION SCHOLARSHIPS
Established in 1961 by the McMaster University Alumni Association as a memorial to former members of the McMaster faculty in recognition of their contribution to higher learning. Two scholarships to be 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 each.

THE JOSEPHINE MAGEE SCHOLARSHIP
Established in 1959 by bequest of Josephine Magee of Hamilton. To be awarded on the basis of general proficiency in the subjects required for admission to students from any province or territory of Canada.

Value: Up to four years' academic fees.

SCHOLARSHIPS OPEN TO ONTARIO STUDENTS
The following scholarships are open to any student applying for admission from an Ontario secondary school within two years of completing the Secondary School Honour Graduation Diploma. The recipients of these scholarships will be determined primarily on the basis of those grades submitted for early admission in the Grade 13 work which qualifies the applicant for the Secondary School Honour Graduation Diploma.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS SCHOLARSHIP
Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to a student entering the Faculty of Engineering. Value: $750.

THE CAWESCO CLUB SCHOLARSHIPS
Established in 1981. Two scholarships to be awarded: (a) one to a student entering the Faculty of Business and (b) one to a student entering the Faculty of Engineering. The recipients must be from outside the City of Hamilton.

ACADEMIC AWARDS

Value: $500 each.

THE CHANCELLORS' SCHOLARSHIPS
A variable number to be awarded to students entering a full-time programme of study.

Value: One year's academic fees each.

THE GEORGE M. CURRY SCHOLARSHIP
Established in 1941 by bequest of Helen Maud Currey of Drumbo, Ontario. To be awarded every four years, the thirteenth award to be made in 1988.

Value: Up to four years' academic fees.

THE DO FascO SCHOLARSHIP
Established in 1955 to the Dominion Foundries and Steel Company. To be awarded to a student who is a Canadian citizen and is entering Engineering I.

Value: $7,300 ($1,825 a year for up to four years).

THE DUNDAS SCHOLARSHIPS
Established in 1984 from funds donated anonymously. A variable number of scholarships to be awarded to students from Dundas and surrounding area entering a full-time programme of study.

Value: One year's academic fees each.

THE EATON FOUNDATION SCHOLARSHIP
Established in 1982 by The Eaton Foundation. To be awarded to a student entering the Faculty of Business.

Value: Up to four years' academic fees.

THE H.P. FRID SCHOLARSHIP
Established in 1982 by the family of H.P. Frid in his memory. To be awarded to a promising student entering a full-time programme of study.

Value: One year's academic fees.

THE MERRILL FRANCIS GAGE ENTRANCE SCHOLARSHIP
Established in 1982 from the estate of Merrill Francis Gage of Hamilton. To be awarded to a keyboard student entering Music I who, in the judgment of the Department of Music, has attained outstanding musical proficiency.

Value: $1,000.

THE GOVERNORS' SCHOLARSHIPS
A variable number to be awarded to students entering a full-time programme of study.

Value: Up to four years' academic fees.

THE HAMILTON SPECTATOR SCHOLARSHIP
Established in 1955 by the Hamilton Spectator. To be awarded to a student from Hamilton and district.

Value: $7,300 ($1,825 a year for up to four years).

THE JOHN HODGINS MEMORIAL SCHOLARSHIP
Established in 1985 by his wife, Jane, in memory of Dr. John W. Hodgins in recognition of his extraordinary contributions in founding the Faculty of Engineering which he served with distinction as the first Dean. To be awarded to an outstanding student entering the Faculty of Engineering.

Value: One year's academic fees.

THE NELLIE P. HOGG SCHOLARSHIPS
Established in 1965 by bequest of Nellie P. Hogg of Hamilton. Two scholarships to be awarded to women students entering a full-time programme of study.

Value: Up to four years' academic fees each.

THE DR. HARRY LYMAN HOOKER ENTRANCE SCHOLARSHIPS
Established in 1981, and resulting from the bequest of Dr. H.L. Hooker. Sixteen scholarships to be awarded to students entering a full-time programme of study.

Value: $7,300 each ($1,825 a year for up to four years).

THE AMELIA MORDEN, PAARDEBURG CHAPTER, I.O.D.E., SCHOLARSHIP
Established in 1956 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 will be given to students entering the Faculty of Humanities or of Social Sciences.

Value: Up to four years' academic fees.

THE LLOYD MEMORIAL SCHOLARSHIP
Established in 1950 in memory of Henry Hayes and Lizzie Lloyd by their children. Grade 13 subjects to be included are: Physics, Chemistry, two credits of Mathematics, and either Biology or a third credit of Mathematics.

Value: Up to four years' academic fees.

THE ALBERT MATTHEWS SCHOLARSHIP
Established in 1920. Grade 13 subjects to be included are Latin and a language other than English.

Value: Up to four years' academic fees.

THE HAROLD MATTHEWS MEMORIAL SCHOLARSHIP
Established in 1917. Grade 13 subjects to be included are French and either German or Spanish.

Value: Up to four years' academic fees.
ACADEMIC AWARDS

THE ISABELLA CAMPBELL McNEE SCHOLARSHIP
Established in 1915 and augmented in 1926. Grade 13 subjects to be included are three credits of Mathematics and Physics.
Value: Up to four years' academic fees.

THE MOULTON COLLEGE ENTRANCE SCHOLARSHIP
Established in 1980 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949. To be awarded to a woman student entering a full-time programme of study.
Value: Up to four years' academic fees.

THE ALVIN I. OGILVIE SCHOLARSHIPS
Established in 1984 by bequest of Alvin I. Ogilvie of Hamilton. Five scholarships to be awarded to students entering a full-time programme of study.
Value: One year's academic fees each.

THE D.E. THOMSON SCHOLARSHIP
Established in 1909 and augmented in 1915. Grade 13 subjects to be included are English and either Latin or French.
Value: Up to four years' academic fees.

THE FRANK THOROLFSSEN MEMORIAL SCHOLARSHIPS
Established in 1978 in memory of Professor Frank Thorolfsson, first Chairman of the Department of Music. One or two scholarships to be awarded to students entering Music I who, in the judgment of the Department, have attained high scholastic achievement and musical proficiency.
Value: $750 each.

THE WHEELER SCHOLARSHIP
Established in 1915. Grade 13 subjects to be included are: History, English and a language other than English.
Value: Up to four years' academic fees.

MERIT AWARDS OPEN TO ONTARIO STUDENTS
Merit Awards are granted on the basis of academic standing and contribution to school and community life in extracurricular activities and work.

THE McMaster MERIT AWARDS
Made available from time to time by authorization of the Board of Governors of the University.
Value: Forty awards of $800 each.

THE LESLIE A. PRINCE MERIT AWARDS
Established in 1979 in honour of Leslie A. Prince, Dean of Students, by his friends and colleagues upon the occasion of his retirement and in recognition of his outstanding contribution to the University community. Two to be awarded.
Value: $800 each.

3. Academic Awards for Full-time In-Course Students
The following awards are based on competition across the University or within a faculty or programme.

3.1 These awards, which are granted in June or November, are provided exclusively for full-time students qualifying on the basis of work included at the May review (or deferred examinations resulting therefrom) in other than their graduating session.

3.2 In addition to meeting the General Conditions listed in Section 1, a student must complete during the Winter Session immediately prior to the May review a full load of work corresponding at least to:
   a. either the minimum number of units specified in the Calendar for their level and programme;
   b. or, if the Calendar does not specify the programme work by individual levels, the average number of units per level; and
   c. must obtain a University Average of 8.0 and no F grades.

3.3 For students who complete a full load of work in the Winter Session as described above a Sessional Average will be computed, which is the weighted average of the grades in all courses (excluding any designated "Extra") taken during that Session. The Sessional Average will be used to determine academic standing for the awards listed below, unless otherwise stated in the terms of a particular award.

3.4 The Sessional Average will be used to break any tie in the competition for awards which are based on another academic criterion.

MEDAL
THE GOVERNOR GENERAL'S MEDAL
Given by Her Excellency the Governor General of Canada. To be awarded to the student who has completed Level I and 30-45 units of a programme in Commerce and who attains the highest Sessional Average.
Value: $25.

GENERAL SCHOLARSHIPS AND PRIZES
THE AARON PRIZE
Established in 1964 by Fannie Aaron ('44). To be awarded to the student who has completed Level I and 30-45 units of a programme in Commerce and who attains the highest Cumulative Area Average.
Value: $1,000.

THE AMERICAN CANADA INC. SCHOLARSHIP
Established in 1983. To be awarded to the student who has completed Level I and 30-45 units of a programme in Commerce and who attains the highest Sessional Average (at least 9.5).
Value: $1,400.

THE ASSOCIATION OF PROFESSIONAL ENGINEERS UNDERGRADUATE SCHOLARSHIPS
Established in 1961 by the Ontario Professional Engineers Foundation for Education. Three scholarships to be awarded to students with the highest Sessional Average in Engineering programmes after the completion of each of: (a) Engineering I; (b) Level I and 30-55 units; and (c) Level I and 70-90 units.
Value: $375 each.

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 3G04 and 3I04, taken in one Session.
Value: $200.

THE J. DOUGLAS BANKIER MEMORIAL SCHOLARSHIP
Established in 1977 in memory of Professor J. Douglas Bankier by his friends, colleagues, and former students. To be awarded to the student who has completed Level I and at least 60 units of Honours or Major programme in the Department of Mathematics and Statistics, who attains the highest Sessional Average and who in that Session achieves a grade of at least B in Statistics 3D06.
Value: $400.

THE SCOTT BARTLETT MEMORIAL PRIZE
Established in 1985 in memory of Scott N. Bartlett by his family and friends. To be awarded to a student who has completed Level I and 60-75 units of the Honours Commerce Programme and who, in the judgment of the Faculty of Business, has achieved high standing in Commerce 3FA3 and 3FB3, taken in one Session.
Value: $100.

THE M. BANKER BANKIER SCHOLARSHIP
Established in 1975 by Dr. M. Banker Bankier and augmented in 1978 in his memory by his family, friends and colleagues. To be awarded to the student who has completed Level I and 60-75 units of a programme in Commerce and who attains the highest Sessional Average.
Value: $300.

THE BEAUTY COUNSELORS OF CANADA SCHOLARSHIP
Established in 1956 by Beauty Counselors of Canada Limited. To be awarded to the student who has completed Natural Sciences I with the highest Sessional Average and who is entering Level II of Honours Biochemistry, Honours Chemistry, Honours Biochemistry and Chemistry or Honours Applied Chemistry programme.
Value: $300.

THE LOUISE E. BETTGER SCHOLARSHIPS IN MUSIC
Established in 1982 in memory of Louise E. Bettger of New Hamburg, Ontario, by her nieces and nephews. Three scholarships to be awarded to students in an Honours programme in Music who, in the judgment of the Department of Music, are outstanding: (a) one in the area of choral or vocal music to a student who has completed Music I or an additional 30-75 units; (b) one to a keyboard student who has completed Level I and 30-75 units; and (c) one to a student who has completed Music I and who has demonstrated overall musical excellence.
Value: $400 each.

THE J.P. BICKELL SCHOLARSHIPS
Established in 1955 by the J.P. Bickell Foundation to encourage interest in the study of geology and metallurgy. Two scholarships to be awarded, normally one to the student entering Level II of Honours Geology, Honours Geology and Physics, and one to the student entering Level II of Chemical Engineering or Metallurgical Engineering, who attain 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 BLAYKE MEMORIAL SCHOLARSHIP
Established in 1979 in memory of Dr. Brian Blayke, 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 Level I and 60-75 units of an Honours programme in Classics, Dramatic Arts, English, French, German, Italian, Russian or Spanish. Students in all programmes except Dramatic Arts must have taken at least some point Linguistics 1A06 or Anthropology 1806 and achieved in it a grade of at least B –

Value: $600.

THE BRAMPTON BRICK LIMITED CERAMIC SCHOLARSHIP
Established in 1980. To be awarded to the student who has completed Level I and 35-50 units of the Ceramic Engineering programme with the highest Sessional Average (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 Level I and 30-45 units of an Honours programme in Philosophy and who attains the highest Cumulative Area Average.

Value: $450.

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: $300.

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 Level I and 30-45 units 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 Level I and at least 60 units of an Honours programme in Chemistry and who, in the judgment of the Department of Chemistry, shows particular promise in thermodynamics.

Value: $200.

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 1E04, 2E04, 3E04 or 4E04 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. The scholarships are to be awarded to students who have completed Level I and at least 35 units of the Ceramic Engineering programme and who, in the judgment of the Department of Materials Science and Engineering, show particular promise in the field of ceramic engineering or materials science.

Value: $500 each.

THE NORMAN N. CASKEY MEMORIAL PRIZE
Established in 1983 by Mrs. Verna Caskey and Miss June Caskey in memory of Norman N. Caskey in memory of husband and father. To be awarded to a student who has completed Music I or Level I and 30-75 units of an Honours programme in 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 Level I and 30-45 units of a programme in Commerce and who, in the judgment of the Faculty of Business, has attained an outstanding Sessional Average and a high standing (a grade of at least A –) in Commerce 2A03.

Value: $150.

THE CHEMICAL INSTITUTE OF CANADA (HAMILTON SECTION) PRIZES
Established in 1984 by the Hamilton Section. Two prizes to be awarded to students who have completed Level I and 30-50 units: (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. Three prizes to be awarded to students who have completed Level I and 60-80 units: (a) one to a student in an Honours programme in Chemistry, Honours Applied Chemistry, or Chemistry Major who attains high standing in chemistry; (b) one to a student in the Honours Biochemistry or Honours Biochemistry and Chemistry programmes who attains high standing in biochemistry and organic chemistry; and (c) one to a student in a programme in Chemical Engineering who attains the highest Cumulative Engineering Average.

Value: Medal and certificate.

THE CLARKSON GORDON SCHOLARSHIP
Established in 1952 by Clarkson Gordon. To be awarded to the student who has completed Level I and 30-45 units of a programme in Commerce and who attains the highest Sessional Average and in that Session attains a grade of at least A – in Commerce 2A03.

Value: $350.

THE CLASS OF '50 SCHOLARSHIP IN HONOURS ECONOMICS
Established in 1982 by the Graduating Class of 1950 in Honours Economics. To be awarded to the student who has completed Level I and 30-45 units of an Honours programme in Economics, and who, in the judgment of the Department of Economics, has attained a high Sessional Average and has demonstrated leadership in undergraduate extracurricular activities.

Value: $450 and book.

THE CLASSICAL STUDIES PRIZE
Established in 1978 by Professor D.M. Shepherd. To be awarded to the student who has completed Level I and 30-45 units of an Honours programme in Classical Studies and who, in the judgment of the Department of Classics, shows most promise.

Value: $100.

THE COOPERS AND LYBRAND SCHOLARSHIP
Established in 1986. To be awarded to a student who has completed Level I and 60-75 units of a programme in Commerce, with an average of at least 10.0 in the Level III accounting courses in that Session, and who, in the judgment of the Faculty of Business, has demonstrated high academic achievement and leadership.

Value: $850.

THE CUMIS LIFE INSURANCE COMPANY SCHOLARSHIP
Established in 1962 commemorating 25 years of the Company's operations in Canada. To be awarded to the student who has completed Level I and 30-45 units of Commerce, Honours Economics, Honours Economics and Mathematics or Honours Economics and Computer Science programme with the highest Sessional Average. Preference to be given to (a) students who are considering entering the fields of life insurance or Credit Union management and (b) children of Credit Union members.

Value: $500.

THE CYANAMID CANADA INC. SCHOLARSHIPS
Established in 1961. Two scholarships to be awarded to the students who have completed Level I and 30-45 units of an Honours programme in Chemistry and of Chemical Engineering who attain the highest Sessional Averages.

Value: $500 and $275 (one in each programme).

THE DATA GENERAL (CANADA) INC. SCHOLARSHIP
Established in 1987. To be awarded to a student who has completed Level I and 30-45 units of an Honours programme in Computer Science and who, in the judgment of the Department of Computer Science and Systems, has achieved notable standing (Sessional Average of at least 9.5) and demonstrated leadership ability and involvement in extracurricular activities.

Value: $1,000.

THE D. M. DAVIES PRIZE
Established in 1984 by friends, colleagues and former students in recognition of Professor Douglas Davies for his outstanding contribution to the Department of Biology during 34 years of service. To be awarded to a student who has completed Level I and 60-75 units of an Honours programme in Biology and who attains the highest average in at least 12 units of senior level courses in whole-animal biology, taken in one Session.

Value: $250.

THE DIGITAL EQUIPMENT OF CANADA LIMITED AWARD OF MERIT
Established in 1984. To be awarded to a student who has completed Level I and 35-50 units of a programme in Computer Engineering with a high Cumulative Engineering Average.

Value: $250 and certificate.

THE DOW CHEMICAL CANADA INC. SCHOLARSHIP
Established in 1976. To be awarded to the student who has completed Level I and 70-85 units of the Chemical Engineering programme who attains notable academic standing, and who has demonstrated leadership in extracurricular activities. The recipient may not be a holder of another scholarship.

Value: $900.
THE ACADEMIC AWARDS

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 Level I and 60-75 units of an Honours programme in Philosophy and who, in the judgment of the Department of Philosophy, has attained the most notable standing.
Value: $200.

The L.F. Eull Prize
Established in 1980 by Group Eight Engineering Limited. To be awarded to the student in a programme in Electrical Engineering who attains the highest average in Electrical Engineering 3N03 and 3503, taken in one Session.
Value: $200.

The Barbara Francis Scholarship
Established in 1985 by Laura Dodson ('56) in memory of her sister. To be awarded to the student who has completed Level I and at least 30 units of an Arts and Science Programme and who has demonstrated outstanding achievement in both arts and science.
Value: $350.

The Harold and Gertrude Freeman Scholarship in French
Established in 1981 by members of the Class of '43 as a grateful tribute to Professor Harold A. Freeman, long-time teacher of French at the University and honorary president of the Class in its junior year, and his wife, Gertrude. To be awarded to the student 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 Department of French, has attained 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 Fritz Prize
Established in 1980 by friends of Professor K. Fritz. To be awarded to the student who has completed Level I and 30-45 units of the three-level Chemistry programme with the highest Cumulative Area Average.
Value: $150.

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 Level I and 30-75 units of an Honours programme in Music and who, in the judgment of the Department of Music, has demonstrated excellence in performance on a keyboard or orchestral instrument.
Value: $500.

The Geology Book Prize
Established in 1955 by an anonymous graduate of Year '47 in memory of Dean C.E. Burke. To be awarded to a student who has completed Level I and 30-45 units of an Honours programme in Geology and who, in the judgment of the Department of Geology, attains high standing in geology.
Value: $50, for books.

The J.L.W. Gill Prizes
Established in 1954 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 to students who have completed Level I and 60-75 units of Honours B.Sc. programmes. Ordinarily, not more than one scholarship will be awarded in any one discipline.
Value: $250 each.

The H.B. Greening Book Prize
Established in 1969 by bequest of Gladys Powis Greening in memory of her husband, Herald Benjamin Greening. To be awarded to the student who has completed Level I and 30-45 units of an Honours programme in Music and who, in the judgment of the Department of Music, has demonstrated excellence in music.
Value: $150, for books.

The Ruth and Jack Hall Prize
Established in 1983 by Jackie MacDonald in memory of her parents. To be awarded to a student who has completed Level I and 60-75 units of an Honours or Major programme in Computer Science, or Level I and 70-90 units of a programme in Computer Engineering, and who attains the highest Cumulative Area Average or Cumulative Engineering Average.
Value: $200.

The Ronald K. Ham Memorial Prize
Established in 1971 in memory of Professor R.K. Ham by his friends and former colleagues. Awarded to the student who has completed Level I and at least 60 units and who, in the judgment of the Department of Materials Science and Engineering, shows most promise as a materials scientist or engineer.
Value: $100.

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 Level I and 30-45 units of an Honours programme in Chemistry and who attains the highest Cumulative Area Average.
Value: $250.

The Hamilton Economic Development Commission Scholarships
Established in 1976. (a) Two scholarships to be awarded on the basis of Sessional Average to students entering Level II of a Commerce programme; (b) Four scholarships to be awarded on the basis of the Cumulative Commerce Average to students who have completed Level I and 30-45 units, and two to students who have completed Level I and 60-75 units 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 Donald Hart Scholarship
Established in 1985 by Mrs. Pamela Hart and Joel Jordan in honour of Donald Neil Hart ('70). To be awarded to a student who has completed Level I and 30-45 units of a programme in Commerce and who, in the judgment of the Faculty of Business, has achieved high standing in the required Level II Commerce courses, taken in one Session.
Value: $400.

The Heatherington-Civitan Scholarship
Established in 1986 by the Civitan Club of Burlington. To be awarded to a student who has completed Level I and 36-90 units of a Social Work programme with high standing and who, in the judgment of the School of Social Work, has demonstrated an interest in a career in working with the mentally handicapped.
Value: $500.

The Rose Hill Scholarship
Established in 1985 by the alumni, faculty and staff of the School of Physical Education and Athletics as a tribute to Professor Rose Hill, long-time teacher, coach and administrator in the School. To be awarded to a student who has completed Level I and 30-45 units of the Physical Education programme and who, in the judgment of the School, best demonstrates the philosophy of physical education espoused by Professor Hill throughout her career, namely, excellence in scholarship and leadership, and participation in sport, dance or fitness.
Value: $500.

The Dr. Thomas Hobley Prize
Established in 1936 by bequest of Mrs. A. McMee of Windsor. To be awarded to a woman student on the basis of the Sessional Average obtained in the penultimate level of a programme in economics or political science.
Value: $200.

The Dr. Harry Lyman Hooker Scholarships
Established in 1981, and resulting from the bequest of Dr. H.L. Hooker. Awarded for overall academic excellence (Sessional Average of at least 9.5) to students in undergraduate programmes, with the exception of those in their graduating Session and those retaining scholarships of $1,000 or greater. Each year quotas are established for each Faculty and other academic units in proportion to the number of full-time undergraduate students who obtain a Sessional Average of 9.5 or greater. Seventy-five awards were made in 1986.
Value: $1,200 each.

The Institute of Electrical and Electronics Engineers (Hamilton Section) Prizes
Established in 1961. Two prizes to be awarded to the students who have completed Level I and 70-90 units of a programme in Electrical Engineering who attain the highest and second highest Cumulative Engineering Averages.
Value: $100 and plaque; and $75.

The Intermetco Limited Scholarship
Established in 1977. To be awarded to the student who has completed Level I and 70-90 units of a programme in Mechanical Engineering and who, in the judgment of the Department of Mechanical Engineering, has attained notable standing.
Value: $600.

The ITCA Community Involvement Prize
Established in 1982 by Italian Canadian Community Involvement Incorporated. To be awarded to the student who has attained the highest Sessional Average on completion of Level I and 60-75 units of an Honours programme in Italian. The recipient must have graduated from a secondary school in the Hamilton area.
Value: $150.

The Ivye Scholarship
Established in 1971 by Professor and Mrs. G.S. French in memory of Mr. and Mrs. I.E. Ivye, the parents of Mrs. French. To be awarded to the student who has completed Level I and 60-75 units of an Honours programme in Music and who, in the judgment of the Department of Music, has attained notable standing.
Value: $125.

The A.L. Johnson Scholarship
Established in 1977 in memory of Dr. A.L. Johnson by his friends and former colleagues. To be awarded to a student who has completed Level I and 110-130 units of a programme in Engineering and Management. Award to be based on distinguished academic performance during the student's undergraduate career. Consideration will also be given to noteworthy contribution in extracurricular activities.
Value: $650 and certificate.
THE KATHLEEN MARY JOHNSTON MEMORIAL PRIZE
Established in 1963 by Lawrence D. Johnston in memory of his wife. To be awarded to the student who has completed Level I and 30-45 units 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 Level I and 30-45 units of the Honours History programme and who attains the highest Cumulative Area Average.
Value: $150.

THE STANFORD N. KATAMBALA GEOLOGY PRIZE
Established in 1965 by contributions from friends and associates of Stanford N. Katambala, a Year III Honours Geology student from Tanzania, killed in a mine accident in northern Ontario in September, 1964. To be awarded to a student who has completed Level I and 60-75 units of the Honours Geology programme and who attains high standing in geology.
Value: $50.

THE GEORGE P. AND LEATHA M. KEYS SCHOLARSHIPS
Established in 1982 by Mrs. Leatha Keys. Three scholarships to be awarded to students who, in the judgment of the Departments of Computer Science and Systems, and of Mathematics and Statistics, have demonstrated outstanding achievement in Honours and Major programmes in those Departments: (a) one to a student who has completed Level I and 30-75 units of the Computer Science programme; (b) one to a student who has completed Level I and 60-75 units of a programme in Mathematics, and (c) one to a student who has completed Level I and 60-75 units of a programme in Statistics.
Value: $400 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 Level I and at least 30 units on the basis of Journalistic ability or on completion of Level I and 60-75 units of an Honours programme in English; on the basis of Cumulative Area Average.
Value: $200.

THE GERRY LAARAKKER SCHOLARSHIP IN PHILOSOPHY
Established in 1983 by Laarakker Photography Inc. To be awarded to a student who has completed Level I and at least 30 units of a programme in Philosophy and who, in the judgment of the Department of Philosophy, has made the most notable contributions to the Department's activities.
Value: $500.

THE RAY LAWSON SCHOLARSHIPS
Established in 1975 by the Honourable Ray Lawson, O.B.E., D.C.L., D.C.N.L., LL.D., K.G.S.I.J., Lieutenant-Governor of Ontario from 1946 to 1952. Two scholarships to be awarded for the highest Cumulative Engineering Averages in an Engineering and Management programme: (a) one to a student who has completed Level I and 70-90 units, and (b) one to a student who has completed Level I and at least 110 units.
Value: $600 each.

THE MACKIE SCHOLARSHIP
Established in 1982 by Linda L. Gadsby ('94) in memory of her mother. To be awarded to the student who has completed Level I and 30-45 units of an Honours programme in Mathematical Sciences and who attains the highest Sessional Average.
Value: $500.

THE BETTY MacMillan PRIZE
Established in 1960 by her classmates in memory of Elizabeth Johnstone MacMillan ('50). To be awarded to the student who has completed Level I and 60-75 units in an Honours programme in Sociology and who, in the judgment of the Department of Sociology, is the most promising student.
Value: $100.

THE LIANNE MARKS SCHOLARSHIP
Established by her family, in 1980 as a bursary and in 1985 as a scholarship, in honour of Lianne Marks, a student at McMaster University (1977-80). To be awarded to a student who has completed Level I and 60-75 units of an Honours programme in Sociology and who, in the judgment of the Department of Sociology, has demonstrated outstanding academic achievement and has made notable contribution to the campus or community by participation in activities other than sports.
Value: $600.

THE RONALD E. MATERICK SCHOLARSHIP
Established in 1967 by Ronald E. Materick ('70). To be awarded to a student who has completed Level I and 70-85 units of a programme in Civil Engineering and who, in the judgment of the Department of Civil Engineering and Engineering Mechanics, has attained notable academic standing.
Value: $500.

THE McGRregor-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, and supplemented in 1944 by bequest from Professor R. Wilson Smith, father of Lee Wilson Smith. To be awarded to the student who has completed Level I and 60-75 units of the Honours English and History programme and who has the highest Sessional Average.
Value: $450.

THE BOYD McLAY SCHOLARSHIP IN PHYSICS
Established in 1977 to commemorate the contributions of Dr. A. Boyd Mc Lay ('22) to teaching and research in optics and spectroscopy at McMaster University from 1930 to 1967. To be awarded to a student who has completed Level I and 60-75 units of an Honours or Major programme in Physics with a high Sessional Average.
Value: $300.

THE McMASTER NURSING ALUMNI PRIZE
Established in 1964 by the Nursing Chapter of the McMaster University Alumni Association. To be awarded to a student who has completed Level I and 70-85 units of the Nursing programme and who, in the judgment of the School of Nursing, has demonstrated leadership while participating in undergraduate activities.
Value: $100.

THE SIMON McNALLY SCHOLARSHIPS
Established in 1972 by S. McNally and Sons, Limited, in honour of Simon McNally. One or two scholarships to be awarded to Canadian citizens who have completed Level I and 35-50 units of a programme in Civil Engineering. Awards are based on scholarship and evidence of practical engineering experience and background.
Value: $650 each.

THE J. J. MILLER PRIZE
Established in 1984 by friends, colleagues and former students in recognition of Professor J.J. Miller for his outstanding contribution to the Department of Biology during 37 years of service. To be awarded to a student entering Level IV of the Honours Biology programme with an outstanding Cumulative Area Average and a grade of at least A – in Biology 3E03 in Level III.
Value: $250.

THE MICHAEL J. MORTON MEMORIAL BOOK PRIZE
Established in 1979 in memory of Dr. M.J. Morton. To be awarded to a student who has completed Level I and 60-75 units 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: $150 for books.

THE ELIZABETH MOSGROVE SCHOLARSHIP
Established in 1959 by bequest of John W. Mosgrove in memory of his mother. To be awarded to sons of members of Her Majesty's Canadian Armed Forces on the basis of Sessional Average.
Value: $350.

THE MOULTON COLLEGE SCHOLARSHIPS
Established in 1957 from funds originally subscribed by the Alumni of Moulton College during the years 1946 to 1949 for the expansion of Moulton College. Two scholarships to be awarded to the women students of Moulton Hall with the highest Sessional Averages: (a) one after completion of Level I and 30-45 units, and (b) one after completion of Level I and 60-75 units.
Value: $800 each.

THE MURATA ERIE NORTH AMERICA, LTD. SCHOLARSHIPS IN CERAMICS AND ELECTRONICS
Established in 1982. Two scholarships to be awarded on the basis of scholarship, general technical awareness and participation in university and community activities: (a) one to a student who attains the highest Sessional Average on completion of Level I and 70-85 units of the Ceramic Engineering programme and who is in that Session attains a grade of at least A – in Materials 30B4, and (b) one to a student who attains the highest Sessional Average on completion of Level I and 70-85 units of the Electrical Engineering programme and who in that Session attains an average of at least 10.0 in Electrical Engineering 3B04 and 3T04.
Value: $600 each.

THE ANNE MURRAY SCHOLARSHIP
Established in 1985 in memory of Anne M. Murray ('82) by her family. To be awarded to the student who has completed Level I and 60-75 units of an Honours programme in German with the highest Sessional Average.
Value: $300.

THE THOMAS NEILLSON SCHOLARSHIP
Established in 1986 in memory of Professor T. Neilson by his family, friends, colleagues and students. To be awarded to a student entering Level IV of a programme in Honours Biochemistry who, in the judgment of the Department of Biochemistry, shows particular promise as an experimental scientist.
Value: $500.

THE NIEMEIER SCHOLARSHIP
Established in 1938 and augmented in 1952 by Dr. O.W. Niemeier. To be awarded to the student who attains the highest Cumulative Area Average at the completion of Level I and 38-55 units of the Nursing programme.
Value: $300.
ACADEMIC AWARDS

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 Level I and 60-75 units of 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: $100, for books.

THE ONTARIO HYDRO SCHOLARSHIP IN ELECTRICAL ENGINEERING
Established in 1986. To be awarded to the student who has completed Level I and 70-90 units of Electrical Engineering and who, in the judgment of the Department of Electrical and Computer Engineering, has achieved notable standing (Sessional Average of at least 9.5), displayed strong communication skills, and demonstrated leadership ability and involvement in extracurricular activities.
Value: $1,000.

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 Level I and 60-75 units of the Honours History programme and who attains the highest Cumulative Area Average.
Value: $200.

THE GLADYS B. LANTYNE PARKER PRIZE
Established in 1953 in memory of Gladys Ballantine Parker by her father, Harry Ballantine. To be awarded to the student who has completed Level I and 30-45 units of a programme in Classics, Greek or Latin and who, in the judgment of the Department of Classics, is most promising.
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 Level I and 70-85 units of the Civil Engineering programme, or Level I and 110-130 units of the Civil Engineering and Management programme. Award is based on scholarship (Sessional Average of at least 9.5) and evidence of leadership, self-motivation, and practical aptitude appropriate for a future in the construction industry.
Value: $1,100.

THE PEVENSING SCHOLARSHIP
Established in 1987 by David C. Hannaford ('64). To be awarded to a student who has completed Level I and 60-75 units of an Honours programme in Economics and who, in the judgment of the Department of Economics, has attained notable academic standing.
Value: $500.

THE PRICE WATERHOUSE AND CO. SCHOLARSHIP
Established in 1959 by Price Waterhouse and Co. To be awarded to the outstanding student on the basis of qualifications and academic record after completion of Level I and 60-75 units of a programme in Commerce. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.
Value: $350.

THE PSYCHOLOGY SOCIETY PRIZES
Established in 1985 by the Psychology Society and the Faculty and Alumni of the Department of Psychology. Three prizes to be awarded to students who have completed Level I and 60-75 units with the highest Cumulative Area Average: (a) one in the Honours Psychology B.A. programme; (b) one in the Honours Psychology B.Sc. programme; and (c) one in a combined Honours programme in Psychology.
Value: $50 each.

THE DR. JOHN A. PYLYPIUK SCHOLARSHIP
Established in 1967 in memory of Dr. John A. Pylypiuk and in recognition of Canadian Centennial Year. To be awarded to the student who has completed Level I and 30-45 units 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 2J06 (Canadian history).
Value: $600.

THE SHARON REEVES SCHOLARSHIP
Established in 1987 by Kevin W. Reeves ('80) in memory of his wife, Sharon ('79). To be awarded to a student who has completed Level I and 30-45 units of an Honours programme in Music (Education) and who, in the judgment of the Department of Music, has attained notable standing.
Value: $300.

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 Level I and 30-75 units of an Honours programme in Music (Education) and who, in the judgment of the Department of Music, has attained notable standing. The recipients must not be holders of another scholarship.
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 on the basis of scholarship (Sessional Average of at least 9.5) and character to: (a) two to students who have completed Engineering I, or Level I and 35-90 units of a programme in Engineering, and (b) two to students who have completed Natural Sciences I or Level I and 30-75 units of a programme in Science. 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 Level I and 60-75 units and who, in the judgment of the Department of History, attains notable standing in an Honours programme in History.
Value: $75, for books.

THE BEN SAUDER SCHOLARSHIP
Established in 1984 by Mr. Ben Sauder. To be awarded to a student entering Level II of a programme in Commerce on completion of Business I 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 Level I and 60-75 units of the Honours English programme, and who attains the highest Cumulative Area Average.
Value: $350.

THE LARRY SEFTON SCHOLARSHIPS
Established in 1985 by the Hamilton Steelworkers Area Council in memory of Larry Sefton, area supervisor (1946-53) and director of District 6 (1953-73) of the United Steelworkers of America, to recognize his commitment to education, to working people, to unions and to the City of Hamilton. Two scholarships to be awarded: (a) one to a student entering Level II of a programme in Labour Studies who, in the judgment of the Committee for Instruction for Labour Studies, achieves notable standing in Level II, and (b) one to a student entering Level III of a programme in Labour Studies with the highest Cumulative Area Average in Level II of a programme in Labour Studies.
Value: $300 each.

THE SHELL CANADA SCHOLARSHIPS IN ENGINEERING AND MANAGEMENT
Established in 1983. Four scholarships to be awarded on the basis of scholarship and demonstration of independent creative effort in Engineering 4A01 or 5A01 project reports: (a) two to students who have completed Level I and 70-90 units, and (b) two to students who have completed Level I and at least 110 units of a programme in Engineering and Management.
Value: $700 each.

THE SHENSTONE PRIZE
Established in 1935 by J.N. Shenstone of Toronto, and continued by members of his family. To be awarded to the student who has completed Natural Sciences I and III, and who attains the highest venderge in any two of the Level I courses in chemistry, physics and biology.
Value: 125.

THE GERALD AND Verna Simpson Memorial Scholarship
Established in 1957 by the children in memory of their parents. To be awarded to the student who has completed Level I and 30-45 units of the Honours Physics programme or the Honours Chemistry and Physics programme with a high Cumulative Area Average.
Value: $300.

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 Vice President and Chief Agent in Canada. Two scholarships to be awarded for the highest Sessional Average in an Honours programme in the Faculty of Humanities: (a) one to a student who has completed Level I and 30-45 units and (b) one to a student who has completed Level I and 60-75 units.
Value: $750 each.

THE PATRICIA L. SMYRE MEMORIAL PRIZES
Established in 1972 by the Patricia Smyre Memorial Fund Committee. Two scholarships to be awarded to students who have completed Level I and 30-45 units and who attain the highest Sessional Average: (a) one in the three-level English programme and (b) one in the three-level Psychology B.A. programme.
Value: $250 each.

THE SOCIETY OF MANAGEMENT ACCOUNTANTS OF ONTARIO SCHOLARSHIP
Established in 1983. To be awarded to the student who has completed Level I and 60-75 units 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 3A03.
Value: $500, for books.

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 Level I and 30-45 units and who, in the judgment of the Department of Modern Languages, has attained notable standing in an Honours programme in Italian.
Value: $300.
SCHOLARSHIPS
Established in 1973 by the South Ontario (formerly Niagara) Economic Development Council. Two scholarships to be awarded to the students who have completed Level I and 60-75 units of the Honours Geography programme and who elect Geography 400E in their graduating Session. Awards are based on scholarship and interest in undertaking studies relating to regional development and regional planning in the Niagara Peninsula.
Value: $900 each.

THE SALVATORE SPIATE MEMORIAL PRIZE
Established in 1984 by the Spitate family. To be awarded to the student who has completed Level I and 30-75 units of an Honours programme in Italian and who, in the judgment of the Department of Modern Languages, has demonstrated academic excellence and an active involvement in community life. Value: $100.

THE S.L. SQUIRE SCHOLARSHIPS
Established in 1938 by bequest of S.L. Squire of Toronto. Four awards to be made to students in any Level I programme who attain the highest standing in any two of Mathematics IA06, IB04, IC06, IH05, IN06, and in other tests provided for this scholarship by the Department of Mathematics and Statistics. Value: $400 each.

THE CLARENCE L. STARR PRIZE
Established in 1946 in memory of Dr. C.L. Starr, M.D., LL.D., F.A.S.S., Professor of Surgery in the University of Toronto, and an honorary alumnus of McMaster University (LL.D. 1922). To be awarded to the student who has completed Nursing I and who attains the highest Sessional Average. Value: $150.

THE MABEL STOCKLEY 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 Level I and 30-45 units of any programme and who gives evidence of outstanding academic achievement and leadership. Value: $350.

THE MARIE L. STOCK SCHOLARSHIP
Established in 1987 by the French Section of the Department of Romance Languages in honour of Marie L. Stock, Professor Emeritus of French, and Chairman of the Department of Romance Languages from 1962 to 1965. To be awarded to the student who has completed Level I and 60-75 units of an Honours programme in French and who, in the judgment of the Department of French, has achieved notable academic standing. Value: $350.

THE JUANITA LEBAIRE 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 Level I and 60-75 units of 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 Level I and 30-45 units of the Honours Geography or the Honours Geography and Geology programme with the highest Sessional Average. Value: $200.

THE DR. R.A. THOMPSON PRIZE IN MATHEMATICS
Established in 1954 by bequest of Dr. William Bethune, in memory of R.A. Thompson, B.A., LL.D., Principal of Central Collegiate Institute, Hamilton, from 1897-1919, in recognition of his contribution to education in Hamilton. To be awarded to the student who has completed Level I and 60-75 units of the Honours Computer Science, Honours Computer Science and Mathematics, Honours Computer Science and Statistics, Honours Mathematics or Honours Statistics programme, and who attains high Cumulative Area Average.
Value: $200.

THE THORNE RIDDLE SCHOLARSHIP
Established in 1956 by Pettit, Hill and Bertram, Toronto, and continued after amalgamation of firms. To be awarded to an outstanding student on the basis of qualifications and academic record after the completion of Level I and 60-75 units of a programme in Commerce. Preference will be given to students who plan to continue their studies after graduation with a practicing firm of chartered accountants.
Value: $350.

THE TOUCHE, ROSS AND CO. SCHOLARSHIP
Established in 1962. To be awarded to the student who has completed Level I and 60-75 units of a programme in Commerce and who attains a high Sessional Average and in that Session attains an average of at least 10.0 in Commerce 3A03 and 3A03.
Value: $300.

CARREL SCHOLARSHIPS
Established in 1984 by the Carrel Refractories Association of Canada. Two scholarships to be awarded to students who have completed Level I and 30-65 units and who attain a high Sessional Average: (a) one in the Chemical Engineering programme and (b) one in the Chemical Engineering programme. Value: $500 each.

THE UNIVERSITY WOMEN'S CLUB OF HAMILTON SCHOLARSHIP
Established in 1945 by the University Women's Club of Hamilton. To be awarded to the woman student who attains the highest Sessional Average in the penultimate year of any programme. Value: $750.

THE VAREY SCHOLARSHIP
Established in 1978 by J.C. Varey, Dundas, in memory of Albert E. Varey. To be awarded to the student who attains high standing in an Honours programme in Biology and who, in the judgment of the Department of Biology, shows an innovative approach to the study of ecology. Value: $250.

THE WEIR FAMILY FOUNDATION SCHOLARSHIP
Established in 1982. To be awarded to the student who has completed Level I and 60-75 units of the Honours Commerce programme and who attains the highest Sessional Average (at least 9.5). 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 Level I and 30-45 units of an Honours programme in Physics with the highest Cumulative Area Average. Value: $800.

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 Level I and 30-45 units of the Honours History programme and who attains the highest Cumulative Area Average. Value: $100.

THE WOMEN'S ART ASSOCIATION SCHOLARSHIPS
Established in 1969. Two scholarships to be awarded: (a) one to a student entering Level II and (b) one to a student who has completed Level I and 30-45 units 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 who has completed Level I and 30-45 units of a programme in Canadian Studies and who attains the highest Sessional Average. 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 Level I and 60-75 units of the Physical Education programme and has demonstrated outstanding achievement in the programme. Value: $200.

THE LILLIAN AND MANUEL ZACK SCHOLARSHIP
Established in 1984 by Lillian and Manuel Zack ('40) of Hamilton. To be awarded to a student who has completed Level I and 70-85 units of the Nursing programme and who, in the judgment of the School of Nursing, has demonstrated achievement, initiative, and commitment to gerontological nursing through clinical practice, term papers, research interest, or community activities and who pursues these interests in Level IV. Value: $600.

SENATE SCHOLARSHIPS
The following scholarships are awarded for general academic proficiency at the discretion of the Undergraduate Council.

Every full-time student who is eligible for review in May but is not graduating in any programme in any Faculty or other academic unit will be eligible for consideration for a Senate Scholarship, provided that he or she attains a Sessional Average of 9.5 in addition to meeting the conditions noted in Section 3, above.

In 1987, the value of a Senate Scholarship is $600.

Each year, quotas of Senate Scholarships are established for each Faculty and other academic units in proportion to the number of full-time undergraduate students enrolled. In 1986, 250 Senate scholarships were awarded, all of which were funded by the donors listed below.

THE EDGAR R. ASHALL SCHOLARSHIP
Established in 1965 by bequest of his wife, Edith M. Ashall.
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THE EDWIN MARVIN DALLEY MEMORIAL SCHOLARSHIPS
Established in 1965 by bequest of Edwin Marvin 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 MARGUERITE Z. YATES SCHOLARSHIP
Established in 1960 by bequest of Mrs. W.H. Yates of Hamilton.

THE YATES SCHOLARSHIPS

RESIDENCE SCHOLARSHIPS
Nine scholarships were established in 1982 by the University for students in residence at the University. Three were named in honour of Sheila Scott, Dean of Women from 1965 to 1982, in recognition of her outstanding contribution to the University community during 25 years of service.

In addition to meeting the conditions noted in Section 3 (above), the recipients must express intent to live in residence in the following academic year. The monetary benefits will be credited to residence fees in January.

The following scholarships are awarded to the student in each residence with the highest Sessional Average (at least 9.5) in an undergraduate programme, with the exception of those in their graduating Session:

Sheila Scott Scholarship 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 1987, the value of each scholarship is $300.

TRAVEL SCHOLARSHIPS
Students who wish to be considered for these awards should consult the Academic Awards Officer before December 1.

THE A.G. ALEXANDER SCHOLARSHIPS
Established in 1938 and augmented in 1946 by Sir Douglas Alexander, and members of his family, in memory of Archibald Grieg Alexander. Two scholarships to be awarded to students who have completed Level I and 60-75 units of an Honours programme in English for excellence in the work of the programme (with emphasis on English). The purpose of the scholarships is to enable the winners to study abroad during the vacation before the final Winter Session.

Value: $4,000 each.

THE JOAN JACKSON DUNBAR TRAVEL SCHOLARSHIP
Established in 1960 by Mayor Lloyd D. Jackson (’09), LL.D (’55) and Mrs. Jackson of Hamilton in memory of their daughter, Joan (’40). To be awarded to a woman student who has completed Level I and 60-75 units 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: $550.

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 Level I and 60-75 units of an Honours or Major programme in any one of the following subject fields ( singly or in combination): Biochemistry, Biology, Chemistry, Geology, Materials Science, Physics. Candidates for this scholarship must have attained high standing in the subjects of their programme and must, in addition, have demonstrated a lively interest in the humanities and in the human and social implications of scientific developments. The purpose of the scholarship is to enable the winner to spend the summer before the final Winter Session in travel and study outside Canada.

Value: $4,000.

4. Single Achievement Awards for Full-time and Part-time Students

The following awards are based on competition across the University or within a faculty or programme for a single achievement.

4.1 These awards, which are granted in June or November, are provided for either full-time or part-time students qualifying on the basis of achievement during the Summer or Winter Sessions immediately preceding the May review (or deferred examinations resulting therefrom).

4.2 In addition to meeting the General Conditions listed in Section 1, a student must obtain at the most recent review a University Average of at least 8.0 and no P grades.

4.3 The University Average will be used to break any tie in the competition for these awards.

THE ALUMNI CANADIAN GEOGRAPHY PRIZE
Established in 1983 by the Geography Branch of the McMaster University Alumni Association in recognition of Dr. Lloyd G. Beeds for his contributions to teaching during more than 35 years of service. To be awarded to the student who attains the highest grade in Geography 2E03 (geography of Canada).

Value: $100.

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 2B04.

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 any Level I programme for the most creative essay in a Level I English course.

Value: $50.

THE CANADIAN CLUB OF HAMILTON SCHOLARSHIP
Established in 1956 by the Canadian Club of Hamilton. To be awarded to the student who, in the judgment of the Department of History, attains notable standing in a Level II course in Canadian history.

Value: $150.

THE JAMES ROBERTSON CARRUTHERS MEMORIAL PRIZE
Established in 1984 in memory of James Robertson Carruthers (’74) by his family and friends. To be awarded to the student whose work, in the judgment of the Department of History, attains notable standing in History 2H06 (United States history).

Value: $100.

THE CITIZEN ACTION GROUP PRIZE
Established in 1984 by the Citizen Action Group, Hamilton, to honour Professor Henry L. Penny, founding Director of the School of Social Work and Board Member of Citizen Action Group. To be awarded to the student in a programme in Social Work who submits an essay or report based on the student’s field work experience that best addresses the need for innovative or non-traditional social work practice.

Value: $250.

THE CLASSICS BOOK PRIZES
Established by Professor A.G. McKay in 1963. Two prizes to be awarded to: (a) the student who attains the highest average in Classical Civilization 2B03 and 2C03 or Art History 2B03 and 2C03, taken in one Session; and (b) the student with the highest standing in Latin 2C03.
THE CONSUL GENERAL OF ITALY BOOK PRIZE
Established in 1985. To be awarded to in-course students for excellence in Italian studies.

THE BEATRICE CORRIGAN MEMORIAL BOOK PRIZE
Established in 1980 in memory of Professor Beatrice Corrigan by her friends and colleagues. To be awarded alternately to the student who achieves the highest standing in Italian 3P03 and to the student who achieves the highest standing in Italian 3P03. 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 2C06, and (b) one for the highest grade in English 2C03. Value: (a) $150; (b) $100.

THE DRAMA TIC 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 1A06.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) PRIZE
Established in 1962. To be awarded to the student in Engineering I who attains the highest grade in Engineering 1C04.

THE FRENCH GOVERNMENT BOOK PRIZES
To be awarded from time to time to in-course students for proficiency in Level I and in Level II French.

THE GERMAN EMBASSY BOOK PRIZE
To be 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 2B06. 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 2D06. 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.

THE INTER NATIONES (BONN) BOOK PRIZE
To be 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 2A06.

THE LATIN PRIZE
Established in 1987 by Dr. John B. Clinard. To be awarded to a student who, in the judgment of the Department of Classics, has demonstrated notable achievement in Latin 2D06. Value: $100.

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 courses in labour economics.

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 courses in economic history.

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 3J06 (Economic Development) or, in exceptional circumstances, for work in a related area.

THE ELEANOR DORBUSH MARPLES PRIZE
Established in 1985 by Mrs. Barbara Niedermeier and her family in memory of her sister. To be awarded to a student who, in the judgment of the Department of Art and Art History, has demonstrated outstanding achievement in Art History 3V03.

THE H.W. McCREADY PRIZE IN BRITISH HISTORY
Established in 1981 in memory of Professor H.W. McCreddy, a member of the Department of History from 1943 to 1975, by former students, colleagues, and friends. To be awarded to the student who, in the judgment of the Department of History, attains notable standing in History 2N06. Value: $100.

THE JOHN McDIARMID PRIZE
Established in 1966. To be awarded to the student in Engineering I who obtains the highest standing in Physics 1D03.

THE McMASTER MARKETING ASSOCIATION PRIZE
Established in 1986. To be awarded to the student who attains the highest standing in Commerce 3MA3 (Marketing Research).

THE NEOSID CERAMIC ENGINEERING PRIZE
Established in 1978 by Neosid (Canada) Limited. To be awarded to the student who has completed Level I and at least 75 units of the Ceramic Engineering programme and who attains the highest standing in Ceramics 4R03 or 4S03.

THE DERRY NOVAK SCHOLARSHIP
Established in 1984 by the Political Science alumni and colleagues in honour of Professor Derry Novak. To be awarded to the student in a programme in Political Science who, in the judgment of the Department of Political Science, has achieved high standing in Level III courses in political theory or political philosophy.

THE PHYSICAL EDUCATION PRIZES
Established in 1982. Two prizes to be awarded to students who have completed the courses in Level III of the Physical Education programme: (a) one to a student who, in the judgment of the School of Physical Education and Athletics, has submitted an outstanding paper or project, and (b) one to the student who, in the judgment of the School of Physical Education and Athletics, has demonstrated outstanding improvement in academic standing throughout the programme.

THE PROCOR LIMITED SCHOLARSHIP
Established in 1962. To be awarded to the student in a programme with a concentration in Russian studies who attains the highest standing in Russian 2A06.

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 Level I and 60-75 units and who, in the judgment of the Department of English, has made the most notable original contribution to student publications.

THE ABRAHAM ROSENBERG MEMORIAL PRIZE
Established in 1986 by bequest of Abraham I. Rosenberg (’34) of Hamilton and Kitchener. To be awarded to the student who attains the highest standing in English 3B03 (Psychoanalytic Approaches to Literary Texts).

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 work in Chinese history.

THE SERBO-CROATIAN BOOK PRIZES
Established in 1982. Three prizes to be awarded to the in-course students who achieve the highest standing in Serbo-Croatian 1D06.

THE SOCIAL WORK PRIZES
Established in 1982. Two prizes to be awarded to: (a) one to the student who attains the highest grade in Social Work 2B06 and (b) one to the student who attains the highest grade in Social Work 2D03.

THE ANNE STEIN MEMORIAL PRIZE
Established in 1971 by friends and colleagues of Anne Stein. To be awarded to the student who attains the highest standing in Social Work 3D09.

THE SVO PRIZE IN GERONTOLOGY
Established in 1987 by the Superannuated Teachers of Ontario, District 13. To be awarded to the student who attains the highest standing in Gerontology 1A06 or Social Science 2G06.

THE SWISS MINISTER TO CANADA BOOK PRIZES
Established in 1950. To be 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 Kenneth W. Taylor (’21), LL.D. (’50). To be awarded to the student who, in the judgment of the Department of Economics, has demonstrated outstanding academic achievement in courses
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within the area(s) of monetary economics and financial institutions and of public finance.
Value: $100.
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 to be awarded: (a) one to the student
who attains the highest standing in German 1206 and (b) one to the student who
attains the highest standing in Russian 2C06.
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 average in any six units of Level III or IV Latin
courses.
Value: $50.
THE UNIVERSITY PRIZES FOR SPECIAL ACHIEVEMENT
Established in 1973. Two prizes to be awarded in each Faculty and other academic
units to students who exhibit exceptional skill and originality in a creative project
(such as an essay, poem, sculpture, mathematical or scientific problem, engineer­
ing 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: $200, for books.

5. Academic Awards for Part-time
In-Course Students

The following awards are based on competition across the University or
within a faculty or programme.
5.1 These awards, which are granted in November, are provided exclu­
sively for part-time students regularly registered in fewer than 24
units in any session and qualifying on the basis of work included
at the most recent review in other than their graduating session.
5.2 In addition to meeting the General Conditions listed in Section 1,
a student must obtain at the most recent review a University Aver­
age of at least 8.0 and no F grades.
5.3 The University Average will be used to break any tie in the com­
petition for these awards.
THE TED ALLEN BOOK PRIZE
Established in 1984 in memory of Frederick J. Allen, an employee and part-time
student at McMaster University. To be awarded to the part-time student who attains
the highest standing in English 2H06 (American literature).
Value: $50, for books.
THE ALUMNI ASSOCIATION SCHOLARSHIPS
Established in 1974 by the McMaster University Alumni Association and later aug­
mented by bequest of Harold E. Amy. Two scholarships to be awarded to part-time
students who have attained the highest University Average at the most recent
review.
Value: $350 each.
THE SIDDNEY L. BLUM SCHOLARSHIP
Established in 1981 in memory of Sidney L. Blum. To be awarded to a part-time
student in the Social Work programme who submits the most significant research
paper, essay or report of a major project in the field of social justice.
Value: $300.
THE WILLIAM J. MCCALLION SCHOLARSHIPS
Five scholarships named in 1984 in honour of Professor McCallion (B.A. ’43, M.A.
’46), first Dean of the School of Adult Education from 1970 to 1978. In recognition of
his outstanding contributions to adult education and to the Department of Math­
ematical Sciences during 41 years of service. To be awarded to part-time students
who have attained the highest University Average at the most recent review.
Value: $250 each.
THE LARRY SEFTON SCHOLARSHIPS
Established in 1985 by the Hamilton Steelworkers Area Council in memory of
Larry Sefton, area supervisor (1946-53) and director of District 6 (1953-73) of the
United Steelworkers of America, to recognize his commitment to education, to
working people, to unions and to the City of Hamilton. Two scholarships to be
awarded to part-time students: one to a student entering Level II and one to a
student entering Level III of a Labour Studies programme who, in the judgment of
the Committee of Instruction for Labour Studies, achieve notable standing in Level
I and Level II, respectively. In the absence of a qualified candidate, the award
will be made to a full-time student.
Value: $300 each.
THE ANNE STEIN MEMORIAL PRIZE
Established in 1981. To be awarded to the part-time student who attains the highest
standing in Social Work 3D09.
Value: $100.
THE UNIVERSITY SCHOLARSHIPS
Established in 1978. Fifteen scholarships to be awarded to part-time students who
have attained the highest University Average at the most recent review.
Value: $250 each.

6. Academic Awards for Graduating Students

The following awards are based on competition across the University or
within a faculty or programme.
6.1 These awards, which are granted in May, are provided exclusively
for graduating students qualifying on the basis of achievement in their
baccalaureate degree programme.
6.2 In addition to meeting the General Conditions listed in Section 1,
a student must obtain:
   a. a Graduation Average of at least 8.0;
   b. at the most recent review a University Average of at least 8.0;
   c. no F grades in the courses last taken equal to:
      i. either the number of units specified in the Calendar for the
         final level of their programme;
      ii. or, if the Calendar does not specify the programme work by
         individual levels, the final 30 units of work.
MEDALS
THE CHANCELLOR’S GOLD MEDAL
Established in 1938. To be awarded to the student in the graduating class of any
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 part­
tner, 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 gradu­
ating class of a programme in Commerce 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 Edu­
cation. To be awarded to the graduating student in Engineering who attains
the highest Graduation Average.
THE BASU MEDAL
Established in 1984 in memory of Professor Sanjoy Basu by friends, colleagues
and accounting organizations. To be awarded to the graduating student who,
in the judgment of the Faculty of Business, has displayed outstanding achievement
in accounting and has attained an average of at least 10.0 in any four of Commerce
4AA3, 4AB3, 4AC3, 4AD3, 4AE3, 4AF3.
THE EZIO CAPPADOCIA MEDAL
Established in 1986 by Professor E. Cappadocia on the occasion of his retirement
from the Department of History. To be awarded to a student graduating from an
Honours programme in History who, in the judgment of the Department of His­
tory, has displayed outstanding achievement and has contributed to the Depart­
ment’s activities.
THE J.E.L. GRAHAM MEDAL
Established by the Faculty of Social Sciences in 1982 in recognition of Professor
J.E.L. Graham for his outstanding contributions to the Faculty and the University
during 35 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 schol­
arship, is judged to be an outstanding member of the class of Social Sciences
graduands, and who has completed the programme primarily on a part-time basis.
THE AMELIA HALL GOLD MEDAL
Established in 1985 by members of the Class of ’38 in recognition of Amelia Hall
(’38), D. Litt. (’75), one of the great pioneers of Canadian theatre and a consum­
mate actress, who performed on Canadian stage, screen, radio and television for
35 years. To be awarded to a graduating student who, in the judgment of the
Committee of Instruction for Dramatic Arts, has made a significant contribution
in drama during the student’s University career.
THE HUMANITIES MEDAL FOR SPECIAL ACHIEVEMENT
Established by the University in 1982. Up to five medals to be awarded to gradu­
ating students in the Faculty of Humanities in recognition of outstanding achieve­
ment 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. MCLVOR 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 to the University during 35 years of service. To be awarded on the recommendation of the Faculty of Social Sciences to the full-time student in the graduating class who, on the basis of scholarship, is judged to be the outstanding member of the class of Social Sciences graduates.

RING
THE BURKE MEMORIAL RING
Presented by science graduates of the University in memory of Dean C.E. Burke. To be awarded to a graduate of a B.Sc. programme who is named to the Deans' Honour List and who has made the most outstanding contribution to undergraduate activities.

SCHOLARSHIPS AND PRIZES
THE CAMERON D. ALLEN BOOK PRIZE
Established in 1978 in memory of Cameron D. Allen. To be awarded to a student graduating from an Honours programme in Geography who, in the judgment of the Department of Geography, 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 of Anthropology, has demonstrated outstanding academic achievement.
Value: $50.

THE WILLIAM AND LIDA BARNES MEMORIAL PRIZE IN HISTORY
Established in 1969 by their son, William D. Barns, of Morgantown, West Virginia. To be awarded to the graduate who, in the judgment of the Department of History, has attained notable standing in the Honours History programme.
Value: $200.

THE MARION BATES BOOK PRIZE
Established in 1967, Centennial Year, by the Alumnae members of the McMaster Alumni Association in honour of Marion Bates, Dean of Women from 1947 to 1965. To be awarded to a student graduating from an Honours programme in History who, in the judgment of the Department of History, has displayed outstanding achievement in Canadian history courses consistently throughout the degree programme.
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 were awarded: (a) one to the student who attains the highest Graduation Average in an Honours B.A. programme in Psychology; (b) one to the student who attains the highest Graduation Average in the Honours B.Sc. programme in Psychology; (c) one to the student who attains the highest Graduation Average in the Honours Biology and Psychology (Life Sciences) programme; (d) one to the student who, in the judgment of the Department of Psychology, has demonstrated outstanding achievement in Psychology 4D06 (Honours thesis).
Value: (a) $50; (b) $50; (c) $50; (d) $75.

THE RUTH BURKE MEMORIAL PRIZE
Established in 1963 by Dr. and Mrs. Herbert S. Armstrong in memory of Mrs. Charles E. Burke. To be awarded to the student in the Nursing programme who attains the highest Graduation Average. The Prize is a set of engraved sterling silver coffee spoons.

THE CANADIAN ASSOCIATION OF OCCUPATIONAL THERAPISTS BOOK PRIZE
Established in 1985. To be awarded to the student who has attained the highest Graduation Average in the Occupational Therapy programme.
Value: $75, for books.

THE CERTIFIED GENERAL ACCOUNTANTS ASSOCIATION PRIZE
Established in 1982 by the Certified General Accountants Association of Ontario. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has displayed outstanding achievement in accounting and has attained an average of at least 10.0 in Commerce 3A3A, 3A3B, 4A3A and 4A3B.
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 graduating student who, in the judgment of the Department of Materials Science and Engineering, has demonstrated outstanding achievement in independent research as exemplified by the senior thesis in Materials 4K04.
Value: $300.

THE LAURA DODSON PRIZE
Established in 1985 by Laura Dodson ('56). To be awarded to the student graduating from the Honours Arts and Science Programme who has displayed outstanding achievement in both arts and science.
Value: $150.

THE EUROPEAN HISTORY PRIZE
Established in 1986 by Professor Ezio Cappadocia, on the occasion of his retirement from the Department of History, in memory of his mentor, Professor Frank H. Underhill. To be awarded to a student graduating from an Honours programme in History who, in the judgment of the Department of History, has displayed outstanding achievement in European history courses consistently throughout the degree programme.
Value: $100.

THE FINANCIAL EXECUTIVES INSTITUTE PRIZE
Established in 1983 by the Hamilton Chapter of the Financial Executives Institute. To be awarded to the graduating student who, in the judgment of the Faculty of Business, has demonstrated outstanding achievement in courses in finance.
Value: $200.

THE IROQUOIS TROPHY
Established in 1970 by the Department of Mechanical Engineering. To be presented to a graduating mechanical engineer on the basis of academic excellence, participation in campus societies, clubs, or other activities, and general leadership. A replica of the Trophy is permanently held by each winner.

THE BURTON R. JAMES MEMORIAL PRIZE
Established in 1984 by his friends and colleagues in honour of Burton R. James ('39), Controller, 1963-73, Assistant Vice-President—Administration, 1971-73, McMaster University. To be awarded to the student who attains the highest Graduation Average in a programme in Commerce.
Value: $150.

THE FRANK E. JONES PRIZE
Established in 1982 in honour of Professor F.E. Jones for his outstanding contributions to the Department of Sociology. To be awarded to the full-time student with the highest Graduation Average in an Honours programme in Sociology.
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 student with the highest Graduation Average in a three-Level programme in Anthropology who, in the judgment of the Department of Anthropology, has demonstrated outstanding academic achievement.
Value: $50.

THE FELIJKS LITKOWSKI PRIZE IN POLITICAL SCIENCE
Established in 1987 by Albert Litkowski ('78) and Richard Litkowski ('86) in honour of their father. To be awarded to a full-time student graduating from an Honours programme in Political Science who, in the judgment of the Department of Political Science, has demonstrated outstanding academic achievement.
Value: $250.

THE AGNES AND JOHN MACNEILL MEMORIAL PRIZE
Established in 1984 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: $150.

THE CATHERINE MACNEILL PRIZE
Established in 1946 by bequest of Annie May MacNeill ('03). To be awarded to a woman student in her graduating year who has attained notable standing in scholarship and has shown qualities of leadership.
Value: $150.

THE PILAR MARTINEZ PRIZE
Established in 1983 by Dr. Pilar Martinez. To be awarded to the graduating student who, in the judgment of the Department of Modern 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: $200.

THE WALTER SCOTT MCCLAY PRIZE
Established in 1938 in honour of Dean McClay, by his daughter, Mrs. R.R. McLaughlin (Marjorie McClay '25) and further enlarged in 1950 by A.H. Wilson of Woodstock. To be awarded to the student who attains the highest Graduation Average in an Honours programme in English.
Value: $250.

THE E.S. MOORE PRIZE IN GEOLOGY
Established in 1956 by Elwood S. Moore, LL.D. ('55). To be awarded to the student graduating in an Honours programme in Geology who, in the judgment of the Department of Geology, has attained the most notable standing in geology.
Value: $150.
ACADEMIC AWARDS

THE P.L. NEWBIGGING PRIZES
Established in 1982 in recognition of Dr. Lynn Newbigging for his outstanding contributions to the Department of Psychology. Four prizes to be awarded to students with the highest Graduation Average: (a) one to a full-time student in the three-Level B.A. programme in Psychology; (b) one to a student in a B.A. programme in Psychology who has completed the programme primarily on a part-time basis; (c) one to a full-time student in the three-Level B.Sc. programme in Psychology, and (d) one to a student in a B.Sc. programme in Psychology who has completed the programme primarily on a part-time basis.
Value: $50 each.

THE ONTARIO ASSOCIATION OF PROFESSIONAL SOCIAL WORKERS PRIZE
Established in 1986 by the Hamilton Branch. To be awarded to the graduating student who attains the highest standing in Social Work 4D12.
Value: $125.

THE ONTARIO PHYSIOTHERAPY ASSOCIATION BOOK PRIZE
Established in 1985 by the Ontario Physiotherapy Association (Hamilton Branch). To be awarded to the student who has attained the highest Graduation Average in the Physiotherapy programme.
Value: $100, for books.

THE HARRY L. PENNY PRIZE
Established in 1984 in recognition of Professor Harry L. Penny, founding Director of the School of Social Work, for his outstanding contribution to the School. To be awarded to the student with the highest Graduation Average in the Social Work programme.
Value: $50.

THE PHYSICAL EDUCATION PRIZE
Established in 1982. To be awarded to the graduating student who, in the judgment of the School of Physical Education and Athletics, has submitted an outstanding paper or project.
Value: $50.

THE POLITICAL SCIENCE PRIZE
Established in 1982. To be awarded to a graduating student who has completed a programme in Political Science primarily on a part-time basis and who, in the judgment of the Department of Political Science, has demonstrated outstanding academic achievement.
Value: $50.

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 4Z06.
Value: $50.

THE LLOYD REEDS PRIZES
Established in 1983 in recognition of Dr. Lloyd G. Reeds for his outstanding contributions to the Department of Geography during 35 years of service. Four prizes to be awarded: (a) one to the student who attains the highest Graduation Average in an Honours B.A. programme in Geography; (b) one to the student who attains the highest Graduation Average in an Honours B.Sc. programme in Geography; (c) one to the student who attains the highest Graduation Average in a three-level B.A. or B.Sc. programme in Geography; and (d) one to the student who, in the judgment of the Department of Geography, has demonstrated outstanding achievement in Geography 4C06.
Value: $50 each.

THE RELIGIOUS STUDIES PRIZES
Established in 1982. Two prizes to be awarded to students who attain the highest Graduation Average in a three or four-level programme in Religious Studies: (a) one to a student who has completed the programme on a full-time basis, and (b) one to a student who has completed the programme primarily on a part-time basis.
Value: $50 each.

THE RELIGIOUS STUDIES HONOURS ESSAY PRIZE
Established in 1982. To be awarded to the student who, in the judgment of the Department of Religious Studies, has demonstrated outstanding achievement in Religious Studies 4GG3.
Value: $50.

THE RICHARD SLOBODIN PRIZE
Established in 1982 in honour of Professor Richard Slobodin for his outstanding contributions to the Department of Anthropology. To be awarded to the graduating full-time student in an Honours Anthropology programme who, in the judgment of the Department, has demonstrated outstanding academic achievement.
Value: $50.

THE SOCIOLOGY PRIZES
Established in 1982. Two prizes to be awarded to students with the highest Graduation Average: (a) one to a student who has completed the three-level programme in Sociology on a full-time basis; and (b) one to a student who has completed a programme in Sociology primarily on a part-time basis.
Value: $50 each.

THE SOCIETY OF CHEMICAL INDUSTRY MERIT AWARDS
Established in 1961. Three plaques to be awarded: (a) one to a Chemical Engineering graduand, (b) one to an Honours Biochemistry or Honours Biochemistry and Chemistry graduand, and (c) one to an Honours Applied Chemistry, Honours Chemistry, Honours Chemistry and Geology, or Honours Chemistry and Physics graduand, who have attained the highest Graduation Average (at least 9.5) and have completed the programme in the normal number of years.

THE MARK WATSON MEMORIAL PRIZE IN HISTORY
Established in 1987 by friends in the Department of History in memory of Mark A. Watson (86). To be awarded to a student graduating from a three-level programme in History who, in the judgment of the Department of History, has displayed outstanding achievement consistently throughout the degree programme.
Value: $100.
Supplementary Student Financial Aid

Bursaries

All bursaries are awarded by the Awards Committee on the basis of a general bursary application form. These application forms are available from the Student Financial Aid Office, DeGroote College, Room 229, in November and February of each academic year. Any person who is registered as a student of McMaster University is eligible to apply.

THE ATKINSON CHARITABLE FOUNDATION BURSARIES
A fund has been made available for the assistance of able students resident in Ontario. A number of awards will be made on the basis of financial need and other considerations, according to regulations suggested by the Foundation.

THE BAILEY HOOGOVENS-MACMASTER BURSARY
The bursary will be awarded to an undergraduate student at the end of the second year. The award will be made on recommendation of the Department of Materials Science and Engineering, on the basis of the Department’s judgement of the candidate’s potential. The general University conditions concerning major bursary awards will apply. On this basis, the bursary will be activated on September 1st, in any given year, at the beginning of the 3rd year university degree programme.

The bursary will involve a ten (10) week work assignment at B.H.C.’s Dutch associates Integrated Iron and Steelworks.

THE J.P. BICKELL BURSARIES
The J.P. Bickell Foundation provides a sum of money for the assistance of students specializing in geology. Recommendations are made by the Department of Geology.

THE AUBREY DALGLEISH BURSARY
Established in 1985. To be awarded to a student in any programme with special preference given to handicapped students and/or students in the Faculty of Business.

Value: $250.00

THE EDITH E. FERRIE BURSARIES
Established in 1965 by the late Edith E. Ferrie. To be awarded to students in any programme.

THE EMMA FOX BURSARIES
Established in 1961 by the Wallingford Hall Committee of which Emma Fox was treasurer from 1918 to 1958. To assist female students in any programme.

Value: $250.00

THE JAMES EDWARD GRADER MEMORIAL BURSARY
Established in 1964 by his sister. To be awarded to an able student specializing in Geology. Application should be made to the Department of Geology.

THE CITY OF HAMILTON BURSARIES
Established in 1959 by the City of Hamilton to commemorate the visit of Her Majesty Queen Elizabeth II and His Royal Highness Prince Philip to Hamilton in July, 1959. To assist Hamilton students.

THE HAMILTON CITIZENS’ MEMORIAL BURSARIES
Established in 1947 by the Hamilton Citizens’ Committee for War Services. Proceeds to be used for undergraduate bursaries primarily to aid dependent children of veterans from Wentworth County killed in World War II.

THE M.A. (JACK) HASSAL BURSARY
Established by the Hamilton and District Chartered Accountants’ Discussion Group in 1982 in memory of M.A. (Jack) Hassal. To assist a student in Commerce who is a Canadian citizen or permanent resident of Canada. It is hoped that recipients, after graduation, will reimburse the fund to the extent of their award so that the fund may assist increasing numbers of students.

THE JACK AND THELMA HEATH MEMORIAL BURSARIES
Established in 1985 by Norton Canada Inc. in memory of Jack and Thehma Heath, former employees of the Company, who were tragically killed in a boating accident. The fund provides up to four $500.00 awards to assist students, with demonstrated financial need, in Level III or Level IV of the B.Sc.N. Programme (basic and/or post-diploma stream).

THE EDWIN W. HILBORN BURSARY
Established in 1906 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 HOLMES BURSARY
Established in 1985 by bequest of Reed Holmes in memory of his parents, with the encouragement of brother Ward, and sisters Frances, Dorcas, and Elizabeth. To be awarded to any students in good standing who require financial assistance to continue studies at McMaster in Social Sciences, Humanities or Science.

Value: $500.00

THE JULIA HURTG BURSARY
Established by family and friends of the late Julia Hurtig in 1985. This bursary will be awarded to a student entering Level II of the Faculty of Humanities in good standing, who has made a special contribution to the McMaster community through involvement in university affairs. Preference will be given to a female student.

THE KHAKI UNIVERSITY AND YOUNG MEN’S CHRISTIAN ASSOCIATION MEMORIAL BURSARIES
Established in 1921 by the Khaki University of Canada and the Young Men’s Christian Association. To assist students in any programme, preference to be given to children of war veterans.

THE RAYMOND C. LABARGE MEMORIAL BURSARIES
Established in 1973 by friends and associates in memory of Raymond C. Labarge (’36) of Ottawa. Four bursaries are available, one in each of: (a) Level II and III of a programme in Commerce, (b) Level II of a three-level programme in the Faculty of Social Sciences, (c) Level III of an Honours programme in the Faculty of Social Sciences. Applicants should have a record of academic performance that has normally been at the upper second-class level or higher. They should also have demonstrated a sense of social awareness, shown interest in and concern for others and been an active participant in University or general community affairs.

Value: $500 each

THE A.J. MELLONI MEMORIAL FUND
To be awarded to a student in any programme.

3M CANADA INC. BURSARY
Established in 1980, a bursary of $500 be awarded annually to a student in Business or a Science programme.

THE MCMASTER 1980 BURSARIES
Established in 1980 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 pressing financial need.

THE MCMASTER WOMEN’S CLUB BURSARY
Established in 1982 by the McMaster Women’s Club to assist a student beyond Level I in the University’s B.Sc.N. programme.

THE O’SHAUGHNESSY BURSARY
Established in 1986 by generous donations from family and friends of the late Margaret O’Shaughnessy, Reg.N., this bursary is to be used to alleviate financial need for students pursuing an education in Nursing (basic or post-diploma stream) in Level II, III, or IV.

THE PROFESSIONAL ENGINEERS’ WIVES ASSOCIATION BURSARIES
Established in 1983 by the Professional Engineers’ Wives Association to be awarded to a needy female Engineering undergraduate student who, because of exterminating circumstances, would be unable to continue her studies without such assistance.

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 WALLINGFORD HALL BURSARIES
Established through anonymous donations to assist needy students in any programme.

THE YATES BURSARIES

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SUPPLEMENTARY STUDENT FINANCIAL AID

Short-Term Emergency Loans

Unless otherwise specified, application should be made to the Director of Student Financial Aid, Divinity College, Room 229.

THE A.H. ATKINSON LOAN FUND
Established in 1967 by A.H. Atkinson to assist engineering students.

THE DEAN OF WOMEN'S EMERGENCY FUND
Established and continued by the McMaster alumnae and individual benefactors to assist female students. This fund is now administered by the Director of Student Financial Aid.

THE ENGINEERING INSTITUTE OF CANADA (HAMILTON SECTION) LOAN FUND
Established by the Hamilton Section of the Engineering Institute of Canada to assist engineering students.

THE HAMILTON AUTOMOBILE CLUB PAST PRESIDENTS MEMORIAL LOAN FUND
Established in 1963 by the Hamilton Automobile Club as a tribute to its deceased past presidents. To be used to assist engineering students.

THE LOUISE HOLMES MEMORIAL LOAN FUND
Established in 1958 by her parents in memory of Louise Holmes, B.A. ('48). To assist female students in any programme.

THE I.O.D.E. LOAN FUNDS
Through the generosity of a number of the local Chapters, Imperial Order Daughters of the Empire, funds are provided to assist female students in any programme or as specified.

A. Edith M. Griffen Loan Fund.
Established in 1957 by Paardeburg Chapter, I.O.D.E., in honour of Mrs. H.S. Griffen.

B. Princess Marina Chapter, I.O.D.E., Loan Fund.
Established in 1975.

C. Emma Frances Pratt Chapter, I.O.D.E., Loan Fund.
Established in 1958. To assist female students in Levels III or IV of any programme.

D. Muriel Clark Riddell Loan Fund.
Established in 1964 by the Right Honourable Stanley Baldwin Chapter, I.O.D.E.

E. St. Hilda Chapter, I.O.D.E., Loan Fund.
Established in 1961.

F. Sovereign Chapter, I.O.D.E., Loan Fund.
Established in 1960. To assist female students in the final level of any programme.

G. Margaret B. Sutterby Memorial Fund.
Established in 1955 by the 67th University Battery Chapter, I.O.D.E.

H. Wentworth Chapter, I.O.D.E., Loan Fund.
Established in 1953.

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS LOAN FUND
Established in 1968 by the Hamilton Section of the Institute of Electrical and Electronics Engineers. To assist students in a programme in Engineering.

THE RUSSELL E. LOVE MEMORIAL LOAN FUND
Established in 1951 by bequest through the Optimist Club of Hamilton. To assist male students in the penultimate or final level of an Arts programme.

THE McILROY LOAN FUND
Established in 1956 by the University Women's Club of Hamilton. To assist female students in the final level of any programme.

THE McMaster ENGINEERING SOCIETY LOAN FUND
Established in 1971 by the McMaster Engineering Society for the provision of loans to engineering students.

THE PI BETA PHI FRATERNITY LOAN FUND
Established in 1958 by the local alumnae of Pi Beta Phi. To assist female students in any Level IV Honours Arts or Science programme.

THE PROFESSIONAL ENGINEERS' WIVES' ASSOCIATION LOAN FUND
Established in 1972 by the Professional Engineers' Wives' Association to provide loans for engineering students.

THE SOCIETY OF AUTOMOTIVE ENGINEERS (ONTARIO SECTION) LOAN FUND
Established in 1962 by the Ontario Section of the Society of Automotive Engineers. To assist students in a programme in Engineering.

THE IVOR WYNNE MEMORIAL LOAN FUND
Established in 1971 in memory of Ivor Wynne, Dean of Students. To assist students in any programme.

THE UNIVERSITY LOAN FUNDS
Small short-term emergency loans from the University funds are available to assist students in any programme.

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Governing Bodies

Board of Governors (1986-87)

EX OFFICIO
J.H. Panabaker, B.A., M.A., LL.D., Chancellor
A.A. Lee, B.A., M.A., M.Div., Ph.D., D.Litt. President and Vice-Chancellor
L.J. King, M.A., Ph.D., Chairman, Board/Senate Committee on Academic Planning

ELECTED BY THE BOARD
Rabbi B. Baskin, B.A., M.H.L., LL.D., D.D., Hamilton
G.H. Blumenauer, B.A.Sc., Oakville
W.P. Cooper, P.Eng., Burlington
D.M. Firestone, B.A., Oakville
J.P. Gordon, B.Sc., P.Eng., LL.D., Mississauga
D.C. Mars, LL.D., Burlington
E.B. Preistner, B.A., Hamilton
V.J. Sardo, B.A., M.B.A., Dundas
W.F. Scandlan, Hamilton
J.G. Sheppard, Hamilton
L.R. Wilson, B.A., M.A., Mississauga

APPOINTED BY THE BOARD OF TRUSTEES OF McMASTER DIVINITY COLLEGE
A.G. Halliwell, Burlington

APPOINTED BY THE ALUMNI
T.G. Chambers (’50), B.A., Ancaster
A.H. Clark (’54), B.A., Dundas
T.R.W. Crawford (’54), B.A., Toronto
W.R. Waugh (’40), B.A., Toronto

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HOW TO GET TO THE UNIVERSITY
FROM TORONTO: From Hwy. 403, take the Main St. West exit, turn left at the top of the ramp, then immediately turn right onto Newton St. Proceed along Newton, crossing King St., and turn left onto Sterling St. and on to the Campus.

FROM BRANTFORD: Take Hwy. 403 to the Aberdeen exit. Turn left at the top of the ramp onto Longwood Rd. to King St. Turn left at King to the second traffic lights. Right onto Sterling St. and on to the campus.

LEGEND
- wheelchair curb ramp
- wheelchair building entry
- shuttle bus stop
- underground parking
- building accessible, incl. washrooms, telephones