Arts, Science & Engineering Calendar, 1980/’82 / McMaster University / Faculty of Business / Faculty of Humanities / Faculty of Social Sciences / Faculty of Engineering / Faculty of Science
Using the Calendar

We have tried to arrange the information in this Calendar in the sequence most appropriate for use by a prospective or new student. General information about the University, sessional dates, admission procedures, regulations, and fees appears first.

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

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

After consulting the programmes you will note that some courses are required and that you may also choose electives. At this stage you will probably wish to look at the courses offered by the University. These are described in pages 77 to 153. Courses are listed by the teaching departments of the University in alphabetic sequence.

Other Publications

UNDERGRADUATE STUDIES
McMaster Divinity College Calendar
School of Nursing Calendar
M.D. Programme Calendar
Post-Graduate Medical Programme Calendar
School of Social Work booklet
Year I Handbook
all of the above publications are available from the Office of the Registrar

GRADUATE STUDIES
Calendar of the School of Graduate Studies/available from the School of Graduate Studies
Faculty of Business M.B.A. programme booklet/available from the Faculty of Business

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

GENERAL INTEREST NON-CREDIT STUDIES
Brochures about non-credit programmes and special offerings/available from the School of Adult Education
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"Directory for Correspondence"

**Mailing address:** McMaster University, 
Hamilton, Ontario, L8S 4L8 
Telephone: Area code 416, Number 525-9140 
The following University officers may be addressed using the appropriate postal code.

**Admission to undergraduate studies**
Assistant Registrar (Admissions and Liaison) 
Gilmour Hall (L8S 4L8) (ext. 4034, 4796)

**Financial aid**
Director
Student Financial Aid
Divinity College (L8S 4K1) (ext. 4317)

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

**Schedules and reservations**
Associate Registrar (Schedules) 
Gilmour Hall (L8S 4L8) (ext. 4453)

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

**On-campus housing for men**
Dean of Men
Commons Building (L8S 4K1) (ext. 4223)

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

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

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

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

**Advice for overseas students**
Overseas Students Adviser
Divinity College (L8S 4K1) (ext. 4748)

**Grievances**
Secretary of the Senate
University Hall, 203 (ext. 4370)
# Sessional Dates

## DATES FOR 1980-81 WINTER SESSION
(FOR BOTH FULL-TIME AND PART-TIME STUDENTS)

<table>
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<tr>
<th>Date Range</th>
<th>Event</th>
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</thead>
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<tr>
<td>Thursday, May 29 to</td>
<td>Spring Convocations.</td>
</tr>
<tr>
<td>Saturday, May 31</td>
<td>Last day for applications for Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Friday, June 27</td>
<td>Deferred Examinations arising from April Examinations.</td>
</tr>
<tr>
<td>Thursday, August 14 to</td>
<td>Completion of registration.</td>
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<tr>
<td>Saturday, August 16</td>
<td>First-term classes end.</td>
</tr>
<tr>
<td>Tuesday, September 2 to</td>
<td>(i) Final Examinations in first-term courses.</td>
</tr>
<tr>
<td>Wednesday, September 8</td>
<td>(ii) Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Saturday, September 11</td>
<td>(iii) Mid-Year Tests in Year I courses.</td>
</tr>
<tr>
<td>Monday, September 14</td>
<td>Classes begin.</td>
</tr>
<tr>
<td>Monday, October 10</td>
<td>Last day for registration and for changing registration in or replacing first-term and full-year courses.</td>
</tr>
<tr>
<td>Saturday, October 11</td>
<td>No classes.</td>
</tr>
<tr>
<td>Monday, October 13</td>
<td>Thanksgiving Day—No classes.</td>
</tr>
<tr>
<td>Friday, October 31</td>
<td>Last day for application for Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
<tr>
<td>Friday, November 14</td>
<td>Autumn Convocation.</td>
</tr>
<tr>
<td>Friday, December 5</td>
<td>First-term classes end.</td>
</tr>
<tr>
<td>Monday, December 8 to</td>
<td>(i) Final Examinations in first-term courses.</td>
</tr>
<tr>
<td>Friday, December 19</td>
<td>(ii) Deferred Examinations arising from Summer Session Examinations.</td>
</tr>
</tbody>
</table>

## DATES FOR 1981-82 WINTER SESSION
(FOR BOTH FULL-TIME AND PART-TIME STUDENTS)

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, January 4</td>
<td>Classes begin for second term, and for courses offered from January to June. Registration for second-term courses in some Faculties.</td>
</tr>
<tr>
<td>Wednesday, January 13</td>
<td>Last day for registration and for changing registration in second-term courses and courses offered from January to June.</td>
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<tr>
<td>Monday, February 1</td>
<td>Classes begin for courses offered from February to June.</td>
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<tr>
<td>Friday, February 12</td>
<td>Last day for withdrawing from second-term or full-year courses.</td>
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<tr>
<td>Monday, February 15</td>
<td>Last day for changing Programme and completing a Graduation Information Card for graduation at Spring Convocation. Mid-term Recess.</td>
</tr>
<tr>
<td>Monday, March 1 to</td>
<td>Last day for withdrawing from courses offered from January to June and from February to June. Classes end.</td>
</tr>
<tr>
<td>Saturday, March 6</td>
<td>(i) Final Examinations.</td>
</tr>
<tr>
<td>Friday, March 8</td>
<td>(ii) Deferred Examinations arising from December Examinations.</td>
</tr>
<tr>
<td>Friday, April 10</td>
<td>Good Friday—no examinations.</td>
</tr>
<tr>
<td>Monday, April 13 to</td>
<td>Spring Convocations.</td>
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<tr>
<td>Thursday, April 30</td>
<td>Examinations begin in courses offered from January to June and from February to June.</td>
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<td>Friday, April 17</td>
<td></td>
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<td>Thursday, May 28 to</td>
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<td>Saturday, May 30</td>
<td></td>
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<tr>
<td>Wednesday, June 24</td>
<td></td>
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DATES FOR 1980 SUMMER (EVENING) SESSION

Monday, May 12  Classes begin.
Friday, May 16  Last day for registration and changes of registration.
Monday, May 19  Victoria Day—No classes.
Friday, May 30  Last day for withdrawing from a course offered only in the first half of the Session.
Tuesday, June 24  First-term classes end.
Wednesday, June 25  Examinations in first-term courses begin.
Monday, June 30  Second-term evening courses begin.
Tuesday, July 1  Dominion Day—No classes.
Friday, July 18  Last day for withdrawing from second-term or full session courses in the Summer (Evening) Session.
Monday, August 4  Civic Holiday—No classes.
Wednesday, August 13  Summer Session classes end.
Thursday, August 14  Summer Session Examinations and Deferred Examinations arising from April Examinations.
Saturday, August 16  Last day for application for Deferred Examinations arising from Summer Session Examinations.
Friday, October 31  Autumn Convocation.
Friday, November 14  Deferred Examinations arising from Summer Session Examinations.
Monday, December 8  to
Friday, December 19  

DATES FOR 1980 SUMMER (DAY) SESSION

Wednesday, July 2  Classes begin.
Thursday, July 3  Last day for registration and changes of registration.
Tuesday, July 8  Last day for withdrawing from a course offered only in the first half of the Session.
Wednesday, July 23  Second-term day classes begin.
Tuesday, July 29  Last day for withdrawing from a course offered only in the second half or offered for the duration of the Summer (Day) Session.
Monday, August 4  Civic Holiday—No classes.
Wednesday, August 13  Classes end.
Thursday, August 14  Summer Session Examinations and Deferred Examinations arising from April Examinations.
Saturday, August 16  Last day for application for Deferred Examinations arising from Summer Session Examinations.
Friday, October 31  Autumn Convocation.
Friday, November 14  Deferred Examinations arising from Summer Session Examinations.
Monday, December 8  to
Friday, December 19  

DATES FOR 1981 SUMMER (EVENING) SESSION

Monday, May 11  Classes begin.
Friday, May 15  Last day for registration and changes of registration.
Monday, May 18  Victoria Day—No classes.
Friday, May 29  Last day for withdrawing from a course offered in the first half of the Session.
Tuesday, June 23  First-term classes end.
Wednesday, June 24  Examinations in first-term courses begin.
Monday, June 29  Second-term evening classes begin.
Wednesday, July 1  Dominion Day—No classes.
Friday, July 17  Last day for withdrawing from second-term or full session courses in the Summer (Evening) Session.
Monday, August 3  Civic Holiday—No classes.
Thursday, August 13  Summer Session classes end.
Friday, August 14  Summer Session Examinations and Deferred Examinations arising from April Examinations.
Monday, August 17  Last day for application for Deferred Examinations arising from Summer Session Examinations.
Friday, October 30  Autumn Convocation.
Friday, November 13  Deferred Examinations arising from Summer Session Examinations.
Saturday, December 12  to
Wednesday, December 21  

DATES FOR 1981 SUMMER (DAY) SESSION

Thursday, July 2  Classes begin.
Friday, July 3  Last day for registration and changes of registration.
Wednesday, July 8  Last day for withdrawing from a course offered only in the first half of the Session.
Thursday, July 23  Second-term day classes begin.
Tuesday, July 28  Last day for withdrawing from a course offered only in the second half or offered for the duration of the Summer (Day) Session.
Monday, August 3  Civic Holiday—No classes.
Thursday, August 13  Classes end.
Friday, August 14  Summer Session Examinations and Deferred Examinations arising from April Examinations.
Monday, August 17  Last day for application for Deferred Examinations arising from Summer Session Examinations.
Friday, October 30  Autumn Convocation.
Friday, November 13  Deferred Examinations arising from Summer Session Examinations.
Saturday, December 12  to
Wednesday, December 23  
Almost 10,000 full-time students attend McMaster University, and of these over 1,100 are pursuing advanced degrees offered through the School of Graduate Studies. In addition, about 3,000 part-time students are registered in the Winter Session from September to April, and 2,500 in the Summer Session. Summer Evening courses are taught in the period of May to August, and Day courses during July and August.

The University was named after Senator McMaster who bequeathed funds to endow "A Christian School of Learning." McMaster University, which grew out of educational work initiated by Baptists in central Canada as early as the 1830's, was founded in 1887. After its initial years in Toronto, the University was moved to Hamilton in 1930. The University became non-denominational in 1957, but the historic Baptist connection has been continued through the separately incorporated McMaster Divinity College.

Undergraduate teaching is conducted through the Faculties of Business, Engineering, Health Sciences, Humanities, Science, and Social Sciences. The Schools of Physical Education and Social Work are part of the Faculty of Social Sciences.

The innovative programmes in the Health Sciences (Medicine and Nursing) are described in separate calendars. The School of Graduate Studies publishes a calendar describing the varied programmes leading to Doctoral and Master's Degrees.

The academic programmes are supported by some fine and even unique facilities. The Library of almost 1,000,000 volumes has a variety of special collections such as the papers of the philosopher, the later Bertrand Russell. The computing facilities include two large Control Data computers (CDC 6400 and CYBER 170/730), two Hewlett-Packard computers (HP2000 and HP3000), an IBM 3031, several types of micro-computers as well as plotting devices and graphics terminals. One of the CDC 6400 computers is used totally for undergraduate teaching. The work of the Science and Engineering Faculties is supported by sophisticated facilities such as the Nuclear Reactor and the Van De Graaff Accelerator.

The University is located on an attractive campus beside the Royal Botanical Gardens at the eastern end of Lake Ontario. The campus is reserved for pedestrian traffic. Over 2,000 students live on the campus in the residences which cater to a variety of life styles.

Access to downtown Hamilton and the activities that a large city has to offer is easy. As part of the extensive downtown redevelopment, new facilities, which support the cultural life of the city have been constructed in recent years. These include an Art Gallery and Hamilton Place, an auditorium which seats over 2,000 persons and includes a studio theatre. A new city library is being constructed; in it McMaster University in cooperation with Mohawk College will operate a Downtown Information Centre which includes teaching facilities.

Application Procedures

Important dates

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

April 15 Summer evening courses
May 31 Summer day courses
July 15 Winter Session courses commencing in September
November 30 Winter Session courses commencing in January

Former McMaster students

If you have previously registered at McMaster, but did not attend last year, you should write to the Dean of Studies of the appropriate Faculty to seek readmission, unless five years have passed since your last registration.

If five years have passed since you last registered at McMaster, you will be required to follow the current regulations and curriculum. You must obtain and complete an application form from the Admissions Office (Gilmour Hall, Room 120: Telephone 525-9140 extensions 4796, 4797, and 4798). Your application will be considered by the appropriate Faculty committee.

New students

McMaster University has undergraduate programmes in Business, Engineering, Engineering and Management, the Humanities, Music, Nursing, Physical Education, the Sciences, the Social Sciences, and Social Work. These programmes are described in this calendar.

You should consult the Admission Requirements (which appear in the next chapter) for the programme of your choice. If your qualifications do not fit the requirements exactly, you should write to Harold Bridle, Assistant Registrar (Liaison and Admissions). Room 120, Gilmour Hall—Telephone 525-9140 extension 4034.

Nursing and Medicine

If you wish to enter either Nursing or Medicine, you should obtain a Nursing or Medicine calendar and the appropriate application form from the Health Sciences Registry (McMaster University Medical Centre, Room 2E5: Telephone 525-9140 extension 2114).

Enquiries

If you have enquiries, please speak to:

Edie Rochkin
or Liz McCallum
Admissions Officers

(525-9140 extension 4796) about admission procedures, admission requirements and the status of your application.

Norma Ward,
Chris Jewell, or Stu Reid
Liaison Officers

(525-9140 extension 4787) about visits to the University, brochures, university programmes and suitable Level 5 (Grade 13) programmes.

Doug Allaby

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

Olga Tynowski

(525-9140 extension 4789) about Scholarships.

Sheila Scott

(525-9140 extension 4371) about Women's Residences.

Brian Harrison

(525-9140 extension 4223) about Men's Residences.
Academic counselling for those offered admission

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

Each Faculty also makes arrangements for students to visit the University and meet with a Faculty adviser to set up their programmes. Though attendance at summer counselling and preregistration sessions is not compulsory, you are strongly advised to use this opportunity to plan your academic programme. If you cannot attend one of these sessions, counselling will be provided at the time of registration.

Application procedures

The application procedures differ according to whether:

i) you wish to enter a degree programme or not,
ii) you wish to be a full-time or part-time student,
iii) you wish to enter Year I or receive credit for University level work already completed, and
iv) you are registered in an Ontario secondary school now.

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

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Follow Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you wish to receive grades in the courses you take?</td>
<td>NO</td>
<td>FOLLOW PROCEDURE E</td>
</tr>
<tr>
<td>Do you wish to study as a part-time student (i.e. take less than 24 units)?</td>
<td>YES</td>
<td>FOLLOW PROCEDURE D</td>
</tr>
<tr>
<td>Do you wish to study for an undergraduate (bachelor’s) degree?</td>
<td>NO</td>
<td>FOLLOW PROCEDURE D</td>
</tr>
<tr>
<td>Do you already have an undergraduate degree?</td>
<td>YES</td>
<td>FOLLOW PROCEDURE D</td>
</tr>
<tr>
<td>Are you seeking to enter Year I?</td>
<td>NO</td>
<td>FOLLOW PROCEDURE C</td>
</tr>
<tr>
<td>Are you now taking one or more Ontario Grade 13 subjects?</td>
<td>YES</td>
<td>FOLLOW PROCEDURE A</td>
</tr>
<tr>
<td></td>
<td>NO</td>
<td>FOLLOW PROCEDURE B</td>
</tr>
</tbody>
</table>
PROCEDURE A:

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

<table>
<thead>
<tr>
<th>Programme</th>
<th>OUAC Programme Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business I</td>
<td>MB</td>
</tr>
<tr>
<td>Engineering I</td>
<td>ME</td>
</tr>
<tr>
<td>Humanities I</td>
<td>MH</td>
</tr>
<tr>
<td>Music I</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Sciences I</td>
<td>MS</td>
</tr>
<tr>
<td>Physical Education I</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences I</td>
<td>ML</td>
</tr>
</tbody>
</table>

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

PROCEDURE B:

For applicants who wish to enter Year I of a full-time degree programme, but who are not now taking one or more Ontario Grade 13 subject in day school.
Obtain an application form (OUAC 105) from the Admissions Office (Gilmour Hall, Room 120: Telephone 525-9140 extensions 4796, 4797, 4798). You should choose one of the following programmes and complete the form:

<table>
<thead>
<tr>
<th>Programme</th>
<th>OUAC Programme Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business I</td>
<td>MB</td>
</tr>
<tr>
<td>Engineering I</td>
<td>ME</td>
</tr>
<tr>
<td>Humanities I</td>
<td>MH</td>
</tr>
<tr>
<td>Music I</td>
<td>MM</td>
</tr>
<tr>
<td>Natural Sciences I</td>
<td>MS</td>
</tr>
<tr>
<td>Physical Education I</td>
<td>MR</td>
</tr>
<tr>
<td>Social Sciences I</td>
<td>ML</td>
</tr>
</tbody>
</table>

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

If you
i) do not have the required Ontario Grade 13 standing or its equivalent; AND
ii) will be 21 or older in the calendar year in which you plan to start your University courses; AND
iii) 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.

PROCEDURE C:

For applicants who seek to enter a full-time degree programme above Year I.
Obtain an application form (OUAC 105) from the Admissions Office (Gilmour Hall, Room 120: Telephone 525-9140 extensions 4796, 4797, 4798). You should choose one of the degree programmes listed in pages 20 to 59 of this calendar, and complete the form. Send the form and the application fee to the Application Centre.

PROCEDURE D:

For applicants who wish to enter as
i) part-time students, or
ii) non-degree students (Occasional or Continuing), or
iii) second-degree candidates.
Obtain a McMaster application form from the Admissions Office (Gilmour Hall, Room 120: Telephone 525-9140 extensions 4796, 4797, 4798). You will be provided with more information procedures at that time.

PROCEDURE E:

For applicants who wish to register as "Listeners". (A listener may attend classes, but does not write assignments nor examinations. Neither will a Listener receive a grade for the course.)
Write, visit, or phone the School of Adult Education in order to register as a Listener. (Gilmour Hall, Room 121: Telephone 525-9140 extension 4321).

Application to the School of Social Work

Admission to the Combined Pass Arts and Social Work Programme is by selection of applicants who have completed, or are completing their first year. Year I students at McMaster who are interested should apply directly to the School of Social Work. Students wishing to apply for transfer from another university are asked to apply both to the University, through the Assistant Registrar (Admissions) and to the School of Social Work. Application to the School of Social Work should be made before March 1. Applicants transferring from another university must clearly indicate on the application form which specific Arts programme they wish in conjunction with their Social Work programme.
Admission Requirements

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

The University Senate may limit enrolment in programmes where the available resources indicate the need, so that admission to some Year I programmes is by selection. This means, therefore, that possession of the minimum admission requirements does not guarantee admission.

The admission requirements are set out in the following sequence:

A) Admission from Ontario secondary schools.

B) Admission from Ontario colleges of applied arts and technology.

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

EARLY ADMISSION FROM ONTARIO SECONDARY SCHOOLS

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

REGULAR ADMISSION FROM ONTARIO SECONDARY SCHOOLS

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

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

i) a Secondary School Honour Graduation Diploma with acceptable standing; AND

ii) a “weighted average” of at least 60.0% (64.0% in Engineering) is needed in the Grade 13 work done for the Diploma; AND

iii) the subject requirements for the appropriate programme must be satisfied.

The “weighted average” is computed as in the example below:

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

“Weighted average” = 416 / 6 = 69.3%.

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

ADMISSION FROM LEVEL 4 (GRADE 12)

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

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

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

3) the Grade 13 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 YEAR I PROGRAMMES

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

Business I

Admission is by selection.

Required:

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

2) One Grade 13 credit in English.

3) Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with a minimum overall average of 60.0%.

Engineering I

Admission is by selection.

Required:

either 1.a) Overall weighted average of at least 64.0% in six credits offered for the Secondary School Honour Graduation Diploma, and

b) Weighted average of at least 64.0% in the following five credits: three Grade 13 credits of Mathematics, and one Grade 13 credit of Physics, and one Grade 13 credit of Chemistry.

Students in this group take the Engineering I programme.

or 2.a) Overall weighted average of at least 70.0% in six credits offered for the Secondary School Honour Graduation Diploma, and
b) At least 72.0% in two credits of Grade 13 Mathematics (which should include Calculus). Those lacking Grade 13 Chemistry or Physics must present Chemistry and Physics at secondary school senior levels. Further details on this category of admission should be obtained from your guidance department. (Students in this group take an adapted Engineering I programme determined in consultation with the Associate Dean of Engineering).

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

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

Humanities I

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

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

Music I

The academic requirements are the same as for Humanities I. In addition, there are the following audition requirements:

1) performance of two or three varied pieces of the candidate's choice, including one from the 20th century. (The minimum acceptable level should be regarded as approximately equivalent to the Royal Conservatory of Music, Toronto, Grade 8; the performance may last up to 30 minutes);
2) ear tests;
3) short written examination, testing rudiments;
4) interview;
5) demonstration of basic keyboard skills, including scales, chords, Harmonization of a simple melody. Those applicants unable to meet minimum musical standards will be expected to register in Music 1Q0/Basic Keyboard Skills
(Those applying for Music I will be informed of arrangements for these tests.)

Natural Sciences I

Natural Sciences I provides a basis for degree programmes in Science. There is considerable flexibility in the Science programmes, which are described in pages 38 to 48.

Required: 1) Grade 13 Calculus.
2) Grade 13 Physics or a second Grade 13 Mathematics.
3) One Grade 13 credit of Biology, or Chemistry, or another Mathematics.
4) A weighted average of at least 60.0% in Calculus and the two additional credits specified above.
5) Additional Grade 13 work to qualify for a Secondary School Honour Graduation Diploma with an overall average of at least 60.0%.

As skills in reading and writing are important, we strongly recommend that you take an appropriate senior level high school English course. Since skill in Mathematics is necessary for those taking Science programmes, we recommend that you take additional credits in Grade 13 Mathematics.

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

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

Social Sciences I

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

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

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

B) Admission from Ontario Colleges of Applied Arts and Technology

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

In the granting of credit attention will be given to:

1) the applicant's performance in the college or institute programme;
2) the duration of the previous programme.
3) the programme taken at the college or institute and the programme to which entry is sought;
4) the applicant's secondary school record;
5) Normally the credit will be at least one Year for a well-qualified graduate of a three-year programme, and at least 12 units for an applicant who has completed two years and performed well, provided the college work is appropriate for the university programme to which entry is sought.

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

C) Admission from other Canadian provinces

Candidates from other provinces of Canada may be admitted on the basis of qualifications recognized as equivalent to the Grade 13 subjects in Ontario. Such candidates should make early application for admission.

Applicants from outside Ontario without the Calculus requirement will be considered for admission to Natural Sciences I provided they have at least second class Honours standing.

If you are in this category, you should follow the subject requirements listed above for the programme you wish to enter.

<table>
<thead>
<tr>
<th>Province</th>
<th>Qualifications Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>Grade 12</td>
</tr>
<tr>
<td>British Columbia</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Grade 12</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>Year I Memorial University of Newfoundland</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>Year I University of Prince Edward Island</td>
</tr>
<tr>
<td>Quebec</td>
<td>Year I University of Prince Edward Island</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>Grade 12</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>Year I University of Prince Edward Island</td>
</tr>
<tr>
<td>Quebec</td>
<td>Appropriate first year CEGEP standing (General Course) or Senior High School Leaving Certificate (Grade 12)</td>
</tr>
</tbody>
</table>
D) Admission from other countries

GREAT BRITAIN AND THE WEST INDIES

Required: 1) Five G.C.E. subjects at least two of which must be at the Advanced Level. 2) Advanced Level subjects appropriate for the programme desired (e.g., two of Mathematics, Chemistry, and Physics for Engineering I; Mathematics (pure or applied) and one other science for Natural Sciences I). 3) An average of at least ‘D’ in the two Advanced Level subjects.

HONG KONG

Required: 1) Five subjects in the G.C.E. or University of Hong Kong Matriculation at least two of which must be at the Advanced Level. 2) Advanced Level subjects appropriate for the programme desired (e.g., two of Mathematics, Chemistry, and Physics for Engineering I; Mathematics (pure or applied) and one other science for Natural Sciences I). 3) An average of at least ‘D’ in the two Advanced Level subjects. 4) Standing satisfactory to McMaster University in the University of Michigan English Language Test. Details of the test will be sent upon receipt of a formal application for admission.

UNITED STATES

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

OTHER COUNTRIES

Students from other countries should send official matriculation certificates well in advance of the session. Certificates in a language other than English should be accompanied by notarized English translations. Each application 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 standings satisfactory to the University in the University of Michigan English Language Test. Details of this test will be sent upon receipt of a formal application for admission.

E) Special students (mature students)

I) FULL-TIME STUDY

If you do not meet the normal admission requirements, you may be admitted "on probation" to full-time study provided you satisfy all of the following requirements:

1) you are at least 21 years old or will be in the calendar year in which you propose to start university study; AND
2) you have not attended school on a full-time basis for at least two years; AND
3) you obtain a satisfactory standing on a scholastic aptitude test (held in June and August) and are considered qualified by the appropriate Faculty Admissions Committee.

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

II) PART-TIME STUDY

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

If you are admitted, you may register as a “Special Student” and may take up to six units of work or one seven-unit course per session; the Winter Session extends from September to April and the Summer Session from May to August. Normally, these first courses shall be Year 1 courses.

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

1) if you obtain marks of at least 50% in all courses and achieve a weighted average of at least 60.0%, you may be granted clear admission. This means that you may register as either a full-time or a part-time student in a degree programme, or as an “Occasional Student” if you do not wish to work towards a degree;
2) if you obtain marks of less than 50% in all the courses, you will be required to discontinue studies at McMaster. Should you wish to take further courses, you would have to write to the Dean of Studies of your Faculty in order to seek readmission;
3) if your performance lies between the two levels specified above, you may continue to take up to six units of work or one seven-unit course per session as a “Special Student” until you achieve University Standing on one “Year of Work” (approximately 30 units) or fail more than 40% of the units required for a “Year of Work” in your programme. This means that for a Year of 30 units, you may have up to 42 units of attempts to attain University Standing and may fail no more than 12 units. After achieving University Standing you may register as either a full-time or part-time student in a degree programme, or as an Occasional Student if you do not wish to work towards a degree.

F) Students transferring from other universities

If you wish to transfer to McMaster University, you will obtain credit only for courses in which you have achieved at least a “C” (third-class honour) standing. In some cases, a higher average may be required.

If your native language is not English, you must obtain standing satisfactory to the University in the University of Michigan English Language Test. Details of this test will be sent upon receipt of a formal application for admission. A student transferring to McMaster University must satisfy the Residence Requirements set out in the Academic Regulations (see “Academic Regulations: Residence Requirements”). The University will not accord to students transferring to McMaster privileges which would not be granted by their own universities.

G) Graduates applying for a second undergraduate degree

Admission is by selection.

If you have a first degree you may apply to take a second degree in the same discipline or in another discipline. The requirements are set out in the Academic Regulations (see “Academic Regulations: Double credit toward a second undergraduate degree”). Application forms are obtainable from the Assistant Registrar (Admissions).

Graduates of other universities must supply an official up-to-date transcript with the completed application.
H) Continuing students: graduates not proceeding to a second degree or an advanced degree

A Continuing student is a university graduate who is not proceeding to an advanced degree, but wishes to take one or more undergraduate classes (or, exceptionally, certain graduate classes). Continuing students, who wish to take Commerce or Engineering courses must re-apply for each session on an application form obtainable from the Assistant Registrar (Admissions).

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

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

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

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

I) 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.

Registration

Registration procedure

YEAR I REGISTRATION

The purpose of Registration is to select the programme and courses you wish to take. This is done before or at the beginning of the Session. Counselling is available and in some cases is compulsory.

Information about how to register is normally sent by mail. If you are a new student and plan to start classes in September, you will normally receive this information between June and August after you have been admitted.

Regulations

APPROVAL OF PROGRAMMES

Your programme and course selection must be approved by the Dean of Studies of your Faculty. Similarly, you must obtain approval from the Dean for any change, including the dropping of courses.

SUMMER SESSION

Students registered in Summer School should note that they are restricted to taking no more than 18 units in the Summer Session of which no more than 12 may be taken either in the summer day session or in the summer evening session.

EXTRA WORK

If you wish to take more than the normal number of courses prescribed for a year, you may do so only with the permission of the appropriate Dean of Studies. Normally, a second-class weighted average in the work of the previous 12 months will be required if extra work is to be permitted. Additional academic fees will be assessed when the additional work is approved to clear an academic deficiency.

SELECTION OF ELECTIVES

If you are registered above Year I, you can take only six units of Year I work in any Year, except where special permission has been obtained from the Deans of Studies.

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, and the grade will be recorded as 'CAN' (cancelled) up to and including the last date for withdrawing from the class. The relevant dates are:

First-term courses 1980-81 October 10, 1980
1981-82 October 16, 1981

Full-session courses 1980-81 February 13, 1981
1981-82 February 12, 1982

1981-82 February 12, 1982

After these dates you will remain registered in the course(s) whether or not you attend, and you will receive no refund of fees. The course(s) will be included in the count when assessing whether you have exceeded the maximum number of attempts permissible for the Year in which you are registered, and you will be assigned a mark.

WITHDRAWAL FROM THE UNIVERSITY

If you wish to withdraw from the University, you must consult the appropriate Dean of Studies. Your identity card must be surrendered at the Office of the Registrar. Fees are not refunded unless this procedure is followed.

Your record in the courses being taken will be handled as outlined in the section immediately above entitled "CANCELLATION OF A COURSE".
Academic Regulations

Since the academic regulations are continually reviewed, we reserve the right to change the regulations in this section of the Calendar. Proposals to change the regulations commencing September 1981 are now being considered by the Undergraduate Council. 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.

Residence requirements

In order to obtain a four-Year (Honours, Major, etc.), first undergraduate degree, you must complete at least two of the Years (approximately 60 units of work) beyond Year I at McMaster University.

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

i) by completing at least two Years (approximately 60 units of work) at McMaster University, which may include Year I, or

ii) by completing Year III (approximately 30 units of work) at McMaster University, including at least 18 units of work beyond Year I in the specialist subject.

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 waive these requirements in special cases and may take into account high academic standing and place of residence, among other considerations.

All the work for a second undergraduate degree must be completed at McMaster University.

LETTERS OF PERMISSION

If you wish to attend another university to take courses which will carry credit towards a McMaster degree, you must get permission from your Dean of Studies. This is a privilege which may be granted by the Dean on behalf of your Faculty, and you should take note of any conditions that might apply. Courses taken in this way cannot be used to satisfy the minimum residence requirements, and will probably delay graduation if they are the last courses for the degree.

Examinations

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

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. Examinations are not rescheduled for the purposes of travel.

The mid-year tests in December for Year I courses and examinations for two and three-unit courses are normally of two hours duration. Examinations for courses of four or more units will normally be three hours.

The University-administered examinations held in April, August, and December are organized by the Office of the Registrar. Other examinations are normally held at an earlier time and are arranged by departments and/or faculties.

Tests and examinations may be scheduled in the morning, afternoon or evening, Monday through Saturday.

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.

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

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

A deferred examination privilege may be granted if you fail to write a final examination for a certifiable medical or compassionate reason provided that the certificate has been submitted by the end of the examination period.

Grading system

The grade and marks for a course are determined by combining the marks obtained on class work, assignments, tests, and examinations.

Since September 1974 the grading scale has been as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>80-100</td>
</tr>
<tr>
<td>B</td>
<td>70-79</td>
</tr>
<tr>
<td>C</td>
<td>60-69</td>
</tr>
<tr>
<td>D</td>
<td>50-59</td>
</tr>
<tr>
<td>E</td>
<td>40-49</td>
</tr>
<tr>
<td>F</td>
<td>less than 40</td>
</tr>
</tbody>
</table>

Under circumstances defined below, credit may be given for courses in which a student has obtained an 'E' grade. Grades of at least "D" must be obtained in Q-group courses of Honours and Major programmes, in R-group courses of the B. Com. and Pass programmes, and in courses which are repetitions or replacements.

Before a failing final mark is submitted to the Registrar by a department, the examination paper will be re-read.

You retain credit for all courses with a grade of "D" or better unless you choose to refuse credit. (See "Attempts", below.)

Deans' honour list

You may be named to the Deans' Honour List if your work in any Year is outstanding. To qualify you must attain at least 90 per cent of the grade points obtainable on the block of work for the Year of your programme.

In this calculation a grade of 'A' carries 3 points, 'B' 2 points, and 'C' one point. The calculation is performed as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
<th>Units</th>
<th>Points x Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>6</td>
<td>18</td>
</tr>
</tbody>
</table>

The total number of points obtainable is 3 X 30 = 90. To qualify for the Deans' Honour List 90% of 90 points, 81 points, would be necessary. In the example above the student would, therefore, be named to the Deans' Honour List.

Academic regulations

The regulations governing programmes in Business, Engineering, Engineering & Management, and Physical Education appear in the appropriate Faculty sections of this Calendar.

UNIVERSITY STANDING

A "Year" is defined as the block of work approved by a Faculty, and specified in the programme descriptions in this Calendar.
You must obtain University Standing in the work of each Year in order to be eligible to continue at or graduate from the University. To obtain University Standing you

1) must have obtained an overall weighted average of at least 55.0% in the work of the Year; and
2) must have obtained a mark of at least 40% in each of the courses used to complete the Year, and
3) may have marks in the range 40-49% in no more than 20% of the units used to complete the Year, or in one course of not more than eight units, whichever is greater; and
4) must not have exceeded the maximum number of "attempts" allowed (See "Attempts", below).

This means that for someone whose Year comprises 30 units

i) the maximum number of attempts is 42 units.
ii) grades of "D" or higher must be obtained on 24 units.
iii) grades of "E" or higher must be obtained on the remaining 6 units, and
iv) the overall weighted average must be 55.0% or higher.

The overall weighted average is calculated as in the example below.

<table>
<thead>
<tr>
<th>Mark</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>66</td>
<td>x 6</td>
</tr>
<tr>
<td>55</td>
<td>x 8</td>
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<tr>
<td>72</td>
<td>x 4</td>
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<tr>
<td>45</td>
<td>x 6</td>
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<tr>
<td>63</td>
<td>x 3</td>
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<tr>
<td>60</td>
<td>x 3</td>
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<td>30</td>
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</tbody>
</table>

Weighted average = 1763 ÷ 30 = 58.8%

ATTEMPTS

You may repeat or replace up to 40% of a Year's work in order to achieve University Standing in a Year, but no course may be repeated more than once. The results of all courses attempted will appear on your transcript. Likewise, a course repeated to satisfy a prerequisite requirement will count as an attempt.

Each Faculty may set regulations governing whether you may continue in a programme in the event that you need to repeat or replace courses to achieve programme standing.

If you have grades of "D" or better on at least 60% of the unit load for your Year, you may repeat or replace courses with grades of "E" or "F". Similarly, if you have obtained credit in all courses of a Year, but do not have an overall weighted average of 55.0%, you may repeat or replace courses. In both cases you may repeat or replace the courses by attending Summer School or by deferring an equivalent amount of work of the following Year. In exceptional cases with the permission of your Dean of Studies, you may take these courses in addition to the work of the following Year; in this case extra fees will be charged.

REFUSAL OF CREDIT

You may refuse credit for a course which you have passed or in which you have been granted credit by writing to the Registrar within a month of receiving your grade report. The course may be repeated or replaced, but this will count against the maximum number of attempts permitted to obtain University Standing. The results of courses in which you have refused credit will appear on your transcript.

FAILED YEAR

You will have failed the Year and be ineligible to continue at the University without permission of the appropriate Dean of Studies, or to graduate from the University, if you do not:

1) obtain a grade of "D" or better in at least 60% of the unit load of the Year on the first attempt; or
2) achieve University Standing after making use of the opportunity provided for raising overall standing by repeating or replacing courses.

REPEATING A YEAR

If you do not achieve University Standing on the first occasion, you will be permitted to repeat the Year only if reasons satisfactory to the appropriate Dean of Studies can be given. If permission to repeat a Year is given, you will be "On Probation".

REQUIREMENT TO WITHDRAW

If you become ineligible to continue on a second occasion, you are required to withdraw from studies at the University for at least 12 months. Thereafter, application for re-admission may be made to the appropriate Dean of Studies.

CONTINUANCE IN PROGRAMME

Year I must be complete before you take Year II work.
Year II must be complete before you take Year IV work.
Year III must be complete before you take Year V work.

Graduation

When you register in your graduating Year you should file a Graduation Information Card with the Registrar before February 13. Graduation Information Cards may be obtained at registration or from the Receptionist, Office of the Registrar.

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

Programme regulations

HONOURS PROGRAMMES

In order to enter or proceed in an Honours programme, a weighted average of at least 70.0% ("B" standing) must be obtained in the designated courses of Year I and the Q-group ("qualifying") courses of Year II or Year III. In the case of some combined honours programmes a weighted average of at least 70.0% will be required in each of the two components.

If you fail to obtain this average, you may be permitted to proceed to the next Year of the Honours programme "On Probation", subject to the approval of the department(s) concerned. If you fail to obtain the necessary percentage a second time, you must transfer to a Major or Pass programme.

Graduation Standing (either First Class or Second Class) is awarded on the average of the Year III and Year IV Q group standings.

If you fail to obtain second-class standing, but have third-class standing, you may receive a Major Degree at the next ensuing Convocation, whether or not there is a corresponding major programme. Where there is no corresponding major programme, the Graduation Standing will be unspecified. If you fail to obtain a third-class Q-group average, you may receive an Ordinary Degree at the next ensuing Convocation whether or not there is a corresponding Pass programme.

MAJOR PROGRAMMES

In order to enter or proceed in a Major programme, a weighted average of at least 60.0% ("C" standing) must be obtained in the designated courses of Year I or the Q-group ("qualifying") courses of Year II or Year III.

If you fail to obtain this average, you may be permitted to proceed to the next Year of the Major programme "On Probation", subject to the approval of the department(s) concerned. If you fail to obtain the necessary percentage a second time, you must transfer to a Pass Programme.

Graduation Standing (either First Class, Second Class, or Third Class) is awarded on the average of the Year III and Year IV Q-group standings.

If you fail to obtain third-class standing, you may receive an Ordinary Degree at the next ensuing Convocation, whether or not there is a corresponding Pass 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., "B" standing in specified courses for entry to an Honours programme).

If the second degree is an Ordinary (Pass) degree, you must complete at least one Year (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 two Years (at least 60 units).

For the second degree you must meet the programme and standing requirements (e.g., "B" standing in specified courses for an Honours degree, "C" standing for a Major degree, etc.).

The foregoing regulations cover the ordinary cases. Special situations will be dealt with in accordance with past practice and the spirit of these regulations. Students who have irregular cases should consult the appropriate Dean of Studies.

Appeal procedures

These procedures are worded to reflect the normal administrative structure and examining procedures of the University. In those cases where the structure and procedures differ, the Board of Student Appeals will operate within the spirit and intention of the policy and procedures set out by the Senate.

To ensure that students are treated fairly in the administration of University regulations, the Senate has established formal appeal procedures, which may culminate in a hearing before the Senate Board for Student Appeals. However, before a student follows the formal procedures, he is advised first to pursue any complaint informally; experience has shown that many complaints can be resolved more quickly in this manner. It is recommended that action be taken expeditiously and, if the formal procedures are to be used, the first step should be taken within 30 days of the alleged grievance arising.

If a student has a grievance which is academic in nature, he should communicate with his instructor, the Department Chairman, and his Dean of Studies, before following the formal procedures.

If a student wishes to raise a question about another matter, he should consult those Faculty members or officials of the University who may be able to help and, in any case, the Dean of Student Affairs, or the Dean of Men, or the Dean of Women.

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

An applicant may seek a review of a decision on admission or the granting of credit if he or she believes that the information on which the decision was made was incomplete or incorrect. Such an applicant must write to the Registrar within 30 days of the original decision being made. The decision of an appropriate Faculty committee is final.

NATURE OF APPEALS

Appeals related to academic standing have been defined by Senate to be of three kinds:

1) those involving solely a "substantive academic judgment" regarding the contents of assignments (e.g., examination papers, essays, etc.);
2) those related to grades and academic standing, such as when an instructor is alleged not to have followed the marking scheme previously outlined;
3) those related to the application of regulations governing degree or programme requirements and to other administrative decisions. The procedures for each kind appear below:

PROCEDURE FOR APPEALS INVOLVING "SUBSTANTIVE ACADEMIC JUDGMENT"

A student should write within 30 days of receiving the grade report to his Dean of Studies to seek a review and state the reason for his request. The Dean of Studies will ask the Department Chairman to make an enquiry to ensure that all term work was included, that
marks were added correctly, etc. Afterwards, the Dean will inform the student in writing of the findings. If the student remains unsatisfied, he may request of the Dean of Studies that there be a formal re-reading of the paper. With this request he must send $10, which will be refunded in the event that there is a significant change in academic standing. At the request of the Dean of Studies, the Department Chairman will arrange for the re-reading of the paper by someone other than the original examiner, and afterwards will report the result to the Faculty Reviewing Committee. This committee will advise the student of its decision, which shall be final. The decision may result in a mark being lowered.

PROCEDURES FOR APPEALS OF GRADES OR STANDING NOT INVOLVING "SUBSTANTIVE ACADEMIC JUDGMENT"

A student should write within 30 days of receiving the grade report to his Dean of Studies to seek a review and state the reason for his request. The Dean of Studies will ask the Department Chairman to make an enquiry, and afterwards inform the student in writing of the findings.

If, after further discussion with the Dean of Studies (and possibly the Dean of the Faculty), a student still believes that he has suffered an injustice, he may appeal in writing to the Senate Board for Student Appeals, the decision of which shall be final.

PROCEDURE FOR APPEALS INVOLVING DEGREE OR PROGRAMME REGULATIONS

A student should discuss the matter (orally or in writing) with his Dean of Studies. If the student wishes to make an appeal, he should do so in writing, within 15 days after the beginning of the next academic session, to the Senate Board for Student Appeals, the decision of which shall be final.

PROCEDURE FOR APPEALS NOT RELATED TO ACADEMIC STANDING

A student should write to the Dean of his Faculty and state the reason for his request. The Dean will meet with the student to discuss the grievance and may suggest another means for resolving the issue. If the student wishes to pursue a formal appeal, the Dean will refer the case to the Senate Board for Student Appeals.

SENATE BOARD FOR STUDENT APPEALS

The Board was established by Senate to decide all cases of student appeals from rulings of other bodies on matters of academic standing, except those involving solely "substantive academic judgment", as noted above. Other allegations of injustice, including allegations of sex discrimination, may be appealed to the Board, although it is possible that some of these appeals may involve matters that do not lie entirely within the authority of Senate and may require action by the Board of Governors. In such cases, students will be so notified.

Hearings conducted by the Senate Board for Student Appeals conform to the accepted procedures of "due process" and are normally open. "Due process" means that the party against whom the allegations of injustice have been made has the full right and opportunity to hear and answer these allegations, to examine evidence, question witnesses, etc. After each appeal, a report is made to the Senate. If the Senate does not have full authority to rectify an injustice, a recommendation rather than a decision may be communicated to the Senate, which may in turn refer the matter to the Board of Governors of the University for action.

Academic Dishonesty

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

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

ACADEMIC REGULATIONS

15
Financial Information

UNDERGRADUATE FEE SCHEDULE AND PAYMENT DATES

Please make all cheques payable to "McMaster University". The University reserves the right to amend fees after the printing of this list.

<table>
<thead>
<tr>
<th></th>
<th>Payable in</th>
<th>Payable in</th>
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<tr>
<td></td>
<td>Standard</td>
<td>Supplementary</td>
<td>Full in</td>
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<td>Fees</td>
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<tr>
<td>Business/Commerce</td>
<td>$715.00</td>
<td>$81.50</td>
<td>$796.50</td>
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<tr>
<td>HUMANITIES/SOCIAL SCIENCES</td>
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<td>All other programmes</td>
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<tr>
<td>Social Work</td>
<td>715.00</td>
<td>81.50</td>
<td>796.50</td>
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<tr>
<td>Music, Physical Education</td>
<td>725.00</td>
<td>81.50</td>
<td>806.50</td>
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<tr>
<td>SCIENCE (All Programmes)</td>
<td>730.00</td>
<td>81.50</td>
<td>811.50</td>
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<tr>
<td>ENGINEERING</td>
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<tr>
<td>Engineering</td>
<td>780.00</td>
<td>91.50</td>
<td>871.50</td>
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<tr>
<td>Eng. &amp; Management Yrs. I, III &amp; IV</td>
<td>780.00</td>
<td>91.50</td>
<td>871.50</td>
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<tr>
<td>Engineering Eng. &amp; Management Yrs. II &amp; IV</td>
<td>715.00</td>
<td>91.50</td>
<td>806.50</td>
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<tr>
<td>HEALTH SCIENCES</td>
<td></td>
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<tr>
<td>Nursing</td>
<td>705.00</td>
<td>91.50</td>
<td>796.50</td>
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<tr>
<td>Medicine</td>
<td>1380.00</td>
<td>58.50</td>
<td>1438.50</td>
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<tr>
<td>(per semester 1st. &amp; 2nd. term)</td>
<td>460.00</td>
<td>24.50</td>
<td>479.50*</td>
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<tr>
<td>3rd. term</td>
<td>460.00</td>
<td>19.50</td>
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</table>

Please note that an amount of $5 is added to fees not paid in full by registration. Also note that a minimum late payment fee of $1 plus $1 for each additional day up to a maximum of 10% of the amount owing, is payable on fees outstanding after Registration unless arrangements are made in advance with the Chief Accountant. Included in the above fees is an assessment of $4.00 per year for the support of the Ontario Public Interest Research Group (see "General Information: Student government and activities"). This fee is refundable only within the first three weeks after registration upon application by the student through the OPIRG office in Room 115 Wentworth House.

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

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

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

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 from the University and all privileges suspended until such times as the fees or any part of the fees are paid in full, or acceptable arrangements for payment are made with the Business Office or the Dean of Students. Academic results, transcripts, or the right to graduate, will be withheld if acceptable arrangements are not made for the payment of any outstanding fees or miscellaneous accounts.

PREPAYMENT OF ACADEMIC FEES

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

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

Students who are expecting to receive financial assistance under the Ontario Student Assistance Program 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 scholarship, etc., and first installment should be paid by August 15. Students being sponsored by Outside organizations, e.g. Vocational Rehabilitation, R.C.M.P. etc., are requested to bring
copies of fee authorizations at the time of registration. Delays may be granted in certain other special circumstances, provided that the student can show satisfactory evidence of ability to pay at a later date.

Notes: A full-time student for the purpose of fees is defined as one taking 27 or more units during an academic session. Students are responsible for fees for each academic session and no fee credits can be transferred from one academic session to another.

(1) Payment of academic fees does not mean acceptance to the University or approval of 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 permits to register.

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

FINANCIAL INFORMATION

MISCELLANEOUS REGULATIONS

Failure to comply with payment dates will result in a late payment fee. Students at least must have made satisfactory financial arrangements with the Chief Accountant before their registration can be completed. (See "Payment dates for academic fees").

No student shall be eligible for any examination, examination results, certificate, diploma, or degree, until fees and other account owed to the University are paid.

At any date after fees become due, a student’s academic privileges may be cancelled for non-payment.

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

Any cheque not accepted and returned by the bank must be covered and include an additional administrative charge.

Amounts of $5 will be assessed for N.S.F. cheques, and $2 for cheques issued on non-chequing accounts or payments stopped by the students.

REFUNDS ON WITHDRAWAL FROM THE UNIVERSITY (BASED ON TUITION FEES OF $720.00 PER SESSION) 1979-80

<table>
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<td>(1) Sept. 8—Sept. 14</td>
<td>720.00</td>
<td>42.50</td>
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<td>7.50</td>
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<td>Sept. 15—Sept. 21</td>
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<td>Sept. 22—Sept. 28</td>
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<td>Oct. 6—Oct. 12</td>
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<td>Oct. 13—Oct. 19</td>
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<td>Oct. 20—Oct. 26</td>
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<td>Oct. 27—Nov. 2</td>
<td>468.00</td>
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<td>Nov. 10—Nov. 16</td>
<td>396.00</td>
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<td>Nov. 17—Nov. 23</td>
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<td>Dec. 1—Dec. 7</td>
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<td>Dec. 8—Jan. 4</td>
<td>252.00</td>
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<td>Jan. 5—Jan. 11</td>
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<td>Jan. 19—Jan. 25</td>
<td>144.00</td>
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<td>Jan. 26—Feb. 1</td>
<td>108.00</td>
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<td>Feb. 2—Feb. 8</td>
<td>72.00</td>
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<td>72.00</td>
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<td>(2) Feb. 9—Feb. 15</td>
<td>36.00</td>
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<td>Feb. 16—End</td>
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(1) Refund in total if withdrawn before September 14.
(2) Last day for cancellation of registration without failure by default—February 13, 1981.
(3) Changes of registration will be permitted until September 19 without penalty.
(4) Full charge assessed immediately.
(5) Second instalment set at $231.50. Initial payment including $5.00 part payment fee if $575.00.

NOTE: Where total fees differ by $5.00 or $10.00, the schedule is adjusted accordingly. Above figures based on 1979-80.

Four weeks should be allowed for processing of refund cheques. A portion of the refund may be withheld for students having outstanding Bookstore and Miscellaneous Accounts.

RESIDENCE AND FOOD SERVICE FEES

REGULAR SESSION 1979-80

Residence fees in 1979-80 for students living on campus, for the period September 4 to the end of the spring examinations, were as follows:

- Residences — room and board: $1695.00
- Apartments — one-bedroom (per person) room only: $974.00
- — four-bedroom (per person) room only: $925.00
- — six-bedroom (per person) room only: $902.00
- Food Plan only: $783.00

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 definite arrangements to the contrary are made.

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

Students will be assessed for unwarranted breakage.

MAY TO SEPTEMBER

1980

<table>
<thead>
<tr>
<th></th>
<th>Single Occupancy</th>
<th>Double Occupancy</th>
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<tbody>
<tr>
<td></td>
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<td>(Rooms have two single beds)</td>
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<tr>
<td></td>
<td>$10 per person per night</td>
<td>$ 8 per person per night</td>
</tr>
<tr>
<td></td>
<td>$37 per person per week</td>
<td>$27 per person per week</td>
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</table>

(N.B. There is an initial $15 registration fee for guests who will be paying on a weekly basis)

Meals will be provided on a cash basis at the current student rate. The University reserves the right to change the amount of residence fees after publication.

(For food services for students not living on campus, please see "General information: Food service").
FINANCIAL INFORMATION

PAYMENT DATES FOR RESIDENCE FEES

Payable in full Payable by Payable by

Residences—room and board $1695. 1125. 575.
Apartment—one-bedroom 974. 650. 329.
—four-bedroom 925. 620. 310.
—six-bedroom 902. 600. 307.
Food Plan only 783. 525. 263.

(Available second week of September)

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

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

Full payment of fees must be completed by January.

Please note that an amount of $5 is added to fees not paid in August.

Part-time degree student fees

Please make all cheques payable to “McMaster University”. Fees are subject to change.

FEES (INCLUDING EXAMINATIONS)

(Based on 1979-80 fees)

<table>
<thead>
<tr>
<th>Payable in full on or before registration</th>
<th>Payable on or before registration</th>
<th>Payable by Dec. 15/ Feb. 28</th>
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<td>Two-unit courses $54.</td>
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<td>Three-unit courses 81.</td>
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<tr>
<td>Six-unit courses 162.</td>
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Note: Failure to file registration before the due date will result in a $10.00 late registration fee.

Full payment of fees must be completed by December 15, 1980 for the September registrant, and February 28, 1981 for the January registrant. Please note that an installment charge of $5 is added to cover administrative costs of deferred payments. A post-dated cheque must be deposited at the time of registration for the unpaid portion of fees. A post-dated charge of $5 is added to fees not paid in August.

No registration is complete until the fee has been paid and the registration form endorsed.

In addition to students for credit, “listener” students not seeking credit may be admitted at one-half of the ordinary fee upon application to the School of Adult Education.

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

Persons aged 65 and over may register in any courses without payment of tuition fees. Admission requirements must be met if courses are to be taken for degree credit.

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, and will be determined by the date on which notices of withdrawal are received at the office of the Dean of the appropriate Faculty. Only students whose written notices of withdrawal are received at this office by the end of the first week of lectures will be entitled to a full refund of fees. Four weeks should be allowed for processing of refund cheques.

An example of the refund schedule for a six-unit course in the winter session, 1979-80 is given below.

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<th>Date of Withdrawal</th>
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<tr>
<td>September 14 inclusive</td>
<td>$162.00</td>
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<tr>
<td>September 15-September 21</td>
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<td>September 22-September 28</td>
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Miscellaneous Fees

As a guide, the following fees were in effect for the 1979-80 academic year.

Tuition fees for students taking
26 units or less / per units $ 26.25
Campus health service 
(optional for part-time [day] students) 7.50
McMaster Student Union Fee for part-time students / per unit to 24 units 0.75
Fees for extra classes / six units 157.50
Transcripts, up to 10 copies ordered and processed at the same time 2.00
Failure to file an advance registration by students in course before the due date 25.00
Administrative fee for students reinsisting following cancellation for non-payment of fees 25.00
Instalment charge 
(see “Payment dates for academic fees”) 5.00
Formal examination re-read procedure 10.00
Duplicate Income Tax Certificate 2.00
Fee for special examinations / per paper 25.00

NOTE: Students taking 24-27 units are classified as full-time but pay fees of 26.25 per unit plus full supplementary fees of $81.50 or 91.50 depending on their programme.

Expenses

To a certain extent, expenses are controlled by the student (e.g., clothing, amusement, and living expenses). The essential costs for a typical student in Year I not living at home will vary from $4,500 to $4,800, depending upon the amount the student chooses to pay for room and board.

INSURANCE OF PERSONAL PROPERTY ON UNIVERSITY PREMISES

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

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

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

HEALTH SERVICES FEE

The supplementary health services fee of $7.50 includes reimbursement of expenses up to $1,000.00 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. Accident should be reported to Student Health within ten days.

Student Financial Aid

Financial aid to help students meet the costs of post-secondary education is available from the provincial government through its Ontario Student Assistance Programme, which consists of four plans:

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

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

For information and applications contact:

- Student Financial Aid Office
  Divinity College, Room 229
  McMaster University
  Hamilton, Ontario
  L8S 4K1
  Telephone: (416) 525-9140, extension 4319
McMaster University offers the following undergraduate degrees:

### Faculty of Business
- B.Com. 4

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

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

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

### Faculty of Health Sciences
- B.Sc.N. (Nursing) 4
- M.D. see below

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

All Health Sciences programmes are described in separate calendars.

### Degrees and Programmes by subject

<table>
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<th>Pass Degree</th>
<th>Major Degree</th>
<th>Honours Degree</th>
<th>Combined Honours Degree</th>
<th>Professional Degree</th>
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DEGREES AND PROGRAMMES

General plan of programmes

In Year I, you register in one of Business I, Engineering I, Humanities I, Music I, Natural Sciences I, Physical Education I, or Social Sciences I. The Curricula for the various Year I programmes appear in the appropriate Faculty Sections.

After completion of Year I, you may enter one of the programmes described in this calendar depending upon the Year I programme completed, the courses taken, and the standing attained.

If you are entering Year I, you should read carefully the requirements below for admission to the programme which you are considering entering after Year I so that you may choose proper electives and options.

COURSE DESIGNATIONS

The course numbers lie within the series 1A0 to 5Z99. In the course number 2P6,

i) "2" shows it is a second-Year level course,

ii) "P" specifies which second-Year course, and

iii) "6" is the number of units credit you earn by passing the course.

Details of lectures, tutorial hours, laboratory periods, are indicated thus: 2 lect., 1 tut., 1 lab. (3); both terms. These are to be interpreted as two lectures, one tutorial hour, and one three-hour laboratory period per week throughout the academic year.

In the sections that follow, which describe the programmes offered by the Faculties, the courses for each year are listed under the following headings:

Q/ Qualifying courses for Honours and Major standing
R/ Required courses
E/ Elective courses

CREDIT VALUES

The credit value of a course is stated in terms of units. A unit consists of one lecture per week per term or one continuous laboratory period of not less than two and not more than three hours per week per term. A tutorial class of one hour per week per term is counted as half a unit.

The unit value of any course is indicated by the last digit; for example, Geology 1A6 indicates a first-year Geology course of six units' value. Although the unit system is an attempt to indicate the amount of work required in each subject, it is inevitable that some courses will require more preparation and assigned problem work than others with the same unit value.

ELECTIVE COURSES AVAILABLE TO YEAR I STUDENTS

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

Anthropology 1A3, 1B6, 1Z3
Art History 1A6
Biology 1G6
Chemistry 1B7
Chinese 1Z6
Classical Civilization 1A6
Comparative Literature 1A6
Computer Science 1H3
Dramatic Arts 1A6
Economics 1A6, 1B6
English 1A6, 1B6
French 1A6, 1B6, 1Y3, 1Z6
Geography 1B6
Geology 1A6, 1B6
German 1A6, 1Z6
Greek 1A6, 1D6, 1Z6
History 1A6, 1B6, 1C6, 1L6
Humanities 1B6
Italian 1A6, 1Y3, 1Z6, 1Z6
Latin 1A6, 1Z6
Linguistics 1A6
Mathematics 1A6, 1B6, 1C6, 1G6, 1K3, 1L3, 1M3
Music 1A6
Philosophy 1B6, 1D6
Physics 1A7, 1B7, 1C8
Political Science 1A6
Psychology 1A6
Religious Studies 1B6, 1C6, 1D6, 1E6, 1F6, 1Z6
Russian 1B6, 1Z6
Sociology 1A6
Spanish 1A6, 1Z6
Ukrainian 1Z6
The Faculty of Business

A. Z. Szendrovolits/M.A., Ph.D., M.Pharm., Dean of the Faculty of Business.
D. J. Johnston/B.Com., M.B.A., Associate Dean of the Faculty of Business.
C. Bentzen-Bilkvist/B.A., Undergraduate Student Advisor

The Faculty of Business offers a four-year Commerce programme leading to the Bachelor of Commerce degree, and, together with the Faculty of Engineering, a five-year programme leading to the Bachelor of Engineering and Management degree.

In the Commerce programme, first-year students are required to establish a foundation in economics, mathematics, and sociology or psychology. The remainder of the work taken must be selected from Social Science, Humanities, or Science.

Beyond the Year I level, all students are required to take a block or core of Business courses, and to supplement this required coverage by electing the remainder of their programme from either Business or non-Business courses. In Year II, the Faculty requires 18 Business units of the year's 30-unit requirement; in Year III 18 Business units; and in Year IV, 12 Business units. This coverage will afford a basic understanding of accounting, statistics, management science, finance, marketing, production, and management. Students have the opportunity of specializing in at least one of the above functional areas through a wide choice of Business electives. Many students, however, take a significant portion of their elective work in non-Business courses. The opportunity exists for either specializing in a particular area of Business or completing a general programme.

The Engineering and Management programme is a joint offering of the Faculty of Engineering and the Faculty of Business. Over five years, it provides a full programme in Chemical, Civil, Computer, Electrical, Engineering Physics, or Mechanical, Engineering, and the full core requirement of a Bachelor of Commerce. It is, therefore, ideal for young engineers seeking careers in Canadian industry, business, or government, where economic and behavioural problems to be solved may become as important as the technical ones.

Upon graduation, the student will be awarded the degree of Bachelor of Engineering and Management. This degree is fully accredited by the Association of Professional Engineers of the Province of Ontario. Full credit will be granted by the Ontario Institute of Chartered Accountants for courses which they require as prerequisite for taking the qualifying examinations for certification as a Chartered Accountant. If appropriate standing has been maintained, full credit in the Management courses will be assigned towards the M.B.A. degree, which normally will shorten that graduate programme to just one further year. Thus the student can proceed in a Master's or Doctoral programme in his branch of Engineering, or in the Faculty of Business. At any point in the Engineering and Management programme, the student may transfer to the four-year programme in either Faculty. His point of entry will be determined by the work he has completed at that point.

Full details relating to the five-year Engineering and Management programme, including detailed course descriptions and academic requirements, are provided in the Faculty of Engineering section.

Programme for the B.Com. Degree

**BUSINESS I**

6 units: Economics 1A6
6-9 units: Mathematics

Students who have taken Level 5 Calculus must take either Mathematics 1M3 and 1L3, or Mathematics 1A6 and 1L3.

Students who have Level 5 Mathematics but not Level 5 Calculus must take Mathematics 1K3 in the first term and Mathematics 1M3 and 1L3 in the second term.

6 units: Sociology 1A6 or Psychology 1A6
Electives to total 30 units.

**COMMERCE**

Admission:
Year II Commerce is a limited enrolment programme, to a maximum of 300 students. Priority is given to students who have:

1. attained, ON THEIR FIRST ATTEMPT, a weighted average of 65% in the courses designated as required in Business I (see "Year I Programme: Business I")
2. attained an overall weighted average of 60% in the block of work designated for Year I;
3. attained at least 60% in each prerequisite course;
4. completed the full load (30 units) in the Regular Session.

Students from other universities or from other faculties within McMaster University may be considered for transfer into Commerce II. All documentation required to complete the admission application must be received by the Registrar by June 15.

Students with excellent academic records who have not satisfied all the requirements by June 15 may be granted admission to Commerce II.

YEAR II: 30 units
See below for academic regulations regarding continuance in programme.

R/ Commerce 2B3, 2D3, 2E3, 2G3; 2H3.
E/ Six to 12 units elective from any year, provided the prerequisites are satisfied.
Students may substitute Economics 2L6 for Economics 2G3 and Economics 2M6 for Economics 2H3, and should do so, if they intend to take a considerable portion of their senior division work in Economics.

YEAR III: 30 units
R/ Commerce 3B3, 3D3, 3E3, 3K3, and six additional units from Year III Commerce.
E/ Electives must be chosen beyond Year I to make a total of 30 units.

YEAR IV: 30 units
R/ Commerce 4B3 and nine additional units in Commerce to be selected from fourth-year offerings.
E/ 18 units elective. All non-Commerce courses must be selected from beyond the Year I level.
Students are advised not to exceed a work load of 15 units per term. Students desiring to take more than 15 units per term must obtain permission from the office of the Associate Dean of the Faculty of Business.

**Continuation in the programme**

In the four-year programme leading to the degree Bachelor of Commerce, the minimum requirement is a weighted average of 60.0% in all courses, a weighted average of 65.0% in the required courses for each Year and at least 60% in each prerequisite course. A student who fails to obtain the required percentage a second time will be ineligible to continue in the Commerce programme. Graduation standing is calculated on the basis of the average of the overall weighted averages in Years III and IV combined.

**PROFESSIONAL ACCOUNTING DESIGNATIONS**

The Institute of Chartered Accountants of Ontario requires students to complete 45 units of designated course work in order to satisfy their academic prequalification requirements. Students may complete the entire 45 units of course work during the four-year Bachelor of Commerce programme through the appropriate selection of elective courses.

The Society of Management Accountants course of study leading to the designation R.I.A. can be substantially fulfilled by an appropriate selection of elective courses. Students interested in the above professional accounting programmes are advised to obtain information at the office of the Undergraduate Student Advisor of the Faculty of Business.
The Faculty of Engineering

ACADEMIC REGULATIONS

ENGINEERING STANDING

In the four-year programme leading to the degree Bachelor of Engineering and in the five-year programme leading to the degree Bachelor of Engineering and Management, the minimum requirement for completion of the block of work defined for a Year is a weighted average of 60.0% with no F grades and not more than 20% of the Year unit load in the E grade range. The final marks of the courses in a Year Block used in the calculations of the weighted average shall be those marks obtained in the first attempt of the Year Block. This requirement is termed Engineering Standing.

CLEARANCE OF DEFICIENCIES

A student who achieves Engineering Standing is allowed to repeat work to clear deficiencies and attain prerequisite requirements.

FAILED YEAR ENGINEERING

A student who fails to achieve Engineering Standing in a Year has failed that Year.

A first year student in this category is required to withdraw from Engineering for a minimum of 15 months. Application for re-admission to Engineering I must be made to the Associate Dean of Engineering in January of the year for which re-admission is desired. Re-admission is not guaranteed.

Students in other Years of an engineering programme who fail to make Engineering Standing for the first time may repeat that year in which Engineering Standing has not been obtained. Credit will be retained only in those courses in which a grade of C or higher has been obtained. All other work shall be repeated.

PROBATIONARY STANDING

A student who fails to achieve Engineering Standing may be granted the privilege of Probationary Standing by the Faculty of Engineering Examinations Review Committee. This privilege will not be granted on more than one occasion during undergraduate engineering studies.

REQUIRED TO WITHDRAW FROM ENGINEERING

A student who fails to achieve Engineering Standing on two occasions or who has a total of two failed years, (in engineering or any other programme) is required to withdraw from further work in any Engineering programme.

A student who has been required to withdraw may apply for re-admission after not less than one year of practical work experience. Re-admission is not guaranteed.

WORK LOAD

The Faculty of Engineering has set a maximum of 38 units of work and a minimum of 34 units unless special approval has been given by the Associate Dean of Engineering. A student with a first class standing in the previous year's work may be granted permission to undertake one additional term course without an increase in fees. A student is expected to carry a minimum work load of 34 units.

REGISTRATION

A student is required to register in that Year for which more than six units of work is incomplete. Work of the next year may be undertaken with the permission of the Associate Dean of Engineering provided that prerequisite and corequisite requirements are fulfilled and scheduling conflicts do not exist.

In the event that the weighted average of the work completed the previous year is unsatisfactory, registration in any work of the next year will not be allowed.
PREREQUISITE REQUIREMENTS

A minimum of a D grade is required in the prerequisite work for all engineering and mathematics courses, while a minimum of a C grade is required in the prerequisite work for Commerce courses.

A student who has achieved Engineering Standing will be allowed to repeat work in order to complete prerequisite requirements. This work will be marked UPGRADE in the student’s academic record.

All prerequisite and corequisite requirements for a course must be fulfilled.

PROGRAMME REQUIREMENTS

It is the student’s responsibility 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.

HONOURS STANDING

Honours standing at graduation will be granted to a student who has obtained first-class standing in the final Year and one previous Year.

YEAR I PROGRAMMES

ENGINEERING I

31 units Chemistry 1A7
Engineering 1C4
Mathematics 1H7, 1N6
Physics 1D3, 1E4
6 units Liberal studies elective
Engineering 1A0

total 37 units

†Students intending to enter an Engineering and Management Programme should take Economics 1A6, and will require at least a C grade for admission.

ADAPTED ENGINEERING I

The programme of each student admitted on the selective engineering admission basis (See “Admission: Area requirements for admission from Level 5 [Grade 13]: Engineering I”) will be determined by the Associate Dean of Engineering in consultation with appropriate members of the Faculties of Science and Engineering.

The curriculum for the adapted Engineering I programme shall have four units of Engineering Design, a minimum of thirteen units of Mathematics, and a minimum of seven units each of Chemistry and Physics as in the regular Engineering I curriculum. Up to three additional units will be available and assignable for self-study and tutorial requirements in Chemistry, Physics, Mathematics.

A minimum of three units Liberal Studies elective should be taken in the second term.

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

Prerequisite requirements for courses listed for each programme are specified with the course description under “Work by Departments”.

B.ENG. IN CERAMIC ENGINEERING

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%.

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

Note: Year II Ceramic Engineering is identical to Year II Metallurgical Engineering. Transfer to Metallurgical Engineering in Year III can therefore be made without course deficiency.

YEAR III: 37 units
R/ Ceramics 4O4 or 4P4; Chemical Engineering 3O4; Chemistry 2F3; Engineering 3P3; Geology 2B4; Materials 3B2, 3D6, 3E6, 3G2; Statistics 3M3.

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

YEAR IV: 35-37 units
R/ Ceramics 4A1, 4K4, 4L4, 4O4 or 4P4; Chemical Engineering 4P3; Engineering 3Q3; Materials 4E3.
E/ Six units liberal studies elective. Senior division technical elective, to make a total of 35 to 37 units.

†Ceramic Engineering students are urged to consider Chemical Engineering 4N4 as a technical elective and should discuss this with the Chairman prior to the end of Year III.

B.ENG. IN CHEMICAL ENGINEERING

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 37 units
R/ Chemical Engineering 2C3, 2D4, 2F4; Chemistry 2M5; Engineering 2A5, 2R4; English 2E6; Mathematics 2M6.

YEAR III: 36-38 units
R/ Chemical Engineering 3A4, 3B3, 3D4, 3E3, 3O4; Chemistry 208; Statistics 3M3.
E/ Seven to nine units technical electives.†

YEAR IV: 36-38 units
R/ Chemical Engineering 4A5, 4K4, 4N4, 4P3, 4R4, and 4W4 or 4Y4.
E/ Six units liberal studies electives; six to eight units technical electives.†

†The following areas and courses are suggested as technical electives:

YEAR III: Biomedical Engineering: Biochemistry 2E4, Biology 1H6, Engineering 4X3, Engineering Physics 3X4; Computer Applications: Computer Science 2N3, Electrical Engineering 2H3, Mathematics 3C6; Environmental Engineering: Biology 1A6, 1F3, 2D3, Chemical Engineering 4V3, 4Z3, Civil Engineering 4C3, Engineering 4U3; Management: Commerce 2A3, 2B3, 3B3, Economics 2G3, 2H3, 3V3; Process Engineering: Chemistry 2F3, 3F3, Engineering 2O3 (or 2O4), 3M3, 3N3, 3P3, 3Q3, 3R3, Materials 4D3, Metallurgy 3C3, Physics 3T3.

YEAR IV: As for Year III above, plus Biomedical Engineering: Chemical Engineering 4T3, Electrical Engineering 4U4, Engineering Physics 4Y3; Computer Applications: Mathematics 4F3; Environmental Engineering: Biochemistry 3G6, Biology 3E3, 4Y3; Management: Commerce 3D3, 3F3, 3G3, 3K3, Economics 3B3, 3H3, 3S3, 3W3; Nuclear Engineering: Engineering Physics 4D4, 4E6, 4F6; Process Engineering: Ceramics 4O4, 4P4; Chemistry 3Q3, Chemical Engineering 4S3, Engineering 4J3, Metallurgy 4C4.

B.ENG.MGT. IN CHEMICAL ENGINEERING AND MANAGEMENT

Admission:
Completion of Engineering I, with a weighted average of 60.0%, including a minimum of a C grade in Economics 1A6.

YEAR II: 39 units
R/ Chemical Engineering 2D4, 2F4; either Chemical Engineering 2C3 or Commerce 3H3; Commerce 2A3, 2B3; Economics 2G3, 2H3; Engineering 2R4; English 2E6; Mathematics 2M6.

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FACULTY OF ENGINEERING

YEAR III: 35-37 units
R/ Chemical Engineering 3D4, 3E3; Chemistry 2O8; Commerce 3G3, 3K3; Engineering 2A5; Psychology 1A6 or Sociology 1A6; one of Chemistry 2F3 (or 2F4), 2M5, Engineering 2O3 (or 2O4).

YEAR IV: 37-39 units
R/ Chemical Engineering 3A4, 3B3, 3O4, 4K4; Commerce 3B3, 3D3, 3E3, 3F3; Engineering 4A1; Statistics 3M3.
E/ Six to eight units electives, from liberal studies or approved technical electives list.*
*Students interested in pursuing an M.B.A. degree may find it useful to elect Commerce 2E3.

YEAR V: 36 units
R/ Chemical Engineering 4A5, 4N4, 4P3, 4R4, and 4W4 or 4Y4; Commerce 4B3; Engineering 5A1.
E/ Nine units Commerce electives selected from Commerce 3A3, 3L3 and all Year IV Commerce courses except Commerce 4B3; one of Chemical Engineering 4E3, 4V3, Materials 4D3, Civil Engineering 4G3, Engineering 4U3.

B.ENG. IN CIVIL ENGINEERING AND ENGINEERING MECHANICS

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 36 units
R/ Civil Engineering 2A2, 2B3, 2C4, 2D3; Engineering 2A4, 2P4, 2Q4; English 2E6; Mathematics 2M6.

YEAR III: 36 units
R/ Civil Engineering 3A3, 3B3, 3G4, 3J4, 3K3, 3M4, 3O4; Engineering 2W4, 3P3; Mathematics 3J4.

YEAR IV: 34-36 units
E/ Six units liberal studies electives, 28 to 30 units chosen from Year IV Civil Engineering courses or other technical electives, in accordance with the following guidelines.

In Year IV, Civil Engineering students shall include a minimum of one course from each of four of the following five groups:
Group A: Civil Engineering 4G4, 4S3
Group B: Civil Engineering 4A4, 4I4, 4M3, 4X3, Engineering 4U3
Group C: Civil Engineering 4D4, 4F3, 4H3
Group D: Civil Engineering 4K3, 4N4, 4P3, 4R4, 4Y4
Group E: Civil Engineering 4B3, 4C3, 4J3

Exceptions to this guideline may be made only with the approval of the Chairman of the Department. Students are advised that some of these courses include a major project counting for more than 50% of the final grade. Students should avoid incurring too great a load of project work in any one term.

B.ENG.MGT. IN CIVIL ENGINEERING AND MANAGEMENT

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%, including a minimum grade of C in Economics 1A6.

YEAR II: 39 units
R/ Commerce 2A3, 2B3; Computer Science 2L3; Economics 2G3, 2H3; Electrical Engineering 2B3, 2D3, 2H3, 2X3; Engineering 2O4; Mathematics 2P4, 2Q4.

YEAR III: 36-39 units
R/ Commerce 3G3, 3K3; Computer Science 3A3; Electrical Engineering 3B4, 3C4; Engineering 2R4, 2W4; English 2E6; Mathematics 3K5.
E/ Optional additional three units technical electives.*
*Students interested in pursuing an M.B.A. degree may find it useful to elect Commerce 2E3.

YEAR IV: 40 units
R/ Commerce 3E3; two of Commerce 3B3, 3D3, 3F3; Computer Science 3C3, 3D3; Electrical Engineering 3F4, 3G4, 3H3, 3K4; Engineering 4A1; Psychology 1A6 or Sociology 1A6; Statistics 3X3.

YEAR V: 37-39 units
R/ Commerce 4B3; one of Commerce 3B3, 3D3, 3F3; Computer Science 4E3, 4W3; one of Computer Science 4F3, 4L3, 4J3, 4X3; Engineering 5A1.
E/ Nine units Commerce electives selected from Commerce 3A3, 3L3 and all Year IV Commerce courses except Commerce 4B3; 13 to 15 units selected from Electrical Engineering 4A4, 4B4, 4C4, 4E3, 4G3, 4H3, 4K3, 4L3.

B.ENG. IN ELECTRICAL ENGINEERING

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 38 units
R/ Electrical Engineering 2B3, 2D3, 2H3, 2X3; Engineering 2O4, 2P4, 2W4; English 2E6; Mathematics 2P4, 2Q4.

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

YEAR IV: 36-38 units
R/ 16 units of Electrical Engineering Year IV courses.*
E/ Six units liberal studies electives; 14 to 16 units technical electives.*

*The following groups of courses are recommended: Electrical and Communications: Electrical Engineering 4A4, 4B4, 4C4, 4G3, 4H3, 4K4, 4L3 or 4M3; Engineering Physics 4B3 or Engineering 3Q3; Engineering Physics 4K3. Power and Control: Electrical Engineering
B.ENG. MGT. IN ELECTRICAL ENGINEERING AND MANAGEMENT

Admission: Completion of Engineering I, with a weighted average of at least 60.0%, including a minimum of a C grade in Economics 1A6.

YEAR II: 36 units
R/ Engineering 2A3, 2B3, Economics 2G3, 2H3; Electrical Engineering 2B3, 2D3, 2H3, 2X3; Engineering 2M4, 2P4, 2Q4.

YEAR III: 37 units
R/ Computer 3G3, 3K3; Electrical Engineering 3B4, 3C4, 3K4; Engineering 3H4, 2W4; Mathematics 3K5; Psychology 2A6 or Sociology 1A6.

YEAR IV (1980-81): 38 units
R/ Computer 3E3; one of Commerce 3B3, 3D3, 3F3; Electrical Engineering 3C4, 3F4, 3G4, 3H3, 3K4, 3N3; Engineering 4A1. E/ Six units liberal studies or approved technical electives.*

YEAR IV (1981-82): 39 units
R/ Computer 3E3; one of Commerce 3B3, 3D3, 3F3; Electrical Engineering 3C4, 3F4, 3G4, 3H3, 3K4, 3N3; Engineering 4A1. E/ Six units liberal studies or approved technical electives.*

YEAR V: 37-39 units
R/ Computer 4B3; two of Commerce 3B3, 3D3, 3F3; 18 to 20 units of Electrical Engineering Year IV courses (see note following Year IV Electrical Engineering programme description); Engineering 5A1.
E/ Nine units Commerce electives selected from Commerce 3A3, 3L3 and all Year IV Commerce courses except Commerce 4B3.

*Students interested in pursuing an M.B.A. degree may find it useful to elect Commerce 2E3.

B.ENG. IN ENGINEERING PHYSICS

Admission: Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 37 units
R/ Engineering 2C2, 2P4, 2W4; Engineering Physics 2A7; English 2E6; Mathematics 2P4, 2Q4; Physics 2C5.

YEAR III: 37-38 units
R/ Chemical Engineering 3B4 or Mechanical Engineering 204; Engineering Physics 3E5; Mathematics 3C8, 3Q4; Physics 3B6, 3M6.
E/ Six units liberal studies elective (which may be deferred to Year IV), or approved technical electives to make a total of 36 to 38 units.*

YEAR IV: 36-38 units
R/ Engineering 4C2, 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4B3, 4D4, 4G3, 4K3, 4S4, 4W3. Physics 4D6.
E/ Six units liberal studies elective (if not completed in Year III); approved technical electives to make a total of 36 to 38 units.*

*The following areas and courses are suggested as technical electives: YEAR III—Biomedical Engineering: Engineering Physics 3X4; Computer Systems: Electrical Engineering 2H3; Nuclear Engineering: Engineering Physics 3D3; Solid State Electronics: Engineering 3Q3. YEAR IV—Biomedical Engineering: Engineering 4X3, Engineering Physics 4Y3; Computer Systems: Engineering Physics 4W3, Physics 4D6; Lasers and Electro-Optics: Engineering Physics 4G3, 4K3, 4S4; Nuclear Engineering: Engineering Physics 4D4, 4E6, 4F6, 4W3; Solid State Electronics: Engineering Physics 4B3.

B.ENG. MGT. IN ENGINEERING PHYSICS AND MANAGEMENT

Admission: Completion of Engineering I, with a weighted average of at least 60.0%, including a minimum of a C grade in Economics 1A6.

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

YEAR III: 38 units
R/ Commerce 3B3, 3G3, 3K3; English 2E6; Mathematics 3C6; Physics 2C5, 3B6; Psychology 1A6 or Sociology 1A6.

YEAR IV: 37-38 units
R/ Chemical Engineering 3B4 or Mechanical Engineering 304; Commerce 3D3, 3E3, 3F3; Engineering 4A1; Engineering Physics 3E5; 4C2; Mathematics 3Q4; Physics 3M6.
E/ Six to seven units approved technical electives, three units of which may be replaced by liberal studies elective.

YEAR V: 40 units
R/ Commerce 4B5; Engineering 5A1; Engineering Physics 4U4; Physics 4B4; at least 10 units selected from Engineering Physics 4B3, 4D4, 4G3, 4K3, 4S4, 4W3, Physics 4D6.
E/ Nine units Commerce electives selected from Commerce 3A3, 3L3 and all Year IV Commerce courses except Commerce 4B3; approved technical electives to make a total of 40 units.

B.ENG. IN MANUFACTURING ENGINEERING

Admission: Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 37 units
R/ Engineering 2A5, 2P4, 2Q4, 2W4; English 2E6; Manufacturing Engineering 2C2; Mathematics 2M6; Mechanical Engineering 2A3.

YEAR III: 38 units
R/ Engineering 3M3, 3N3, 3R3; Manufacturing Engineering 3M3; Mathematics 3V6; Mechanical Engineering 3A3, 3C3, 3E4, 3Q4, 3R3, 4X3.

YEAR IV: 39 units (tentative, 1981-82)
R/ Engineering 4J3; Manufacturing Engineering 4A3, 4M4, 4P2; Mechanical Engineering 4C3, 4D3, 4Q3, 4R3, 4T3, 423.
E/ Six units liberal studies elective; three units approved technical elective.

B.ENG. IN MECHANICAL ENGINEERING

Admission: Completion of Engineering I, with a weighted average of at least 60.0%.

YEAR II: 37 units
R/ Engineering 2A5, 2P4, 2Q4, 2W4; English 2E6; Mathematics 2M6; Mechanical Engineering 2A3, 2B3, 2C2.

YEAR III: 37 units
R/ Engineering 3D3, 3M3, 3N3; Mathematics 3V6; Mechanical Engineering 3A3, 3C3, 3D3, 3E4, 3M2, 3Q4, 3R3.

YEAR IV: 36-39 units
R/ Mechanical Engineering 4C3, 4G3, 4M4, 4P2, 4Q3, 4R3, 4S3.
E/ Six units liberal studies elective; three of the following courses: Ceramics 4Q4, Chemical Engineering 4T3, 4V3, Civil Engineering 3K3, Electrical Engineering 2H3, 3S3, Engineering 3P3, 3Q3, 3R3, 4J3, 4X3, Engineering Physics 4D4, 4X3, Mechanical Engineering 4A3, 4D3, 4F3, 4L3, 4T3, 4U3, 4V3, 4W3, 4X3, 4Y3, 4Z3.

*Electives must be chosen so that no more than 21 units are taken in any one term.
B.ENG. MGT. IN MECHANICAL ENGINEERING AND MANAGEMENT

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%, including a minimum of a C grade in Economics 1A6.

YEAR II: 39 units
R/ Commerce 2A3, 2E3; Economics 2G3, 2H3; Engineering 2A5, 2P4, 2W4; English 2E6; Mathematics 2M6; Mechanical Engineering 2C2.

YEAR III: 38 units
R/ Commerce 3G3, 3K3; Engineering 2Q4; Mathematics 3V6; Mechanical Engineering 2A3, 3D3, 3M3, 304, 3R3; Psychology 1A6 or Sociology 1A6.

YEAR IV: 37 units
R/ Commerce 3B3, 3D3, 3F3; Engineering 2Q3, 3M3, 4A1; Mechanical Engineering 3A3, 3C3, 3E4, 4C3, 4P2.
E/ Six units liberal studies or approved technical electives.*

*Students interested in pursuing an M.B.A. degree may find it useful to elect Commerce 2E3.

YEAR V: 38 units
R/ Commerce 4B3; Engineering 5A1; Mechanical Engineering 4G3, 4M4, 4Q3, 4R3 (commencing 1981-82), 4B3.
E/ Nine units Commerce electives selected from Commerce 3A3, 3L3 and all Year IV Commerce courses except Commerce 4B3 (part of Mechanical Engineering 4M4 may, with approval, be included in the Commerce electives); additional approved technical electives, which must include at least nine units of Mechanical Engineering, to make a total of 38 units.

B.ENG. IN METALLURGICAL ENGINEERING

Admission:
Completion of Engineering I, with a weighted average of at least 60.0%.

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

Note: Year II Metallurgical Engineering is identical to Year II Ceramic Engineering. Transfer to Ceramic Engineering in Year III can therefore be made without course deficiency.

YEAR III: 35 units
R/ Chemical Engineering 3Q3; Engineering 3P3; Materials 3B2, 3D6, 3E6, 3G2; Mathematics 3V6; Metallurgy 3C3.

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

YEAR IV: 36 units
R/ Engineering 4M3; Materials 4E3; Metallurgy 4A1, 4C4, 4K4, 4L4.
E/ Six units liberal studies elective; approved technical electives to make a total of 36 units.
The Faculty of Humanities

A. Berland/M.A., M.Litt., Dean of Humanities,
M.P. Halsall/M.A., Ph.D., Associate Dean of Humanities (Studies)
P. Kalnins/Student Advisor
S. Richard/Student Advisor

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

—Jacques Maritain

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

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

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

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

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

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

Open Electives in Humanities

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

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<th>YEAR I PROGRAMMES</th>
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<td>HUMANITIES I</td>
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<td>18 units</td>
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<tr>
<td>12 units</td>
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<td>total 30 units</td>
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*MStudents intending to enter Honours Music should register in Music I.

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

MUSIC I

| 16 units | Q Music 1BB4, 1C6, 1D2, 1E4 |
| 2 units | R Music 1G2 |
| 12 units | E Elective, excluding Music. |
| total 30 units |

Programmes for the Honours B.A. Degree

Subject to possible timetable restrictions, and with the written approval of the appropriate Departments and Dean of Studies, a student may select any combination of two of the following subjects to make an Honours programme: Art History, Canadian Studies, Classical Civilization, Dramatic Arts, English, French, German, Greek, History, Italian, Latin, Music, Philosophy, Russian. Spanish. Combinations may also be possible with certain Social Science disciplines. The student’s programme will be arranged in accord with the practice in Combined Honours Programmes: i.e. normally 12 Q units per-Year in each subject, plus elective work to make up a minimum overall load of 30 units.

Students wishing to enter Honours programmes offered by the Faculty of Humanities and pursue these programmes 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:

- Classical Civilization
- Dramatic Arts (Combined Honours only)
- English
- French (Combined Honours only)
- History
- Philosophy

Department of Art and Art History

The Department of Art and Art History offers programmes in both Art and Art History.

I HONOURS ART

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

A. For students in Year IV

YEAR IV: 30 units (1980-81)

G/ Art 4B12; or 4C6 and one of Art 3A6, 3B6, 3E6, or 4A6; six units of Art History.
R/ One of Art 3A6, 3B6, 3E6 or 4A6.
E/ Six units elective, approved by the Department.
B. For students entering Honours Art Year II in September, 1979 and after.

Admission:
University Standing in any Year I with a weighted average of 70% in Art History 1A6 and Art 1B6 and 1D6.

YEAR II: 30 units
Q/ Art 2A6, 2B6; six units from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3.
R/ Art 2C3; three units from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3.
E/ Six units elective excluding Art and Art History.

YEAR III: 30 units (beginning in 1980-81)
Q/ One of Art 3A6, 3B6, 3E6 or 4A6; six units from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2O3, 2P3, whichever not previously completed.
R/ Art 3C3; three units of Art History.
E/ 12 units elective, at least six excluding Art and Art History.

YEAR IV: 30 units (beginning in 1981-82)
Q/ Art 4B12; or Art 4C6 and one of Art 3A6, 3B6, 3E6, or 4A6, whichever not previously completed.
R/ One of Art 3A6, 3B6, 3E6, and 4A6, whichever not previously completed.
E/ Six units elective.

At least "D" is required in all Q and R group Art and Art History courses.

PASS ART

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of 55 or higher in each of Art History 1A6 and Art 1B6 and 1D6.

YEAR II: 30 units
R/ Art 2A6 or 2B6, Art 2C3; six units chosen from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3, whichever not previously completed.
E/ 12 units elective, at least six excluding Art and Art History.

YEAR III: 30 units
R/ One of Art 2A6, 2B6, 3A6, 3B6, 3E6, or 4A6, whichever not previously completed; six units of Art History.
E/ Six units elective, at least six excluding Art and Art History.

YEAR IV: 30 units
R/ Art 3C3; three units from Art History.
E/ 12 units elective, at least six excluding Art and Art History.

At least "D" is required in all R group Art and Art History courses.

II HONOURS ART HISTORY

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I, with a weighted average of 70% in Art History 1A6 and six units acceptable to the Department.

YEAR II: 30 units
Q/ 18 units chosen from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3.
E/ 12 units, including no more than six units of Art History.

YEAR III: 30 units
Q/ 18 units of Art History.
E/ 12 units, including no more than six units of Art History.

YEAR IV: 30 units
Q/ 18 units of Art History, including two seminars if not taken in Year III.
E/ 12 units elective.

At least “D” is required in all Q group Art History courses.

COMBINED HONOURS IN ART HISTORY AND ANOTHER SUBJECT

Students who wish to combine Art History with another subject in a combined Honours programme must complete Year I with a weighted average of 70% in Art History 1A6 and six units of the other Honours subject. The Art History requirements for such a programme are as follows: 12 units of Art History in each of Years II, III, and IV, including 18 units chosen from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3, and at least one seminar course.

At least "D" is required in all Q group Art History courses.

To the total of approximately 24 units of Q work in each Year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

PASS ART HISTORY

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of 55 or higher in Art History 1A6.

YEAR II: 30 units
R/ 12 units chosen from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3; three units of Art History; three units Humanities.
E/ 12 units elective, at least six excluding Art History.

YEAR III: 30 units
R/ Six units chosen from Art History 2B3, 2C3, 2K3, 2L3, 2M3, 2N3, 2O3, 2P3, whichever not previously completed; nine units of Art History; three units Humanities.
E/ 12 units elective, at least six excluding Art History.

At least "D" is required in all R group Art History courses.

CANADIAN STUDIES

COMBINED HONOURS IN CANADIAN STUDIES AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the approval of the Counsellor of the Canadian Studies Committee of Instruction.

Admission:
University Standing in any Year I with a mark of 55 or higher in each of English 1C2, 2C2, 3C2, 4C2, and 4D2, with a weighted average of 70% in English 1C2 and English 2C2, and English 3C2 and English 4C2, and a weighted average of 55 or higher in English 2C2 and English 3C2.

At least "D" is required in all R group English courses.

Note: No student may register in any Year of this programme without the approval of the Counsellor of the Canadian Studies Committee of Instruction.

Admission:
University Standing in any Year I with a mark of 55 or higher in each of English 1C2, 2C2, 3C2, 4C2, and 4D2, with a weighted average of 70% in English 1C2 and English 2C2, and English 3C2 and English 4C2, and a weighted average of 55 or higher in English 2C2 and English 3C2.

At least "D" is required in all R group English courses.

Language Requirements

Before proceeding to Year III of the programme the student in Combined Honours Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a mark of at least 55 in French 1A6 or 1B6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French. Readings in French will be included in Year III and Year IV seminars.

YEAR III:
Q/ Six units from Canadian Studies 3A3, 3B3, 4A3, 4B3, 4C3, 4D3; six units from courses designated as Canadian area courses.

Note: A mark of at least 70 in Canadian Studies 2A6 will be required for continuation in Year III of the programme.

YEAR IV:
Q/ A minimum of six units from Canadian Studies 3A3, 3B3, 4A3, 4B3, 4C3, 4D3; six units from courses designated as Canadian area courses.

Note: A mark of at least 70 in Canadian Studies 2A6 will be required for continuation in Year III of the programme.

At least "D" is required in all Q group Canadian Studies courses.

At least "D" is required in all Q group Canadian Studies courses.
To a total of approximately 24 or more units of Q work in each Year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units per Year.

At least "D" is required in all Q group specialist courses.

Department of Classics

HONOURS CLASSICAL CIVILIZATION

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I, with a weighted average of 70% in 12 units of Year I work including a mark of at least 70 in Classical Civilization 1A6. (Students are recommended to include at least one of Greek 1A6, 1Z6, Latin 1A6, 1Z6 in their Year I programme).

YEAR II: 30 units
Q/ Classical Civilization 2D3; nine additional units of Classical Civilization or Ancient History; six units of Greek or Latin.
E/ 12 units elective, at least six excluding Greek, Latin, and Classical Civilization.

YEAR III: 30 units
Q/ Six units of Classical Civilization or Ancient History; six units of Greek; six units of Latin.
E/ 12 units elective, at least six excluding Greek, Latin and Classical Civilization.

YEAR IV: 30 units
Q/ Classical Civilization 4F3; three additional units of Classical Civilization; six units of Greek or Latin (whichever language taken in both Year II and Year III); three units of the other Classical language; and three to six units of Greek or Latin or Classical Civilization or Ancient History.
E/ Electives to total 30 units.

At least "D" is required in all Q group specialist courses.

COMBINED HONOURS IN CLASSICAL CIVILIZATION AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Students who wish to combine Classical Civilization with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in Classical Civilization 1A6 and in six units of the other Honours subject. The Classical Civilization requirements for such a programme are as follows:

12 units of Classical Civilization in each of Years II (including Classical Civilization 2D3), III, and IV (including Classical Civilization 4F3). The student must choose no fewer than six units from each of the following groups:

(a) Classical Archaeology and Art History: Classical Civilization 2B3, 2C3, 2L3, 2M3, 2G3, 2L6, 2M6.
(b) Greek and Roman Literature in Translation: Classical Civilization 2E3, 3A3, 3B3, 3C3, 4A3; Classical Greek 1A6, 1A6, 2A3, 2B3, 3A6, 4F3, 4H3; Koine Greek 1D6; Latin 1A6, 1A6, 2A3, 2C3, 2F3, 2G3, 2L3, 2M3, 3A3, 3D3, 4G3, 4H3.
(c) Greek and Latin Language and Literature: Classical Greek 1Z6, 1A6, 2A3, 2B3, 3A6, 4F3, 4H3; Koine Greek 1D6; Latin 1Z6, 1A6, 2A3, 2C3, 2F3, 2G3, 2L3, 2M3, 3A3, 3D3, 4G3, 4H3.
(d) Social, Political and Religious Thought in the Classical World: Classical Civilization 2K3, 2X3, 2Z3, 3M3, 3N3.
(e) Ancient History: History 2L6, 3D6, 3L6, 4D6, 4F6.

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.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

At least "D" is required in all Q group specialist courses.

PASS CLASSICAL CIVILIZATION

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 55 in Classical Civilization 1A6. With the approval of the Departmental Counsellor, Greek 1A6 or 1Z6 or Latin 1A6 or 1Z6 or History 1L6 with a mark of at least 55 may be substituted for Classical Civilization 1A6.

Programme Areas:
(a) Classical Archaeology and Art History: Classical Civilization 2B3, 2C3, 2L3, 2M3, 2G3, 2L6, 2M6.
(b) Greek and Roman Literature in Translation: Classical Civilization 2E3, 3A3, 3B3, 3C3, 4A3; Classical Greek 1A6, 1A6, 2A3, 2B3, 3A6, 4F3, 4H3; Koine Greek 1D6; Latin 1A6, 1A6, 2A3, 2C3, 2F3, 2G3, 2L3, 2M3, 3A3, 3D3, 4G3, 4H3.
(c) Public and Private Life in the Classical World: Classical Civilization 2D3, 2K3, 2X3, 2Z3, 3M3, 3N3; History 2L6, 3D6, 3L6, 4D6, 4F6.

YEAR II: 30 units
R/ 12 units of Classical Civilization, including six units from one programme area and three units each from the other two areas; six units Humanities.
E/ 12 units elective, at least six excluding Classical Civilization.

Pass Classical Civilization students who achieve a weighted average of at least 70% in their Year II Classical Civilization courses may be admitted to Honours Classical Civilization in Year III.

YEAR III: 30 units
R/ 12 units of Classical Civilization; six units Humanities.
E/ 12 units elective, at least six excluding Classical Civilization.

Students are encouraged to take at least six units of Greek or Latin.

At least "D" is required in 12 units of R group specialist courses.

HONOURS CLASSICS

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 70 in Greek 1A6 and in Latin 1A6. (Greek 1Z6 or Latin 1Z6 with a mark of at least 75 may be substituted for Greek 1A6 or Latin 1A6.) Students are recommended to include Classical Civilization 1A6 in their Year I programme.

At the end of each year, Q-average will be based on the specified number of units of work in Greek, Latin and Classical Civilization (or Ancient History) in which the student has been most successful.

YEAR II: 30 units
Q/ The 18 units of Greek, Latin, and Classical Civilization or Ancient History in which the student obtains the highest weighted average.
R/ Greek 2A3, 2B3; Latin 2F3 and nine additional units from Latin 1A6 (if not previously completed), 2A3, 2C3, 2G3, 2L3, 2M3. Greek 1A6 (if not
ART AND ART HISTORY

previously completed), otherwise six units of Classical Civilization or History 2L6.
E/ Six units elective, excluding Greek and Latin.

YEAR III: 30 units
Q/ The 18 units of Greek, Latin, and Classical Civilization or Ancient History in which the student obtains the highest weighted average.
R/ Greek 3C3 (or 4E3)*; Latin 3E3 (or 4C3)*; and 12 additional units of Year III (or Year IV)* Greek and Latin; six units of Classical Civilization or History 3D6 or 3L6.
E/ Six units elective, excluding Greek and Latin.

YEAR IV: 30 units
Q/ The 18 units of Greek, Latin, and Classical Civilization or Ancient History in which the student obtains the highest weighted average.
R/ Greek 4E3 (or 4E3)*; Latin 4C3 (or 3E3)*; and 12 additional units of Year IV (or Year III)* Greek and Latin; six units of Classical Civilization or History 3D6 or 3L6 or 4D6 or 4I6.
E/ Six units elective.

* Year III Greek courses alternate with Year IV Greek courses. Year III Greek courses are offered in 1981-82; Year IV Greek courses are offered in 1980-81. Year III Latin courses alternate with Year IV Latin courses. Year III Latin courses are offered in 1980-81; Year IV Latin courses are offered in 1981-82.

Note: At least "D" is required in all Q or R group specialist courses.

COMBINED HONOURS IN GREEK AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Students who wish to combine Greek with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in Greek 1A6 and in six units of the other Honours subject. (Greek 126 with a mark of at least 75 may be substituted for Greek 1A6.)

The Greek requirements for such a programme are as follows:
12 units of Greek in each of Years II, III, and IV.
Year III Greek courses alternate with Year IV Greek courses. Year III Greek courses are offered in 1981-82; Year IV Greek courses are offered in 1980-81.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

At least "D" is required in all Q group specialist courses.

COMBINED HONOURS IN LATIN AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Students who wish to combine Latin with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in Latin 1A6 and in six units of the other Honours subject. (Latin 126 with a mark of at least 75 may be substituted for Latin 1A6.)

The Latin requirements for such a programme are as follows:
Year II/Latin 2F3; nine additional units from Latin 1A6 (if not previously completed), 2A3, 2G3, 2L3, 2M3.
Year III/Latin 3E3 (or 4C3)*; nine additional units of Year III (or Year IV)* Latin.
Year IV/Latin 4C3 (or 3E3)*; nine additional units of Year IV (or Year III)* Latin.

* Year III Latin courses alternate with Year IV Latin courses. Year III Latin courses are offered in 1980-81; Year IV Latin courses are offered in 1981-82.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

At least "D" is required in all Q group specialist courses.

PASS LATIN

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 55 in Latin 1A6 or at least 75 in Latin 126.

YEAR II: 30 units
R/ Latin 2F3; nine additional units from Latin 1A6 (if not previously completed), 2A3, 2G3, 2L3, 2M3; six units of Classical Civilization or History 2L6.
E/ 12 units elective, at least six excluding Latin.

* Year III Latin courses alternate with Year IV Latin courses. Year III Latin courses are offered in 1980-81; Year IV Latin courses are offered in 1981-82.

At least "D" is required in all R group specialist courses.

DRAMATIC ARTS

COMBINED HONOURS IN DRAMATIC ARTS AND ANOTHER SUBJECT

Note: No student may register without the approval of the Chairman of the Committee on Dramatic Arts. Students are therefore advised to consult the Chairman of the Committee on Dramatic Arts before registering.

Students who wish to combine Dramatic Arts with another subject in a Combined Honours programme must complete Year I with a weighted average of at least 70% in Dramatic Arts courses in the first requirement should consult the Chairman of the Committee on Dramatic Arts before registering.

Admission:
University Standing in any Year I including Dramatic Arts 1A6 and six additional units of Humanities with a mark of at least 55 in Dramatic Arts 1A6.

At least "D" is required in all Q group specialist courses.
Students wishing to graduate in Honours English must have attained at least a mark of 70 in English 1A6 or 1B6. At least 'D' is required in all Q or R group English courses.

At the end of each year, Q-average will be based on the 12 units of work in English in which the student has been most successful. Students wishing to graduate in Combined Honours in 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 six units of work from at least five of the six indicated areas must be taken.

Area I: English 3D3; 3DD3; 4E6 (Mediaeval)
Area II: English 3I3; 3K6; 3T3 (Renaissance)
Area III: English 3V6; 4B6 (17th & 18th Centuries)
Area IV: English 2I6; 4L3; 4M3 (19th & 20th Centuries)
Area V: English 2G6; 2H6 (North American)
Area VI: English 2B6; 2V6; 4N6 (Genre & Language Studies)

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

YEAR II:
Q/ The 12 units of English in which the student obtains the highest weighted average.
R/ 12 units of English from English 2B6; 2G6; 2H6; 2I6; 2V6.

YEAR III:
Q/ The 12 units of English in which the student obtains the highest weighted average.
R/ 12 units of English from English 3D3; 3DD3; 3I3; 3K6; 3T3; 3V6.

YEAR IV:
Q/ The 12 units of English in which the student obtains the highest weighted average.
R/ 12 units of English from English 4B6; 4E6; 4L3; 4M3; 4N6.

At least 'D' is required in all Q or R group English courses.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 50 units.

Students wishing to graduate in Honours English, combined with a subject other than language, must have attained at least "D" standing in six units of a language other than English or of other courses approved for this purpose by the Department of English. Students should consult the Department for a list of approved courses. The Department strongly advises students to fulfill this requirement before Year III.

PASS ENGLISH

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 55 in English 1A6 or 1B6.

YEAR II: 30 units
Q/ The 18 units of English in which the student obtains the highest weighted average.
R/ 18 units of English from English 2B6; 2G6; 2H6; 2I6; 2V6.
E/ 12 units elective, at least six excluding English.

YEAR III: 30 units
Q/ The 18 units of English in which the student obtains the highest weighted average.
R/ 18 units of English from English 3D3; 3DD3; 3I3; 3K6; 3T3; 3V6.
E/ 12 units elective, at least six excluding English.

YEAR IV: 30 units
Q/ The 18 units of English in which the student obtains the highest weighted average.
R/ 18 units of English from English 4B6; 4E6; 4L3; 4M3; 4N6.
E/ 12 units elective.

At least 'D' is required in all Q or R group English courses.

Note: Students wishing to graduate in Pass English must have attained at least "D" standing in six units of a language other than English or of other courses approved for this purpose by the Department of English. Students should consult the Department for a list of approved courses. The Department strongly advises students to fulfill this requirement before Year III.

COMBINED HONOURS IN ENGLISH AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.
HISTORY

Department of German

HONOURS GERMAN

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I, with a weighted average of 70% in 12 units of Year I work including a mark of at least 70 in German 1A6. (German 1Z6 with a grade of “A” may be substituted for German 1A6 with permission of the Department.)

YEAR II: 30 units
Q/ Either (a) German 2E3 and three of German 2A3, 2D3, 2F3, 2G3; or (b) German 1A6 and 2Z6.
R/ Six units Humanities or six units approved by the Department.
E/ 12 units elective, at least six excluding German.

YEAR III: 30-31 units
Q/ Either (a) German 3C4 and 12 additional units of Year III or IV German; or (b) German 2A3, 2D3, 2E3, 2F3, 2G3.
R/ Three units Humanities or three units approved by the Department.
E/ 12 units elective, at least six excluding German.

With the approval of the Department and of the Associate Dean of Humanities (Studies), Year III of Honours German may be replaced by courses of study at a German university.

YEAR IV: 30 units
Q/ Either (a) German 4C4 and 16 additional units of Year III or IV German; or (b) German 3C4 and 20 additional units of Year III or IV German; or (c) German 4E2 and 16 additional units of Year III or IV German (which may include German 4C4).
E/ Electives to total 30 units.

At least ‘D’ is required in all Q group German courses.

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

COMBINED HONOURS IN GERMAN AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Students who wish to combine German with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in German 1A6 and in six units of the other Honours subject. (German 1Z6 with a grade of “A” may be substituted for German 1A6 with permission of the Department.) The German requirements for such a programme are as follows:

Year II: Either
(a) German 2E3 and three of German 2A3, 2D3, 2F3, 2G3; or
(b) German 1A6 and 2Z6.
Year III: Either
(a) German 3C4 and eight additional units of German; or
(b) German 2E3 and three of German 2A3, 2D3, 2F3, 2G3.

With the approval of the Department and of the Associate Dean of Humanities (Studies), the German half of Year III Combined Honours may be replaced by courses of study at a German university.

Year IV: Either
(a) German 4C4 and 12 additional units of Year III or IV German; or
(b) German 3C4 and 12 additional units of German; or
(c) German 4Z6 and eight additional units of Year III or IV German (which may include German 4C4).

At least ‘D’ is required in all Q group German courses.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

PASS GERMAN

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 55 in German 1A6. (German 1Z6, with the permission of the Department, may be substituted for German 1A6.)

YEAR II: 30 units
R/ Either (a) German 2E3 and three of German 2A3, 2D3, 2F3, 2G3; or (b) German 1A6 and 2Z6; six units Humanities or six units approved by the Department.
E/ 12 units elective, at least six excluding German.

Pass German students who achieve a weighted average of at least 70% in their Year II German courses may be admitted to Honours German in Year III.

YEAR III: 30 units
R/ Either (a) German 3C4 and eight additional units of German, or (b) German 2E3 and three of German 2A3, 2D3, 2F3, 2G3; six units Humanities or six units approved by the Department.
E/ 12 units elective, at least six excluding German.

At least ‘D’ is required in all R group German courses.

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

Department of History

HONOURS HISTORY

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I, with a weighted average of 70% in 12 units of Year I work acceptable to the Department, including a mark of at least 70 in any Year I History course. Students should note that certain courses may require a reading knowledge of a language other than English.

YEAR II: 30 units
Q/ 12 units of Year II History; six units of either Year II or Year III History. A three-field requirement (see note below) must be satisfied by the end of Year II.
E/ 12 units elective, excluding History, approved by the Department.

YEAR III: 30 units
Q/ Six units of Year III History, six units of either Year III or Year II History, including History 2J6 if it has not been taken; six units of Year IV History.
E/ 12 units elective, six of which may be History, approved by the Department.

YEAR IV: 30 units
Q/ 12 units of Year IV History; six units of Year III History.
E/ 12 units elective, six of which may be History, approved by the Department.

At least ‘D’ is required in all Q group courses.
Note: In selecting courses in this programme students must ensure that they take at least six units in each of three fields of History. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and United States.

**COMBINED HONOURS IN HISTORY AND ANOTHER SUBJECT**

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

**Admission:**

Students who wish to combine History with another subject in a Combined Honours programme must complete any Year I with a weighted average of 70% in a Year I course in History together with six units of the other Honours subject. Students should note that certain courses may require a reading knowledge of a language other than English. The History requirements for a Combined Honours programme are as follows:

**YEAR II:**

Q/ Six units of Year II History; six units of Year II or Year III History.

**YEAR III:**

Q/ Six units of Year III or Year II History; six units of Year IV History. A three-field requirement (see note above) must be satisfied by the end of Year III.

**YEAR IV:**

Q/ Six units of Year III History; six units of Year IV History.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

At least "D" is required in all Q group courses.

**HONOURS HISTORY AND ECONOMICS**

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

**Admission:**

University Standing in any Year I with a mark of at least 70 in any Year I History course and a mark of at least 70 in Economics 1A6 or 1B6.

The mathematics requirements for this programme are described on page

**YEAR II:** 30 units

Q/ Economics 2L6 and 2M6; six units of Year II History and six units of Year II or Year III History approved by the History Department.

R/ Economics 2B3; Mathematics '1L3 and 1M3 or equivalent (if not complet­ed in Year I).

E/ Electives to total 30 units.

*Students may also meet the statistics requirement by taking Economics 306 in Year III.*

**YEAR III:** 30 units

Q/ Economics 3A3 and 3AA; six additional units of Economics; six units of Year III or Year II History; six units of Year IV History. A three-field requirement (see note above) must be satisfied by the end of Year III.

E/ Six units elective.

**YEAR IV:** 30 units

Q/ 12 units of Economics; 12 units of Year III or IV History, including one Year IV course.

E/ Six units elective.

At least "D" is required in all Q group History courses.

**PASS HISTORY**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Department of Philosophy**

**HONOURS PHILOSOPHY**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**

University Standing in any Year I, with a weighted average of 70% in 12 units acceptable to the Department.

**YEAR II:** 30 units

Q/ 15 units Philosophy, including Philosophy 2A6 and 2C6. Philosophy 2C6 may be taken in the third year of study.

R/ Philosophy 2B3.

E/ 12 units elective, only six of which may be in Philosophy.

**YEAR III:** 30 units

Q/ 18 units Philosophy, including Philosophy 3A6, 3G3, 303, Philosophy 3A6 and/or 3G3 may be taken in the fourth year of study.

E/ 12 units elective, only six of which may be in Philosophy.

**YEAR IV:** 30 units

Q/ 18 units Year III or IV Philosophy, including Philosophy 4H3.

E/ 12 units elective.

Note: At least "D" is required in all Q and R group Philosophy courses.

**COMBINED HONOURS IN PHILOSOPHY AND ANOTHER SUBJECT**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Students who wish to combine Philosophy with another subject in a Combined Honours programme must complete any Year I with a weighted average of 70% in six units acceptable to the Department of Philosophy and six units of the other Honours subject. The Philosophy requirements for such a programme are as follows:
**ROMANCE LANGUAGES**

**YEAR II:**
Q/ Philosophy 2A6 or 2C6 plus three more units of Philosophy.
R/ Philosophy 2B3.

**YEAR III:**
Q/ 12 units Year III or IV Philosophy, including Philosophy 2A6 or 2C6, if either not previously completed.

**YEAR IV:**
Q/ 12 units of Year III or IV Philosophy.
   
   **Note:** At least “D” is required in all Q and R group Philosophy Courses.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 32 units.

**HONOURS PHILOSOPHY AND BIOLOGY**

**Note:** No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**
University Standing in any Year I, including Philosophy 1B6 or 1D6, Biology 1A6 or 1G6, and six units of Year I Mathematics. A mark of at least 70 must be obtained in the six units of Biology and in the six units of Philosophy.

Students are advised to note carefully the prerequisites for all courses listed in the following programme.

**YEAR II: 30-33 units**
Q/ The 18-21 units listed in R, with the exception of Chemistry 208 and Philosophy 2L3, in which the student obtains the highest weighted average.
R/ Biology 2B3, 2C3, 2E3 and 2F3. 15 units of Philosophy including Philosophy 2B3, 2D3 or 2G3. 2L3, 2A6 or 2C6. Chemistry 208 may replace six units of Biology.
E/ Three to six units elective.

**YEAR III: 30-33 units**
Q/ The 18-21 units listed in R with the exception of Philosophy 3W3, in which the student obtains the highest weighted average.
R/ 12 units of Biology chosen from two of Biology 2B3, 2C3, 2E3 or 2F3, if not previously taken, and from Biology 3F6, 3H6, 3I6, 3J6, 3N6, 3O3 and 3Q3.
15 units of Philosophy including Philosophy 2A6 or 2C6 (whichever not previously taken); Philosophy 3W3; and six additional units of Year III or IV level Philosophy including at least one of Philosophy 3L3 and 3O3.
E/ Three to six units elective.

**YEAR IV: 30-33 units**
Q/ The 18-21 units listed in R, with the exception of Philosophy 4W3, in which the student obtains the highest weighted average.
R/ 12 units of Biology chosen from those listed in Year III, not previously taken, and from Biology 3K3, 4E3, 4Y3 and 4M3.
15 units of Philosophy to include 4S3 and 4W3, 3G3 or 3N6; and three to six units to be selected from the following: Philosophy 3L3 or 3O3 (if not previously taken), or Philosophy 4C3.
E/ Three to six units elective.

   **Note:** It is recommended that students include Biology 1H6 and Philosophy 2F6 at some point in their programme.

   At least “D” is required in all Q or R group Philosophy courses.

**HONOURS PHILOSOPHY AND MATHEMATICS**

**Note:** No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**
University Standing in any Year I with a weighted average of at least 70% in Mathematics 1A6 or 1C6, 1B4* and six units acceptable to the Department of Philosophy.

*Students who have taken Applied Mathematics 1C6 instead of Mathematics 1B4 will be considered for admission to Honours Mathematics and Philosophy.

**YEAR II:**
Q/ Mathematics 2A4 or 2A5, 2B4, 2F4; 12 units of Philosophy including 2A6 or 2C6 and 2B3.
E/ Six units elective.

**YEAR III:**
Q/ Mathematics 3A6, 3E4; 12 units of Philosophy.
R/ One of Mathematics 2C4, 3B4, 3L4, 3P4.
E/ Six units elective.

**YEAR IV:**
Q/ Two of Mathematics 4A6, 4E6, 4K4; 12 units of Year III or IV Philosophy.
R/ One of Mathematics 3B4, 3L4, 3P4, 4B4.
E/ Six units elective.

   At least “D” is required in all Q group Philosophy courses.

**PASS PHILOSOPHY**

**Note:** No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**
University Standing in any Year I, with a mark of at least 55 in a Year I course acceptable to the Department.

**YEAR II:**
Q/ 12 units Philosophy, including Philosophy 2A6 and 2C6; six units Humanities or six units approved by the Department. Philosophy 2C6 may be taken in the third year of study.
E/ 12 units elective, at least six excluding Philosophy.

**YEAR III:**
Q/ 12 units Philosophy; six units Philosophy or six units Humanities or six units approved by the Department.
E/ 12 units elective, at least six excluding Philosophy.

   At least “D” is required in all R group Philosophy courses.

   A minimum of 30 units Philosophy must be completed in this programme. If taken in Year I, Philosophy 1B6 or 1D6 counts towards this total.

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**Department of Romance Languages**

**HONOURS FRENCH**

**Note:** No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**
University Standing in any Year I with a weighted average of 70% in 12 units acceptable to the Department, including a mark of at least 70 in French 1A6 (French 1B6 with a mark of at least 75 may be substituted for French 1A6 with permission of the Department).

Students will choose EITHER of the following two Honours programmes:

**Programme A: French Language and Literature**

**YEAR II:**
Q/ French 2A4; at least one of French 2J3, 2IJ3; at least one of French 2W3, 2WWS; plus additional units to make a total of 19 units of French.
E/ 12 units elective, at least six excluding French.

**YEAR III:**
Q/ French 3C4; at least one of French 3K3, 3KK3; at least one of French 3Q3, 3O3; at least one three-unit seminar in French literature; plus additional units to make a total of 19 units of French.
E/ 12 units elective, at least six excluding French.
With the approval of the Department and the Associate Dean of Humanities (Studies), Year III of Honours French may be replaced by courses of study at a French-language university.

YEAR IV: 31 units
Q/ French 4A4; at least one of French 3K3, 3KK3, 3MM3, 3Q3, 3QQ3 (whichever not previously completed), 3R3, 4J3, 4R3; two three-unit seminars in French literature; plus additional units to make a total of 19 units of French.
E/ 12 units elective.

At least "D" is required in all Q group French courses.

Programme B: French Language and Linguistics

YEAR II: 31 units
Q/ French 2A4; two 3-unit courses in French literature; one of French 3B3, 3G3, 4E3; an introduction to the scientific study of language: Linguistics 1A6 or Anthropology 2M6.
E/ 12 units elective, at least six excluding French.

YEAR III: 31 units
Q/ French 3C4; two 3-unit courses in French literature; nine units from French 3A3, 3B3, 3CC3, 3E3, 3G3, 3J3, 3L3 (whichever not previously completed), 3R3, 4BB3, 4E3, 4Z3, to total 19 units.
E/ 12 units elective, at least six excluding French.

With the approval of the Department and of the Associate Dean of Humanities (Studies), Year III of Honours French may be replaced by courses of study at a French-language university.

YEAR IV: 31 units
Q/ French 4A4; one 3-unit course in French literature; six to nine units from French 3A3, 3B3, 3CC3, 3E3, 3G3, 3J3, 3L3, 3R3, 4BB3, 4E3, 4Z3, whichever not previously completed; three to six units from the following courses in Linguistics: Anthropology 2Q3, 313 to total 19 units.
E/ 12 units elective.

At least "D" is required in all Q group French courses.

Note: Related courses in Linguistics, notably English 2S3, 2V6 and Russian 2F6, may be taken as electives.

COMBINED HONOURS IN FRENCH AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a weighted average of at least 70% in 12 units of Year I work including a mark of at least 70 in Italian 1A6 or 126 or 12Z6.

YEAR II: 30 units
Q/ Italian 1A6 or 2D6; Italian 2E6.
R/ Six units of English if not previously completed; otherwise, six units of Humanities.
E/ 12 units elective, at least six excluding Italian.

YEAR III: 30-31 units
Q/ Italian 2D6 (if not previously completed) or Italian 3D4; Italian 3P6; and additional units of Italian to total 18 to 19 units.
E/ 12 units elective, at least six excluding Italian.

With the approval of the Department and of the Associate Dean of Humanities (Studies), Year II of Honours Italian may be replaced by courses of study at a European university.

YEAR IV: 30-31 units
Q/ Italian 3D4 (if not previously completed) or Italian 4M3; Italian 4P3 (if not previously completed); and additional units of Italian to total 18 or 19 units.
E/ 12 units elective.

Note: It is recommended that students include Italian 3L3, 3O3, 4L4 and History 3A3 in their programme.

At least "D" is required in all Q group Italian courses.

COMBINED HONOURS IN ITALIAN AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.
**Admission:**

Students who wish to combine Italian with another subject in a Combined Honours programme, must complete Year I with a mark of at least 70 in Italian 1A6 or 1Z6 and in six units of the other Honours subject. The Italian requirements for such a programme are as follows:

**YEAR II:**
- Q/ Italian 1A6 (if not previously completed) or 2D6; Italian 2E6.

**YEAR III:**
- Q/ Italian 2D6 (if not previously completed) or 3D4; Italian 3R6; and additional units of Italian to total 12-13 units.

With the approval of the Department and the Associate Dean of Humanities (Studies), the Italian half of a Combined Honours Programme may be replaced by courses of study at a European university.

**YEAR IV:**
- Q/ Italian 3D4 (if not previously completed) or 4M3; Italian 4P3 (if not previously completed); and additional units of Italian to total 12-13 units.

Note: It is recommended that students include Italian 4L4 and History 3A3 in their programme.

At least "D" is required in all Q group Italian courses.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme the student must add elective work to make up a minimum overall load of 30 units.

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**PASS ITALIAN**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**

University Standing in any Year I with a mark of at least 55 in Italian 1A6 or 1Z6 or 1Z26.

**YEAR II:** 30 units
- R/ Italian 1A6 or 2D6; Italian 2E6; six units of English, if not previously completed; otherwise, six units of Humanities.
- E/ 12 units elective, at least six excluding Italian.

Pass Italian students who achieve a weighted average of at least 70% in their Year II Italian courses may be admitted to Honours Italian in Year III.

**YEAR III:** 30-31 units
- R/ Italian 2D6 (if not previously completed) or 3D4; Italian 3R6; Italian 4P3; six units Humanities.
- E/ 12 units elective, at least six excluding Italian.

Note: It is recommended that students include History 3A3 in their programme.

At least "D" is required in all R group Italian courses.

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**HONOURS SPANISH**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**

University Standing in any Year I with a weighted average of 70% in 12 units of Year I work including a mark of at least 70 in Spanish 1Z6 or 1A6.

**YEAR II:** 30 units
- Q/ Spanish 1A6 (if not previously completed) or 2A6, 2B3, 2C3 and 2E3.
- R/ Three units Humanities.
- E/ 12 units elective, at least six excluding Spanish.

**YEAR III:** 31 units
- Q/ Spanish 3A4, 3B3, 3BB3, 3C3, 3CC3, 3E3.
- E/ 12 units elective, at least six excluding Spanish.

Students who have not already taken Spanish 2A6 or 2E3 may include one or the other in their Year III elective group.

With the approval of the Department and of the Associate Dean of Humanities (Studies), Year III of Honours Spanish may be replaced by a course of study at a university abroad.

**YEAR IV:** 31 units
- Q/ Spanish 4A4 and 12 additional units of Year IV Spanish.
- R/ Three units Humanities.
- E/ 12 units elective.

At least "D" is required in all Q group Spanish courses.

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**COMBINED HONOURS IN SPANISH AND ANOTHER SUBJECT**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

Students who wish to combine Spanish with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in Spanish 1Z6 or 1A6 and in six units of the other Honours subject. The Spanish requirements for such a programme are as follows:

**YEAR II:**
- Q/ Spanish 1A6 (if not previously completed) or 2A6, 2E3; and either 2B3 or 2C3.

With approval of the Department and the Associate Dean of Humanities (Studies), the Spanish half of a Combined Honours Programme may be replaced by courses of study at a Spanish-speaking university.

**YEAR III:**
- Q/ Spanish 3A4 and nine additional units of Year III Spanish.

**YEAR IV:**
- Q/ Spanish 4A4 and nine additional units of Year IV Spanish.

At least "D" is required in all Q group Spanish courses.

To the total of approximately 24 units of Q work in each year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

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**PASS SPANISH**

Note: No student may register in any Year of this programme without the Departmental Counsellor’s approval, which should be obtained before completing registration forms in March.

**Admission:**

University Standing in any Year I, with a mark of at least 55 in Spanish 1Z6 or 1A6.

**YEAR II:** 30 units
- R/ Spanish 1A6 (if not previously completed) or 2A6, 2E3, and either 2B3 or 2C3; six units Humanities.
- E/ 12 units elective, at least six excluding Spanish.

Pass Spanish students who achieve a weighted average of at least 70% in their Year II Spanish courses may be admitted to Honours Spanish in Year III.

**YEAR III:** 31 units
- R/ Spanish 3A4 and nine additional units of Year III Spanish; six units Humanities.
- E/ 12 units elective, at least six excluding Spanish.

At least "D" is required in all R group Spanish courses.
HONOURS RUSSIAN STUDIES

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a weighted average of at least 70% in 12 units of Year I work including a mark of at least 70 in Russian 1Z6. (Students with a mark of at least 70 in Russian 1B6, who are interested in entering this programme, should consult the Department for ways of meeting the programme requirements.)

YEAR II: 30 units
Q/ Russian 2A6, 2C6, 2E3, plus three units chosen from approved courses.
E/ 12 units elective, at least six excluding Russian.

YEAR III: 30 units
Q/ Russian 3C6, plus 12 units chosen from approved courses.
E/ 12 units elective, at least six excluding Russian.

YEAR IV: 30 units
Q/ Russian 4C6, plus 15 units chosen from approved courses.
E/ Nine units elective.

Approved courses: A total of 30 units of Russian Studies are required in addition to the courses specified by course number above; these are to be taken, as available, at convenient points in the student's programme:
- History 3H6, Political Science 2K6; Russian 1B6, 3K6, one of History 4O6, Political Science 36, 4G6, 4J6.

At least "D" is required in every Q group course.

COMBINED HONOURS IN RUSSIAN AND ANOTHER SUBJECT.

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Students who wish to combine Russian with another subject in a Combined Honours programme must complete Year I with a mark of at least 70 in Russian 1Z6 and in six units of the other Honours subject. The Russian requirements for such a programme are as follows:

Year II Q/ Russian 2A6, 2C6, 2E3.
Year III Q/ Russian 3C6, 3A3, and three additional units of Russian.
Year IV Q/ Russian 4C6; any two of Russian 3B3, 3F3, 4E3, 4F3, if not completed previously; and three additional units of Russian.

To the total of approximately 24 or more units of Q-work in each Year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

At least "D" is required in every Q group Russian course.

HONOURS RUSSIAN AND POLITICAL SCIENCE

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in Humanities I or Social Sciences I, with a weighted average of at least 70% in Russian 1Z6 and in six units acceptable to the Department of Political Science including a mark of at least 70 in Russian 1Z6. A Year I course in Political Science is recommended.

YEAR II: 30 units
Q/ Political Science 2K6 or 3M6; six units of Year II Political Science; Russian 2A6, 2C6, 2E3.
E/ Three units elective.

YEAR III: 30 units
Q/ Political Science 2K6 or 3M6; six units of senior division Political Science; Russian 3A3, 3C6 and three additional units of Russian.
E/ Six units elective.

YEAR IV: 30 units
Q/ Political Science 4J6; six units of senior division Political Science; Russian 4C6; any two of Russian 3B3, 3F3, 4E3, 4F3, if not taken previously, and three additional units of Russian.
E/ Three units elective.

At least "D" is required in every Q group Russian course.

PASS RUSSIAN

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in any Year I with a mark of at least 55 in Russian 1Z6.

YEAR II: 30 units
R/ Russian 2A6, 2C6, 2E3; three units Humanities.
E/ 12 units elective, at least six excluding Russian.

Pass Russian students who achieve a weighted average of at least 70% in their Year II Russian courses may be admitted to Honours Russian Studies in Year III.

YEAR III: 30 units
R/ Russian 3A3, 3C6; any one of Russian 3B3, 3F3, 4E3, 4F3; three additional units of Russian; three units Humanities.
E/ 12 units elective, at least six excluding Russian.

At least "D" is required in every R group Russian course.

Department of Music

HONOURS PROGRAMME FOR THE MUS. BAC. DEGREE

Note: No student may register in any Year of this programme without the Departmental Counsellor's approval, which should be obtained before completing registration forms in March.

A. For students who have taken Music 1B4.

YEAR II: 32 units (1980-81)
Q/ Music 2B4, 2C4, 2D2, 2H4
R/ Music 2E4, 2G2
E/ 12 units elective, at least six excluding Music.

YEAR III (History & Theory): 32 units (1980-81 and 1981-82)
Q/ Music 2B4, 3C4, 3J4, 3R3
R/ Music 3E4, 3H4 and either 3T3 or 3U3
E/ Six units elective, excluding Music.

YEAR III (Education): 30-32 units (1980-81 and 1981-82)
Q/ Music 3J4; 10-12 units from Music 3K3, 3L3, 3M4, 3N3, 3O3, 3T3, 3U3
R/ Music 2B4, 3E4, 3G2
E/ Six units elective, excluding Music.
MUSIC

- Q/ Music 3BB4, 4C4, 4H4, 4I4
- R/ Music 4E4; one of 4A4, 4S4
- E/ Six units elective.

YEAR IV (Education): 30 units (1980-81, 1981-82 and 1982-83)
- Q/ 10-12 units from Music 4K3, 4L3, 4M4, 4N3, 403, 4P2
- R/ Music 3BB4, 4E4, 4G2
- E/ Electives to total 30 units.

B. For students entering Honours Music Year II in September, 1981, and after.

Admission:
University Standing in Music I including Music 1BB4, 1C6, 1D2, 1E4, 1G2, with a weighted average of 70% in Music 1BB4, 1C6, 1D2, 1E4.

YEAR II: 32 units (beginning in 1981-82)
- Q/ Music 2BB4, 2C4, 2D2, 2H4
- R/ Music 2E4, 2G2
- E/ 12 units elective, at least six excluding Music.

YEAR III (History & Theory): 32 units (beginning in 1982-83)
- Q/ Music 3BB4, 3C4, 3J4, 3R3
- R/ Music 3E4, 3H4 and either 3T3 or 3U3
- E/ Six units elective, excluding Music.

YEAR III (Education): 30-32 units (beginning in 1982-83)
- Q/ Music 3J4; 10-12 units from Music 3K3, 3L3, 3M4, 3N3, 303, 3T3, 3U3
- R/ Music 3BB4, 3E4, 3G2
- E/ Six units elective, excluding Music.

YEAR IV (History & Theory): 30 units (beginning in 1983-84)
- Q/ Music 4BB4, 4C4, 4H4, 4I4
- R/ Music 4E4; one of 4A4, 4S4
- E/ Six units elective.

YEAR IV (Education): 30 units (beginning in 1983-84)
- Q/ 10-12 units from Music 4K3, 4L3, 4M4, 4N3, 403, 4P2.
- R/ Music 4BB4, 4E4, 4G2.
- E/ Electives to total 30 units.

At least 'D' is required in all Q and R group Music courses.

COMBINED HONOURS B.A. IN MUSIC AND ANOTHER SUBJECT

Note: No student may register in any Year of this programme without the Departmental Counselor's approval, which should be obtained before completing registration forms in March.

Students who wish to combine Music with another subject in a Combined Honours programme are required to complete Music I with a weighted average of 70% in Music 1C6, 1D2, and six units of the other Honours subject. The Music requirements for such a programme are as follows:

- Year II Music 2BB4, 2C4, 2E4.
- Year III Music 3BB4, 3C4, 3E4.
- Year IV Music 4BB4, 4E4, four additional units of Music.

To the total of approximately 24 units of Q work in each Year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units.

PASS B.A. IN MUSIC

Note: No student may register in any Year of this programme without the Departmental Counselor's approval, which should be obtained before completing registration forms in March.

Admission:
University Standing in Music I, or any Year I with a mark of at least 55 in Music 1A6.
Faculty of Science

The Faculty of Science provides work through the following Departments:

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

All Departments offer four-year Honours programmes which prepare students for graduate studies, an Ontario Teacher's Certificate, and industry. Three-year Pass programmes, which provide a science education, but are less extensive and less demanding than the Honours programmes, are also offered by all Departments except Biochemistry and Metallurgy. Some Departments offer "Major" programmes as well (which are indicated in the list above by an asterisk). "Major" programmes require four years 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 distinguished from Honours programmes by being less specialized and somewhat less demanding.

For admission to and continuation in Honours and Major programmes, O-group courses are to be taken in one academic session, except in the Department of Mathematical Sciences and in the Metallurgy and Materials Science Major programme and, very exceptionally, for some part-time students, in the Departments of Biology, Geography, and Psychology. Part-time students should plan their programmes in consultation with a Dean of Studies.

Students must achieve a grade of 'D' or better in all courses which are included in the Q-group of Honours and Major programmes, or in the area of concentration of Pass programmes.

All first-year Science students take five courses or, with appropriate permission, six. Of the five, one is Mathematics; three others are chosen from additional Mathematics, Biology, Chemistry, Geology, Physics, and Psychology; the fifth course may be in Science or in Humanities or in Social Sciences.

The percentage required for admission to a Year II Honours or Major programme must be obtained on the first attempt and is, normally, based on work completed in one academic session.

Up to the end of Year III, students may be permitted to transfer between Pass and Major, and Major and Honours, programmes, on the recommendation of the Department concerned and with the approval of a Dean of Studies.

NOTE:
Attention is drawn to the specific deadline dates (page 11) for changing registration in first-term or full-year courses, for withdrawing from a first-term course, for changing registration in a second-term course, and for withdrawing from a second-term or full-year course. Beyond the September deadline date, first-term courses may be cancelled up to the October deadline but may not be replaced by second-term courses; beyond the January deadline date, second-term courses may not be replaced. First-term courses cancelled by the October deadline may not be replaced by second-term courses. Students who cancel a full-year course by the January deadline date may add a second-term course provided that their second-term work load is not thereby, increased.

Department of Biochemistry

HONOURS BIOCHEMISTRY

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

Admission:
University Standing in Natural Sciences I including Chemistry 1A7 or 1C8, with a weighted average of at least 70% in Chemistry 1A7 or 1C8 and Mathematics 1A6 or 1C6, Biology 1A6 (or for admission in 1980-81, Biology 1B6 or 1C6) must be taken in Years I or II; its election in Year I is recommended. The election of Mathematics 1G6 in Year I and of Physics 1A7 or 1B7 or 1C8 in Year I or Year II is recommended.

YEAR II: 33-34 units
Q/ Chemistry 2N4, 2S8; Chemistry 2Q5 or 2T4.
R/ Biochemistry 2C2, nine units of Mathematical Sciences or Natural Sciences, including in 1980-81 Biology 1B6 or 1C6 if neither completed, and in 1981-82 Biology 2B3 or 2C3, and Biology 1A6 if not completed.
E/ Six units elective, excluding Biochemistry.

* Chemistry 2T4 requires that Mathematics 2G3 be elected. Chemistry 2U3 requires that Mathematics 2G3 and 2D3 be elected.

1 Computer Science 1H3 or 2H3, 2N3, Biology 3H6, Chemistry 2U3* and Physics 2A6 may be of interest. Beginning in 1981-82, the election of both Biology 2B3 and 2C3 in Year II is recommended because they are prerequisites to many Biology courses in Years III and IV.

Students considering Year III of Honours Biochemistry and Chemistry are referred to that programme for the appropriate choice of electives.

YEAR III: 32-34 units
Q/ Biochemistry 3G6, 3L4; Chemistry 3D6.
R/ 10-12 units of Natural Science. Junior division Biology courses (except 2B3 and 2C3) are not normally to be chosen.
E/ Six units elective, excluding Biochemistry.

1 Biology 3O3, 3P3, 4B4, 4B6, 4I3, 4S6, 4V3, and Chemistry 3E4 or 3E6 may be of interest.

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YEAR IV: 30-32 units
Q/ At least 12 units of senior division Biochemistry including one of Biochemistry 4B6, 4K4, 4L4; at least one of Biochemistry 4D3, 4E3, 4M3; and additional units from R in which the student obtains the highest weighted average to give a total of 19 to 21 units.
R/ Units to total 24 to 26 in combined Q and R from Biochemistry 4C4, 4D3, 4E3, 4H3, 4M3, 4Q3, Biology 3O3, 3P3, 4B4, 4B6, 4I3, 4O3, 4S6, 4V3, Chemistry 3E4 or 3E6, 4A3, 4D3. Other senior division courses may be selected with permission of the department.
E/ Six units elective.

HONOURS BIOCHEMISTRY AND CHEMISTRY

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

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, Mathematics 1A6 or 1C6, Applied Mathematics 1G6 and either Biology 1A6 (or for admission in 1980-81, Biology 1B6 or 1C6) or Physics 1A7 (or 1B7 or 1C8), with a weighted average of at least 70% in Chemistry 1A7 or 1C8 and Mathematics 1A6 or 1C6.

YEAR II: 33-35 units
Q/ Chemistry 2A4, 2S8, 2T4.
R/ Mathematics 2E3, 2O3; Biochemistry 2C2; either Biology 1A6 (or in 1980-81, Biology 1B6 or 1C6) or Physics 1A7 (or 1B7 or 1C8), if both not completed in Year I.
E/ Electives, at least three units of which may not be Biochemistry or Chemistry, to make a total of 33 to 35 units.

Students considering Year III Honours Chemistry should elect Chemistry 2O3.

Beginning in 1981-82, students considering Year III Honours Biochemistry should elect Biology 2B3 or 2O3.

YEAR III: 33-35 units
Q/ The 16 to 19 units from R in which the student obtains the highest weighted average.
R/ Biochemistry 3G6, 3L4 or 3L2; Chemistry 2U3, 3D6; Chemistry 3A4 or 3E6 or both 3C4 and 3Y3.
E/ Electives at least six units of which may not be Biochemistry or Chemistry, to make a total of 33 to 35 units.

YEAR IV: 32-35 units
Q/ The 16 to 19 units from R in which the student obtains the highest weighted average.
R/ Two of Biochemistry 4D3, 4E3, 4M3, 4Q3; Biochemistry 4U4 (Chemistry 4U4) or Biochemistry 4B4 or Chemistry 4G6; Chemistry 3A4 or 3E6 or both 3C4 and 3Y3; three to four units of senior division Biochemistry, three units of senior division Chemistry.
E/ Electives to make a total of 32 to 35 units.

BIOCHEMISTRY MAJOR

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, with a weighted average of at least 60% in Chemistry 1A7 or 1C8 and Mathematics 1A6 or 1C6. Biology 1A6 (or for admission in 1980-81, Biology 1B6 or 1C6) must be taken in Years I or II, its election in Year I is recommended.

YEAR II: 30-33 units
Q/ Chemistry 2O5, 2S8.
R/ Biochemistry 2C2, and nine to 12 units of Natural Science including in 1980-81 Biology 1C6 (or 1B6) if neither completed and in 1981-82 Biology 2B3 (or 2C3) and Biology 1A6 if not completed.
E/ Electives, at least six units of which may not be Biochemistry, to make a total of 30 to 33 units.

Beginning in 1981-82, the election of both Biology 2B3 and 2C3 in Year II is recommended because they serve as prerequisites to many Biology courses in Years III and IV.

YEAR III: 31-33 units
Q/ Biochemistry 3G6, 3L4 and one of Chemistry 3D6, Biology 3J3, 3O3, 3P3, 3Q3, 4B4, 4I3, 4V3 in which the student obtains the highest weighted average.
R/ Chemistry 3D6 if not included in Q, nine to 11 units of Natural Science including at least three units of senior division Biology.
E/ Six units elective, excluding Biochemistry.

YEAR IV: 30-32 units
Q/ 16 units including at least 10 units of Biochemistry from Biochemistry 4B6 or 4K4 or 4L4, 4C4, 4D3, 4E3, 4H3, 4M3, 4Q3; Biology 3O3, 3P3, 3Q3, 4B4, 4B6, 4I3, 4O3, 4S6, 4V3; Chemistry 3E4 or 3E6, 4A3, 4D3.
R/ Six units of senior division Natural Science.
E/ Electives to make a total of 30 to 32 units.

Department of Biology

HONOURS BIOLOGY

Admission (1980-81 only):
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, and a weighted average of at least 70% in one of Biology 1B6, 1C6, 1D6, 1E6, and six additional units acceptable to the department, provided that at least 60% is obtained in Biology 1B6 or 1C6 or 1D6 or 1E6.

Admission (Beginning in 1981-82):
University Standing in Natural Sciences I, including Biology 1A6, and Chemistry 1A7 or 1C8, and Physics 1B7 (or 1A7 or 1C8), with a weighted average of at least 70% in Biology 1A6 and six additional units acceptable to the department, providing that at least 60% is obtained in Biology 1A6.

Students are advised to note carefully the prerequisites for all senior division courses listed in the following programme (particularly Biochemistry 3G6).

YEAR II (1980-81 only): 30-32 units
Q/ 12 units of Biology (so chosen that Biology 1B6 and 1C6 and either 1D6 or 1E6 are completed by the end of year II), and the five to eight units which yield the highest weighted average selected from the following: Computer Science 1H3 or 2H3, Biology 2A3, 2H3, Chemistry 2O8, 2Q5, Physics 2A6.
R/ Chemistry 2O8, 2Q5; alternatively Computer Science 1H3 or 2H3, Biology 2H3, and Chemistry 2D4 or 206. Physics 1B7 (or 1A7 or 1C8), unless completed.
E/ Electives to make a total of 30-32 units, not to include Biology or Biochemistry (unless Chemistry 2D4 is chosen in R, in which event at least six of the elective units may not include Biology or Biochemistry).

YEAR II (Beginning in 1981-82): 32-35 units
General Biology Option
Q/ Chemistry 2O8, Biology 2B3, 2C3, and the three additional units of Biology in R in which the student obtains the highest mark.
R/ Biology 2D3, 2E3, 2F3; Chemistry 2Q5.
E/ Electives, excluding Biochemistry and Biology, to make a total of 32 to 35 units.

Ecology Option
Q/ Chemistry 2O8, Biology 2F3, 2H3 and the three additional units of Biology in R in which the student obtains the highest mark.
R/ Biology 2B3, 2C3, 2D3, 2E3; Computer Science 1H3 or 2H3.
E/ Electives, excluding Biochemistry and Biology, to make a total of 32 to 35 units.

YEAR III: 30-33 units
Q/ The 17-19 units from R (excluding Biology 1D3, 1E3, 2A3 (3Q3), Computer Science 1H3, 2H3) in which the student obtains the highest weighted average.
R/ 24-27 units of Biology, or one or more of Biochemistry 3G6, 3L2, Computer Science 1H3 (2H3), and Biology 2H3, together with Biology courses to make 24-27 units. At least 11 units of senior division Biology must be included.
E/ Electives excluding Biochemistry and Biology to make a total of 30 to 33 units.

YEAR IV: 30-33 units
Q/ The 17-19 units from R in which the student obtains the highest weighted average.
R/ Biology 4F4 or 4C8 together with senior division Biology courses to make 24-27 units, or, subject to the approval of the Department, Biology 4F4 or 4C8 together with senior division Biology to make 16-20 units and six-eight units of other senior division Natural Sciences.
E/ Electives to make a total of 30 to 33 units.

In Years III and IV, students interested in interdisciplinary work may wish to elect, in consultation with the Chairman of the Department of Biology,
Honours Biology and Geology

Admission from Year 1 1980-81:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, Physics 1B7 or 1C8, Mathematics 1A6, or 1C6 or 1F6, and a mark of at least 70% in one of Biology 1B6, 1C6, 1D6, or 1E6, and a mark of at least 70% in Geology 1A6.

Admission from Year 1 1981-82:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, Physics 1B7 or 1C8, Mathematics 1A6, or 1C6 or 1F6, and a mark of at least 70% in each of Biology 1A6 and Geology 1A6.

Year II (1980-81 only): 35-36 units
Q/ Geology 2B6, Geology 2C6 plus 6 units of first year Biology selected from R.
R/ Biology 1B6 or 1C6 if not already taken; Biology 1D6 or 1E6 if not already taken; Mathematics 1G6 or both Biology 2H3 and either Computer Science 1H3 or 2H3; Chemistry 2G5 or Chemistry 2F4 and 2R2.

Year II (Beginning in 1981-82): 34-36 units
Q/ Two of Biology 2C3, 2D3, 2E3 or 2F3; Geology 2B6; Geology 2C6.
R/ Mathematics 1G6, or both Biology 2H3 and either Computer Science 1H3 or 2H3; Chemistry 2G5 or both Chemistry 2F4 and 2R2.
E/ Electives at least three units of which may not be Biology or Geology to make a total of 34 to 36 units.

Year III (1981-82 only): 35-36 units
Q/ Geology 3D6 and 12 to 13 units of Biology and Geology chosen from R, including six units of senior division Biology in which the student obtains the highest weighted average.
R/ Biology 2E3 or 2D3 if not already completed; additional units to make up Q requirements from Biology 3A4, 3E3, 3F6, 3M6, 3X3, 3Y6, Geology 3C6; Chemistry 2O8 or both Chemistry 2D4 and Biochemistry 2E4.
E/ Electives at least three units of which may not be Biology or Geology to make a total of 35 to 35 units.

Year III (Beginning 1982-83): 35-36 units
Q/ Geology 3D6 and the 12 to 13 units of Biology and Geology chosen from R, including six units of senior division Biology, in which the student obtains the highest weighted average.
R/ Any two of Biology 2C3, 2D3, 2E3 or 2F3 not already completed; additional units to make up Q requirement, chosen from Biology 3A4, 3E3, 3F6, 3M6, 3X3, 3Y6, Geology 3C6; Chemistry 2O8 or both Chemistry 2D4 and Biochemistry 2E4.
E/ Electives at least three units of which may not be Biology or Geology to make a total of 35 to 37 units.

Year IV: 33-36 units
Q/ 18 to 20 units of Biology and Geology chosen from R in which the student obtains the highest weighted average. At least six units must be from Biology and six units from Geology.
R/ Either Biology 4J3 or Geology 3E2; additional units to make up the Q requirement, chosen from Biology 3A4, 3E3, 3F6, 3M6, 3X3, 3Y6, 4A6, Biology 4F4 or 4C8 or Geology 4K6, Geology 3C6, 4M6, 4D6, 4G6; Biochemistry 3G6 or 2E4, if Chemistry 2O8 taken in third year.
E/ Electives to make a total of 33 to 36 units (Geology 2D5 is recommended).

Honours Biology and Philosophy

Admission:
University Standing in Natural Sciences I, including Biology 1A6, Chemistry 1A7 or 1C8, and Philosophy 1B6 or 1D6. A mark of at least 70% must be obtained in Biology 1A6 and in the six units of Philosophy.

Students are advised to note carefully the prerequisites for all courses listed in the following programme. No student may register in any year of this programme without the approval of the Chairman of the Biology Department. Students are advised to consult the Chairman for counselling in March.

Year II (Beginning in 1981-82): 35 units
Q/ The 18 or more units listed in R, with the exception of Chemistry 208 and Philosophy 2L3 or Philosophy 3W3, in which the student obtains the highest weighted average.
R/ Biology 2B3, 2C3, 2E3 and 2F3; Chemistry 2B8; Philosophy 2B3, 2D3 or 2G3, 2A6 or 2C6, and 2L3 or 3W3.

Year III: 32-33 units
Q/ The 18 or more units listed in R, with the exception of Philosophy 3W3 or Philosophy 2L3, in which the student obtains the highest weighted average.
R/ 12 units chosen from Biochemistry 3G6, Biology 3F6, 3H6, 3I3, 3J3, 3N6, 3O3, 3Q3; Philosophy 2A6 or 2C6, 3L3 or 3O3, 2L3 or 3W3 and an additional three units of Philosophy.
E/ Five to six units elective (Chemistry 2D5 should be considered).

Year IV: 33 units
Q/ The 18 or more units listed in R, with the exception of Philosophy 4W3, in which the student obtains the highest weighted average.
R/ 12 units of senior division Biochemistry or Biology chosen from those listed in Year III, not previously taken; and from Biology 3X3, 4E3, 4Y3 and 4M3; Philosophy 4W3 and 12 additional units of Philosophy including 3G3 or 3N6, 4S3 or 4C3, and 3L3 or 3O3.
E/ Six units elective.

Honours Biology and Psychology (Life Sciences)

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C6, Physics 1A7, 1B7, 1C8, Mathematics 1A6, 1C6, or 1F6, and a mark of at least 70% in each of Biology 1A6 or 1B6, and Psychology 1A6.

Year II: 33-34 units
Q/ Biology 1C6, or 2B3 and 2C3; Psychology 2D6 or 2T6; either Statistics 2R6 or Computer Science 1H3 (2H3) and Biology 2H3.
R/ Chemistry 2O8 and Chemistry 2Q5 or 2P4.
E/ Three units elective, excluding Biology and Psychology, to make a total of 33 to 34 units.

Year III: 33-35 units
Q/ The 18 to 20 units of Biology and Psychology chosen from R (excluding Biology 1E6) in which the student obtains the highest weighted average.
R/ 12 to 14 units of Biology chosen from Biology 1E6 or 2E3, 3H6, 3L2, 3N4 or 3O3, 3P3, 3Y6, 4E3, 12 units of Psychology chosen from Psychology 2A3, 2D6, 2H3, 2J3, 2T6, 2U5, 2V3, 3B3, 3F6, 3K3, 3M6, 3N6, 3R3, 3S3, 3T3, 3U3, 3V3, 3W6, 3X3; Biochemistry 3G6.
E/ Three units elective, excluding Biology and Psychology, to make a total of 33 to 35 units.

Year IV: 33-36 units
Q/ The 18 to 20 units of Biology and Psychology chosen from R in which the student obtains the highest weighted average.
R/ 12 to 14 units of Biology chosen from Biology 1E6 or 2E3, 3H6, 3L2, 3N4 or 3O3, 3P3, 3Y6, 4E3, 12 units of Psychology chosen from Psychology 2A3, 2D6, 2H3, 2J3, 2T6, 2U5, 2V3, 3B3, 3F6, 3K3, 3M6, 3N6, 3R3, 3S3, 3T3, 3U3, 3V3, 3W6, 3X3; Biochemistry 3G6.
E/ Three units elective, excluding Biology and Psychology, to make a total of 33 to 35 units.

General Requirements:

Students must complete a minimum of one laboratory course in Psychology and one in senior division Biology. A minimum of 18 units of Psychology and a minimum of 18 units of Biology must be included in the total Q group for Years III and IV combined.

Biology Major

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8 and at least 60% in Biology 1A6 (in 1980-81 the requirement is at least 60% in one of Biology 1B6, 1C6, 1D6 or 1E6) and a weighted average of at least 60% in Biology 1A6 (in 1980-81, one of Biology 1B6, 1C6, 1D6 or 1E6) and six additional units acceptable to the Department.

Year II (1980-81 only): 30 - 33 units
Q/ 12 units of Biology (so chosen that Biology 1B6, 1C6 and either 1D6 or 1E6 are completed by the end of Year II).
R/ Chemistry 2O8.
E/ Electives, at least six units of which may not be in Biology or Biochemistry, to make a total of 30 to 33 units.

Year II (Beginning in 1981-82): 30 - 33 units
Q/ The 12 units of Biology from R in which the student obtains the highest weighted average.
R/ Chemistry 2O8, Biology 2B3, 2C3, 2D3, 2E3 and 2F3.
CHEMISTRY

HONOURS CHEMISTRY

Students or 1C8, Mathematics 44

YEAR I: 30 - 33 units
Q/ 13 to 15 units from R (excluding Biology 1D3, 1E3 and 2H3) in which the student obtains the highest weighted average.
R/ 16 to 18 units* of Biology and Biochemistry (in 1980-81, Biology 1D3 or 1E3 must be taken if not already completed).
E/ Electives, at least six units of which may not be Biology or Biochemistry to make a total of 30 to 33 units.

YEAR II: 30 - 33 units
Q/ 15 to 18 units* of senior division Biology.
R/ Six units of Natural Science.
E/ Electives, at least six units of which may not be Biology or Biochemistry, to make a total of 30 to 33 units.

*Students in Years III and IV of this programme should select these courses in consultation with the chairman of the department or his designate.

PASS BIOLOGY

Admission:
University standing in Natural Sciences I, including Chemistry 1A7 or 1C8 and at least 55% in Biology 1A6 (in 1980-81 at least 55% in one of Biology 1B6, 1C6, 1D6 or 1E6). Physics 1B7 (or 1A7 or 1C8) is strongly recommended in Year I.

YEAR I (1980-81 only): 30 - 33 units
R/ 12 units of Biology so chosen that Biology 1B6, 1C6 and either Biology 1D6 or 1E6 are completed by the end of Year I.
R/ 6 units of Natural Sciences other than Biology.
E/ Electives, at least six units of which may not be Biology, to make a total of 30 to 33 units.

YEAR II (Beginning in 1981-82): 30 - 33 units
R/ Biology 2B3, 2C3, 2D3, 2E3, and 2F3.
E/ Electives, at least six units of which may not be Biology, to make a total of 30 to 33 units.

YEAR III: 30 - 33 units
R/ 18 units of Biology.
E/ Electives, at least six units of which may not be Biology, to make a total of 30 to 33 units.

Department of Chemistry

HONOURS APPLIED CHEMISTRY

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

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, Mathematics 1A6 or 1C6, and Applied Mathematics 1C6* or Mathematics 1G6* with a weighted average of at least 70% in Chemistry 1A7 or 1C8, and either Mathematics 1A6 or 1C6, or Physics 1A7 or 1B7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken in Years I or II; its election in Year I is strongly recommended.

*Students who have taken Mathematics 1B4 instead of Applied Mathematics 1C6 or Mathematics 1G6 will be considered.

Economics 1A6 or 1B6, if not taken in Year I, is recommended as an elective in Years II or III.

YEAR II: 33-36 units
Q/ The 16 to 18 units from R in which the student obtains the highest weighted average.
R/ Chemistry 2A4, 2B8, 2X1; Chemical Engineering 2D4, 2F4; Computer Science 1H3 or 2H3, Mathematics 2G3, 2O3.
E/ Three to six units elective, excluding Chemistry.

YEAR III: 32 units
Q/ The 18 to 21 units from R in which the student obtains the highest weighted average.
R/ Chemistry 3D6, 3E6, 3I5, 2U3. Chemical Engineering 3S6 or Chemistry 3A4 (if Chemical Engineering 3S6 not offered).
E/ Electives, at least six units of which may not be Chemistry, to make a total of 32 units.

YEAR IV: 32-35 units
Q/ The 17 to 18 units from R in which the student obtains the highest weighted average.
R/ Chemistry 4A3 or 4D3, 4C3 or 4R3 or 4S3, 4T4; either Chemistry 3C4 and 3Y3 or Chemical Engineering 4K4 and 4S3; either Chemistry 3A4 or Chemical Engineering 3S6 (whichever not taken in Year III).
E/ Electives* to make a total of 32 to 35 units.

*The following are among courses which are relevant: Engineering 204, Materials 4D3, 4E3, Metallurgy 2C3, 3C3, 4C4, 4N3. Chemical Engineering 304, 4K4, 4N4, 4P3, 4S3, Commerce 2A3, 2B3, 3B3, 3F3, Physics 2B6.

HONOURS BIOCHEMISTRY AND CHEMISTRY

(See "Department of Biochemistry: Honours Biochemistry and Chemistry".)

HONOURS CHEMISTRY

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

Admission:
University Standing in Natural Sciences I, including Chemistry 1A7 or 1C8, and Applied Mathematics 1C6*, or Mathematics 1G6* with a weighted average of at least 70% in Chemistry 1A7 or 1C8, and either Mathematics 1A6 or 1C6 or Physics 1A7 or 1B7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken in Years I or II; its election in Year I is strongly recommended.

*Students who have completed Year II Honours Chemistry, and Biology 1A6, 1B6, or 1C6, are eligible for Year III Honours Biochemistry and Chemistry.

YEAR III: 32-35 units
Q/ The 15 to 20 units from Chemistry 3A4, 3C4, 3D6, 3E6, 3Y3, in which the student obtains the highest weighted average.
R/ The courses listed but not included in Q.
E/ Nine to 12 units elective, six of which may not be Chemistry.

YEAR IV: 31-34 units
Q/ The 19 units in which the student obtains the highest weighted average, selected as follows: Chemistry 4E5; at least one course from each of Chemistry 4A3 or 4D3, Chemistry 4B3 or 4Q3, Chemistry 4C3 or 4R3 or 4S3; and Year IV Chemistry courses to make up the balance.
R/ Six to nine units of Year IV Chemistry not included in Q, or senior division Natural Science or Engineering courses.
E/ Six units elective.

HONOURS CHEMISTRY AND GEOLOGY

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

Admission:
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, and Applied Mathematics 1C6* or Mathematics 1G6* with a weighted average of at least 70% in Geology 1A6 and Chemistry 1A7 or 1C8. The election of Physics 1A7 is recommended.

*Students who have taken Mathematics 1B4 instead of Applied Mathematics 1C6 or Mathematics 1G6 will be considered.

YEAR II: 34 units
Q/ The 16 to 20 units (of which at least six must be in Geology) from Chemistry 2A4, 2B8, 2T4, Geology 2B6, 2C6, in which the student obtains the highest weighted average.
YEAR III: 35 units
Q/ The 15 to 19 units (of which at least six must be in Chemistry) from Geology 2D5, 3C6, 3G4; Chemistry 2U3, 3E6, in which the student obtains the highest weighted average.
R/ The courses listed but not included in Q; Geology 3E2; Mathematics 203.
E/ Six units elective.

YEAR IV: 31-34 units
Q/ The 18 to 20 units from R in which the student obtains the highest weighted average.
R/ Chemistry 3A4; 18 to 21 units of senior division Chemistry and Geology, including at least six units of each.
E/ Electives to make a total of 31 to 34 units.

HONOURS CHEMISTRY AND PHYSICS

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

Admission:
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, Applied Mathematics 1G6, or Mathematics 1G6, Chemistry 1A7 or 1C8, and Physics 1A7, with a weighted average of at least 70% in three of Mathematics 1A6 or 1C6, Applied Mathematics 1C6, or Mathematics 1G6, Chemistry 1A7 or 1C8, Physics 1A7.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 is strongly recommended.

YEAR II: 32-33 units
Q/ The 17 to 19 units from Chemistry 2S8, 2T4; Physics 2B6, 2D5, in which the student obtains the highest weighted average.
R/ The course listed but not included in Q; Mathematics 2G3, 203.
E/ Three or four units elective.

YEAR III: 34 units
Q/ The 16 to 20 units from R in which the student obtains the highest weighted average.
R/ Chemistry 2A4, 3E6; Physics 3M6; six to nine units from Physics 3B6, 3N3, Chemistry 3Y3 or Physics 3K4; and Mathematics 3C6.
E/ Electives to make a total of 34 units.

Students who elect Year III courses in Year III and Year IV courses in Year IV will generally find that more options are offered by the timetable.

YEAR IV: 31-34 units
Q/ The 19 to 21 units from R in which the student obtains the highest weighted average.
R/ Chemistry 4E4 or Physics 4J4; Physics 4F3; Chemistry 3C4 if not taken in Year III; at least 14 units of senior division Chemistry or Physics, which must include Chemistry 3Y3 or Physics 3K4, if not taken in Year III.
E/ Six to nine units elective.

CHEMISTRY MAJOR

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

Admission:
University Standing in Natural Science I, including Chemistry 1A7 or 1C8, Mathematics 1A6 or 1C6, and Applied Mathematics 1C6 or Mathematics 1G6 with a weighted average of at least 60% in Chemistry 1A7 or 1C8 and either Mathematics 1A6 or 1C6 or Physics 1A7 or 1B7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken in Year I or II; its election in Year I is strongly recommended.

*Students who have taken Mathematics 1B4 instead of Applied Mathematics 1C6 or Mathematics 1G6 will be considered.

YEAR I: 32-35 units
Q/ The 15 to 16 units from Chemistry 2A4, 2S8, 2T4, 2U3, 2X1 in which the student obtains the highest weighted average.
R/ The course listed, but not included in Q; Mathematics 2G3, 203.
E/ Six to nine units elective, excluding Chemistry.

YEAR III: 31 units
Q/ The 13 to 16 units from Chemistry 3A4, 3D6, 3E6, 3Y3, in which the student obtains the highest weighted average.
R/ The course listed, but not included in Q.
E/ 12 units elective, six of which may not be Chemistry.

YEAR IV: 30-32 units
Q/ The 14 to 16 units from R in which the student obtains the highest weighted average.
R/ Chemistry 4T4, 3C4, if not previously taken; six units of Year IV Chemistry; six units of senior division Chemistry or other senior division Science or Engineering courses.
E/ Electives to make a total of 30 to 32 units.

Students preparing for industrial employment should consider the following courses as electives in Years III and IV: Materials 4D3, Metallurgy 3C3, 4C4, Chemical Engineering 2A5, 3D4, 4K4, 4P3, 4S3. Substitution of one or two of these for required courses will be considered.

PASS CHEMISTRY

Admission:
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, with at least 55% in Chemistry 1A7 or 1C8. Physics 1A7 or 1B7 or 1C8 must be taken in Years I or II; its election in Year I is strongly recommended.

YEAR II: 30 units
R/ Chemistry 2F4, 208, 2P4, 2R2.
E/ 12 units elective, excluding Chemistry.

YEAR III: 30-31 units
R/ Chemistry 3K6, Chemistry 3I3 and 3Q4.
E/ Electives, at least six of which may not be Chemistry, to make a total of 30 or 31 units.

Department of Geography

HONOURS GEOGRAPHY

(For B.A. Programme in Honours Geography, see "Faculty of Social Sciences: Honours Geography").

Admission:
University Standing in Natural Sciences I, including Geography 1A6, with an average of at least 70% in Geography 1A6 and six units of Natural Science or Mathematics. The election of Geography 1A6 is recommended.

YEAR II: 30 units
Q/ Geography 2F3, 2K3, 2L6, 2T3, one of Geography 2M3, 2W3.
E/ 12 units elective, at least six of which may not be Geography.

YEAR III: 30 units
Q/ Geography 3F3 and 3M3: two of 3E3, 3K3, 3L3, 3V3, 3W3; six units selected from Year III Geography science courses* or other science courses acceptable to the Department.
E/ 12 units elective, at least six of which may not be Geography.

YEAR IV: 30 units
Q/ Geography 3F3 and 3M3: two of 3E3, 3K3, 3L3, 3V3, 3W3; six units selected from Year III Geography science courses* or other science courses acceptable to the Department.
E/ 12 units elective, at least six of which may not be Geography.

*Geography science courses are designated with an asterisk in the offerings of the Department of Geography.

HONOURS GEOGRAPHY AND GEOLOGY

(For B.A. Programme in Honours Geography and Geology, see "Faculty of Social Sciences: Honours Geography and Geology").

Admission:
University Standing in Natural Sciences I, including Geography 1A6, Geology 1A6, and Mathematics 1A6 or 1C6, with an average of at
least 70% in Geography 1A6 and Geology 1A6. Chemistry 1A7 is strongly recommended.

YEAR II: 33 units
Q/ 18 units from Geography 2L6, 2M3, 2T3, Geology 2B6, 2C6, in which the student obtains the highest weighted average.
R/ The course(s) listed but not included in Q; an additional three or six units of Natural Science or Engineering approved by the Department.
E/ Electives, excluding Geography and Geology, to make a total of 33 units.

YEAR III: 35-37 units
Q/ Geography 3M3; Geology 2D5, 3C6; six units of Year III Geography science courses.
R/ Geography 3E3; Geology 3E2.
E/ 10-12 units elective, at least four of which may not be Geography or Geology.

YEAR IV: 31-33 units
Q/ Six units of Year IV Geography science courses; six units of Year IV Geology courses; six units of Year IV Geography science courses or senior division Geology courses.
E/ 13 to 15 units elective. Geology 3G4 is strongly recommended.

*Geography science courses are designated with an asterisk in the offerings of the Department of Geography.

PASS GEOGRAPHY
(For B.A. Programme inPass Geography, see "Faculty of Social Sciences: Pass Geography").

Admission:
University Standing in Natural Sciences I, with at least 55% in Geography 1A6.

YEAR II: 30 units
R/ 15 units of Year II Geography science courses.
E/ 15 units elective, at least six of which may not be Geography.

YEAR III: 30 units
R/ Nine units from Geography 3F3, 3K3, 3L3, 3M3, 3V3, 3W3; six units of Year III or IV Geography science courses* or other science courses acceptable to the Department.
E/ 15 units elective, at least six of which may not be Geography.

*Geography science courses are designated with an asterisk in the offerings of the Department of Geography.

Department of Geology

HONOURS BIOLOGY AND GEOLOGY
(See "Department of Biology: Honours Biology and Geology").

HONOURS CHEMISTRY AND GEOLOGY
(See "Department of Chemistry: Honours Chemistry and Geology").

HONOURS GEOGRAPHY AND GEOLOGY (B.Sc.)
(See "Department of Geography: Honours Geography and Geology").

For B.A. Programme in Honours Geography and Geology, see Faculty of Social Sciences Honours Geography and Geology).

HONOURS GEOLOGY

Admission:
University Standing in Natural Sciences I, including Geography 1A6, Mathematics 1A6, or 1C6, Chemistry 1A7, or 1C8, and one of a six-unit Year I course in Biology (excluding Biology 1H6), Physics 1A7 or 1B7, or 1C8, with a weighted average of at least 70% in Geography 1A6, and one other of the courses listed previously.

YEAR II: 33-35 units
Q/ Geography 2B6, 2C6, 2D5
R/ Whether of a six-unit Biology Year I course, (excluding Biology 1H6) and Physics 1A7 or 1B7 or 1C8 not already completed, Chemistry 2P4, Science and/or Engineering courses approved by the Department such that the R

group total is 10-12 units. Mathematics 1G6 and Chemistry 2F3 are recommended.
E/ Six units elective, excluding Geology.

Students wishing to transfer to Honours Biology and Geology at end of Year II should consult with the Chairman of either the Department of Biology or Geology and the Dean of Studies.

Attention is drawn to Geology 3E2, which is scheduled outside regular term.

YEAR III (1980-81): 32-36 units
Q/ Geology 3C6, 3D6, 3G4
R/ Geology 3E2, Chemistry 2P4, 2R2; two to six units Science and/or Engineering courses.
E/ Six units elective, excluding Geology.

YEAR III (Beginning 1981-82): 32-37 units
Q/ Geology 3C6, 3D6, 3G4
R/ Geology 3J3, Geology 3E2; Materials 3D3; two to six units Science and/or Engineering courses.
E/ Six units elective, excluding Geology.

YEAR IV: 32 units
Q/ The 18 to 21 units of Science and/or Engineering, including at least 16 units of Year IV Geology in which the student obtains the highest weighted average.
R/ Geology 4B6, 4M6.
E/ Electives to make a total of 32 units.

HONOURS GEOLOGY AND PHYSICS

Admission
University Standing in Natural Sciences I, including Mathematics 1G6 or Applied Mathematics 1C6*, Chemistry 1A7, Geology 1A6, Mathematics 1A6 or 1C6, and Physics 1A7*, with a weighted average of at least 70% in Geography 1A6 and Physics 1A7*.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 and Mathematics 1A6 are, however, strongly recommended.

YEAR II: 35 units
Q/ Geology 2B6, Physics 2B6, 2C5.
R/ Geology 2C6, Mathematics 2G3, 203.
E/ Six units, excluding Geology and Physics (Computer Science 2H3 is strongly recommended).

Attention is drawn to geology 3E2, which is scheduled outside of regular term.

YEAR III (beginning in 1981-82): 31-33 units
Q/ Physics 3M6, Physics 2H3 or Chemistry 2P4. Geology 2D5 or 3C6, Geology 3A3 or 3B3.
R/ Mathematics 3C6, Geology 3E2.
E/ Six units elective.

YEAR IV (beginning in 1982-83): 33-34 units
Q/ Physics 4K3, 4B4, three units of Geology acceptable to the Department, six units of Geology chosen from R.
R/ Three units of Physics acceptable to the Department, Geology 3A3 or 3B3 (whichever not already taken). Geology 2D5 or 3C6 (whichever not already taken), six additional units of senior division Geology or Physics.
E/ Six units elective.

GEOLoGY MAJoR

Admission:
University standing in Natural Sciences I, including Chemistry 1A7 or 1C8, with a weighted average of at least 60% in Geology 1A6 and one of: a six-unit Year I Biology, Chemistry 1A7 or 1C8, Mathematics 1A6 or 1C6, Physics 1A7 or 1B7 or 1C8.

YEAR II: 30-32 units
Q/ Geology 2B6, 2C6.
R/ Chemistry 2P4; a six-unit Year I Biology, or, if completed, six units of Natural Science and/or Engineering approved by the Department.
E/ Eight to 10 units elective, six of which may not be Geology.

Attention is drawn to Geology 3E2, which is scheduled outside of regular term.
**GEOLOGY AND PHYSICS MAJOR**

**Admission**

University Standing in **Natural Sciences I**, including Mathematics 1G6 or Applied Mathematics 1C6, Chemistry 1A7, Geology 1A6, Mathematics 1A6 or 1C6, and Physics 1A7*, with a weighted average of at least 60% in Geology 1A6 and Physics 1A7*.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 and Mathematics 1G6 are, however, strongly recommended.

**YEAR II:** 33 units

Q/ Geology 2B6, Physics 2B6, 2G3.
R/ Geology 2C6; Mathematics 2G3, 203.
E/ Six units, excluding Geology and Physics (Computer Science 2H3 is strongly recommended).

**YEAR III (beginning in 1981-82):** 30-32 units

Q/ Physics 2H3 or Chemistry 2F4, Physics 3F3, Geology 3C6 or 2D5, Geology 3A3 or 3B3.
R/ Eight units of Geology or Physics, which must include at least four units of Physics.
E/ Electives to make a total of 30 to 32 units.

**YEAR IV (beginning in 1982-83):** 29-31 units

Q/ Geology 3A3 or 3B3 (whichever not already taken), Geology 2D5 or 3C6 (whichever not already taken or, if both have already been taken, six units of senior division Geology), three units of Physics acceptable to the Department, six units of senior level Physics.
R/ Three to four units of senior division Geology or Physics.
E/ Electives to make a total of 29 to 31 units.

**PASS GEOLOGY**

**Admission:**

University Standing in **Natural Sciences I**, including Geology 1A6, Chemistry 1A7 or 1C8, and Mathematics 1A6 or 1C6, with at least 55% in Geology 1A6.

**YEAR II:** 30 units

R/ Geology 2B6, 2C6: a six-unit Year I Biology course, if not already completed, or six units of Science and/or Engineering approved by the Department.
E/ 12 units elective, at least six of which may not be Geology.

Attention is drawn to Geology 3E2 which is scheduled outside of regular term.

**YEAR III:** 31 units

R/ Geology 2D5, 3D6, 3E2, 3C6.
E/ 12 units elective, six of which may not be in Geology. Geology 3G4 is strongly recommended.

**Department of Mathematical Sciences**

(For Honours B.A. programme in Philosophy and Mathematics see "Faculty of Humanities: Honours Philosophy and Mathematics", and for the Honours B.A. programme in Economics and Mathematics see "Faculty of Social Sciences: Honours Economics and Mathematics").

**HONOURS MATHEMATICAL SCIENCES**

**Admission:**

University standing in **any Year I** with a weighted average of at least 70% in Mathematics 1A6 or 1C6, 1G6 or 1B4 or Applied Mathematics 1C6 and six additional units acceptable to the Department of Mathematical Sciences.

The election of Computer Science 1H3 as an extra course in Natural Sciences Year I may be approved by a Dean of Science (Studies).

For students intending to enter Honours Theoretical Physics and Applied Mathematics, Physics 1A7 is required in Year I and is strongly recommended for students intending to enter Honours Computer Science and Applied Mathematics.

This is a Year II programme from which students may enter the Honours Programmes in Applied Statistics and Computation, Computer Science and Applied Mathematics, Computer Science and Mathematics, Mathematics, Statistics, and Theoretical Physics and Applied Mathematics.

**YEAR II:** 32-34 units

Q/ The 18 to 21 units in R in which the student obtains the highest weighted average.
R/ Mathematics 2A5, 2B4, 2A4, Statistics 2D4, four to 10 units from Computer Science 2H3 (if 1H3 not completed), 2K3*, 2L3*, Mathematics 2F4, Physics 2C5, Statistics 3M3*.
E/ Electives to make a total of 32-34 units, at least six units of which may not be from the Department of Mathematical Sciences.

*Students taking Computer Science 2K3 or 2L3 are required to take Computer Science 2H3 (if Computer Science 1H3 has not been completed in Year I).

*Students intending to enter Year III of Honours Computer Science and Applied Mathematics or Honours Computer Science and Mathematics must take Computer Science 2L3. Computer Science 2K3 must be taken in Year II or Year III.

Students intending to enter Applied Statistics and Computation must take Computer Science 2L3 in Year II and Statistics 3M3 in Year II or Year III.

Students intending to enter Honours Mathematics must take Mathematics 2F4.

Students intending to enter Theoretical Physics and Applied Mathematics must take Physics 2C5.

The Department of Mathematical Sciences requires that all Honour students entering Year III or Year IV have their programmes approved by the Chairman or designate.

**HONOURS APPLIED STATISTICS AND COMPUTATION**

**Admission:** 1980-81

Completion of Year II Honours Applied Mathematical Sciences.

**Admission:** 1981-82

Completion of Year II Honours Mathematical Sciences including Computer Science 2L3.

**YEAR III:** 32-34 units

Q/ Computer Science 3A3* or 3G3; Statistics 3D6; the nine units of R in which the student obtains the highest weighted average.
R/ Mathematics 3T3 and Statistics 3M3 (if not completed); eight to 10 units from the courses prescribed below.
E/ Electives, at least six units of which may not be from the Department of Mathematical Sciences to make a total of 32 to 34 units.

*A student intending to take Year IV Computer Science courses should select Computer Science 3A3 in Year III.

**YEAR IV:** 32-34 units

Q/ Computer Science 4G6; the 12 units in R in which the student obtains the
MATHEMATICS

highest weighted average.
R/ Statistics 4M3; 10 to 13 units from the courses prescribed below, including
(if not completed) Mathematics 3Q4, Statistics 4S3, 4T3, 4U3.
E/ Electives to make a total of 32 to 34 units.

*Prescribed Courses are: Computer Science 3A3, 3G3; Mathematics
3I4, 3Q4; Statistics 3U3, 4J3, 4S3, 4T3, 4U3, 4V3, 4X3, 4Y4.

HONOURS COMPUTER SCIENCE AND APPLIED MATHEMATICS

Admission: 1980-81
Completion of Year II Honours Applied Mathematical Sciences, or
Year II Honours Mathematics including Applied Mathematics 1H3 or
2H3, 2L3. (If Physics 2C5 was not taken in Year II, it must be taken in
Year III in place of Mathematics 3C6, which must be elected in Year IV.)

Admission: 1981-82
Completion of Year II Honours Mathematical Sciences including
Computer Science 1H3 or 2H3, 2L3. (If Physics 2C5 was not taken in
Year II, it must be taken in Year III in place of Mathematics 3C6
which must be elected in Year IV.)

YEAR III: 33-35 units
Q/ The 15 units in R in which the student obtains the highest weighted
average.
R/ Computer Science 2K3 (if not completed) 3A3, 3T3; Mathematics 3C6;
Statistics 3M3 (if not completed); eight to 12 units from the courses
prescribed below.
E/ Electives, at least six units of which may not be from the Department of
Mathematical Sciences, to make a total of 33 to 35 units.

YEAR IV: 32-34 units
Q/ Computer Science 4G6; the 12 to 15 units in R in which the student obtains
the highest weighted average.
R/ 17 to 20 units from the courses prescribed below, including Computer
Science 3D3 (if not completed).
E/ Electives, to make a total of 32 to 34 units.

*Cognate Courses that should be considered as electives are: Computer
Science 2A3, 3S3; Mathematics 4C4, 4D4, 4F3, 4K3, 4Q6, 4S4; Statistics
3D6, 3U3, 4M3, 4T3, 4U3, 4V3; Physics 3B6.

*Prescribed Courses are: Computer Science 3C3, 3D3, 3G3, 4E3, 4F3, 4J3,
4L3, 4M3, 4X3; Mathematics 3I4, 3Q4, 4S4; Physics 4D6.

HONOURS COMPUTER SCIENCE AND MATHEMATICS

Admission: 1980-81
Completion of Year II Honours Computer Science and Mathematics or
Year II Honours Applied Mathematical Sciences.

Admission: 1981-82
Completion of Year II Honours Mathematical Sciences including
Computer Science 2L3.

Note: In Years III and IV combined, in addition to the specific
courses, the student must include at least six units of senior division
Mathematics or Statistics courses and at least six units from the
courses prescribed below.

YEAR III: 33-34 units
Q/ Mathematics 3A6; Computer Science 3A3; the eight units from R in which
the student obtains the highest weighted average.
R/ Computer Science 2K3 (if not completed); nine to 13 units chosen from
senior division Mathematics or Statistics courses and the courses pre-
scribed below.
E/ Electives, at least six units of which may not be from the Department of
Mathematical Sciences, to make a total of 33 to 34 units.

YEAR IV: 32-34 units
Q/ Computer Science 4G6; one of Mathematics 4A6, 4C4, 3T3 and 403, 4Q6,
4S4; the six units from R in which the student obtains the highest weighted
average.
R/ 10 to 12 units chosen from senior division Mathematics and Statistics
courses and the courses prescribed below, including Computer Science
3D3 (if not completed).
E/ Electives, to make a total of 32 to 34 units.

*Mathematics 3E4, 3F6, 3L4, 3Q4, 3R3, 3S3, Statistics 3D6, 3U3, 4G3,
4J3, 4M3, 4V4, 4X3 should be considered.

†Computer Science 3C3, 3D3, 3G3, 3T3, 4E3, 4F3, 4J3, 4L3, 4M3, 4X3.

HONOURS MATHEMATICS

Admission: 1980-81
Completion of Year II of Honours Mathematics.

Admission: 1981-82
Completion of Year II of Honours Mathematical Sciences.

YEAR III: 32-34 units
Q/ The 18 to 20 units from R in which the student obtains the highest
weighted average.
R/ Mathematics 3A6; Mathematics 2F4 (if not completed); 18 additional units
of senior division Mathematics courses* or prescribed Statistics courses†.
E/ Electives, at least six units of which may not be from the Department of
Mathematical Sciences, to make a total of 32-34 units.

*Mathematics 3E4 must be taken in Year III or Year IV.

YEAR IV: 32-34 units
Q/ The 18 to 20 units from R in which the student obtains the highest
weighted average.
R/ Mathematics 4A6, or 3T3 and 403 (if not completed); 18 additional units
of senior division Mathematics courses or Statistics courses prescribed
below.
E/ Electives to make a total of 32-34 units.

† Prescribed Statistics Courses are: Statistics 3D6, 3U3, 4G3, 4J3, 4M3,
4X3, 4Y4.

HONOURS STATISTICS

Admission: 1980-81
Completion of Year II of Honours Statistics.

Admission: 1981-82
Completion of Year II of Honours Mathematical Sciences.

YEAR III: 32-34 units
Q/ Statistics 3D6; the 12 units from R in which the student obtains the highest
weighted average.
R/ Mathematics 3A6 or 306; Statistics 3M3 (if not completed); at least nine
units from the courses prescribed below.
E/ Electives†, at least six units of which may not be from the Department of
Mathematical Sciences, to make a total of 32-34 units.

†The attention of students is drawn to Economics 306 and Commerce
3E3.

YEAR IV: 32-34 units
Q/ Statistics 4M3; the 15 units from R in which the student obtains the highest
weighted average.
R/ Mathematics 3T3 (if not completed); at least 12 units from the courses
prescribed below†.
E/ Electives** to make a total of 32-34 units.

††Prescribed courses for Year IV: Computer Science 3A3 or 3G3;
Mathematics 3E4, 3F6, 3Q4, 3R3, 3S3, 3T3; Computer Science 2L3, 3A3 or 3G3;
Statistics 3U3, 4S3, 4T3, 4U3, 4V3.

**The attention of students is drawn to Economics 306, 3G6; Commerce
4V3; Mechanical Engineering 4C3 or Commerce 4E5.

Major Programmes

MATHEMATICAL SCIENCES MAJOR

Admission:
University standing in any Year I with a weighted average of at least
60% in Mathematics 1A6 or 1C6, and 1B4 or 1G6 or Applied
MATHEMATICS

Mathematics 1C6, and six additional units acceptable to the Department of Mathematical Sciences.

The election of Applied Mathematics 1H3 as an extra course in Year I may be approved by a Dean of Science (Studies).

This is a Year II programme from which students may enter the Major Programme in Applied Statistics and Computation, Computer Science and Applied Mathematics, Computer Science and Mathematics, and Mathematics.

YEAR II: 30-32 units
Q/ The 12 to 15 units in R in which the student obtains the highest weighted average.
R/ Mathematics 2G3, 2J6, 203; four to 10 units from Computer Science 2H3 (if 1H3 not completed), 2K3*, 2L3*. Statistics 2D4, 3M31.
E/ Electives to make a total of 30-32 units, at least six units of which may not be from the Department of Mathematical Sciences.

*Students taking Computer Science 2K3 or 2L3 must take Computer Science 2H3 (if 1H3 not completed).

†Students intending to enter Year III Applied Statistics and Computation must take Computer Science 2H3 (if 1H3 not completed), 2L3 and Statistics 2D4. Statistics 3M3 is strongly recommended as an elective.

Students intending to enter Year III Computer Science and Applied Mathematics must take Computer Science 2H3 (if 1H3 not completed), 2K3 and 2L3.

Students intending to enter Year III Mathematics must take Statistics 2D4.

The Department requires that all students entering Year III or IV Major Programmes have their programmes approved by the Chairman or designate.

APPLIED STATISTICS AND COMPUTATION MAJOR

Admission: 1980-81
Completion of Year II Applied Mathematical Sciences Major or Mathematics Major including Applied Mathematics 1H3 or 2H3, 2L3.

Admission: 1981-82
Completion of Year II Mathematical Sciences Major including Computer Science 1H3 or 2H3, 2L3, and Statistics 2D4.

Year III: 29-31 units
Q/ Computer Science 3A3* or 3G3, Statistics 3D6, the six to eight units in R in which the student obtains the highest weighted average.
R/ Mathematics 3T3 and Statistics 3M3 (if not completed), eight to 10 units from the courses prescribed below†.
E/ Electives, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 29 to 31 units.

*A student intending to take Year IV Computer Science courses should elect Computer Science 3A3 in Year III.

YEAR IV: 29-31 units
Q/ Computer Science 4G6; the nine units in R in which the student obtains the highest weighted average.
R/ 10 to 13 units from the courses prescribed below†, including (if not completed) Mathematics 3Q4; Statistics 4S3, 4T3, 4U3.
E/ Electives to make a total of 29 to 31 units.

†Prescribed courses are: Computer Science 3A3, 3G3, 4W3; Mathematics 3I4, 304; Statistics 3U3, 4J3, 4M3, 4S3, 4T3, 4U3, 4V3, 4X3, 4Y4.

COMPUTER SCIENCE AND APPLIED MATHEMATICS MAJOR

Admission: 1980-81
Completion of Year II Applied Mathematical Sciences Major or Year II Mathematics Major including Applied Mathematics 1H3 or 2H3, 2L3.

Admission: 1981-82
Completion of Year II Mathematical Sciences Major including Computer Science 1H3 or 2H3, 2L3.

YEAR III: 29-32 units
Q/ The 13 units in R in which the student obtains the highest weighted average.
R/ Computer Science 2K3 (if not completed); Computer Science 3A3, 3T3; Statistics 2D4 (if not completed); Statistics 3M3 (if not completed); Physics 2G3; six to nine units from the courses prescribed below†.
E/ Electives*, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 29-32 units.

YEAR IV: 30-32 units
Q/ The 15 units in R in which the student obtains the highest weighted average.
R/ Computer Science 4G6; six to eight units from Mathematics 3C6 or 3T3, 3I4, 3Q4; nine to 12 units from the courses prescribed below†, including Computer Science 3D3 (if not completed).
E/ Electives†, to make a total of 30 to 32 units.

* Cognate courses that should be considered as electives are: Mathematics 4C4, 4D4, 4E5, 4O6, 4S4; Statistics 3D6, 3U3, 4M3, 4S3, 4T3, 4U3, 4V3, 4X3, 4Y4.

† Prescribed courses are: Computer Science 2A3, 3C3, 3D3, 3G3, 3I3, 3T3, 4E3, 4F3, 4J3, 4L3, 4M3, 4W3; Mathematics 3Q4; Physics 4D6.

COMPUTER SCIENCE AND MATHEMATICS MAJOR

Admission: 1980-81
Completion of Year II Applied Mathematical Sciences Major, including Mathematics 2D4, or completion of Year II Computer Science and Mathematics Major.

Admission: 1981-82
Completion of Year II Mathematical Sciences Major including Computer Sciences 1H3 or 2H3, 2L3; Statistics 2D4.

Note: In Year III and IV combined, in addition to the specified courses, the student must include at least six units of senior division Mathematics or Statistics courses* and at least six units from the courses prescribed below†.

YEAR III: 30 units
Q/ Computer Science 3A3; Mathematics 306; one additional course from R.
R/ Eight to 10 units chosen from Computer Science 2K3 (if not completed), senior division Mathematics or Statistics courses*, and the courses prescribed below†.
E/ Electives, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 30 units.

YEAR IV: 30 units
Q/ Computer Science 4G6; one of Mathematics 4C4, 3T3 and 4O3, 4Q6, 4S4; one other course from R.
R/ Six to eight units chosen from senior division Mathematics or Statistics courses*, and the courses prescribed below†, including Computer Science 3D3 (if not completed).
E/ Electives, to make a total of 30 units.

* Mathematics 3E4, 3F6, 3L4, 3Q4, 3R3, 3S3; Statistics 3D6, 3U3, 4G3, 4J3, 4M3, 4X3, 4Y4 should be considered.

† Prescribed courses are: Computer Science 2A3, 3C3, 3D3, 3G3, 3I3, 3T3, 4E3, 4F3, 4J3, 4L3, 4M3, 4X3; Mathematics 3I4, 3Q4.

MATHEMATICS MAJOR

Admission: 1980-81
Completion of Year II Mathematics Major.

Admission: 1981-82
Completion of Year II Mathematical Sciences Major including Statistics 2D4.

YEAR III: 30-32 units
Q/ The 12 units in R in which the student obtains the highest weighted average.
R/ Mathematics 3O6, 3T3; nine additional units of Mathematics or Statistics.
E/ Electives, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 30-32 units.

YEAR IV: 30-32 units
Q/ The 16 units in R in which the student obtains the highest weighted average.
R/ Mathematics 4O3 (if not completed); 17 to 19 additional units of senior division Mathematics or Statistics.
E/ Electives, to make a total to 30 to 32 units.

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Pass Programmes

PASS COMPUTER SCIENCE

Admission:
University standing in any Year I with at least 55% in Mathematics 1A6 or 1C6.

The election of Mathematics 1B4 or 1G6 or Economics 1A6 or 1B6 is strongly recommended. The election of Computer Science 1H3 as an extra course in Year I may be approved by a Dean of Science (Studies).

YEAR II: 28-30 units
R/ Computer Science 2H3 (if 1H3 is not completed) 2K3, 2L3; six units from Mathematical Sciences. (Computer Science 2A3 is strongly recommended).
E/ Electives*, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 25-30 units.

Note: The Department of Mathematical Sciences requires that all Pass Computer Science students entering Year III have their programme approved by the Chairman of the Unit for Computer Science.

YEAR III: 28-30 units
R/ Computer Science 3R6; six units from Computer Science 2A3, 3A3, 3D3, 3G3, 3I3, 3T3, 4L3; at least three units of Mathematical Sciences or Natural Sciences beyond Year I.
E/ Electives*, at least six units of which may not be from the Department of Mathematical Sciences, to make a total of 28 to 30 units.

*It is recommended that students choose their electives so that the Years II and III combined, 18 units are in a single subject, e.g., Commerce.

PASS MATHEMATICS

Admission:
University standing in any Year I with a weighted average of at least 55% in Mathematics 1A6 or 1C6, and 1B4 or 1G6 or Applied Mathematics 1C6.

YEAR II: 30 units
R/ Mathematics 2G3, 2J6, 2O3.
E/ 18 units elective, at least six units of which may not be from the Department of Mathematical Sciences.

YEAR III: 30-32 units
R/ Mathematics 3G6, 3T3; six to eight additional units of Mathematical Sciences.
E/ 15 units elective, at least six units of which may not be from the Department of Mathematical Sciences.

Department of Metallurgy and Materials Science

HONOURS METALLURGY AND MATERIALS SCIENCE

Admission:
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, 1G6 or Applied Mathematics 1C6, and Chemistry 1A7 or 1C8, with a weighted average of at least 70% in Chemistry 1A7 or 1C8 and Mathematics 1G6 or Applied Mathematics 1C6 or Physics 1A7. Physics 1A7 must be taken in Year I or II; its election in Year I is strongly recommended.

YEAR II: 35-37 units
Q/ The 18 units from R in which the student obtains the highest weighted average.
R/ Chemistry 2A4, 2T4; Computer Science 2H3; Mathematics 2G3, 2O3; Engineering 2O3 (unless Materials 1A6 completed); Materials 2F3; Metallurgy 2C3; Physics 1A7 or, if completed, Physics 2B6. Physics 2G3 or Engineering 2P4. (If Physics 1A7 is taken in Year II, no other Physics course may be selected.)
E/ Electives, if necessary, to make a total of 35 to 37 units.

YEAR III: 34 units
Q/ The 16-18 units from R in which the student obtains the highest weighted average.
R/ Materials 3B2, 3D6, 3E6, 3G2; Mathematics 3C6; Physics 2B6, if not completed; Chemistry 2U3 or Physics 3M6 (which may be deferred to Year IV).
E/ Electives to make a total of 34 units, which must include at least six units which are not selected from courses in Chemistry, Mathematical Sciences, Physics, nor from any offerings of the Department of Metallurgy and Materials Science.

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

YEAR IV: 30 units
Q/ The 17 units of senior division Ceramics, Chemistry, Materials, Mathematical Sciences courses, Metallurgy or Physics from R and E in which the student obtains the highest weighted average.
R/ Materials 4E3; Metallurgy 4A1, 4K4, 4L4; Physics 3M6 or Chemistry 2U3, if not completed.
E/ Electives, at least six units of which may not be Chemistry, Mathematical Sciences courses, Physics, or any course offered by the Department of Metallurgy and Materials Science, to make a total of 30 units.

METALLURGY AND MATERIALS SCIENCE MAJOR

Admission:
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, 1G6 or Applied Mathematics 1C6, and Chemistry 1A7 or 1C8, with a weighted average of at least 60% in Chemistry 1A7 or 1C8 and one of Mathematics 1G6, or Applied Mathematics 1C6 or Physics 1A7. Physics 1A7 must be taken in Years I or II; its election in Year I is strongly recommended.

YEAR II: 30-33 units
Q/ The 15 units from R in which the student obtains the highest weighted average.
R/ Chemistry 2T4; Computer Science 2H3; Mathematics 2G3, 2O3; Engineering 2O3 (unless Materials 1A6 completed); Engineering 2P4; Materials 2F3; Metallurgy 2C3; Physics 1A7 or, if completed, Physics 2B6.
E/ Electives, if necessary, to make a total of 30 to 33 units.

YEAR III: 32 units
Q/ The 15 units from R in which the student obtains the highest weighted average.
R/ Chemistry 2A4, Materials 3B2, 3D6, 3E6, 3G2; Mathematics 3V6; Physics 2B6, if not completed.
E/ Six units elective, if necessary, which may not be Chemistry, Mathematical Sciences courses, Physics or any course offered by the Department of Metallurgy and Materials Science.

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

YEAR IV: 30 units
Q/ The 15 units of senior division Ceramics, Chemistry, Materials, Mathematical Sciences courses, Metallurgy, and Physics, from R and E in which the student obtains the highest weighted average.
R/ Engineering 3P3; Materials 4E3; Metallurgy 4A1, 4L4.
E/ Electives to make a total of 30 units, at least six units of which may not be Chemistry, Mathematical Sciences courses, Physics or any course offered by the Department of Metallurgy and Materials Science.

Department of Physics

HONOURS APPLIED PHYSICS

Admission:
Completion of Year II Honours Physics, or Honours Mathematical Sciences (formerly Honours Applied Mathematical Sciences) including Physics 2B6 and 2C5.

YEAR III: 34-36 units
Q/ The 18 or more units listed in R in which the student obtains the highest weighted average.
R/ Physics 2H3 (if not completed), 3B6, 3H4, 3M6; Mathematics 3C6; additional units chosen from Physics 3K4, 3N3, 3F4, 3S4, 3T3; Engineering Physics 3D3, 3X4; Biology 403; Mathematics 3O4, to make a total of 28-30 units.
E/ Six units, which may not be Physics or Engineering Physics.
**PHYSICS**

**YEAR IV:** 32-34 units
Q/ The 18 units listed in R in which the student obtains the highest weighted average
R/ Physics 4A2, 4B4, 4D6, 4J4; Engineering Physics 4W3; six to eight units of senior division Physics or Engineering Physics.
E/ Electives to make a total of 32 to 34 units.

**HONOURS CHEMISTRY AND PHYSICS**

(See "Department of Chemistry: Honours Chemistry and Physics").

**HONOURS GEOLOGY AND PHYSICS**

(See "Department of Geology: Honours Geology and Physics").

**HONOURS PHYSICS**

**Admission:**
University Standing in Natural Sciences I*, including Physics 1A7* and Mathematics 1G6* or Applied Mathematics 1C6* with a weighted average of at least 70% in Mathematics 1A6 or 1C6, and Mathematics 1G6* or Applied Mathematics 1C6* and Physics 1A7*. Chemistry 1A7 or 1C8 must be taken in Year I or II; its election in Year I is strongly recommended.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 and Mathematics 1G6 are, however, strongly recommended.

**YEAR II:** 32-35 units
Q/ Physics 2B6, 2C5, 2H3.
R/ Mathematics 2A5, 2C4, Computer Science 2H3.
E/ Six to nine units elective, at least six of which may not be Physics.

Students who have satisfactorily completed Year II Honours Physics are eligible to proceed to Year III Honours Applied Physics or Year III Honours Theoretical Physics and Applied Mathematics. They will be considered for admission to Year III Honours Computer Science and Applied Mathematics, provided that Computer Science 2L3 has been elected in Year II, and to Year III Honours Metallurgy and Materials Science, preferably if Engineering 204 has been elected in Year II.

**YEAR III:** 32-35 units
Q/ The 16 units of Physics listed in R (which may include Mathematics 3C6) in which the student obtains the highest weighted average.
R/ Physics 3H4, 3K4, 3M6, 3N3; Mathematics 3C6; three to six units of senior division Natural Science* or Mathematics.
E/ Six units elective which may not be Engineering Physics or Physics.

*Physics 3B6 or 4D6 must be taken in Years III or IV. Students who elect Year III courses in Year III and Year IV courses in Year IV will generally find that more options are offered by the timetable.

**YEAR IV:** 32-34 units
Q/ The six courses of senior division Physics from R and E in which the student obtains the highest weighted average.
R/ Physics 4A2, 4B4, 4F3, 4J4; two of Physics 3R4, 3S4, 4C4, 4D6, 4E3, 4K3; six units of senior division Science or Mathematics.
E/ Electives to make a total of 32 to 34 units.

**HONOURS THEORETICAL PHYSICS AND APPLIED MATHEMATICS**

**Admission:**
Completion of Year II Honours Mathematical Sciences (formerly Honours Applied Mathematical Sciences) including Physics 2B6 and 2C5, or Honours Physics. (The student should have completed Computer Science 1H3 or 2H3, or Applied Mathematics 1H3 or 2H3.)

**YEAR III:** 32-35 units
Q/ The four courses in which the student obtains the highest weighted average from among Mathematics 3A6 or 3O6, 3C6, 3Q4, Physics 3K4, 3M6, 3N3.
R/ Mathematics 3A6 or 3O6, 3C6; Physics 2H3 (if not completed), 3K4, 3M6; three to seven units from Physics 3A3, 3N2, 3R4, 3S4, Mathematics 3Q4.
E/ Electives, at least six units of which may not be Mathematical Sciences courses, or Physics, to make a total of 32 to 35 units.

**YEAR IV:** 32-34 units
Q/ Mathematics 4D4, Physics 4C4, 4F3, one of Mathematics 4A6, or 3T3 and 4O3, 4T4, at least four units from R in which the student obtains the highest weighted average.
R/ Physics 4A2, 4B4; five-12 units from senior division Physics and Mathematical Sciences courses, including, if not completed, Mathematics 3Q4.
E/ Electives to make a total of 32 to 34 units.

**GEOL OGY AND PHYSICS MAJOR**

(See "Department of Geology: Geology and Physics Major").

**PHYSICS MAJOR (GENERAL OPTION)**

**Admission:**
University Standing in Natural Sciences I, including Mathematics 1A6 or 1C6, Physics 1A7*, and Mathematics 1G6* or Applied Mathematics 1C6*, with a weighted average of at least 60% in three subjects: Physics 1A7* and two of Mathematics 1A6, 1C6, Mathematics 1G6* or Applied Mathematics 1C6*, Chemistry 1A7 or 1C8. Chemistry 1A7 or 1C8 must be taken in Years I or II; its election in Year I is strongly recommended.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 and Mathematics 1G6 are, however, strongly recommended.

**YEAR II:** 30-32 units
Q/ Physics 2B6 and 10 units of Physics, Chemistry, or Mathematical Sciences courses, beyond Year I, from R and E.
R/ Physics 2G3 or 2C5, 2H3; Mathematics 2G3, 2O3.
E/ Electives, at least six units of which may not be Physics, to make a total of 30 to 32 units.

**YEAR III:** 29-32 units
Q/ The 15 units of Physics from R and E in which the student obtains the highest weighted average.
R/ Physics 3H4; either Mathematics 3C6, Physics 3M6, and three to four units of senior division Physics, or Physics 3P3, 3T3 and nine to 10 units of senior division Physics.
E/ Electives, at least six units of which may not be Physics or Engineering Physics.

Students who elect Year III courses in Year III and Year IV courses in Year IV will generally find that more options are offered by the timetable.

**YEAR IV:** 30-32 units
Q/ The 15 units listed in R in which the student obtains the highest weighted average.
R/ Physics 4A2; 18 units of senior division Physics which must include Physics 3B6 or 4D6, if neither completed.
E/ Electives to make a total of 30 to 32 units.

**PHYSICS MAJOR (HEALTH AND RADIATION PHYSICS OPTION)**

**Admission:**
University Standing in Natural Sciences I, including Biology 1A6 or 1B6, Chemistry 1A7, Mathematics 1A6 or 1C6, Physics 1A7* and Mathematics 1G6* or Applied Mathematics 1C6*, with a weighted average of at least 60% in three subjects: Physics 1A7* and two of Mathematics 1A6, 1C6, Mathematics 1G6*, Applied Mathematics 1C6*, Chemistry 1A7, 1C8.

*Students who have taken Mathematics 1B4 or Physics 1B7 or 1C8 instead of the prescribed courses will be considered. Physics 1A7 and Mathematics 1G6 are, however, strongly recommended.

**YEAR II:** 29-31 units
Q/ Physics 2B6, and 10 units of Physics, Chemistry, or Mathematical Sciences courses beyond Year I, from R and E.
R/ Physics 2G3 or 2C5, 2H3; Mathematics 2G3, 2O3, Computer Science 2H3.
E/ Electives (Chemistry 2D4 or 2O3 is strongly recommended) to make a total of 29 to 31 units.

**YEAR III:** 30-32 units
Q/ Physics 3B6, 3H4, 3P3, 3T3.
R/ Biology 3G3 or Biology 2A3, Chemistry 2F4.
E/ Electives to make a total of 30 to 32 units.
YEAR IV: 30-32 units
Q/ The 18-19 units of Year III or Year IV Psychology chosen from R and E in which the student obtains the highest weighted average.
R/ 18-19 units of Year III or Year IV Psychology.
E/ Electives to make a total of 30 to 33 units; electives may include Psychology.

HONOURS BIOLOGY AND PSYCHOLOGY (LIFE SCIENCES)
(See “Department of Biology: Honours Biology and Psychology”)

PASS PSYCHOLOGY
(For B.A. programme in Pass Psychology, see “Faculty of Social Sciences: Pass Psychology”)

Admission:
University Standing in Natural Sciences I with at least 55% in Psychology 1A6.
At some time during the programme the student must meet a laboratory requirement by completing at least one of Psychology 2L6, 2U3, 2V3, 3C6, 3E3, 3P3, 3V3, 4D6, 4G3, or 4E7. (If in any of these courses laboratory work is optional, the laboratory option must be exercised to receive credit toward the laboratory requirement.) Year II and Year III Psychology students will not be permitted to register in more than 18 units of Psychology in a given year, nor will they be permitted to register in courses of a year higher than the one in which they are registered.
A minimum grade of “D” must be obtained in Psychology 2G3, or Statistics 2R6, and Psychology courses presented to satisfy area requirements.

YEAR II: 30-32 units
R/ At least 12 units of Year II Psychology including Psychology 2G3 or Statistics 2R6; six to eight units of Biochemistry, Biology, Chemistry, Mathematics, or Physics.
E/ Electives at least six units of which may not be Psychology, to make a total of 30 to 32 units.

YEAR III: 30-32 units
R/ 12 units of Year II and Year III Psychology; six to eight units of Biochemistry, Biology, Chemistry, Mathematics, or Physics, beyond Year I.
E/ Electives, at least six units of which may not be Psychology, to make a total of 30 to 32 units.

Science

PASS SCIENCE

Admission:
University Standing in Natural Sciences I, including at least two courses from Year I Biology, Chemistry, and Physics, with a weighted average of at least 55% in two or more Mathematics or science courses. Chemistry 1A7 (or 1C8) and Physics 1B7 (or 1A7 or 1C8) must be taken in Years I or II; the election of both in Year I is strongly recommended.

YEAR II: 30 units
R/ 18 units of Natural Science courses (which may include Mathematical Science courses) including Chemistry 1A7 (or 1C8), if not completed, or Physics 1B7 (or 1A7 or 1C8), if not completed.
E/ 12 units elective.

Note: In Years II and III combined, not more than 14 units of first-year work may be taken and not more than 18 units of R-group courses may be taken in any one Department.

YEAR III: 30 units
R/ 18 units of Natural Science courses (which may include Mathematical Science courses) at least six of which must be from the senior division.
E/ 12 units elective.
The Faculty of Social Sciences

R. C. McVor/M.A., Ph.D., F.R.S.C., Dean of Social Sciences.
R. W. Hornosty/B.S.P., M.A., Ph.D., Associate Dean (Studies).
G. R. Raymond/M.A., Assistant to the Dean.
E. Frank/M.A. Student Advisor
D. Jacobs/Student Advisor
J. Weston/B.A. Student Advisor

The social sciences are concerned with the systematic study of the whole gamut of human relationships in societies which range from the primitive to the post-industrial. There is also a growing interest among social scientists in the interaction between men and their natural and artificial environments. Developments in theory and refinements of scientific method have, in recent years, given great impetus to social studies and research.

The Faculty of Social Sciences is essentially a convenient administrative structure that groups a number of disciplines in the following departments or schools:


It is readily seen that not all disciplines that have a bearing on social science are represented by the departments within the Faculty; nor are all the constituent parts of the Faculty, strictly speaking, engaged in systematic social studies. Psychology, geography, history, and philosophy, are, in some of their aspects, identifiable as social sciences. Physical education and social work, on the other hand, have a strong practical orientation, drawing largely, but not exclusively, on the social sciences for knowledge and insights that may be applied in professional practice.

The departments offer the regular three-year Pass programmes, as well as four-year Honours programmes. The Honours programmes provide a richer concentration in the particular field, and are normally a requirement for those who contemplate proceeding to graduate studies. In many cases, students may combine work in two departments and be graduated with a Combined Honours Degree in the two subjects. The Faculty of Social Sciences is participating fully in helping interested students combine concentration in a social science area with the new concentration in Canadian Studies.

The two schools—Social Work and Physical Education—attached to the Faculty offer programmes of study which lead to the combined BA/BSW degree in the one case, and the single BPE degree in the other. The School of Social Work in addition offers a second degree (B.S.W.) to those who already have attained one undergraduate degree.

Students are strongly advised to take advantage of the extensive counselling services provided by the Faculty. First-year students in particular should plan a programme of study that would allow them a number of options when they enter second year.

COURSES IN PHYSICAL EDUCATION AND SOCIAL WORK AVAILABLE FOR UNDERGRADUATE CREDIT

Several courses offered by the School of Physical Education and the School of Social Work can be taken by third- and fourth-year students as electives for undergraduate credit.

These courses are:

- Physical Education 3P3
- Physical Education 3Q3
- Physical Education 4G3
- Physical Education 4J3
- Social Work 3C3
- Social Work 3J3
- Social Work 4J3
- Social Work 4M3

Students in the Faculty of Social Sciences who are in the Social Work programme may take, as part of their B.A. programme, up to six units of Social Work courses which have been approved for B.A. credit. Students who are in the four year Bachelor of Physical Education programme may take as electives, up to six units of Physical Education courses which have been approved for arts credit.

YEAR I PROGRAMMES

PHYSICAL EDUCATION I

20 units
Physical Education 1A6, 1B3 and 1E3, Biology 1H6, Practicum two units.
12 units Elective†
total 32 units
†Students may take 10 units elective if Mathematics 1A6 and 1B4 are chosen.

SOCIAL SCIENCES I

12* units of
Anthropology 1A3, 1Z3 and/or 1B6
Economics 1A6
Geography 1A6 and/or 1B6
Political Science 1A6
Psychology 1A6
Religious Studies 1B6, 1C6, 1D6, 1E6, 1F6, or 1Z6
Sociology 1A6
18 units Elective†
total,30 units
†Students may take more than 12 units of work in the Faculty of Social Sciences if they wish subject to the conditions outlined in the paragraph which follows.
†Normally, a student will take only six units in any one discipline (excluding Mathematics). In special circumstances, a student may be permitted to take up to 12 units in one discipline. The student is also strongly advised to take at least six units of work outside the Faculty of Social Sciences. Students may take 16 units elective if Mathematics 1A6 and 1B4 are chosen.

COMBINED HONOURS PROGRAMME

Subject to possible timetable restrictions, and with the written approval of the appropriate Departments and Deans of Studies, a student may combine work in any two departments, and be graduated with a combined honours degree in the two subjects. These programmes will normally include units of work beyond Year I in each Department (normally 12 Q units per year in each subject to a total during Years II, III, and IV, of approximately 36 units).

For special requirements in Honours programmes, and for taking extra units, either as extra work or as make-up work, see “Academic Regulations”.

PART-TIME STUDIES

Subject to the limitations of course offerings, a student may pursue on a part-time basis any Honours programme in the Faculty of Social Sciences. Normally, a part-time student will arrange his programme of studies in consultation with the Undergraduate Advisor of the appropriate Department.

PASS PROGRAMMES

For special requirements in Pass programmes, and for taking extra units, either as extra work or as make-up work, see “Academic Regulations”.

A student must obtain at least 55% in the required Year I work in the area in which the student wishes to concentrate in Year II.
Department of Anthropology

HONOURS ANTHROPOLOGY

Admission:
University Standing in any Year I with an average of at least 70% in Anthropology 1A3 and 123, and six additional units acceptable to the Department. Anthropology 1B6 (Linguistics 1A6) may be substituted for either 1A3 or 123.

During Years II, III, and IV, students must complete at least 36 units of Anthropology. In special cases, courses offered by other Departments may be approved for credit as an Anthropology course (and included in calculating the Q average). Students are required to take at least one half course above Year I in each of physical anthropology, archaeology, and linguistics. (Appropriate physical anthropology courses include Anthropology 2D3, 2E3, 2J3).

YEAR II: 30 units
Q/ The 12 units chosen from R in which the student obtains the highest weighted average.
R/ Anthropology 2F3 and at least nine other units of Year II or Year III Anthropology; courses in other Departments may be substituted with Departmental approval.
E/ Electives to total 30 units. The Department recommends six units outside the Faculty of Social Sciences.

YEAR III: 30 units
Q/ The 12 units chosen from R in which the student obtains the highest weighted average.
R/ Anthropology 3S6 and at least six other units of Year II and Year III Anthropology courses in other Departments may be substituted with Departmental approval.
E/ Electives to total 30 units. The Department recommends six units outside the Faculty of Social Sciences.

YEAR IV: 30 units
Q/ The 12 units chosen from R in which the student obtains the highest weighted average.
R/ Anthropology 4J3 and at least nine other units of Year IV anthropology; courses in other Departments may be substituted with Departmental approval.
E/ Electives to total 30 units.

PASS ANTHROPOLOGY

Admission:
University Standing in any Year I with an average of at least 55% in Anthropology 1A3 and 123. Anthropology 1B6 (Linguistics 1A6) may be substituted for either 1A3 or 123.

In consultation with the Department, students may include in their R group courses which are offered by other Departments.

During Years II and III, students must complete at least 24 units of Anthropology. In special cases the Department may approve courses offered in other Departments for credit as anthropology courses.

YEAR II: 30 units
R/ Anthropology 2F3 and at least nine other units of Year II or Year III Anthropology; courses in other Departments may be substituted with Departmental approval.
E/ Electives to total 30 units. The Department recommends six units outside the Faculty of Social Sciences.

YEAR III: 30 units
R/ At least 12 units of Year II or Year III Anthropology; courses in other Departments may be substituted with Departmental approval.
E/ Electives to total 30 units. The Department recommends six units outside the Faculty of Social Sciences.

Canadian Studies

Combined Honours in Canadian Studies and Another Subject

Note: No student may register in any Year of this programme without the approval of the Counsellor of the Canadian Studies Committee of Instruction.

Admission:
University Standing in any Year I with an weighted average of 70% in 12 units of Year I work including the other Honours subject. The Canadian Studies component will be as follows:

YEAR II:
Q/ Canadian Studies 2A6; six units from courses designated as Canadian area courses.

Note: A mark of at least 70 in Canadian Studies 2A6 will be required for continuation in Year III of the programme.

Language Requirements—
Before proceeding to Year III of the programme the student in Combined Honours Canadian Studies will be required to demonstrate a satisfactory reading knowledge of French. This requirement may be satisfied by obtaining a mark of at least 55 in French 1A6 or 1B6, or by satisfying the Committee of Instruction of such competence through a test based upon literary and periodical materials in French. Readings in French will be included in Year III and Year IV seminars.

YEAR III:
Q/ Six units from Canadian Studies 3A3, 3B3, 4A3, 4B3, 4C3, 4D3; six units from courses designated as Canadian area courses.

YEAR IV:
Q/ A minimum of six units from Canadian Studies 3A3, 3B3, 4A3, 4B3, 4C3, 4D3, (whichever not previously completed); additional units of interdisciplinary seminars or Canadian area courses to total 12 units.

To a total of approximately 24 or more units of Q work in each Year of a Combined Honours programme, the student must add elective work to make up a minimum overall load of 30 units per Year.

At least “D” is required in all Q group specialist courses.

Department of Economics

Mathematics Requirements

The Honours Economics programme and all Combined Honours programmes in Economics and another subject (with the exception of Honours Economics and Mathematics) require the successful completion of one course from each of the following groups by the end of Year II:

1. Grade 13 calculus or Mathematics 1K3,
2. Mathematics 1B4, 1D7, 1G6, 1H7 or 1L3 or Applied Mathematics 1C6.
3. Mathematics 1A6, 1C6, 1M3 or 1N6.

Students should include these courses in their Year I programmes if at all possible.

If Mathematics 1L3 and 1M3 are chosen, they must be completed with an average grade of at least 55%.

COMBINED HONOURS IN ECONOMICS AND ANOTHER SUBJECT

With the approval of both departments concerned, a student may arrange to follow a Combined Honours programme in Economics and another discipline. Some of these programmes are described below. Students wishing to arrange other programmes should consult the Department.

HONOURS ECONOMICS

Admission:
University standing in any Year I with an average of 70% in Economics 1A6 or 1B6 and in six units of Mathematics or another course acceptable to the Department of Economics, including a mark of at least 70% in Economics 1A6. The mathematics requirements for this programme are described above. In the course of a 4-year programme, students must complete at least 54 units of Economics including Economics 306 or 3B3. Economics 306 is recommended. In addition, 48 units of work other than Economics are required.
YEAR II: 30 units
Q/ Economics 2L6 and 2M6.
R/ Economics 2B3 (unless Economics 3O6 is chosen in Year III); Mathematics 1L3 and 1M3 or equivalent (unless completed in Year I).
E/ Electives to complete a programme of 30 units, including at least six units offered by other departments.

YEAR III: 30 units
Q/ Economics 3A3 and 3AA3 and 12 additional units of Economics in which the student obtains the highest weighted average.
R/ At least 18 units of Economics including Economics 3O6 (unless Economics 2B3 has been completed in Year II).
E/ Electives to complete a programme of 30 units including at least six units offered by other departments.

YEAR IV: 30 units
Q/ The 16 units of Economics in which the student obtains the highest weighted average.
R/ At least 18 units of Economics including at least one of 4E3, 4F3, 4H3.
E/ Electives to complete a programme of 30 units.

HONOURS ECONOMICS AND GEOGRAPHY

Admission:
University Standing in any Year I with a mark of at least 70% in Economics 1A6 and in Geography 1B6.

The mathematics requirements for this programme are described above.

YEAR II: 30 units
Q/ Economics 2L6 and 2M6; Geography 2A3, 2B3, 2R3.
R/ Geography 2L6 or Economics 2B3*; Mathematics 1L3 and 1M3 if not completed in Year I.
E/ Electives to total 30 units.

*Students may also meet the statistics requirement by taking Economics 3O6 in Year III.

YEAR III: 30 units
Q/ Economics 3A3 and 3AA3; six additional units of Economics; 12 units of Year III or IV Geography including Geography 3N3.
R/ 12 units of Economics; 12 units of Year III or IV Geography excluding physical and regional geography.
E/ Six units elective.

YEAR IV: 30 units
Q/ 12 units of Economics; 12 units from Geography 4H3, 4J6, 4T3, 4U3, 4X3.
E/ Six units elective.

HONOURS ECONOMICS AND MATHEMATICS

Admission:
University Standing in Business I, Natural Sciences I or Social Sciences I with an average of at least 70% in Economics 1A6, Mathematics 1A6 or 1C6, and 1B4 or 1G6 or 1H7 or Applied Mathematics 1C6, or 1C7 including a mark of at least 70% in Economics 1A6.

YEAR II: 30-32 units
Q/ Economics 2L6 and 2M6, Mathematics 2A5, 2B4, 2D4, 2F4.
E/ Electives to total 30 to 32 units.

YEAR III: 30-32 units
Q/ Economics 3A3 and 3AA3; six additional units of Economics; Mathematics 2C4, 3A6 or 3O6; six units from Mathematics 3E4, 3F6, 3P4, 3Q4, 3R3, 3S3, 3T3 or Statistics 3D6, 3U3, 4G3.
E/ Electives to total 30 to 32 units.

YEAR IV: 30-32 units
Q/ 12 units of Economics; 10 units of Mathematics chosen from 3E4, 3F6, 3P4, 3Q4, 3R3, 3S3, 3T3 or 4A6 or 4G3, 4C4, 4K4, 4U4 or Statistics 3D6, 3U3, 4G3, 4J3, 4M3, 4X3.
E/ Electives to total 30 to 32 units.

HONOURS ECONOMICS AND POLITICAL SCIENCE

Admission:
University Standing in any Year I with an average of at least 70% in Economics 1A6 or 1B6 and six additional units acceptable to the Department of Political Science, including a mark of at least 70% in Economics 1A6. A first-year course in Political Science is recommended.

The mathematics requirements for the programme are described above.

YEAR II: 30 units
Q/ Economics 2L6 and 2M6; 12 units of Year II Political Science. Political Science 2F6 is recommended.
R/ Economics 2B3*; Mathematics 1L3 and 1M3 or equivalent (if not completed in Year I).
E/ Electives to total 30 units.

*Students may also meet the statistics requirement by taking Economics 3O6 in Year III.

YEAR III: 30 units
Q/ Economics 3A3 and 3AA3; six additional units of Economics; 12 units of senior division Political Science.
E/ Six units elective.

YEAR IV: 30 units
Q/ 12 units of Economics, 12 units of senior division Political Science.
E/ Six units elective.

HONOURS HISTORY AND ECONOMICS

(See “Faculty of Humanities: Honours History and Economics)

PASS ECONOMICS

Admission:
University Standing in any Year I including a mark of at least 55% in Economics 1A6.

General Provisions:
In the course of a three year programme students must complete at least 30 units of Economics including Economics 2B3 or 3O6. In addition, 42 units outside of Economics are required. Students must complete Mathematics 1K3 and 1L3 with an average of at least 55% before the end of Year II and preferably by the end of Year I. Mathematics 1A6 and one of Mathematics 1B4 or 1G6 or 1H7 or Applied Mathematics 1C6 or 1C7 may be substituted for Mathematics 1K3 and 1L3. Grade 13 calculus may be substituted for Mathematics 1K3, but in this case 55% is required in Mathematics 1L3.

To continue in the Pass Economics programme a student must obtain a grade of at least 55% in each of Economics 2L6 and 2M6.

YEAR II: 30 units
R/ Economics 2L6 and 2M6; Economics 2B3*; Mathematics 1K3 and 1L3 if not completed in Year I.
E/ Electives to complete a programme of 30 units; including at least six in other departments.

*Students may also meet the statistics requirement by taking Economics 3O6 in Year II.

YEAR III: 30 units
R/ At least 12 units of Economics.
E/ Electives to complete a programme of 30 units.
Department of Geography

HONOURS GEOGRAPHY

(For B.Sc. programme in Honours Geography, see "Faculty of Science: Honours Geography").

Admission:
University Standing in any Year I with a mark of at least 70% in Geography 1A6 or 1B6, and an average of at least 70% in that and six additional units acceptable to the Department. Students are advised to consult the Handbook for Undergraduate Geographers, which may be obtained from the departmental office.

YEAR II: 30 units
Q/ The 12 units of second year geography from R in which the student obtains the highest weighted average.
R/ Geography 2L6, nine units chosen from 2A3, 2B3, 2D3, 2F3, 2K3, 2R3, 2T3; at least three additional units of Geography or approved courses offered by other departments.
E/ At least 12 units electives, six of which must not be in geography.

YEAR III: 30-32 units
Q/ The 18 Geography units from R in which the student obtains the highest weighted average.
R/ Nine units chosen from 3D3, 3E3, 3F3, 3K3, 3L3, 3M3, 3N3, 3O3, 3T3, 3W3, 3Z3; at least nine additional units of Year III geography, or approved courses offered by other departments.
E/ At least 12 units elective, six of which must not be in Geography.

YEAR IV: 30 units
Q/ The 18 units of Year IV Geography in which the student obtains the highest weighted average.
E/ At least 12 units elective, six of which must not be in Geography.

HONOURS GEOGRAPHY AND GEOLOGY

(For B.Sc. programme in Honours Geography and Geology, see "Faculty of Science: Honours Geography and Geology").

Admission:
University standing in any Year I with an average of at least 70% in Geography 1A6 and Geology 1A6 or 1B6.

YEAR II: 32 units
Q/ The 15 units of Geography and Geology (excluding Geography 3E3) chosen from R in which the student obtains the highest weighted average.
R/ Geography 2L6, 2M3, 2T3; Geology 2B6, 2C6; Mathematics 1A6, or 1K3 and 1L3 or 1M3, if not taken in Year I.
E/ Electives to total 32 units.

YEAR III: 29-32 units
Q/ The 15 units from R (excluding Geography 3E3 and Geology 3E2), in which the student obtains the highest weighted average.
R/ Geography 3E3, 3M3, 3W3; Geology 3E2, 3C6; at least six additional units of Year III Geography or Geology.
E/ Six to nine units elective, at least six of which may not be Geography or Geology.

YEAR IV: 30 units
Q/ Six units of Year IV Geography; six units of Year IV Geology; six units of Year IV Geography or senior division Geology courses.
E/ 12 units elective.

PASS GEOGRAPHY

(For B.Sc. programme in Pass Geography, see "Faculty of Science: Pass Geography").

Admission:
University Standing in any Year I including Geography 1A6 or 1B6.

During Years II and III, students must complete at least 18 units of work outside of Geography.

YEAR II: 30 units
R/ At least 12 units of Year II Geography.
E/ Electives to total 30 units.

YEAR III: 28-32 units
R/ At least 12 units of Year III Geography.
E/ Electives to total 30 to 32 units.

Department of Psychology

HONOURS PSYCHOLOGY

(For B.Sc. programme in Honours Psychology, see "Faculty of Science: Honours Psychology").

Admission:
University Standing in any Year I with at least 70% in Psychology 1A6 and 70% in six additional units. At sometime during the programme, the student must meet a laboratory requirement by completing at least two of Psychology 2L6, 2U3, 2V3, 3C6, 3E3, 3Q3, 3S3, 3V3, 4D6, 4G3 or 4E7. (If in any of these courses laboratory work is optional, the laboratory option must be exercised to receive credit toward the laboratory requirement.) Further, it is strongly recommended that students complete Psychology 2D6 and 2T6 early in their programmes. Courses presented to meet the laboratory requirement must be included in the Q-group when determining honours standing.

Students enrolling in the Honours Psychology B.A. programme in the 1979-80 academic year and thereafter must complete one of Mathematics 1A6, 1C6, 1F6 or 1M3 with a grade of at least 50% preferably in Year I of their university work. Students who qualify for honours but who did not complete the mathematics requirement in Year I may proceed in Honours Psychology, provided that they complete the mathematics requirement in Year II. In this instance, Statistics 2R6 must be deferred to the Year III Q group and another six units of Psychology will be taken to complete the Q group for Year II.

Year II and Year III Psychology students will not be permitted to substitute psychology courses for electives nor will they be permitted to register in courses a year higher than the one in which they are registered.

Students registered in Honours programmes in Psychology must complete the entire Q group for each Year within one academic session, unless they are registered in 18 or fewer units of university work. For such students the Q standing will be calculated on the basis of the first 15 units of Psychology completed in Year II (including Statistics 2R6), and the first 18 units of Psychology completed in each of Years III and IV.

A minimum grade of "D" must be obtained in Psychology courses presented to satisfy Q requirements.

YEAR II: 30 units
Q/ The 15-18 units of Psychology chosen from R and E in which the student obtains the highest weighted average. Statistics 2R6 must be included if taken.
R/ 15-18 units of Year II Psychology, including Statistics 2R6 (except as noted under "Admission" above).
E/ Electives to total 30 units, at least 12 of which must be outside of Psychology.

YEAR III: 30 units
Q/ The 18 units of Psychology designated in R.
R/ 18 units of Year II and Year III Psychology.
E/ Electives, excluding Psychology, to total 30 units.

YEAR IV: 30-31 units
Q/ The 18-19 units of Year III or Year IV Psychology chosen from R and E in which the student obtains the highest weighted average.
R/ 18-19 units of Year III or Year IV Psychology.
E/ Electives to total 30-31 units. Electives may include Psychology.

PASS PSYCHOLOGY

(For B.Sc. programme in Pass Psychology, see "Faculty of Science: Pass Psychology").

Admission:
University Standing in any Year I with at least 55% in Psychology 1A6.

YEAR II: 30 units
R/ At least 12 units of Year II Psychology.
E/ Electives to total 30 units.
Year II and Year III Psychology students will not be permitted to register in more than 18 units of Psychology courses in a given year, nor will they be permitted to register in courses a year higher than the one in which they are registered. A minimum grade of “D” must be obtained in Psychology 2G3 or Statistics 2R6 and Psychology courses presented to satisfy area requirements.

YEAR II: 30 units
R/ At least 12 units of Year II Psychology, including Psychology 2G3 or Statistics 2R6.
E/ Electives to total 30 units.

YEAR III: 30 units
R/ At least 12 units of Year II and Year III Psychology.
E/ Electives to total 30 units.

School of Physical Education
Programme for the B.P.E. Degree

Throughout the four years, in the “R” courses in the B.P.E. programme (delineated by year below), a student must achieve a minimum of 50% in each course taken and a weighted average of at least 60% each year. In Year I, a student is required to withdraw unless he/she completes two units of assigned practicum satisfactorily on the first attempt (during the first year of attendance in B.P.E.). Students who do not obtain the required 50% in each course or the weighted average of 60% in the “R” group may be permitted, subject to the approval of the Department, to repeat required B.P.E. courses, or to repeat or replace B.P.E. elective courses, up to six units per year. Students may not proceed to the next year until the weighted average is achieved.

Until 1983, the minimum requirement for graduation in the programme leading to the degree Bachelor of Physical Education is a weighted average of 60% in at least 36 units of Physical Education taken in Years II, III, and IV. A student taking the Physical Education programme may be awarded First Class, or Second Class standing on the basis of the weighted average of the Physical Education courses taken in Years III and IV.

YEAR II: 30 units
R/ Physical Education 2C6, 2D3, 2E3, 2F3; Physical Education 2U0.
E/ 15 units excluding Physical Education.

YEAR III: 30 units
R/ Physical Education 3A6, 3E3; six units of Physical Education from Year III or Year IV levels; Physical Education 3U0.
E/ 15 units excluding Physical Education.

YEAR IV: 30 units
R/ 12 to 18 units of Physical Education at Year III or Year IV levels; Physical Education 4U0.
E/ 12 to 18 units excluding Physical Education.

Beginning 1984, the minimum requirement for graduation in the programme leading to the degree Bachelor of Physical Education is a weighted average of 60% in at least 54 units taken in Years II, III and IV. A student taking the Physical Education programme may be awarded First Class or Second Class standing on the basis of the weighted average of Physical Education courses taken in Years III and IV.

Beginning 1980-81.

YEAR I: 32 units
R/ Physical Education 1A6, 1B3, 1E3; Practicum two units, Biology 1H6.
E/ 12 units excluding Physical Education.

YEAR II: 34 units
R/ Physical Education 2A3, 2B3, 2C6, 2D3, 2F3; Practicum four units.
E/ 12 units excluding Physical Education.

YEAR III: 34 units
R/ 15 to 18 units at Year III or IV levels; Practicum four units.
E/ 12 to 15 units excluding Physical Education.

YEAR IV: 34 units
R/ 15 to 18 units at Year III or IV levels; Practicum four units.
E/ 12 to 15 units excluding Physical Education.

Department of Political Science

HONOURS POLITICAL SCIENCE

Admission:
University Standing in any Year I with an average of 70% in Political Science 1A6 plus six units acceptable to the Department of Political Science.

R group courses are those which are eligible for Q group credit.

The R group includes all courses in Political Science. Year III and IV students cannot include Year II Political Science courses in the Q group.

During Year II, III and IV, students in Honours Political Science must complete not fewer than 48 units and not more than 60 units of Political Science, 12 units of which must be in Year II.

Subject to the approval of the Department, students in Honours Political Science are permitted to select, above the minimum 48 units of Political Science, up to 12 units in other Departments for inclusion in the R group.

YEAR II: 30 units
Q/ The 12 units of R in which the student obtains the highest weighted average.
R/ A total of 18 units including at least 12 units of Year II Political Science.
E/ 12 units elective.

YEAR III: 30 units
Q/ The 18 units of R in which the student obtains the highest weighted average.
R/ A total of 24 units, including at least 16 units of Year III Political Science.
E/ Six units elective.

YEAR IV: 30 units
Q/ The 18 units of R in which the student obtains the highest weighted average.
R/ A total of 24 units, including at least 12 units of Year IV Political Science and another six units of either Year III or Year IV Political Science. Political Science 426 is required.
E/ Six units elective.

HONOURS RUSSIAN AND POLITICAL SCIENCE

(See “Faculty of Humanities, Honours Russian and Political Science”)

COMBINED HONOURS IN POLITICAL SCIENCE AND ANOTHER SUBJECT

During Years 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 Year II courses and at least six units should be in Year IV courses.

PASS POLITICAL SCIENCE

Admission:
University Standing in any Year I. Political Science 1A6 is recommended.

The Pass degree is based upon the best 24 units of R group courses.

During Years I, II, and III, students in Pass Political Science must complete not fewer than 30 units and not more than 54 units of Political Science, of which at least 12 units should be in Year III courses.

POLITICAL SCIENCE

YEAR I: 32 units
R/ Physical Education 1A6, 1B3, 1E3; Practicum two units, Biology 1H6.
E/ 12 units excluding Physical Education.

YEAR II: 34 units
R/ Physical Education 2A3, 2B3, 2C6, 2D3, 2F3; Practicum four units.
E/ 12 units excluding Physical Education.
RELIGIOUS STUDIES

Subject to the approval of the Department, students may include in their R group courses in other Departments.

Students in Year II may take Year III courses, provided they meet all prerequisites.

Students in Year III may take Years II, III or IV courses, provided they meet all prerequisites.

YEAR II: 30 units
R/ 12 to 18 units of Year II Political Science.
E/ Electives to total 30 units.

YEAR III: 30 units
R/ 12 to 18 units of Year III or Year IV Political Science.
E/ Electives to total 30 units.

Department of Religious Studies

HONOURS RELIGIOUS STUDIES

Admission:
University Standing in any Year I with an average of 70% in 12 units acceptable to the Department, preferably to include at least one of the following: Anthropology 1A3 and 1Z3, Philosophy 1B6, 1C6 or 1D6, Sociology 1A6 or 1B6, or one of the first-year Religious Studies courses.

R group courses are those which are eligible for Q credit. In consultation with the Departmental Undergraduate Advisor, students may include in their R group courses which are offered by other Departments. A list of such courses as are recommended by the Department is available in the Religious Studies Handbook in the Departmental Office. E group courses are those which are not eligible for Q credit.

During Years II, III, and IV, students must complete at least 36 units of Religious Studies (including courses approved as substitutes for courses in Religious Studies) and at least 24 units outside of Religious Studies.

In consultation with the Departmental Undergraduate Advisor, this Honours programme may be modified so that a student may pursue concentrated work in a second subject.

All Honours students are required to arrange their programmes in close consultation with and upon approval of the Departmental Undergraduate Advisor.

For Part-Time students completing Year IV Honours Religious Studies, seminars 4FF3, 4GG3, and Advanced Study Courses, e.g., 4AA6, will be made available in 1980-81 under the aegis of Part-Time Studies and thereafter every other year. Where the completion of the 12 units of Year IV Honours Religious Studies in one academic year imposes difficulties, students should consult the departmental Undergraduate Advisor.

In selecting their courses students will bear in mind the twofold purpose of the Honours Religious Studies Programme: to comprehend the depth and variety of religious traditions and to know at least one religious tradition in detail. Ideally, students are encouraged to study from each of three Groups of courses and to follow a sequence of courses from Years II through IV in at least one Group.

The three Groups are:
Group A: Asian Religions
Group B: Early Mediterranean Religions
Group C: Modern Western Religion

YEAR II: 30 units
Q/ The 12 units of Religious Studies chosen from R in which the student obtains the highest weighted average.
R/ At least 12 units of Year II Religious Studies, including six units from the following list in the Group in which the student is concentrating:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A3</td>
<td>3P6</td>
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<td>3T3</td>
<td>3Q3</td>
</tr>
<tr>
<td>3G3</td>
<td>3X3</td>
<td>3BB3</td>
</tr>
<tr>
<td>3Q6</td>
<td>3YY6</td>
<td>3B3</td>
</tr>
</tbody>
</table>

E/ Electives to total 30 units.

YEAR IV: 30 units
Q/ The 12 units of Religious Studies from R in which the student obtains the highest weighted average.
R/ At least 12 units of Year IV Religious Studies consisting of 4F3, 4G3, and six units of Advanced Study courses from the Group in which the student is concentrating.

E/ Electives to total 30 units.

PASS RELIGIOUS STUDIES

Admission:
University Standing in any Year I. Completion of six units in Religious Studies with a grade of 55% is recommended.

In consultation with the Department, students may include in their R group courses which are offered by other Departments.

During Years II and III, students must complete at least 24 units of Religious Studies (including courses approved as substitutes for courses in Religious Studies) and at least 18 units of work outside of Religious Studies.

All Pass students are required to arrange their programmes in close consultation with and upon approval of the Departmental Undergraduate Advisor.

In selecting their courses students will bear in mind the twofold purpose of the Pass Religious Studies Programme: to comprehend the depth and variety of religious traditions and to know at least one religious tradition in detail. Ideally, students are encouraged to study from each of three Groups of courses and to follow a sequence of courses from Years II through III in at least one Group. The three Groups are:

Group A: Asian Religions
Group B: Early Mediterranean Religions
Group C: Modern Western Religion

YEAR II: 30 units
R/ At least 12 units of the following Year II Religious Studies, taken in at least two of the Groups, one of which is recommended to be Group A.

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
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<tbody>
<tr>
<td>2B6</td>
<td>2DD3/2EE3</td>
<td>2M3, 2N3</td>
</tr>
<tr>
<td>206</td>
<td>2E6</td>
<td>2L6</td>
</tr>
</tbody>
</table>

E/ Electives to total 30 units.

YEAR III: 30 units
R/ At least 12 units of Year III Religious Studies (or approved courses of other Departments), including six units from the following list in the Group in which the student is concentrating:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A3, 3P6, 3E3</td>
<td>3M3, 3O3, 3T3</td>
<td>3D6, 3K3</td>
</tr>
<tr>
<td>3I6, 3Q6, 3G3</td>
<td>3K3, 3YY6</td>
<td>3Q3, 3BB3, 3B3</td>
</tr>
</tbody>
</table>

E/ Electives to total 30 units.

YEAR IV: 30 units
R/ At least 12 units of Year IV Religious Studies (or approved courses of other Departments), including six units from the following list in the Group in which the student is concentrating:

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
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<tbody>
<tr>
<td>3A3</td>
<td>3P6</td>
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<td>3I6</td>
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<td>3E3</td>
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<td>3Q3</td>
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<td>3G3</td>
<td>3X3</td>
<td>3BB3</td>
</tr>
<tr>
<td>3Q6</td>
<td>3YY6</td>
<td>3B3</td>
</tr>
</tbody>
</table>

E/ Electives to total 30 units.
School of Social Work

FOUR-YEAR COMBINED PASS ARTS AND SOCIAL WORK PROGRAMMES FOR THE B.A./B.S.W. DEGREES

Year I students who intend to work for the combined B.A. and B.S.W. degrees should consult the School of Social Work prior to registration.

Graduation from the Pass programme for the ordinary B.A. degree requires a weighted average of at least 55% in at least 24 units of the subject of concentration in Years I and II.

During Years II, III, and IV, students qualifying for the B.A. and B.S.W. degrees must take at least 48 units of Social Work for credit toward the B.S.W. degree, and 60 units of credit toward the B.A. degree. They must also fulfill Departmental requirements in the area of concentration. The B.S.W. degree will be granted only if the student has maintained an overall average in all Social Work courses of 60%, and attained 60% in each of the four required courses.

Admission:
Admission to the School of Social Work is contingent upon completion of any Year I programme, or in the case of part-time students (normally), completion of a minimum of 30 units of work. In choosing courses in Year I, care must be taken to include those courses that will be appropriate for the subject of concentration selected for the B.A. programme in Year II. (Note: Students have found courses in Psychology, Sociology, Economics, and Political Science to be excellent preparation for Social Work studies.)

Enrolment in Year II of the combined Pass Arts and Social Work programme is limited. Application for admission should be made to the School of Social Work prior to March 1.

Students in Years III and IV are expected to assume the cost of travelling to and from their field practice agencies.

YEAR II: 36 units
R/ Courses in the subject of concentration as prescribed in the corresponding Pass programme, Social Work 2B6 and 2C6.
E/ Electives, all of which must be outside Social Work area, to total 24 units.

YEAR III: 36 units
R/ Courses in the subject of concentration as prescribed in the corresponding Pass programme; Social Work 309, and an additional three units of Year III or Year IV Social Work for credit towards the B.S.W. degree.
E/ Electives for credit towards the B.A. degree, to total at least 24 units.

YEAR IV: 36 units
R/ Social Work 4D12; 12 units of Year III and Year IV Social Work for credit towards the B.S.W. degree.
E/ Electives for credit towards the B.A. degree, to total at least 12 units.

Programme for the B.S.W. as a Second Degree

Individuals already holding a B.A. degree may be admitted to the School of Social Work. Applicants who intend to work for the B.S.W. as a second degree should first apply for admission to the School of Social Work. Application should be made to the School prior to March 1 for the Fall Term. Enrolment is limited.

Students are required to take courses to total 60 units. The required courses: Social Work 2B6, Social Work 2C6, Social Work 309 and Social Work 4D12 must be taken in sequence. Of the 27 additional units of electives, 15 must be in Social Work. The B.S.W. degree will be granted only if the student has maintained an overall average of 60%, and attained 60% in each of the four required courses.

Department of Sociology

HONOURS SOCIOLOGY

Admission:
University Standing in any Year I with an average of 70% in 12 units acceptable to the Department, including a mark of at least 70% in Sociology 1A6. Consult department advisors about combined honours programmes.

During Years II, III, and IV students must complete at least 42 units of Sociology. As part of their programme, Honours students must successfully complete 12 units of course work from among the following core courses in Theory, Methodology and Statistics: including six units from Sociology 256, 3A3 or 3P3, and six units from Sociology 2Y3, 2Z3, 3H6, or 3O3. A student may take a maximum of six units of Year IV directed research (Sociology 4M3, 4N3).

Normally, Honours students will arrange their programmes in consultation with the departmental advisor. Senior division courses are Year III and IV courses.

YEAR II: 30 units
Q/ The 12 units chosen from R in which the student obtains the highest weighted average.
R/ At least 12 units of Year II or Year III sociology.
E/ Electives to total 30 units. The Department strongly recommends six units outside the Faculty of Social Sciences.

YEAR III: 30 units
Q/ The 12 units of Sociology chosen from R in which the student obtains the highest weighted average.
R/ At least 12 units of Year II or Year III sociology.
E/ Electives to total 30 units. The Department strongly recommends six units outside the Faculty of Social Sciences.

YEAR IV: 30 units
Q/ The 12 units of Sociology chosen from R in which the student obtains the highest weighted average. Nine of these units must be in Year IV Sociology.
R/ 18 units of senior division Sociology to include not less than 12 units of Year IV Sociology.
E/ Electives to total 30 units. The Department strongly recommends six units outside the Faculty of Social Sciences.

PASS SOCIOLOGY

Admission:
University Standing in any Year I including Sociology 1A6. A grade of 55% or above in six units of Sociology is required.

During Years II and III, students must complete at least 24 units of Sociology.

Pass students must complete at least three units from among the following courses in Theory, Methodology and Statistics: Sociology 256, 2Y3, 2Z3, 3H6.

YEAR II: 30 units
R/ At least 12 units of Year II or Year III Sociology.
E/ Electives to total 30 units. The Department strongly recommends six units outside the Faculty of Social Sciences.

YEAR III: 30 units
R/ At least 12 units of Year II or Year III Sociology.
E/ Electives to total 30 units. The Department strongly recommends six units outside the Faculty of Social Sciences.

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PART-TIME DEGREE STUDIES

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 daytime offerings of the summer and winter sessions, a wide selection of evening classes is available in sessions beginning in September, January and May.

Most of these are open to full and part-time students alike. The academic programmes for both groups of students are identical, the only difference being that part-time students will progress more slowly through their programmes. All programmes require a degree of specialization in one or two related subjects.

Each student taking degree courses is required to register in one of the four undergraduate faculties (Business, Humanities, Science and Social Sciences). By so doing, you establish a relationship with the academic counsellors of your Faculty and with the departments concerned with your major intellectual interests. If your interests change, it is possible to transfer to another department or Faculty. The organization of subjects of interest by Faculty is presented in the table below.

ORGANIZATION OF SUBJECTS OF INTEREST BY FACULTIES

Faculty of Business

Commerce

Faculty of Humanities

Art
Art History
Chinese
Classical Civilization
Dramatic Arts
English
French
German
Greek
History
Italian
Latin
Music
Philosophy
Russian
Spanish
Ukrainian

Faculty of Science

Applied Mathematics
Biology
Biochemistry
Chemistry
Computer Science
Geography
Geology
Mathematics
Metallurgy & Materials Science
Physics
Psychology
Statistics

Social Sciences

Anthropology
Economics
Geography
Labour Studies
Political Science
Physical Education
Psychology
Religious Studies
Social Work
Sociology

Applicants who satisfy the normal admission requirements of the University (see Admissions Section of this Calendar) can register for either full or part-time studies. Those who do not satisfy these requirements may be admissible as "Special Students" and given the opportunity to show that they can deal successfully with university work by taking Year 1 courses. Initially, "Special students" may take up to 12 units of work per session with the approval of the Faculty Dean of Studies. Detailed regulations will be found in the Registration Section of this Calendar.

The University welcomes to its courses students who wish to obtain university credit but who do not wish to follow a degree programme. Such persons who satisfy normal admission requirements may be admitted to any courses for which they have the prerequisites. Those without these qualifications are admissible as Special students and normally will begin by taking Year 1 courses. For purposes of identification within the University framework, students not proceeding to a degree are called "Occasional Students"; if they do not hold a university degree, or "Continuing Students" if they already have completed a degree programme. Occasional Students and Continuing Students may transfer to a degree program but may not be able to use all the credits they have earned toward the requirements of that programme.

Although both daytime and evening courses are in principle open to part-time students, part-time students often have other responsibilities which restrict them to the courses offered in the evenings or in the summer. We have, therefore, listed the evening and summer courses which the University intends to offer on the main campus during the next two-year period. Additions to this list may be made from time to time as departmental resources permit. The schedule for 1980 and 1980-81 can be regarded as "firm"; that for 1981 and 1981-2 may have to be modified because of staffing problems.

This schedule has been carefully planned to make available the required courses for most of the Pass Programmes and some of the Honours Programmes of the University over a five or six year period. For those who can arrange to take day courses, the options are greatly enlarged.

The University offers a number of first and second year courses for those who wish to study during the January-June period. Some of these start in January with classes one night a week until the end of June. Others begin in February, with classes one evening per week and one Saturday morning per month to achieve the same completion date. Although open to all students, the January-June session may be particularly attractive to students who have completed their Grade XIII on the semester system and want to make a start on university studies before September.

In addition to the courses scheduled for the central campus, the university offers a considerable selection of summer and winter evening courses at off-campus centres in Brantford, Burlington, Grimsby, Hagersville, Oakville, Saltfleet and in the Mohawk-Mcmaster Education Information Centre of the new Hamilton Public Library. These are open to full time and part-time students alike. Announcements concerning these offerings will be made from time to time. While most of these courses will also be available on the central campus, some are only available at an off-campus centre.

You are urged to familiarize yourself with the structure of academic programmes, the description of courses and the academic regulations described in this Calendar. General information on brochures, courses, application procedures and admission regulations is provided by the Registrar's Office (525-9140 local 4796). Students registered in Summer School should note that they are restricted to taking no more than 18 units in the Summer session of which no more than 12 may be taken either in the summer day session or in the summer evening session.

More detailed information concerning programmes and course content is provided by the Academic Counsellors within each Faculty. The offices of the Academic Counsellors of the Faculties of Humanities (extensions 4326, 4328) and Social Sciences (extension 4604) are open in the evenings from Monday to Thursday during the first part of each term and on scheduled evenings or by appointment throughout the year. The Faculty of Business (extension 4432) and Science (extension 4385) invite you to make an appointment by telephone.
In cooperation with the Mohawk College of Applied Arts and Technology, the University operates Education Information Centres in Hagersville and Hamilton and supports the Brantford Centre which is directed by the Council on Continuing Education for Brantford and Brant County. These centres exist to provide information and assistance in career planning for citizens of all ages and maintain comprehensive collections of calendars and brochures concerning educational opportunities across Canada. The staffs of these centres are also familiar with McMaster's programme and can either assist you or help you make contact with the appropriate persons at McMaster. The Centre in Hagersville is at 2 Main St. West ('phone 1-768-1010). The Centre in Hamilton is at 16 James St. South ('phone 522-3361 or 522-3171) but it will be moving in September 1980 to greatly improved facilities within the new Hamilton Central Library just off Jackson Square. The Education Information Centre in Brantford is located at 16 Market St. (P.O. Box 113, 'phone (519) 753-3171).

Mohawk College and McMaster University have been working out arrangements which will permit students to receive a Mohawk diploma and a University Degree through an integrated programme involving attendance at both institutions. It appears highly probable that Diploma-Degree programmes in Broadcast Journalism and in Commerce will be approved in the spring of 1980 for students enrolling in September. Prospective students should inquire in March.

The McMaster Association of Part-Time Students (MAPS) maintains an office and student lounge in Room 102 of Kenneth Taylor Hall ('phone 525-9140-2021) and publishes a newsletter "Link" which is sent to all part-time students. The coffee lounge is open afternoons and evenings from Monday to Thursday and all day Friday. 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.

The table below presents the dates upon which first and second term courses begin and final examinations are completed for the University sessions for 1980, 1981 and the first part of 1982. The full Sessional Dates and procedures for application and registration can be found in their respective sections of the Calendar.

### SESSIONAL DATES FOR 1980 - 1982

<table>
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<tr>
<th>Session</th>
<th>Code</th>
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### COURSE OFFERINGS 1980-82

Course offerings are arranged alphabetically, by department. The sessions in which the courses will be given are indicated according to the code shown in the table of Sessional Dates. First and second term offerings are differentiated by the code numbers 1 and 2. The code number 3 indicates a course that runs through both terms, an x indicates that the term in which the course will be given has not yet been determined. The code 0 indicates that the course will be offered only at an off-campus location, yet to be announced.

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61
### PART-TIME DEGREE STUDIES

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**APPLIED MATHEMATICS** [Including Computer Science and Statistics]

See Mathematical Sciences

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6 units to be announced in S.E. 1982

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| 1B6 | General Geology | - | - | 3 | - | - | - |

**GERMAN**

| 1Z6 | Beginner's intensive German | 3 | - | 3 | 3 | 3 | 3 |
| 2D3 | The German Novelle | - | - | 1 | - | - | - |
| 2Z6 | Intermediate intensive German | - | 3 | - | - | 3 | - |
| 4B4 | Nineteenth century drama | - | - | - | - | 3 | - |

**GREEK**

| 1Z6 | Beginners' intensive Greek | - | 3 | - | - | - | - |
| 2A3 | Plato: selected readings | - | - | - | 1 | - | - |
| 2B3 | Homer: selected readings | - | - | - | 2 | - | - |

**HISTORY**

<p>| 1A6 | Mediaeval Europe | - | 3 | 3 | - | - | 3 |
| 1C6 | The modern world: the end of European Primacy | - | 3 | - | - | - | 3 |
| 1L6 | Ancient History | - | - | - | - | 3 | - |
| 1B6 | European History | - | - | - | 3 | - | - |
| 2B6 | Chinese History | - | - | - | 3 | - | - |</p>
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### LABOUR STUDIES

Six units in Labour Studies will be offered in 1980-81, broken into two three-unit courses as described below:

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Note: Social Work 3D9 is offered May 5 to July 11 from 9:30 a.m. to 4:30 p.m.

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### PART-TIME DEGREE STUDIES

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**SPANISH**

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**STATISTICS** *(See MATHEMATICAL) SCIENCES*

**UKRAINIAN**

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Courses by Departments

Anthropology

Faculty as of January 15, 1980

D. R. Counts/Chairman

Professor Emeritus


Professors

David J. Damas/A.B. (Toledo), A.M., Ph.D. (Chicago).
M. M. R. Freeman/B.Sc. (Reading), Ph.D. (McGill).
Edward V. Gianvillle/B.A., Ph.D. (Dublin).
Richard Slobodin/B.A., M.S. (City College of New York), Ph.D. (Columbia).

Associate Professors

Matthew Cooper/B.A. (Brooklyn College), M. Phil., Ph.D. (Yale).
David R. Counts/B.A. (Texas), Ph.D. (Southern Illinois).
Charles E. Stortroen/A.B. (Luther), M.A. (Minnesota).
E. J. E. Szathmary/B.A., Ph.D. (Toronto).

Assistant Professors


Lecturer

Patricia Sutherland/B.A. (Toronto).

Associate Member

Ralph Matthews/B.A. (Memorial), M.A., Ph.D. (Minnesota), (Sociology).

CURRICULUM 1980-82

Not all courses are offered in every year. Students should consult the
Department’s brochure, which will be available prior to registration,
for a list and description of the courses offered in the current year,
and the names of the instructors. A 50% minimum is required in all
prerequisite courses, unless otherwise specified. There are no
co-requisite requirements for part-time students. The University
reserves the right to limit enrolment in any course. The Department
offers two Year I Anthropology courses; 1A5, 123, which taken
4gether are designed to provide an introduction to the study of
Anthropology.

1A3/ Introduction to Cultural and Social Anthropology. A general intro-
duction to the study of human culture and society in all of its aspects.
Examples and illustrations will be drawn largely from non-Western
societies. 3 hrs. (lects. and discussion); one term.
Prerequisite: Open, except to students who have completed Anthro-
pology 1A6, 1F3, 1G3.

1B6/ The Study of Language. A far-reaching survey intended to acquaint
students with the various disciplines that deal with language and
many of the crucial concepts and techniques developed within
them. 3 hrs. (lects. and discussion); two terms.
Prerequisite: Open. Same as Linguistics 1A6.

1Z3/ Human Origins and Cultural Beginnings. 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.

2A3/ World Prehistory—Paleolithic. A study of human cultures and socie-
ties during the Pleistocene, from approximately 2 million to 8000
years ago. 3 hrs. (lects. and discussion); one term.
Prerequisite: Six units of Year I Anthropology or permission of the
instructor. Not open to students who have completed Anthropology 2A6.

2B3/ Peoples of North America. A comparative study of selected cultures
of this continent, dealing with traditional and modern situations.
3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 1A3. Not open to students who have completed Anthropology 3C6.

2C3/ Communal Societies. Comparative study of communal societies
emphasizing conditions giving rise to them and practices and beliefs
which sustain them. 3 hrs. (lects. and discussion); one term.
Prerequisite: Six units of Year I Anthropology.

2D3/ Genetics and Evolution. Introduction to basic genetics and the
operation of microevolutionary processes on human populations.
3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 2E5 or permission of the instructor. Not open to students who have completed Biology 1C6.

2E3/ Physical Anthropology. An introduction to the study of human
evolution, evolutionary mechanisms, and variability in living species
of human and non-human primates. 3 hrs. (lects. and discussion); one term.
Prerequisites: Six units of Year I Anthropology or permission of the
instructor. (This course is a prerequisite for advanced courses in
physical anthropology.)

2F3/ Social Anthropology. An introduction to the anthropological con-
cepts and theory underlying the comparative study of the social
institutions of non-literate peoples. 3 hrs. (lects. and discussion); one term.
Prerequisite: Registration in Pass or Honours Anthropology or
permission of the instructor. This course is required of all students registered in Pass or Honours
Anthropology in Year II.

2G3/ Folklore Studies. The systematic study of oral traditions, folktales,
folksongs, jokes, riddles, etc. as well as customs transmitted by oral
traditions. 3 hrs. (lects. and discussion); one term.
Prerequisite: Six units of Year I Anthropology or permission of the
instructor.

2H3/ Ecological Anthropology. An introduction to the study of the
interdependence of human societies and their physical and biological
environments in an anthropological perspective. 3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 2F3 or permission of the instructor.

2I3/ History of Anthropology. Some of the major developments and
personalities in the history of anthropology as a discipline, with
emphasis upon the English-speaking world. 3 hrs. (lects. and discussion); one term.
Prerequisite: Six units of Year I Anthropology or permission of the
instructor.

2J3/ Human Growth and Adaptation. Variation in body form and com-
position examined in the context of growth, evolutionary develop-
ment, and environmental adaptation. 3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 2D3 or Anthropology 2E3 or permission of the
instructor. Offered in alternate years.

2K3/ Social Biology. Bio-social anthropology. The biological and evolu-
tionary background of human social behaviour. 3 hrs. (lects. and discussion); one term.
Prerequisite: Anthropology 2F3 or permission of the instructor. Offered in alternate years.

2M6/ General Linguistics. An introduction to the concepts and techniques
used in the scientific analysis of language. Phonetics, phonology,
morphology, historical reconstruction, syntax and semantics will be
covered. Many diverse languages will be examined. 3 hrs. (lects.); two terms.
Prerequisite: Linguistics 1A6 or permission of the instructor.

2N3/ World Prehistory: Neolithic Cultures. A survey of the development
of settled, food producing human cultures from earliest villages to
urban life. 3 hrs. (lects. and discussion); one term.
Prerequisite: Six units of Year I Anthropology or permission of the
ANTHROPOLOGY

2P3/ Peoples of the Pacific. An introduction to the ways of life and thought in Pacific island societies. The course will emphasize the material culture, networks of social relations, and systems of belief of the peoples of Melanesia, Polynesia, and Micronesia. 3 hrs. (lects. and discussion); one term. Prerequisite: Open.

2Q3/ Linguistics and the Study of Culture. A survey of the major areas in which linguistics and linguistic methods are used to explore anthropological problems: e.g. evolution, world view, socio-linguistics, etc. 3 hrs. (lects. and discussion); one term. Prerequisite: Open except to students who have completed Anthropology 3M5.

2R3/ Religion, Magic, and Witchcraft. A survey of beliefs and practices related to the supernatural in non-Western societies. Emphasis will be placed on the relationship between ideology and social structure. 3 hrs. (lects. and discussion); one term. Prerequisite: At least three units of Year I Anthropology or permission of the instructor.

2S3/ Human Biology and Social Controversy. Biological models of man and reaction to them by society. Selected controversies, current and historical, will be considered: biological vs. cultural determinism; dualism vs. monism; biological vs. cultural evolution; human variation and racism. 3 hrs. (lects. and discussion); one term. Prerequisite: Open.

2W3/ 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 Year II, if on a different topic, to a total of six units. Not open to those who completed 2G6 in 1974-75.

2X3/ Warfare and Aggression. The aim of the course is to assess the extent to which violence is both controlled by and an expression of society and culture. 3 hrs. (lects. and discussion); one term. Prerequisite: At least three units of Year I Anthropology or permission of the instructor.

3A3/ Ethnology: The Canadian North. A comparative ethno­logical analysis of selected societies in the Canadian North. 3 hrs. (lects. and discussion); one term. Prerequisite: At least three units of Year I Anthropology or permission of the instructor.

3B3/ Ethnology: Europe. A comparative ethnological survey of selected societies in Europe. 3 hrs. (lects. and discussion); one term. Prerequisite: At least three units of Year I Anthropology or permission of the instructor.

3C3/ Ethnology: North America. A comparative ethnological survey of selected societies in North America. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2F3 or permission of the instructor.

3D3/ Ethnology: Pacific Islands. Analysis of selected issues in Pacific anthropology. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2F3 or permission of the instructor.

3E3/ Ethnology: Australia. A survey of ethnographic and theoretical problems in the study of Australian aboriginal societies. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2F3 or permission of the instructor.

3F3/ Contemporary Northern Peoples. An examination of native-white interaction in northern Canada from earliest contact times to the present day. 3 hrs. (lects. and discussion); one term. Prerequisite: One course beyond Year I or permission of the instructor.

3G3/ Comparative Mythology. An examination of some of the major anthropological attempts to explain the existence and meaning of myth. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2G3, 2M6, or permission of the instructor.

3H3/ 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 Year I Anthropology or permission of instructor.

3I/ Phonetics and Phonology. An advanced course covering phonetics, phonology, and morphology. The student will be taught to analyse many diverse languages. 3 hrs. (lects.) one term. Prerequisite: Anthropology 2M6 or permission of the instructor. Not open to students who have completed Anthropology 4F3. Offered in alternate years.


3K3/ Archaeological Methods. Technique and methodology in the investigation of archaeological material. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2A6 or Anthropology 2A3 and 2N3 or permission of the instructor. Enrolment in this course may be limited.

3L3/ Comparative Systems of Thought. Selected studies in religion, magic, and systems of knowledge, in the cultures of non-literate peoples, and their expression in myth and ritual. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2F3 or permission of the instructor.

3N6/ Human Evolution. A general consideration of evolutionary trends within the Order Primates. Special emphasis is given to the evolution of the hominids. 3 hrs. (lects. and discussion); two terms. Prerequisite: Anthropology 203 or Anthropology 2E3 or permission of instructor. Offered in alternate years.

3O6/ Human Osteology. Identification and analysis of the bones of the human skeleton, with a consideration of disease processes that have affected earlier populations. 3 hrs. (lects. and discussion); two terms. Prerequisite: Anthropology 203 or Anthropology 2E3 or permission of the instructor. Offered in alternate years.

3S6/ The History of Anthropological Theory. The development of anthropology as a discipline, with emphasis upon the emergence and refinement of concepts concerning culture, social structure, and sociocultural change. 3 hrs. (lects. and discussion); two terms. Prerequisite: Anthropology 2F3 or permission of the instructor. This course is required of all students registered in Honours Anthropology.

3T3/ Competition and Conflict. Focus is on the comparative study of political processes and the role which conflict and competition play in social life. 3 hrs. (lects. and discussion); one term. Prerequisite: Six units of anthropology.

3U3/ North American Prehistory. A study of the development of North American cultures from the original peopling of the New World until the arrival of Europeans. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2A6 or Anthropology 2A3 and 2N3 or permission of the instructor.

3V3/ Comparative Economic Organization. An examination of contrasting types of economic organization, with particular reference to societies with a non-industrial base. 3 hrs. (lects. and discussion); one term. Prerequisite: Six units of anthropology or permission of instructor.

3W3/ Special Topics in Anthropology. Reading and discussion of selected problems in anthropology. One term. Prerequisite: Written permission of the supervising professor. This course may be repeated in Year III, if on a different topic, to a total of six units.

3X3/ People of India. Discussion of the ethnology, archaeology and physical anthropology of selected societies in India. 3 hrs. (lects. and discussion); one term. Prerequisite: At least six units of Anthropology. Offered in alternate years.

3Y3/ Comparative and Historical Linguistics. The techniques for reconstructing ancestral languages: language families, cognate sets, sound laws, internal and comparative reconstruction, and mechanisms of change. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2M6 or permission of the instructors. Same as Linguistics 3Y3.

3Z3/ Medical Anthropology. Health and illness in non-Western societies and an examination of social practices and beliefs which influence them. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2F3 or permission of the instructor. Offered in alternate years.

4B3/ Current Problems in Anthropology. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Anthropology or permission of the instructor. This course may be taken twice in a term with different instructors. 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.

4C3/ Communication and Culture. Discussion centers on the roles which communication systems such as ritual, myth, sign language, and music play in the maintenance and evolution of culture. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Anthropology or permission of the instructor. Offered in alternate years.

4E3/ 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: Anthropology 3K6 or 3K3 and 3U3 or permission of the instructor.

4G3/ Independent Research. Independent study of a research problem through published materials and/or field work. Students will be required to write up the results of their inquiry in scholarly form. Prerequisite: Registration in Year 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.

4I3/ Contemporary Anthropological Theory. Selected topics. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Anthropology. Not open to students who have completed Anthropology 3P6. This course is required of all students registered in Honours Anthropology.

4J6/ Research Design. Intensive examination of conceptual and practical problems in social science research design, research methods, and data analysis. Introduction to computer applications. 2 hrs. (seminar) and 2 hrs. (lab); two terms. Prerequisite: Registration in Year IV Honours in any Social Sciences Programme and permission of the instructor.

4L3/ Culture and the Individual. Deals with the relationship between individual persons and their lives in the context of various concepts of culture. A case history approach is used employing autobiographical material from both “natives” and Anthropologists. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Anthropology or permission of the instructor. Offered in alternate years.

4M3/ Advanced Regional Archaeology II. A study of the field data methods and theoretical problems in the prehistory of selected areas. 3 hrs. (seminar); one term. Prerequisite: Anthropology 3K6 or 3K3 and 3U3 or permission of the instructor.

4N3/ Anthropology and Education. A comparison of the formal and informal ways in which people learn within their cultural context, and a survey of the uses of anthropology in schools. 3 hrs. (seminar); one term. Prerequisite: Registration in Honours Social Science or permission of the instructor.

4O3/ Human Genetics. Consideration of some of the major areas in human genetics, including cytogenetics, bio-chemical, behavioural, and population genetics. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2D3 or Biology 1C6, or permission of the instructor. Offered in alternate years.

4P3/ Primate Behavior. Ecology, demography, social organization, and development of social behavior among Old and New World monkeys and apes. 3 hrs. (lects. and discussion); one term. Prerequisite: One of Anthropology 2E3, 2F3, 2K3 or permission of the instructor.

4Y3/ Developing Societies. Topics will include the meaning of development, innovation and technological change, urbanization, and protest movements. 3 hrs. (lects. and discussion); one term. Prerequisite: Anthropology 2E3 or permission of the instructor.

4Z3/ Advanced Linguistics. Intensive work in a selected topic or technique. Analysis of a language or language family may also be pursued. 3 hrs. (seminar); one term. Prerequisite: Anthropology 2M6 and either Anthropology 3I3 or Anthropology 3Y3 (Linguistics 3Y3).

Note: Students may be interested in the following courses, offered by other Departments, which have linguistic content: English 3C3; French 3B3, 3G3, 3L4, 4K3; Linguistics 1A6; Russian 2F6.

Art and Art History

Faculty as of January 15, 1980

G. B. Wallace/Chairman

Professors

George B. Wallace/MA. (Trinity College, Dublin).

Assistant Professors

Donald F. Carr/B.A. (Guelph), M.F.A. (Chicago).
Hugh G. Galloway/Dipl. Art (Edinburgh).

Lecturers


Art Gallery Curator

David G. Taylor/B.A. (Windsor), M.Museol. (Toronto).

Associate Members

Katherine M. D. Dunbabin (Classics)
Alexander G. McKay (Classics)

ART HISTORY

CURRICULUM 1980-82

At least “D” is required in all courses listed under “prerequisite”, unless otherwise indicated.

1A6/ Introduction to the Study of Visual Art. An examination of methods employed in the interpretation, criticism, and history of art; with emphasis on major monuments of art and architecture in the western tradition. 3 lecs.; two terms. Prerequisite: Open.

2B3/ Greek Art. The architecture, sculpture, and painting of the Greek and Hellenistic worlds. 3 lecs.; one term. Prerequisite: Open to students in Years II and above.

2C3/ Roman Art. The architecture, sculpture, and painting, of the Roman world. 3 lecs.; one term. Prerequisite: Open to students in Years II and above. Same as Classical Civilization 2C3.

2J3/ An Introduction to the History of Print Making. A study of woodcut, engraving, lithography, and other methods of print making, from the 15th century to the present. 3 lecs.; one term. Prerequisite: Open to students in Years II and above.

2K3/ Early Medieval Art and Architecture in Western Europe. A study of art and architecture in Europe from 600-1200. 3 lecs.; one term. Prerequisite: Open to students in Years II and above. Offered in alternate years.

2L3/ The Gothic Image. A study of European art and architecture in the later Middle Ages. 3 lecs.; one term. Prerequisite: Open to students in Years II and above except to students with credit in Art History 206.

2M3/ The Art and Architecture of the European Renaissance 1400-1580. 3 lecs.; one term. Prerequisite: Open to students in Years II and above except to students with credit in Art History 206.

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3 lects.; one term.
Prerequisite: Open to students in Years II and above except to students with credit in Art History 2F6.

2O3/ Modern Art and Architecture 1780-1880. A study of the origin and development of modern styles from Neo-Classicism through Impressionism.
3 lects.; one term.
Prerequisite: Open to students in Years II and above except to students with credit in Art History 2F6.

2P3/ Modern Art and Architecture 1880 to the Present. Topics examined will include Post-impressionism, Fauvism, Cubism, Surrealism and related developments.
3 lects.; one term.
Prerequisite: Open to students in Years II and above except to students with credit in Art History 2F6.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

3B3/ Canadian Art and Architecture. A survey of the visual arts in Canada from the earliest explorations and settlements to the present.
3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

3D3/ Northern European Painting, 1380-1600. The development of painting in the Lowlands, France, and Germany, and the influences of regional schools.
3 lects.; one term.
Prerequisite: Art History 2E6 or Art History 2M3.
Offered in alternate years.

3E3/ Italian Baroque Art and Architecture. A discussion of the formation and character of the Baroque style in Italy in the 17th century. The works of principal artists will be examined, and special attention will be given to the cultural structure of Rome.
3 lects.; one term.
Prerequisite: Art History 2E6 or Art History 2N3.
Offered in alternate years.

3G3/ Late Antique and Early Christian Art. The art and architecture of the later Roman Empire, and the birth of Christian Art (A.D. 200-600).
3 lects.; one term.
Prerequisite: Art History 2C3 or 2D6 or 2K3 or Classical Civilization 2C3, or permission of the Department.
Same as Classical Civilization 3G3.
Alternate with Art History 4L3.
Offered in alternate years.

3H3/ Approaches to Art History. A study of the various approaches which art historians of the last one hundred years have taken in investigating the art of the past.
Seminar (2 hrs.); one term.
Prerequisite: Registration in Years III or IV of a programme in Art or Art History and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

3J3/ The Carolingian Renaissance. The architecture, painting, and sculpture of the Carolingian Renaissance is examined against the background of the political, theological, and literary achievements of the period.
Seminar (2 hrs.); one term.
Prerequisite: Art History 2D6 or Art History 2K3 and registration in Years III or IV of a programme in Art or Art History and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

3K3/ Studies in Late Mediaeval Art. An investigation of aspects of the art of the late Middle Ages.
Seminar (2 hrs.); one term.
Prerequisite: Art History 2D6 or Art History 2L3 and registration in Years III or IV of a programme in Art or Art History and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

3L3/ Venetian Renaissance Painting. An examination of the works of the major painters of the Renaissance in Venice, including such artists as Giovanni Bellini, Giorgione, and Titian.
Seminar (2 hrs.); one term.
Prerequisite: Art History 2E6 or Art History 2M3 and registration in Years III or IV of a programme in Art or Art History and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

3N3/ Romanesque Painting and Sculpture. A study of the style and iconography of eleventh and twelfth century painting and sculpture in Western Europe, with emphasis on developments in France.
3 lects.; one term.
Prerequisite: Art History 2D6 or 2K3.
Offered in alternate years.

3Q3/ Myth and Allegory in Italian Renaissance Art. An examination of interpretations by Italian Renaissance artists of selected classical myths and the use of the allegorical mode of artistic expression.
3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

3P3/ Contemporary Painting and Sculpture. Discussion of the most recent tendencies in European, American and Canadian art.
3 lects.; one term.
Prerequisite: Art History 2F6 or 2P3, or permission of the Department.
Offered in alternate years.

4B3/ Art of Byzantium. The art and architecture of the Greek East from the founding of Constantinople to 1453.
3 lects.; one term.
Prerequisite: Art History 2D6 or 2K3.
Offered in alternate years.

3 lects.; one term.
Prerequisite: Art History 2E6 or 2M3.
Offered in alternate years.

4D3/ European Architecture. A course dealing with European Architecture during the 17th and 18th centuries.
3 lects.; one term.
Prerequisite: Art History 2E6 or 2N3.
Offered in alternate years.

4E3/ English Painting 1730 to the Present. The development of English painting from Hogarth to Francis Bacon with some consideration of related trends in the graphic arts.
3 lects.; one term.
Prerequisite: Six units of Art History, or permission of the Department.
Offered in alternate years.

Seminar (2 hrs.); one term.
Prerequisite: Art History 2E6 or Art History 2N3 and registration in Years III or IV of a programme in Art or Art History. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

4G3/ Topics in 18th and 19th Century Art. Discussion of selected European painters, sculptors and architects.
Seminar (2 hrs.); one term.
Prerequisite: Registration in Years III or IV of a programme in Art or Art History. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

4H3/ Naturalism in Baroque Painting. A stylistic and iconological study of works by major Baroque artists in the context of the literary and philosophical culture of the period.
Seminar (2 hrs.); one term.
Prerequisite: Art History 2E6 or 2N3 and registration in Years III or IV of a programme in Art or Art History. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

4J3/ Expressionism. Examination of one of the major tendencies in 20th century art in Europe and North America.
Seminar (2 hrs.); one term.
Prerequisite: Art History 2F6 or 2P3 and registration in Years III or IV of a programme in Art or Art History. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

4K3/ Supervised Reading. Readings in a field of special interest to the student, under the guidance of a faculty member.
Prerequisite: Registration in Years III or IV of a programme in Art.
ART
CURRICULUM 1980-82

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

1B6/ Introduction to Studio Practice I. An introduction to the methods and materials used in drawing and painting.
2 studio practice (3 hrs.); two terms.
Prerequisite: Intention of entering a programme in Art and submission of an acceptable portfolio. Not open to students with previous standing in Art 1A6.

1D6/ Introduction to Studio Practice II. An introduction to the methods and materials used in sculpture and printmaking.
2 studio practice (3 hrs.); two terms.
Prerequisite: Intention of entering a programme in Art and submission of an acceptable portfolio. Not open to students with previous standing in Art 1A6.
Note: Students intending to take Art 1B6 and Art 1D6 must submit to the Chairman of the Department of Art and Art History in the spring a portfolio to show their interests and ability. We believe that drawings made without supervision or assistance are especially helpful in making this assessment and the portfolio could contain drawings from nature in several media; for example, a self-portrait, a still life, or a landscape. It is recommended that applicants come to the Department for an interview, if possible. Later applications will be considered if space is available in the class.

2A6/ Painting I. A sequential investigation of the elements of painting based upon the poker’s traditional points of reference.
2 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

2B6/ Sculpture. A study of basic three-dimensional principles leading to a comprehension of sculptural form. Emphasis on the human model.
2 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

2C3/ Figure Drawing and Superficial Anatomy.
1 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

2D3/ An Introduction to Traditional Studio Techniques and Materials. An examination through discussions and studio practice of some major pictorial techniques such as frescoes, tempera, etc.
2 studio practice (3 hrs.); one term.
Prerequisite: Registration in a programme in Art or Art History and permission of the Department. Available as an elective only. Preference will be given to students registered in an Art History programme. Before registering, every student must obtain a limited enrolment permission slip from the Department.
Offered in alternate years.

3A6/ Painting II. An advanced course based upon figure composition, life drawing, and portraiture. The art student is progressively encouraged to work on his own themes.
2 studio practice (3 hrs.); two terms.
Prerequisite: Art 2A6.

3B6/ Sculpture II. An advanced course concentrating on techniques of carving and casting.
2 studio practice (3 hrs.); two terms.
Prerequisite: Art 2B6.

3C3/ Advanced Drawing
1 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

3E6/ Print Making I. Studio class in the intaglio and relief methods of print making.
2 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

4A6/ Print Making II. Studio course in the techniques of lithography and silk screen printing.
2 studio practice (3 hrs.); two terms.
Prerequisite: Registration in a programme in Art.

4B12/ Studio Project. A summation of investigations into aspects of technique begun in any of Art 3A6, 3B6, 3E6, or 4A6, to be done under supervision of a staff member.
Prerequisite: Registration in Year IV Honours Art and a mark of at least 80 in the previous course in the chosen field.

4C6/ Minor Studio Project. An investigation of techniques begun in any of Art 3A6, 3B6, 3E6, 4A6, 2C3, or 3C3, supervised by a staff member.
Prerequisite: Registration in Honours Art and a mark of at least 70 in the previous course in the chosen field. Not available to students taking, or who have credit in Art 4B12.
Note: Students wishing to combine Art 4C6 with Art 4D3 must have a mark of at least 80 in a previous course in the chosen field or fields or be given special permission by the Chairman of the Department.

4D3/ Media Research. Investigation of studio techniques, under the guidance of a staff member.
Prerequisite: Registration in Honours Art and a mark of at least 70 in the previous course in the chosen field.
Note: Students wishing to combine Art 4D3 with Art 4B12 must have a mark of at least 80 in a previous course in the chosen field or fields. Students wishing to combine Art 4D3 with Art 4C6 must have a mark of at least 80 in a previous course in the chosen field or fields or be given special permission by the Chairman of the Department.

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 listings in the Calendar.

Students wishing to pursue Asian Studies may obtain further information from Dr. D. Barrett (History) or Dr. G. MacQueen (Religious Studies).

CURRICULUM 1980-1982

1. Courses Dealing Strictly with Asian Material

ANTHROPOLOGY

3H3/ Ethnology: Southeast Asia
3X3/ People of India (Offered in alternate years)

HISTORY

2B6/ China: From the Opium War to the Present
2U6/ The History of Modern Asia (Alternates with History 3G6)
3CC3/ Ancient China
3D03/ Imperial China
3G6/ The History of South Asia (Alternates with History 2U6)
4G6/ The Revolutionary Movement in Modern China

POLITICAL SCIENCE

2M6/ Introduction to Far Eastern Political Traditions (Offered 1980-81)
3C3/ Comparative Politics: South Asian Systems
3D3/ Comparative Politics: Southeast Asian Systems

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BIOCHEMISTRY

3MM/6: The Politics of Modern and Contemporary China
3Q6/6: Politics in Japan (Offered 1980-81)

RELIGIOUS STUDIES

2AA3/6: Pathways of Indian Mysticism
2B6/6: Introduction to Asian Philosophy
2O6/6: Religious Traditions of Asia
2P3/6: Buddhist Art in Asia
3A3/6: Religion in Contemporary India (Offered 1980-81)
3E3/6: Religion and Society in East Asia: A Workshop in Theory and Method (Offered 1981-82)
3G3/6: Human Nature in Classical Confucian Thought (Offered 1980-81)
3H3/6: “Mind” in Traditional Chinese Thought (Offered 1981-82)
3I6/6: The Hindu Temple (Offered 1981-82)
3P6/6: Indian Philosophy
3Q6/6: The Buddhist Tradition (Offered 1981-82)
3V3/6: Indian Art and Religion

3WW3/6: Yoga: Theory and Practice

3XX3/6: Studies in Hindu Sacred Literature (Offered 1981-82)
4AA6/6: Advanced Study in Hindu Religious History
4BB6/6: Advanced Study in Buddhist and East Asian Religious History
4EB6/6: Advanced Study in Indian Philosophy

2. Courses with a Significant Amount of Asian Content

ECONOMICS

3J6/6: Economic Development

POLITICAL SCIENCE

2G6/6: Culture and Politics of Southern Asia and North Africa
3P6/6: Foreign Policy of the U.S.S.R., China, and the West
4Q6/6: Developing Political Systems

RELIGIOUS STUDIES

1B6/6: World Religions
1C6/6: Texts, Traditions, and Thought
1F6/6: Religion and Contemporary Problems
1Z6/6: The Possibility of Religion in the Modern World
2A6/6: Death and Dying: A Comparative Religious Enquiry
2BB3/6: Images of the Divine Feminine (Offered 1981-82)
2CC3/6: Specialists in the Sacred (Offered 1981-82)
2GG6/6: The Sacred Cosmos in Religious and Scientific Thought (Offered 1981-82)

3. Language Courses (Chinese 126, 1ZZ6, 226, 2ZZ6 are offered by the Russian Department; Chinese 4A6 and Sanskrit 4A6 are offered by the Department of Religious Studies).

Chinese 1Z6/6: Elementary Chinese (Offered 1981-82)
Chinese 1ZZ6/6: Elementary Chinese for Dialect Speakers (Offered 1981-82)
Chinese 226/6: Intermediate Chinese (Offered 1980-81)
Chinese 2ZZ6/6: Intermediate Chinese for Dialect Speakers (Offered 1980-81)
Chinese 4A6/6: Introduction to Literary Chinese
Sanskrit 4A6/6: Introduction to Sanskrit

Biochemistry

Faculty as of January 15, 1980
D. R. McCalla/Chairman

Professors

Luis A. Branda/B.Sc., D.Sc. (Uruguay)
William W. Chan/M.A., Ph.D. (Cambridge)
Richard M. Epand/A.B., Ph.D. (Columbia)
Richard M. Epand/A.B., Ph.D. (Columbia)
Barbara M. Ferrier/(part-time) B.Sc., Ph.D. (Edinburgh)
Karl B. Freeman/I.B.A., Ph.D. (Toronto)
Hara P. Ghosh/M.Sc., D. Phil. (Calcutta)
Ross H. Hall/B.A. (British Columbia), M.A. (Toronto), Ph.D. (Cambridge)
Dennis R. McCalla/B.Sc., M.Sc. (Saskatchewan), Ph.D. (California Inst. of Technology), F.C.I.C.
Thomas Neilson/B.Sc., Ph.D. (Glasgow), F.C.I.C.

Assistant Professor
Gerhard E. Gerber/B.Sc., Ph.D. (Toronto)

Associate Members
George D. Sweeney (Medicine)/M.B., Ch.B., Ph.D. (Cape Town)
Richard J. Haslam (Pathology)/M.A., D.Phil. (Oxford)

CURRICULUM 1980-82

For prerequisite purposes, a grade of "D" or better is required.

2C2/6: Molecular Determinants of Living Processes: Some Models. Examples illustrating how chemical properties of components of living processes a) determined their selection b) influenced biochemical evolution c) influence biological function. 2 lects., one term.

2E4/6: Introductory Biochemistry. A predominantly descriptive treatment of the basic areas of biochemistry, including physiological chemistry. This course is designed for students who do not intend to take further biochemistry.

3G6/6: 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.

3L2/6: Laboratory. Illustration of fundamental principles as presented in Biochemistry 3G6.

3L3/6: Laboratory. Illustration of fundamental principles as presented in Biochemistry 3G6.

4B6/6: Senior Thesis. A thesis based on a project under the direction of a member of the Faculty. Enrolment may be limited. Prerequisite: Registration in Year IV Biochemistry or Biochemistry and Chemistry and permission of the Chairman.

4C4/6: Biochemistry in Contemporary Society. Areas of sociological importance are explored from a biochemist's viewpoint. Typical topics are nutrition, agriculture, the food and pharmaceutical industries, pollution, and infection. 2 lects., two terms.


4E3/6: Advanced Biochemistry. Biochemical approaches for studying the possible molecular components and regulatory mechanisms involved in complex biological phenomena, such as cell transformation,
3 lects.; one term. Prerequisite: Biochemistry 3G6.

4H3/ Clinical Chemistry. An outline of clinical chemistry; its relevance to health care, and its contribution to basic biological science. The anatomy, physiology, and chemical tests relevant to the major organ systems. This course is identical with Chemistry 4H3.

3 lects.; one term. Prerequisite: Registration in Year IV of an Honours or Major programme in Biochemistry or Chemistry.

4K4/ Advanced Biochemistry Laboratory. A major project or a series of experiments together with a minor project. This laboratory complements Biochemistry 4C4; the projects and experiments are oriented towards environmental problems.

2 labs. (3); two terms. Prerequisite: Registration in Biochemistry 4C4. Registration in this course may be limited.

4L4/ Advanced Biochemistry Laboratory. The fundamental principles of experimental biochemistry using modern instrumental methods. In one term, a project may be selected by the student.

2 labs. (3); two terms. Prerequisite: Biochemistry 3L2 or 3L4.


3 lects.; one term. Prerequisite: Biochemistry 3G6.

4Q3/ Molecular Pharmacology. Interactions of drugs with living systems during absorption, distribution, elimination, metabolism, and action in terms of the chemical and biochemical structure of drugs and their receptors.

3 lects.; one term. Prerequisite: Biochemistry 3G6.

4U4/ Advanced Experimentation. A course emphasizing fundamental principles in biochemistry and chemistry using a broad range of modern instrumental methods. This course is identical with Chemistry 4U4.

1 lab. (4); two terms. Prerequisite: Registration in Year IV Honours Biochemistry and Chemistry.

For Graduate Courses see Calendar of School of Graduate Studies.

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 the appropriate member of the Bioengineering Committee. Members in 1979-80 were as follows:

J. W. Bandier (Dean of Engineering)
R. Bloch (Biomedical Engineering)
J. L. Brash (Chemical Engineering)
I. A. Feuerstein (Chemical Engineering)
W. James (Civil Engineering & Mech Engineering)
Y. E. Missirlis (Engineering Physics)
R. A. Morton (Biology)
W. R. Newcombe (Mechanical Engineering)
S. N. Sama (Electrical Engineering/Surgery)
H. P. Schwarz (Geology)

CURRICULUM 1980-82

Elective courses in Bioengineering are available through a number of departments. In keeping with the basic definition of Bioengineering, "the application of Engineering Principles and Knowledge to Medicine and Biology" the following elective courses offer an opportunity to relate engineering studies to the needs of medicine and biology.

Biology 1H6: Human Physiology
Psychology 1A6: General Psychology
Sociology 1A6: An Introduction to Sociology

Chemistry 2D4: Introductory Organic Chemistry
Chemistry 2B8: Organic Chemistry
Biochemistry 2E4: Introductory Biochemistry

Engineering Physics 3X4: Engineering Applications in Physiological Systems
Chemical Engineering 4T3: Transport Processes in Biomedical Engineering
Electrical Engineering 4U4: Biomedical Electronics Instrumentation

Engineering 4X3: Introduction to Biomedical Engineering

Engineering Physics 4Y3: Introduction to Biomedical Physics

Biology

Faculty as of January 15, 1980

S. F. H. Threlkeld/Chairman

Professors
Kenneth A. Kershaw/B.Sc. (Manchester), Ph.D. (N. Wales), D.Sc. (Wales).
Stanley Mak/M.Sc. (Saskatchewan), Ph.D. (Toronto).
Esther L. McCandless/B.E.S. (Bethany), M.S., Ph.D. (Cornell).
John J. Miller/B.A., Ph.D. (Toronto).
Ludvic Prevost/M.A., Ph.D. (Toronto).
George J. Sorger/B.Sc. (McGill), M.S., Ph.D. (Yale).
Iwao Takahashi/B.A. (Kododate), M.S.A. (Kyushu), Ph.D. (Montreal).
Jean E. M. Westermann/B.Sc. (Western), M.A. (Mount Holyoke), Ph.D. (Toronto).

Associate Professors
Allan D. Dingle/B.Sc. (McMaster), M.Sc. (Illinois), Ph.D. (Brandeis).
Graham P. Harris/B.Sc., Ph.D. (London).
Doris E. N. Jensen/M.A. (Toronto), Ph.D. (British Columbia).
John N. A. Lott/B.Sc. (British Columbia), M.S., Ph.D. (California, Davis).
Richard A. Morton/M.S., Ph.D. (Chicago).
Ronald A. Sonstegard/(Pathology) B.S., M.S. (South Dakota State University), Ph.D. (Guelph).
Christopher M. Wood/B.Sc., M.Sc. (British Columbia), Ph.D. (Univ. of East Anglia).

Assistant Professors
Thomas T. Chen/B.Sc. (Taiwan Prov. Chung-Hsing University), M.A. (State University of N.Y. at Plattsburgh), Ph.D. (Alberta).
Frank L. Graham/(Pathology) M.A., Ph.D. (Toronto).
C. David Rollo/B.Sc. M.Sc. (University of Guelph), Ph.D. (British Columbia).
Rama S. Singh/B.Sc. (McGill), M.Sc. (Kanpur), Ph.D. (California, Davis).

Lecturer (part-time)

CURRICULUM 1980-82

For prerequisite purposes, a grade of "D" or better is required.

1A6/ Adaptation in the Biological World. A course in introductory Biology which stresses the adaptation of form and function at the levels of molecules, cells, organisms and populations.

2 lec.; 1 lab. (3); two terms. Prerequisite: Registration in, or completion of, Natural Sciences 1, or registration in a programme in Engineering above Year I. Not open to students who have completed Biology 1B6, 1C6, 1D3, 1D6, 1E3, 1E6, 1F3.
BIOLOGY

1B6/ Cell Biology and Physiology. Cellular fine structure as related to function; cell growth and division; cell populations; how cells obtain and use energy; how the information in macromolecules is used.
2lects., 1 lab. (3); two terms.
Prerequisite: Completion of Natural Sciences I, or registration in Pass or Honours Psychology.
Last year to be offered, 1980-81.

1C6/ Genetics and Evolution. An introduction to the principles of genetics, with special reference to the mechanism of evolution. A laboratory and tutorial component is included.
2lects., 1 tut. or 1 lab. (3); two terms.
Prerequisite: Completion of Natural Sciences I. Normally not open to students who have completed, or are registered in, Science 2K3.
Last year to be offered, 1980-81.

1D6/ The Plant Kingdom and Ecology. First term: an introduction to the major plant groups. Second term: the fundamental concepts of ecology, the ecosystem, food-chains, energy flow, population dynamics, and basic environmental factors. A laboratory and tutorial component is included.
3lects. or 2 lects., 1 lab. (3) or 1 tut.; two terms.
Prerequisite: Completion of Natural Sciences I, or at least a grade of C in Biology 1G6.
Not open to students who have completed Biology 103 or 1E6 or 1F3.
Last year to be offered, 1980-81.

1D3/ The Plant Kingdom. An introduction to the major plant groups: identical with the first term of Biology 1D6.
2lects., 1 lab. (3); one term.
Prerequisite: Completion of Natural Sciences I, or at least a grade of C in Biology 1G6. Not open to students who have completed Biology 106.
Last year to be offered, 1980-81.

3lects. or 2 lects., 1 lab. (3) or 1 tut.; two terms.
Prerequisite: Completion of Natural Sciences I, or registration in Pass or Honours Psychology. Not open to students who have completed, or are registered in, Biology 106 or 1E3 or 1F3.
Last year to be offered, 1980-81.

1E3/ The Animal Kingdom. An introduction to the major animal groups identical with the second term of Biology 1E6.
2lects., 1 lab. (3); one term.
Prerequisite: Completion of Natural Sciences I, or registration in Pass or Honours Psychology. Not open to students who have completed Biology 106.
Last year to be offered, 1980-81.

1F3/ Ecology. The fundamental concepts of ecology, the ecosystem, food-chains energy flow, population dynamics, and basic environmental factors.
2lects., 1 lab. (3); one term.
Prerequisite: Open, except to students who are registered in Natural Sciences I, or who have completed, or are registered in, Biology 106 or 1E6.

1G6/ Introduction to Biology. Basic concepts in cell biology, animal physiology, and genetics. The course covers cell structure, organelle function, metabolism, growth, division, endocrinology, muscle function, circulation, excretion, and immunology. A laboratory component is included.
3lects., or 2 lects., 1 lab. (3); two terms.
Prerequisite: At least a 60% average in two Grade 13 science or mathematics courses, or at least a grade of C in Physical Education 2C6. Not open to students registered in the Faculty of Science.

1H6/ Human Physiology. An introduction to the physiological processes of the human body with particular reference to respiration, circulation, digestion, excretion, and muscle, nerve, and endocrine function. A laboratory component is included.
3lects., or 2 lects., 1 lab. (3); two terms.
Prerequisite: Open, except to students in Natural Sciences I. May be taken only as an elective by students registered in a Biology programme.

2A3/ Radiation Biology. The effects of radiation upon biological material at the physical, molecular, cellular, tissue, and organismal levels. Applications of radiation in medicine and industry.
3lects.; one term.
Prerequisite: Biology 1B6 and Physics 1A7 or 1B7 or 1C8, or permission of the instructor.
Last year to be offered, 1980-81.

2B3/ Cell Biology. The fine structure of cells as related to function and development; the growth cycle and division processes; an introduction to cellular differentiation.
2lects., 1 lab. (3); one term.
Prerequisite: Completion of Biology 1A6 or at least a grade of B in Biology 1G6. Not open to students who have completed Biology 1B6.
Offered beginning in 1981-82.

3lects. or 2 lects., 1 lab. (3); one term.
Prerequisite: Completion of Biology 1A6 or at least a grade of B in Biology 1G6. Not open to students who have completed Biology 1C6.
Offered beginning in 1981-82.

2D3/ The Plant Kingdom. An introduction to the major groups of green plants. Growth and development of vegetative parts and mechanisms of reproduction will be emphasized.
2lects., 1 lab. (3); one term.
Prerequisite: Completion of Biology 1A6 or at least a grade of B in Biology 1G6. Not open to students who have completed Biology 1D6 or 1D3.
Offered beginning in 1981-82.

2E3/ The Animal Kingdom. An introduction to the major animal groups, with emphasis on structure and function.
2lects., 1 lab. (3); one term.
Prerequisite: Completion of Biology 1A6 or at least a grade of B in Biology 1G6. Not open to students who have completed Biology 1E6 or 1E3.
Offered beginning in 1981-82.

2F3/ Fundamentals of Ecology. A broad overview of ecology at the organism, population and community level.
2lects., 1 lab. (3); one term.
Prerequisite: Computer Science 1H3 or 2H3.

3A4/ Structure and Function of Plants. Morphology, anatomy, and ultrastructure of higher plants in relation to physiological activities.
3lects., 1 lab. (3); one term.
Prerequisite: Biology 1D3 or 1D6 or 2D3, or permission of the instructor.

3C3/ Microbiology II. Basic energy-yielding mechanisms; biochemical and genetic regulation of morphogenesis; microbial life under extreme conditions.
3lects.; one term.
Prerequisite: Biology 3E3.

3D3/ Animal Parasitology. Parasites of animals, dealing with life histories, host-parasite relationships, and arthropod vectors.
2lects., 1 lab. (3); one term.
Prerequisite: Biology 1E3 or 1E6 or 2E3.

2lects., 1 lab. (3); one term.
Prerequisite: Chemistry 208 or 2D4.

3F6/ Comparative Anatomy and Evolution of Vertebrates. An introduction to the development of structure and function in vertebrates.
2lects., 1 lab. (3); two terms.
Prerequisite: Biology 1E6 or 2E3 or permission of the instructor.

3H6/ Cell Biology. Cell organization; the development and functions of organelles; cell growth and cell proliferation; cell to cell interactions; the behaviour of cells in culture; responses to inhibitors.
3lects., first term; 2lects., second term; 1lab. (3) every other week; two terms.
Prerequisite: Biology 1B6 or 2B3 or permission of the instructor.

3lects.; one term.
Prerequisite: Biology 1B6 or 2B3 and 1C6 or 2C3.

3lects.; one term.
Prerequisite: Biology 1C6 or 2C3.
Offered beginning in 1981-82.

3K6/ Animal Histology. The structure, function, and organization of cells, tissues, organs and organ systems.
2lects., 1 lab. (3); two terms.
Prerequisite: Biology 1E6 or 2E3 or permission of the instructor.

3L2/ Laboratory. Projects involving techniques used in the general area of cell biology, including fixation and staining of cells, auto-radiography, immunofluorescence.
1lab. (3), alternating with a discussion period; two terms.
Prerequisite: Registration in Year III or Year IV of a Biology programme.

3M6/ Form, Function, and Life History of Invertebrates. Development of specialization in form, function, and life cycle during evolution and during the growth of individuals of certain groups. 2 lects., 1 lab. (3); two terms. Prerequisite: Biology 1E3 or 1E6 or 2E3.

3N4/ Developmental Biology. A comparative and analytical study of developmental phenomena. Particular emphasis will be given to processes of growth, cell differentiation, and morphogenesis during embryonic development. 2 lects., alternating with 1 lect., 1 lab. (3); two terms. Prerequisite: Biology 1B6 or 2B3. Last year to be offered, 1980-81.

3N6/ Developmental Biology. As above. 2 lects., 1 lab. (3); two terms. Prerequisite: Biology 1B6 or 2B3. Offered beginning in 1981-82.

3O3/ Microbial Genetics. The genetics of bacteriophage, 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 1C6 or 2C3.

3P3/ Cell Physiology. Cell function with emphasis upon cell membranes and transport processes. A quantitative physicochemical interpretation of the electrical properties of cells. 2 lects., 1 tut.; one term. Prerequisite: Biology 1B6 or 2B3, and registration in, or completion of Biochemistry 3G6.

3Q3/ Radiation Biology. The effects of radiation upon biological material at the physical, molecular, cellular, tissue, and organismal levels. Applications of radiation in medicine and industry. 2 lects., one term. Prerequisite: Biology 1A6 or 1B6 or at least one B standing in Biology 1G6, and one of Physics 1A7 or 1B7 or 1C8, or permission of the instructor. Not open to students who have completed Biology 2A3. Offered beginning in 1981-82.

3W3/ Ecology of Northern Plant Associations. The vegetation of northern Canada and its relationships with climate, geomorphology, and glacial history. Anatomical, morphological, and physiological adaptations to northern environments. The potential impact of man on these systems. 2 lects., 1 seminar; one term. Prerequisite: Biology 1D6 or 1E6 or 1F3 or 2F3. Offered in 1981-82 and in alternate years.

3X3/ Animal Population and Community Ecology. Methods of analyzing population data; procedures for modelling populations and population processes; intra- and interspecific competition; predator-prey relationships. 2 lects., 1 lab. (3); one term. Prerequisite: Biology 1D6 or 1E6 or 1F3 or 2F3 and registration in, or completion of, Biology 2H3 or 2H4.

3Y6/ Comparative Physiology. Water relations, nutrition, circulatory mechanisms, and integrative mechanisms in plant and animal systems. 2 lects., 1 lab. (3); two terms. Prerequisite: Biology 1B6 or 2B3 or registration in at least Year III of a non-science programme and a grade of at least B in Biology 106.

4B6/ Plant Physiology. Principles of physiology and metabolism in plants. 2 lect., 1 tut. or 1 lab. (3), two terms. Prerequisite: Registration in, or completion of, Biochemistry 3G6, or permission of the instructor.

4B4/ Plant Physiology. The same as Biology 4B6, but without the laboratory or tutorial. 2 lects.; two terms. Prerequisite: Registration in, or completion of, Biochemistry 3G6, or permission of the instructor. 

4C8/ Senior Thesis. A thesis based upon a research project carried out under the direction of a member of the Faculty. Prerequisite: Approval by the Chairman in the preceding spring term. Normally open only to students who obtain first-class honours in Year III. Not open to students who are registered in, or have completed, Biology 4F4.

4E3/ Population Genetics. Experimental and theoretical aspects of the genetic basis of evolutionary changes in populations. 2 lects., 1 tut.; one term. Prerequisite: Biology 1C6 or 2C3 and Mathematics 1F6 (or 1A6 or 1C6).

4F4/ Selected Topics in Biology. 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. Not open to students who are registered in, or who have completed, Biology 4C8.

4H2/ Plant Development. An experimental analysis of development in plants: cytological, genetic, and biochemical studies. 2 lects.; one term. Prerequisite: Biology 3H6.

4I0/ 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: Completion of, or registration in Biochemistry 3G6, or permission of the instructor.

4J3/ Field Course. A two-week study of ecological problems in a low­

atic environment, held at Churchill, Manitoba, preceding registrat­

tion week. A report must be submitted before the end of the first term. Prerequisite: Biology 1D3 or 1E6 or 2D3. Offered in 1981-82 and in alternate years.

4K6/ Methods in Plant Ecology. Sampling methods, pattern in vegetation and its causality, community description and analysis. Classification and ordination approaches. 1 lect., 1 tut., 1 lab. (3); two terms. Prerequisite: Registration in Biology 4J3. Offered in 1981-82 and in alternate years.

4L2/ Advanced Laboratory. Projects involving radiostatellite labelling, ultracentrifugation, electron microscopy. 1 lab. (3), alternating with a discussion period; two terms. Prerequisite: Registration in Year III or Year IV of a Biology programme.

4M3/ Problems in Genetics. The first term of Biology 4M6. A laboratory and tutorial component may be included. 3 lects.; 2 lects., 1 tut.; or 2 lects., 1 lab. (3); one term. Prerequisite: Biology 3O3 or permission of the instructor.

4M6/ Problems in Genetics. Current problems in cytogenetics, molecular, biochemical and behavioural genetics. The content will vary and will be partly determined by student interest. A laboratory and tutorial component may be included. 3 lects.; 2 lects., 1 tut.; or 2 lects., 1 lab. (3); two terms. Prerequisite: Biology 3O3 and 3I3.

4N3/ Developmental Genetics. A discussion of developmental processes with special emphasis on the application of genetics and molecular biology to the analysis of morphogenesis. 3 lects.; one term. Prerequisite: Completion of Biology 1B6 or 2B3, and 1C6 or 2C3, or registration in or completion of Biology 3H6 or 3N4 or 3N6.

4O3/ Molecular Biophysics. The physical biochemistry of macromolecules; methods for their study including techniques such as sedimentation, electrophoresis, and X-ray diffraction, and application to proteins and nucleic acids. 3 lects.; one term. Prerequisite: Registration in Year III or IV Honours or Year IV Major Biology (with registration in or completion of Biochemistry 3G6), or in Year IV Biochemistry, or in Years II or IV Honours or Major Physics, or permission of the instructor.

4R4/ Entomology. Functional morphology and development of insects, with some attention to adaptations for habitats and habits. 2 lects., 1 lab. (3); one term. Prerequisite: Registration in, or completion of, Biology 3M4 or 3M6. Offered in 1981-82 and in alternate years.

4S6/ Vertebrate Physiology. Comparative studies of functional activities of vertebrate animals. 2 lects., 1 lab. (3); two terms. Prerequisite: Biology 1B6 or 2B3; registration in, or completion of, Biochemistry 3G6. Biology 3P3 is recommended.

4U3/ Freshwater Invertebrates. The development and ecology of freshwater forms, with emphasis on arthropods of the region. 2 lects., 1 lab. (3); one term. Prerequisite: Registration in, or completion of, Biology 3M4 or 3M6. Offered in 1980-81 and in alternate years.

4V3/ Virology. The viruses of animals, bacteria, and plants, with emphasis on the molecular biology of virus replication and the diversity of virus-cell interactions. 2 lects., 1 tut. (2); one term. Prerequisite: Completion of, or registration in, Biochemistry 3G6 or permission of the instructor.

4W3/ Mycology. Structure and identification of fungi; physiology of their growth and reproduction; their environmental rôle. 2 lects., 1 lab. (3); one term. Prerequisite: Registration in, or completion of, Biology 3E3.

4Y3/ Ecology of Inland Waters. Physical, chemical, and biological, inter­

relations of inland waters, including aspects of pollution. 2 lects., 1 lab. (3); one term. Prerequisite: Biology 1D6 or 1E6 or six other units of Biology including Biology 1F3 or 2F3, and registration in Year III or IV of a
Canadian Studies

Courses and programmes in Canadian Studies at McMaster University are supervised and co-ordinated by an interdisciplinary Committee of Instruction. Students who wish to register in a course not on the list must consult the Committee of Instruction. 

Committee of Instruction

M. Ahmed (Romance Languages)
C. Bailstadt (English) / Chairman
C. Bayard (Romance Languages)
W. Coleman (Political Science)
L. Gentilcore (Geography)
P. George (Economics)
R. Hyman (English)
R. Matthews (Sociology)
R. Preston (Anthropology)
W. Roberts (Labour Studies)
R. Thompson (Economics)
H. Turner (History)
J. Weaver (History)

CURRICULUM 1980-82

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

2A6/ An Introduction to Canadian Studies. An interdisciplinary study of Canada which examines major phases of Canadian development on the basis of the relationship between changing economic and cultural centres and their respective peripheries or hinterlands. 1 lect. (2 hrs.). 1 tut.; two terms.

Prerequisite: Registration in a programme in Canadian Studies or a weighted average of 70% in 12 units of Year I work or permission of the Committee of Instruction.


Prerequisite: Registration in a programme in Canadian Studies or permission of the Committee of Instruction.

3B3/ Topics in Regional Studies. 1980-81 and 1981-82: Native Peoples and Northern Settlements. A study of the history of native peoples and recent changes in their economic, political, social and cultural relations with the rest of Canada. Seminar; one term.

Prerequisite: Registration in Year III or IV of a programme in Canadian Studies or permission of the Committee of Instruction.

4A3/ Topics in Canadian Urbanization I. 1981-82: Approaches to Canadian Urban Development. An assessment of theories about the evolution of the Canadian urban system as well as the composition of urban society and patterns of land use, past and present. Readings are derived from history, geography and sociology. Seminar; one term.

Prerequisite: Registration in Year III or IV of a programme in Canadian Studies or permission of the Committee of Instruction.

4B3/ Topics in Canadian Urbanization II. 1981-82: The Hamilton-Region Research Seminar. The objective is to have students produce an original contribution to the type of material examined in Canadian Studies 4A3, using local material. Seminar; one term.

Prerequisite: Canadian Studies 4A3 and registration in Year III or IV of a programme in Canadian Studies or permission of the Committee of Instruction.


Prerequisite: Registration in Year III or IV of a programme in Canadian Studies or permission of the Committee of Instruction.


Prerequisite: Registration in Year III or IV of a programme in Canadian Studies or permission of the Committee of Instruction.

Canadian Area Courses

Humanities:

Art History 3B3/ Canadian Art and Architecture
English 2C3/ Contemporary Canadian Fiction
English 2G6/ Canadian Literature
English 3Z3/ Contemporary Canadian Poetry
French 2B3/ An Introduction to the Civilization of French Canada
French 2F3/ The Civilization of French Canada I
French 2FF3/ The Civilization of French Canada II
History 2J6/ The History of Canada
Music 3T3/ Studies in Canadian Music

Social Sciences:

Anthropology 3A3/ Ethnology: The Canadian North
Anthropology 3F3/ Contemporary Northern Peoples
Economics 2K6/ Economic History of Canada
Geography 2E3/ Canada
Geography 3D3/ Historical Geography of Canada
Political Science 2G6/ Politics in Canada
Political Science 3D6/ Political Parties, Movements and Elites in Canada
Religious Studies 3B3/ Native and Ethnic Religions in Canada
Religious Studies 3BB3/ Major Denominations in Canada
Sociology 2H6/ The Structure of Canadian Society

Note: Other courses may qualify as Canadian Area courses. Students wishing to register in a course not on the list must consult the Committee of Instruction.

Of the total number of units taken in courses designated as Canadian Area courses, at least six must be taken outside and at least six must be from within the Faculty in which the student is registered.

The Canadian Area courses required for the Canadian Studies portion of the Combined Honours programme must be exclusive of Canadian Area courses offered by the student's department (e.g. a student in Honours Canadian Studies and History may not use History courses to fulfill the Canadian Area component).
Chemical Engineering

Faculty as of January 15, 1980

D. R. Woods/Chairman

Professors

Robert B. Anderson/A.B. (Augustana College), M.S., Ph.D. (Iowa), F.C.I.C.
John L. Brash/B.Sc., Ph.D. (Glasgow).
Alvin E. Hamielec/B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng.
Terrence W. Hoffman/B.Sc., M.Sc. (Queen's), Ph.D. (McGill), F.C.I.C., P.Eng.
Keith L. Murphy/part-time B.A.Sc. (Toronto), M.Sc., Ph.D. (Wisconsin), P.Eng.
Donald R. Woods/B.Sc. (Queen's), M.Sc., Ph.D. (Wisconsin), P.Eng.

Associate Professors

Andrew Benedek/B.Eng., (McGill), Ph.D. (Univ. of Washington).
Irwin A. Feuerstein/B.Chem.Eng. (City College of New York), M.S. (Newark College of Engineering), Ph.D. (Massachusetts)
John F. MacGregor/B.Eng. (McMaster), Ph.D. (Wisconsin).

Assistant Professors

Paul A. Taylor/B.Sc., Ph.D. (Univ. of Wales), P.Eng.

CURRICULUM 1980-82

A minimum grade of "D" is normally required for prerequisites specified for Chemical Engineering courses unless otherwise stated below. Special cases may be considered by the Department upon request. Enrolment in these courses by students in programmes other than Chemical Engineering, Chemical Engineering & Management or Honours Applied Chemistry may be limited.

2C3/ Information Management. How to obtain, interpret, store, retrieve, manipulate and communicate information. T.V. taping to improve verbal communication, computer programmes, searching the literature, organization, treatment of data, and polishing.
1 lects., 1 tut (3), first term; 1 tut (3), two terms, alternate weeks.
Prerequisite: Registration in Year II Chemical Engineering or Chemical Engineering & Management or permission of the Department.

3 lects., 1 tut (3), one term.
Prerequisite: Registration in Year II Chemical Engineering, Chemical Engineering & Management or Applied Chemistry, or permission of the Department.

2F4/ Chemical Engineering Principles II. Combined mass and energy balances in the steady and unsteady state. The second law of thermodynamics and physical and chemical equilibria.
3 lects., 1 tut (3), one term.
Prerequisite: Chemical Engineering 2D4 or permission of the Department.

3A4/ Fluid Flow and Heat Transfer. The application of fluid mechanics to flow through packed beds, filtration, fluidization, etc. Heat transfer in chemical engineering systems. Steady and unsteady state conduction, natural and forced convection, radiant heat transfer, condensation of vapours and boiling.
4 lects., one term.
Prerequisite: Chemical Engineering 304; Chemical Engineering 2F4 or permission of the Department. Co-requisite: Chemical Engineering 3B3.

3B3/ Laboratory and Design. Problems, experiments, and projects, in statistics, fluid mechanics, heat transfer, and thermodynamics.
1 lab. (3), 1 calculation lab. (3); one term.
Prerequisite: Chemical Engineering 3A4.

3D4/ Chemical Engineering Thermodynamics. Review of the total energy balance and mechanical energy balance. Theoretical and practical cycles, including throttling and refrigeration. Chemical reaction and phase equilibria of multicomponent systems, and deviations from ideality in the gas and liquid phase.
2 lects.; two terms.
Prerequisite: Chemical Engineering 2F4 or permission of the Department.

3E5/ Process Model Formulation and Solution. Formulation of models for various chemical processing units in the steady and unsteady states. Techniques for numerical solution of model equations, including algebraic and ordinary differential equations, both linear and non-linear.
3 lects.; one term.
Prerequisite: Chemical Engineering 2F4, or permission of the Department.

3O4/ 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: Applied Mathematics 2J5 or Mathematics 2M6.

3S6/ Transport Phenomena and Unit Operations. Heat, mass, and momentum transfer, and their application to the analysis and design of equipment in the chemical industry. Specifically intended for the industrial chemist.
3 lects.; two terms.
Prerequisite: Chemical Engineering 2D4 and 2F4, or permission of the Department. Not open to students registered in Chemical Engineering or Chemical Engineering and Management.
To be offered in 1981-82 and in alternate years.

4A5/ Transport Phenomena—Theory and Applications. Simultaneous heat and mass transfer, with and without chemical reaction, in binary and multicomponent systems for steady and unsteady state; boundary layer theory for various geometries. Applications; basic design techniques for distillation, solvent extraction, gas absorption, humidification, and drying.
1 lects.; second term; 2 lects., second term.
Prerequisite: Chemical Engineering 3A4 or permission of the Department.

2 lects.; two terms.
Prerequisite: Chemical Engineering 2D4, 2F4 or permission of the Department.

4N4/ Cost Estimation and Process Development. The design and operation of chemical plants, and the creation and development of new processes using case studies. Design methodology, decision-making, reliability theory, project planning, cost estimation, time value of money, functional analysis, and a survey of optimization techniques.
2 lects.; two terms.
Prerequisite: Registration in, or completion of, R-group courses in Year IV Chemical Engineering.

3 lects.; one term.
Prerequisite: Chemical Engineering 3A4 or Registration in Year IV Ceramic Engineering or permission of the Department.

4R4/ Chemical Engineering Laboratory. Calculation classes and laboratory projects in transport phenomena, reaction kinetics and reactor design.
2 labs. (3); two terms.
Prerequisite: Registration in, or completion of, R-group courses in Year IV Chemical Engineering or permission of the Department.

4S3/ Heterogeneous Catalysis. A survey of heterogeneous catalysis, including the preparation of catalysts and tools for investigating them, physical adsorption and chemisorption, the kinetics and mechanism of catalytic reactions, and commercial processes.
3 lects.; one term.
Co-requisite: Chemical Engineering 4K4 or permission of the Department.
The laboratory is designed to illustrate the lecture material, and co-ordinates with it. The source and chemistry of air pollutants; measurement survey techniques and legal constraints; dispersion in the atmosphere; stack height calculations; Design of processes for removal of gaseous and particulate pollutants.

2 lects.; 1 tut. (2); one term.

To be offered in 1981-82 and in alternate years.

Chemical Plant Design and Simulation. Projects, often in cooperation with industry, usually involve steady-state computer simulation of an existing process or design of a new process. Plant equipment may be tested to develop simulation models.

1 project lab. (3), first term; 3 project labs. (3), second term. *

Prerequisite: Registration in, or completion of, R-group courses of Year IV Chemical Engineering, or permission of the Department.

Undergraduate Research Project. Research projects with students working on their own under the direction of a Faculty member.

1 lab. (3), first term; 3 labs (3), second term. *

Prerequisite: Registration in, or completion of, R-group courses of Year IV Chemical Engineering and first-class standing and permission of the Department.

Colloids, Surface Phenomena and Unit Operations. The properties of colloids and surfaces and their use in the design of reactors and separators. Includes surface tension, concentration, charge, stability of colloids, double layer phenomena, wetting, flocculation coagulation, the surface equations of charge and particle size measurements.

3 hrs.: one term.

Prerequisite: Chemical Engineering 304 or 356 or permission of the Department.

Engineering 4U3/ Water and Wastewater Treatment Design. Offered jointly by the Departments of Chemical Engineering, Civil Engineering and Engineering Mechanics. See Engineering (General) for course description.

*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.

See also the Calendar of the School of Graduate Studies.

Chemistry

Faculty as of January 15, 1980

G. W. King/Chairman

Professors

Richard F. W. Bader/M.Sc. (McMaster), Ph.D. (M.I.T.), F.C.I.C.
Russell A. Bell/M.Sc. (Wellington), M.S. (Wisconsin), Ph.D. (Stanford)
Thomas Birchall/M.Sc., Ph.D. (McMaster)
Ronald F. Childs/B.Sc. (Bath Univ. of Technology), Ph.D. (Nottingham)
Affio Corsini/B.Sc., Ph.D. (McMaster), F.C.I.C.
Donald R. Eaton/M.A., D.Phil. (Oxford)
Klaus Fritz/Dipl. Chem., Dr rer. nat. (Mainz)
Ronald P. Graham/M.A. (Queen's), A.M., Ph.D. (Columbia), F.C.I.C.
David B. MacLean/B.Sc. (Acadia), Ph.D. (McGill), F.C.I.C.
Jack J. McCullough/B.Sc., Ph.D. (Queen's, Belfast)
Ian D. Spenser/B.Sc. (Birmingham), Ph.D., D.Sc. (London), F.R.I.C., F.C.I.C.
Henry G. Thode/C.C., M.B.E., B.Sc., M.Sc., LL.D (Saskatchewan), Ph.D. (Chicago), D.Sc. (Toronto, British Columbia, Acadia, Laval, Royal Military College, McGill, Queen's), F.R.S., F.R.S.C., F.C.I.C.
Richard H. Tomlinson/B.Sc. (Bishop's), Ph.D. (McGill), F.C.I.C.
John Warkentin/M.Sc. (Manitoba), Ph.D. (Iowa State), F.C.I.C.

Associate Professors

Peter T. Dawson/B.Sc. (Birmingham), Ph.D. (Cambridge).
John E. Greedan/B.A. (Bucknell), Ph.D. (Tufts).
Orville E. Hileman/Jr., B.S.Ed. (Bowling Green State), Ph.D. (Case Institute of Technology).
Joseph D. Laposa/B.Sc. (St. Louis), M.S. (Chicago), Ph.D. (Loyola).
Michael J. McGlinchey/B.Sc., Ph.D. (Manchester).
A. John Yarwood/B.Sc., Ph.D. (Birmingham).

Assistant Professors

Adam P. Hitchcock/B.Sc. (McMaster), M.Sc., Ph.D. (British Columbia).
Brian E. McCarty/B.Sc. (British Columbia), Ph.D. (Stanford).
Michael A. Quilliam/B.Sc., Ph.D. (Manitoba).

Associate Member

Christopher Walker/M.B., B.S., D.Path. (London), Professor of Pathology.

Teaching Fellow


Instructional Assistants

Nancy Fabian, B.Sc. (Western).
George Ozog, B.Sc. (London).

CURRICULUM 1980-82

For prerequisite purposes, a grade of "D" or better is required.

*Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

1A7/ General Chemistry. An introduction to the principles of chemistry. The laboratory is designed to illustrate the lecture material, and co-ordinates with it.
3 lects., 1 tut., alternating 1 lab. (3); two terms.
Prerequisite: Registration in Natural Sciences I or Engineering I, or permission of the Chairman of the Department.
1A6/ General Chemistry. An introduction to the principles of chemistry. This course parallels Chemistry 1A7, but it involves less laboratory work and gives students a greater opportunity for individual study. 4 hrs. (2 lects., 2 labs; or 2 lects., 1 lab.; 2 terms. Prerequisite: Grade 13 Chemistry or permission of instructor. Open only to students in a part-time programme.

1B7/ General Chemistry. An introduction to the principles of chemistry. A course designed for students who are registered in Faculties other than Science or Engineering.

2 lects., 1 tut., 1 lab. (3); two terms. Prerequisite: Grade 13 Chemistry, or Level 4 Chemistry with an overall Grade 13 average of at least 75%, or permission of the instructor. Not open to students in Natural Sciences I.

1C8/ General Chemistry. An introduction to the principles of chemistry. A course designed for students who do not have Level 5 (Grade 13) Chemistry consisting of Chemistry 1A7 with an additional tutorial.

3 lecs., 1 lab. (3) every other week; two terms. Prerequisite: Grade 12 Chemistry and registration in Natural Sciences I or Engineering I, or permission of the Chairman of the Department. Not open to students who have Grade 13 Chemistry.

2A4/ Analytical Chemistry I. An introduction to the basic principles of analytical chemistry, with particular emphasis on solution equilibria. Applications to classical methods of analysis.

2 lects., 2 labs. (3); one term. Prerequisite: Chemistry 2T4, or registration in a programme in which Chemistry 2A4 is required.

2D4/ Introductory Organic Chemistry. 3 lecs., 1 lab. (3); one term. Prerequisite: Chemistry 1A7 or 1B7 or 1Ca.

2F3/ Inorganic Chemistry. Chemistry 2T4 without the associated laboratory work.

3 lecs.; one term. Prerequisite: Chemistry 1A7 or 1Ca. Not open to students in a programme in Chemistry.

2F4/ Inorganic Chemistry. A course designed for those who are not registered in Honours Applied Chemistry, Honours Chemistry, or Chemistry Major. Atomic, molecular, and crystal structure; valency and chemical bonding; comparative chemistry of the non-transition metals.

3 lecs., 1 lab. (3); one term. Prerequisite: Chemistry 1A7 or 1Ca.

2M5/ Analytical Chemistry. An introduction to classical and modern analytical techniques with an emphasis on applications in Engineering.

1 lec., 1 lab. (3); first term: 2 lecs., 1 lab. (3); second term. Prerequisite: Chemical Engineering 2D4, 2F4, either of which may be taken concurrently. Not open to students registered in Biochemistry or who have completed Chemistry 2X1 or 3K6.

2N4/ Analytical Chemistry. An introduction to classical and modern analytical techniques with emphasis on applications in Life Sciences.

1 lec., 1 lab. (3); two terms. Prerequisite: Chemistry 2P4 or 2Q5 or 2T4, any of which may be taken concurrently. Not open to students registered in Engineering or who have completed Chemistry 2X1 or 3K6.


Text: Morrison and Boyd, Organic Chemistry (3rd ed.)

Prerequisite: Chemistry 1A6. Open only to students in a part-time programme.


Text: Morrison and Boyd, Organic Chemistry (3rd ed.).

3 lecs., 1 lab. (3); two terms. Prerequisite: Chemistry 1A7 or 1Ca. Not open to students registered in Chemistry 2S8.

2P4/ Physical Chemistry. The states of matter; elementary principles of thermodynamics; chemical and physical equilibria; electro-chemistry; rates of chemical reactions.

2 lecs., two terms. Prerequisite: Chemistry 1A7 or 1Ca, and Mathematics 1A6 or 1Ca.

2G5/ Physical Chemistry. Basis of physical phenomena related to biological systems, including equilibria, transport, and kinetics.

2 lecs., 1 lab. (3) or problem session (3) every other week; two terms. Prerequisite: Chemistry 1A7 or 1Ca, and Mathematics 1A6 or 1Ca of 1F6. Not open to students who are registered in or have completed Chemistry 2P4 or 2T4.

2R2/ Laboratory Course in Physical Chemistry. A series of experiments to illustrate the basic principles of physical chemistry.

1 lab. (3); two terms. Prerequisite: Chemistry 1A7 or 1Ca. Chemistry 2P4, which may be taken concurrently.

2S8/ Structure and Reactions of the Main Group Elements. Structure, stereochemistry, and reactions of organic and inorganic covalent compounds; structures of ionic solids; methods of structure determination.

3 lecs., 1 lab. (3); two terms. Prerequisite: Registration in a programme in which Chemistry 2S8 is required.

2T4/ Thermodynamics. An introduction to the basic principles of thermodynamics, with applications to physical and chemical equilibria in ideal and real systems.

3 lecs. 1 lab. (3); one term. Prerequisite: Chemistry 1A7 or 1Ca; Mathematics 2G3, which may be taken concurrently.

2U3/ Quantum Chemistry. An introduction to the principles of quantum mechanics and their application in chemistry.

3 lecs.; one term. Prerequisite: Chemistry 1A7 or 1Ca; Mathematics 2G3, 203, which may be taken concurrently.

2X1/ Qualitative Inorganic Analysis. A laboratory course on the identification of cations and anions in inorganic mixtures.

1 lab. (3); one term. Prerequisite: Co-registration in Chemistry 2A4.

3A4/ Analytical Chemistry I. An introduction to separation techniques and modern instrumental methods of analysis.

3 lecs., 1 lab. (3); one term. Prerequisite: Chemistry 2A4.

3C4/ Chemical Kinetics. The rates of chemical reactions in gaseous, condensed, and interfacial systems, and the molecular processes by which reactions occur.

3 lecs., 1 lab. (3); one term. Prerequisite: Chemistry 3Y3.


2 lecs., 1 lab. (3); two terms. Prerequisite: Registration in a programme in which Chemistry 3D6 is required.

3E4/ Inorganic Chemistry. The properties, structures, and reactions of inorganic compounds, with emphasis on transition element chemistries.

2 lecs., two terms. Prerequisite: Chemistry 2S8 and registration in Honours Biochemistry or Biochemistry Major.

3E6/ Inorganic Chemistry. The properties, structures, and reactions of inorganic compounds, with emphasis on transition element chemistries.

2 lecs., 1 lab. (3); two terms. Prerequisite: Registration in a programme in which Chemistry 3E6 is required.


3 lecs.; one term. Prerequisite: Chemistry 2S8; or 209 and 2F4.

3K3/ Analytical Chemistry. An introduction to modern analytical techniques.

1 lec., 2 labs. (3); one term. Prerequisite: Chemistry 2P4 or 205 or 2T4, any of which may be taken concurrently, and Chemistry 2A4 or 2M4 or 2N4. Not open to students who are registered in, or have completed, Chemistry 3A4 or 3K6.

3K6/ Analytical Chemistry. An introduction to classical and modern analytical techniques.

1 lec., 2 labs. (3); two terms. Prerequisite: Chemistry 2P4 or 205 or 2T4, any of which may be taken concurrently. Not open to students who are registered in, or have completed, Chemistry 2A4 or 3K3 or 2M4.

3O4/ Inorganic Chemistry. A sequel to Chemistry 2F3 or 2F4. Transition metal complexes; application of physical techniques to inorganic problems.

3 lecs., 1 lab. (3); one term. Prerequisite: Chemistry 2F3 or 2F4.

3Q3/ Statistical Thermodynamics. An introduction to the principles of statistical thermodynamics and their applications in chemistry.

3 lecs.; one term. Prerequisite: Chemistry 2T4 and either Chemistry 2U3 or Physics 3M6. Physics 3M6 may be taken concurrently. Not open to students who are registered in, or have completed, Physics 3K3.
**4A3/ Advanced Organic Chemistry.** A discussion of some modern advances in organic chemistry including such topics as aromaticity, molecular rearrangements, and organic photochemistry. 3 lects.; one term. Prerequisite: Chemistry 3D6.

**4B3/ Chemical Applications of Spectroscopy.** The applications of elementary group theory and spectroscopy to the solution of chemical problems; quantum states and spectra; theory of microwave, infrared, Raman, electronic, and magnetic resonance spectra; gas and tunable lasers. 3 lects.; one term. Prerequisite: Registration in Year IV of an Honours or Major programme in Chemistry.

**4C3/ Solid State Chemistry.** The structure and properties of solids, particularly crystalline solids; principles of structure, including non-stoichiometric and defect structures; association of chemical and physical properties. The growth and preparation of single crystals. Properties peculiar to solids; anisotropy, cooperative effects. 3 lects.; one term. Prerequisite: Chemistry 2T4 or 2P4 or 2Q5, and registration in Year IV of an Honours or Major programme.

**4D3/ The Chemistry of Natural Products.** The structural elucidation and synthesis of selected naturally occurring organic compounds. 3 lects.; one term. Prerequisite: Chemistry 3D6.

**4E4/ Advanced Experimentation.** A laboratory course emphasizing fundamental principles in chemistry using modern instrumental methods. 2 labs. (4); one term. Prerequisite: Registration in Year IV of an Honours or Major programme in Chemistry.

**4F3/ The Physical Chemistry of Surfaces.** The principles and applications of surface chemistry, including all interface types, capillarity, thermodynamics of surfaces, stability of colloids, adsorption, and catalysis. Text: Adamson, *Physical Chemistry of Surfaces*, 2nd edition. 3 lects.; one term. Prerequisite: Chemistry 2T4 or 2P4 or 2Q5 or Chemical Engineering 2D4, 2F4.

**4G6/ Senior Thesis.** A thesis based on a project under the direction of a member of the Faculty. Prerequisite: Registration in Year IV Honours Applied Chemistry or Honours Chemistry or Honours Biochemistry and Chemistry.

**4H3/ Clinical Chemistry.** An outline of clinical chemistry: its relevance to health care, and its contribution to basic biological science. The anatomy, physiology and chemical tests relevant to the major organ systems. This course is identical with Biochemistry 4H3. 3 lects.; one term. Prerequisite: Registration in Year IV of an Honours or Major programme in Biochemistry or Chemistry.

**4P3/ Advanced Analytical Chemistry.** A course emphasizing the theory of multiple-step equilibria and its application to the design of selective methods of determination and separation. 3 lects.; one term. Prerequisite: Chemistry 3A4.

**4Q3/ Advanced Quantum Mechanics.** 3 lects.; one term. Prerequisite: Registration in an Honours programme in Chemistry or in Chemistry Major.

**4R3/ Advanced Transition Metal Chemistry/Physical Methods.** Homogeneous catalysis. Mechanisms of reaction involving transition metal ions. Applications of NMR and other physical methods. 3 lects.; one term. Prerequisite: Chemistry 3E6.

**4S3/ Advanced Main Group Chemistry/Radio-chemistry.** 3 lects.; one term. Prerequisite: Chemistry 3E6.

**4T4/ Instrumental Analysis.** Advanced experiments in instrumental methods of analysis. 1 lect., 1 lab. (4); two terms. Prerequisite: Registration in Year IV Honours Applied Chemistry or Chemistry Major.

**4U4/ Advanced Experimentation.** A course emphasizing fundamental principles in biochemistry and chemistry using a broad range of modern instrumental methods. This course is identical with Biochemistry 4U4. 1 lab. (4); two terms. Prerequisite: Registration in Year IV Honours Biochemistry and Chemistry.

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**Chinese**

(See “Russian: Chinese”)

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**Civil Engineering and Engineering Mechanics**

Faculty as of January 15, 1980

W.K. Tsoi/ Chairman

Professors


Gunhard-Aestius Oravas/M.S., Ph.D. (Michigan), P. Eng.

Hugh Robinson/B.Sc., Ph.D. (Durham), P.Eng.

Alan A. Smith/B.Sc. (Glasgow), Ph.D. (Strathclyde), P.Eng.


Associate Professors


Mark Donelan/part-time B.Eng. (McGill), Ph.D. (British Columbia).

Robert G. Drysdale/B.Sc. (Manitoba), M.A.Sc., Ph.D. (Toronto), P.Eng.


David Lam/part-time B.Sc. (Hong Kong), M.A.Sc. (Waterloo), Ph.D. (Waterloo).

Assistant Professors


Lecturer

James MacLeod/B.A.Sc. (Toronto).

CURRICULUM 1980-82

A minimum grade of “D” is required for prerequisites specified for Civil Engineering courses. Special circumstances should be submitted to the Department for consideration.

**2A2/ Surveying and Measurement.** Introduction to measurement and computational techniques of surveying, the theory of measurement and errors, adjustment of observations. 1 lect., 1 lab. (5); one term. Prerequisite: Registration in Civil Engineering.

**2B3/ Introduction to Civil Engineering.** Topics will include: Design methodology, construction methods, earthwork quantities, and geo-technical aspects, concrete mix design. A professional liaison programme with visits to engineering firms is also included, as is oral and written communication. 2 lects., first term, 1 lab. (3) every other week; two terms. Prerequisite: Registration in Civil Engineering.

**2C4/ Structural Mechanics.** Determinate systems, stress resultants and deflection; virtual work; Castigliano’s theorems, shear flow, combined bending, unsymmetrical bending, equivalent stresses; column buckling, beam columns, impact loading, structural proportioning. 3 lects., 1 lab. (3); one term. Prerequisite: Engineering 2P4.
2D3/ Geology for Engineers. Composition of the earth; minerals and rocks; weathering; erosion, transportation and deposition; engineering properties of rock; geologic structure; ground water; earth movements; subsurface exploration; map usage and airphoto interpretation; site selection for engineering works; field trips. 2 lects., 1 lab. (3); one term. Prerequisite: Registration in Civil Engineering. Not open to students with credit in Geology 1A5 or 1B6.

3A3/ Geotechnical Engineering I. Composition and characteristics of soils; soil classification systems; site investigation; soil compaction; hydraulic characteristics of soils; flow nets and ground water; total and effective stresses; stresses and displacements; consolidation theory and settlement analysis. 2 lects., 1 lab. (3) or 1 tut. (2) every other week; one term. Prerequisite: Civil Engineering 2D3 or Geology 1A6 or 1B6.

3B3/ Geotechnical Engineering II. Shear strength characteristics and failure criteria for soils; direct shear, triaxial, plane strain, and field tests; earth pressure theory; lateral earth pressure on retaining walls; bearing capacity, introduction to shallow and deep foundations; introduction to slope stability and embankment design. 2 lects., 1 lab. (3) or 1 tut. (2) every other week; one term. Prerequisite: Civil Engineering 3A3.

3G4/ Structural Analysis. Indeterminate systems using methods of slope-deflection and moment distribution. Virtual work for trusses. Loading conditions and influence lines. An introduction to steel design. 3 lects., 1 lab. (3); one term. Prerequisite: Civil Engineering 2C4.

3J4/ Reinforced Concrete Design. Introduction to concrete technology; design by working stress and by ultimate strength methods to insure adequate capacities for bending moment, shear and diagonal tension, axial force, bond and anchorage; consideration of practical design requirements; interpretation of building code, with regard to behaviour of structures. 3 lects., 1 lab. (3); one term. Prerequisite: Civil Engineering 3G4.

3K3/ Introduction to Transportation Planning. Methods of predicting and planning for future transportation demand; basic concepts of traffic operations and control; design of transportation facilities; transportation systems evaluation. 2 lects., 1 tut. (2); one term. Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6 or permission of the Department.

3M4/ Hydraulics and Hydrology. Demand for water; water collection and distribution; flow in pipes and open channels. Hydraulic machines. Flow measurement. Hydrology; precipitation and runoff; recurrence intervals; unit hydrograph. 2 lects., 1 tut., 1 lab. (3); one term. Prerequisite: Civil Engineering 3Q4.

3Q4/ Civil Engineering Fluid Mechanics. Hydrotostatics; kinematics of fluids; continuity equations. Hydrodynamics; conservation of energy and momentum; Bernoulli equation; turbulence and boundary layers; similarity, rotodynamic machinery; measuring devices, unsteady flow. Application to open channels and pipe flows. 3 lects., 1 tut. (1), 1 lab. (2) every other week; one term. Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6.

4A4/ Water Resources Engineering Analysis. Analysis of storms, snowfall runoff, infiltration, hydrology of low-flows, storage-frequency analysis, catchment models for floods, flood routing, spillway design, non-uniform flow, freeboard design, and hydroeconomics. Use of interactive computer simulations of, and field trips to the local water resources system. 3 lects., 1 lab. (2); one term. Prerequisite: Civil Engineering 3M4, or permission of the Department.

4B3/ Engineering Systems. Mathematical models and systems; project comparison; optimization; linear, non-linear and dynamic programming; simulation and computer-aided design. 2 lects., 1 tut. (2) or 1 lab. (3); one term. Prerequisite: Knowledge of Fortran programming, and permission of the Department.

4C3/ Environmental Protection. Environmental impact statement and procedures, economic-ecological tradeoff methods, cost-benefit analysis. Energy hydrological and geometrical cycle on a broad scale. Engineering aspects involving water control, solid waste treatment and disposal, recycling and resource management, building systems. Student groups will undertake specific research projects with Faculty guidance. 2 lects., 1 tut. (2); one term. Prerequisite: Engineering 2W4 or permission of the Department.

4D4/ Geometric Highway Design. Location and design of various types and classes of highways. Theory and practice in design of intersections, interchanges, arterial highways, and freeways, in urban and rural areas, with consideration of alignments, cross sections, safety, traffic demand, right-of-way utilization, and environmental impact. 3 lects., 1 lab. (2); one term. Prerequisite: Civil Engineering 3K3, or permission of the Department.

4F3/ Traffic Engineering. Selected elements of operation and control of streets and highways. Analysis of traffic stream and vehicular characteristics affecting traffic flow. Intersection signalization and timing plans including strategies for area traffic control. Highway-freeway control and surveillance. Measurement and analysis of traffic data. 3 lects; one term. Prerequisite: Civil Engineering 3K3, or permission of the Department.

4G4/ Pavement Materials and Design. Components of highway pavements; ground water and drainage for highway facilities; soil compaction and stabilization; flexible and rigid pavement design; aggregate materials, concrete mixes, flexible pavement design; concrete pavement design. 3 lects., 1 lab. (3); one term. Prerequisite: Civil Engineering 3A3 and 3B3 or permission of the Department.

4H3/ Land Use and Transportation. An analysis of models of urban land use and urban growth with particular reference to the interrelations between transportation systems and land use change. 3 lects; one term. Prerequisite: Civil Engineering 3K3 or permission of the Department. Same course as Geography 4H3.

4I4/ Design of Water Resources Systems. Investigation, planning, and design, of elements in a hypothetical development of a real river system, using primary government hydrographic and hydrologic data and maps. Such elements would include flood control, water supply, hydro-power, navigation, drainage, irrigation, recreation and municipal and biological aspects of watershed management. Role of conservation authorities and public bodies. The laboratory involves several site visits and design sessions using a library of computer programs. 2 lects., 1 tut., 1 lab. (2); one term. Prerequisite: Civil Engineering 3M4 or permission of the Department.

4J3/ Engineering: Its History, Philosophy, and Influence on Civilization. History and philosophy of engineering from antiquity to modern times, with special emphasis on scientific technology. Cultural significance of engineering to civilization. Nature and problems of industrial technology. Benefits and risks of technological progress. Civil engineering as learned profession. 2 lects., 1 tut., (2); one term. Prerequisite: Registration in a Civil Engineering programme, or permission of the Department.

4K3/ Modern Methods of Structural Analysis. The development and application of matrix methods of structural analysis, covering primarily the displacement method, but also including the basic aspects of the force method. Introduction to the finite element method, dynamic properties, and stability considerations in structures. 2 lects., 1 tut. (2); one term. Prerequisite: Civil Engineering 3G4.

4M3/ Municipal Hydraulics. Design of water supply and sewerage systems. Hydraulics of varied flow and transients; surge systems; water hammer. Surface water drainage. Ecometric analysis of water resources systems, population projections. 2 lects., 1 tut. (2); one term. Prerequisite: Civil Engineering 3M4 and 3Q4 or permission of the Department.

4N4/ Design of Steel Structures. Elastic and plastic analysis and design of steel members and structures. Relationship of design specifications to the basic behaviour of structures. Use of design specifications as an aid to the solution of practical design problems. Concept of direct state design and plastic collapse. 2 lects., 1 lab. (3); one term. Prerequisite: Civil Engineering 3G4.

4P3/ Mechanics of Materials. A course in stress analysis (as opposed to structural analysis). Elements of the theory of elasticity, advanced topics from among areas of energy principles, beam theory, and torsion, an introduction to theory of plates and shells. 3 lects.; one term. Prerequisite: Civil Engineering 3G4.

4R4/ Structural Synthesis. Discussion of structural design process, gravity and lateral load requirements, structural design 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 based on working drawings of the structures. Use of package computer programme for alternate design comparison. 3 lects., 1 lab. (3); one term. Prerequisite: Civil Engineering 3G4, 3J4.

4S3/ Foundation Engineering. Principles of foundation design; bearing capacity, settlement, and location; footings, retaining structures; pile
CLASSICS

Classics

Faculty as of January 15, 1980

H. Jones/Chairman

Professors

Donald M. Shepherd/M.A. (Queen's), Ph.D. (Chicago).
William J. Slater/M.A., Ph.D. (St. Andrews).

Associate Professors

Katherine M.D. Dunbabin/B.A., D.Phil. (Oxford).

Assistant Professor


Associate Member

Bryan D. Mangrum/(Art and Art History).

CURRICULUM 1980-82

A grade of at least “D” is required in all courses listed under “prerequisite”, unless otherwise indicated.

CLASSICAL CIVILIZATION

No language other than English is required for courses listed under Classical Civilization.

1A6/ An Introduction to the Civilizations of Greece and Rome. A survey of Greek and Roman culture from the Mycenaean Age to the Late Roman Empire, based on readings from Greek and Roman authors in translation and on the archaeological evidence.

2 lects., 1 tut. (2); two terms.
Prerequisite: Open.

2B3/ Greek Art. The architecture, sculpture, and painting of the Greek and Hellenistic world.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Same as Art History 263.

2C3/ Roman Art. The architecture, sculpture, and painting of the Roman world.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Same as Art History 2C3.

2D3/ Greek and Roman Mythology. A study of the Greek and Roman myths, and the intellectual and spiritual climate in which they were fostered and developed, from the Mycenaean Age to early Christian times.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.

2E3/ Greek and Roman Drama. Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama on later drama.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Alternates with Classical Civilization 2C3.
Same as Dramatic Arts 2E3.

2K3/ Social Life and Thought of the Greeks and Romans. A description and analysis of selected aspects of the social life of Greece and 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 Years II and above, except to students with credit in Classical Civilization 3M3, 3N3, or 3O3.

2L3/ The Greek City: An Archaeological Study. A study of the physical growth and development of the cities which became the focal point of society and culture in the Greek world. The chief topics will be the rise and fall of the principal centres of Cretan and Mycenaean culture, the emergence of the mature Greek cities, culminating in Athens in the 5th century, and subsequent urban development and city planning in the time of Alexander the Great and his successors.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Alternates with Classical Civilization 2M3.

2M3/ The Roman City: An Archaeological Study. A study of the transformation of the city of Rome from an obscure village to a vast metropolis, the nature of city planning and urban life, and the patterns of urban development in Rome and her Empire. The study is based upon the evidence of monuments and architectural remains found in Rome, Pompeii, and other surviving cities of the Empire in Europe, Africa, and Asia.

3 lects.; one term.
Prerequisite: Open to students in Years II and above.
Alternates with Classical Civilization 2L3.

2X3/ Greek and Roman Background to Early Christianity. A description and analysis of selected Greek and Roman social and political institutions which helped to form the background to the life of early Christians and the New Testament writers. The topics surveyed include: the spread of the Greek language and culture, Roman provincial government and the Roman army, travel by land and sea, the life of major cities, education, and literature.

3 lects.; one term.
Prerequisite: Open to students in Years II and above, except to students with credit in Classical Civilization 2P3 or Religious Studies 2G3.
Alternates with Classical Civilization 223.

2Z3/ Greek and Roman Religion. A study of the role of religion in Greek and Roman public and private life.

3 lects.; one term.
Prerequisite: Open to students in Years II and above, except to students with credit in Classical Civilization 2Q3 or Religious Studies 2H3.
Alternates with Classical Civilization 2X3.
Same as Religious Studies 2Z3.

3A3/ Topics in Greek Literature in Translation. 1981-82: Greek Poetry: Background and Technique. A study of the Iliad and selections from Greek poetry, including works of Pindar and the lyric poets. Lectures will examine the circumstances under which Greek poetry was produced, the refinement of its techniques, and possible reasons for its decline.

3 lects.; one term.
Prerequisite: Six units of Classical Civilization, or permission of the Department.
Classical Civilization 3A3 may be repeated, if on a different topic, to a total of six units.
Alternates with Classical Civilization 3B3.
3B3/ Topics in Roman Literature in Translation. 1980-81: Latin Poetry. The Generic Approach. A study of Roman poetry, including works of Catullus, Horace, and Ovid. Lectures will examine the influence of Greek theory and especially of the rhetorical genres, and the interplay of Greek tradition and the originality of individual Roman authors.
3 lects.; one term.
Prerequisite: Six units of Classical Civilization, or permission of the Department.
Classical Civilization 3B3 may be repeated, if on a different topic, to a total of six units.
Alternates with Classical Civilization 3A3.

3C3/ Greek and Roman Epic. A survey of epic poetry, including the origins, Homer and Greek epic, Vergil and Roman epic.
3 lects.; one term.
Prerequisite: Classical Civilization 1A6 or 2B3, or permission of the Department.
Alternates with Classical Civilization 2E3.

3G3/ Late Antique and Early Christian Art. The art and architecture of the later Roman Empire, and the birth of Christian art (A.D. 200-600).
3 lects.; one term.
Prerequisite: Classical Civilization 2C3 or Art History 2C3 or 2D6 or 2K3, or permission of the Department.
Alternates with Classical Civilization 4L3.

3M3/ Social Life and Thought in Periclean Athens. A description and analysis of selected aspects of the social life of Athens in the second half of the 5th century B.C., based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2K3, as well as others peculiar to Periclean Athens: work and leisure, education, religion, marriage and family-life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term.
Prerequisite: Classical Civilization 2K3 and six additional units either from Classical Civilization or from Ancient History, or permission of the Department.
Alternates with Classical Civilization 3N3.

3N3/ 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. and the beginning of the 1st century A.D., based upon contemporary literature, documents, and artifacts. Lectures will deal in greater depth with topics introduced in Classical Civilization 2K3, as well as others peculiar to Augustan Rome: work and leisure, education, religion, marriage and family-life, the roles of women, war and peace, social structure, and social mobility.
3 lects.; one term.
Prerequisite: Classical Civilization 2K3 and six additional units either from Classical Civilization or from Ancient History, or permission of the Department.
Alternates with Classical Civilization 3M3.

4A3/ The Classics and English Literature. A course devoted to an exploration of the influences of classical literature upon English writers from mediaeval to modern times, and conducted jointly by the Departments of Classics and English.
1 lect., 1 seminar; one term.
Prerequisite: Registration in Years III or IV of a programme in English, Classics, Classical Civilization, Latin, or Greek, or permission of the Department.
Offered in alternate years.
Same as English 4A3.

4F3/ Supervised Study. Under the supervision of members of the Department of Classics, students will investigate in detail some areal(s) of Classical Civilization with a view to bringing together aspects of the work of previous years.
Tuts.; one term.
Prerequisite: Registration in Year IV of Honours Classical Civilization or Combined Honours in Classical Civilization and another subject, or permission of the Department.

4L3/ Topics in Ancient Art and Archaeology. 1981-82: Archic Greek Art. The birth and development of Greek painting and sculpture, 1000-480 B.C.
Seminar; one term.
Prerequisite: Classical Civilization 2B3 and registration in Years III or IV of a programme in Classical Civilization or Art History, and permission of the instructor. Not open to students who have completed Classical Civilization 3F3 or Art History 3F3.
Classical Civilization 4L3 may be repeated, if on a different topic, to a total of six units. Before registering, every student must obtain a limited enrolment permission slip from the instructor.
Alternates with Classical Civilization 3G3.
Same as Art History 4L3.

The following courses in the field of Classical Civilization are offered by the Department of History:

History 1L6/ Ancient History
History 2L6/ Greece and Rome
History 3D6/ Roman History 264 B.C.-A.D. 117
History 3L6/ The World of Ancient Greece
History 4D6/ Special Topics in Greek History
History 4H6/ Special Topics in Roman History

The following courses in the field of Classical Civilization are offered by the Department of Philosophy:

Philosophy 2A6/ Ancient Greek Philosophy
Philosophy 3E3/ Plato
Philosophy 3J3/ Aristotle

The following courses in the field of Classical Civilization are offered by the Department of Religious Studies:

Religious Studies 2E6/ The Beginnings of Christianity
Religious Studies 3O3/ The Fourth Gospel
Religious Studies 3O6/ Western Religious Thought — Development of the Christian Traditions between 100 and 800
Religious Studies 3X3/ The Letters of Paul

GREEK

BEGINNERS' LANGUAGE COURSE

126/ Beginners' Intensive Greek. A rapid introduction to the grammar of Ancient Greek. Passages of simple Greek are read in the second term.
5 hrs. (lects. and tuts.); two terms.
Prerequisite: Open
Note: This course, with a mark of at least 75, is accepted as a prerequisite for admission to Honours Classics or Combined Honours in Greek and another subject.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

1A6/ Introduction to Greek Studies. Selected readings from the Apology of Plato and the Persian Wars of Herodotus.
3 lects., 1 tut.; two terms.
Prerequisite: Level 5 (Grade '13) Greek, Greek 1Z6, or permission of the Department.

2A3/ Plato. Selected readings from the Republic.
3 lects.; one term.
Prerequisite: Greek 1A6, or Greek 1Z6 with a mark of at least 75.

2B3/ Homer. Selected readings from the Odyssey.
3 lects.; one term.
Prerequisite: Greek 1A6, or Greek 1Z6 with a mark of at least 75.

3A6/ Greek Tragedy. Selected readings from the tragedies of Aeschylus, Sophocles, and Euripides.
3 lects.; two terms.
Prerequisite: Greek 2A3 and 2B3, or permission of the Department.
Alternates with Greek 4F3 and 4H3.

3C3/ Thucydides, and Language Study. Selected readings from the Peloponnesian War; advanced language study.
3 lects.; 1 tut.; one term.
Prerequisite: Registration in Years III or IV of Honours Classics or Combined Honours in Greek and another subject, or permission of the Department.
Alternates with Greek 4G3.

3D3/ Plato and Aristotle. Selected readings from works on literary criticism.
3 lects.; one term.
Prerequisite: Registration in Years III or IV of Combined Honours in Greek and another subject, or permission of the Department.
Alternates with Greek 4G3.

4E3/ Demosthenes, and Language Study. Selected readings from the speeches; advanced language study.
3 lects.; 1 tut.; one term.
Prerequisite: Registration in Years III or IV of Honours Classics or Combined Honours in Greek and another subject, or permission of the Department.
CLASSICS

LATIN

BEGINNERS' LANGUAGE COURSE

1Z6/ Beginners' Intensive Latin. A rapid introduction to Latin, normally intended for students with no Latin or students who have not completed Grade 13 Latin. The study of grammar is followed by the reading of simple prose passages and selections from the speeches of Cicero.
3 lects.; two terms.
Prerequisite: Open.

1A6/ Introduction to Latin Studies. Selected readings from the poems of Catullus and the Odes of Horace.
3 lects.; 1 tut.; two terms.
Prerequisite: Grade 13 Latin or Latin 126, or permission of the Department.

2A3/ Ovid. Selected readings from the Metamorphoses and other works.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2C3/ Sallust. Selected readings from the Bellum Catilinae and the Bellum Jugurthinum.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2F3/ Latin Language. A study of the syntax, metre, and style of Latin, based on selected authors.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2G3/ Vergil. Selected readings from the Aeneid.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2L3/ Mediaeval Latin: Prose Authors. Selected readings from prose works of representative Latin authors of the Middle Ages.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2M3/ Mediaeval Latin: Poetry and Drama. Selected readings from the works of representative Latin poets and playwrights of the Middle Ages.

NEW TESTAMENT AND KOINE GREEK

4 lects.; two terms.
Prerequisite: Open.

Same as New Testament 186 (See Divinity College Calendar).

LATIN

BEGINNERS' LANGUAGE COURSE

1Z6/ Beginners' Intensive Latin. A rapid introduction to Latin, normally intended for students with no Latin or students who have not completed Grade 13 Latin. The study of grammar is followed by the reading of simple prose passages and selections from the speeches of Cicero.
3 lects.; two terms.
Prerequisite: Open.

1A6/ Introduction to Latin Studies. Selected readings from the poems of Catullus and the Odes of Horace.
3 lects.; 1 tut.; two terms.
Prerequisite: Grade 13 Latin or Latin 126, or permission of the Department.

2A3/ Ovid. Selected readings from the Metamorphoses and other works.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2C3/ Sallust. Selected readings from the Bellum Catilinae and the Bellum Jugurthinum.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2F3/ Latin Language. A study of the syntax, metre, and style of Latin, based on selected authors.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2G3/ Vergil. Selected readings from the Aeneid.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2L3/ Mediaeval Latin: Prose Authors. Selected readings from prose works of representative Latin authors of the Middle Ages.
3 lects.; one term.
Prerequisite: Latin 1A6, or Latin 126 with a mark of at least 75.

2M3/ Mediaeval Latin: Poetry and Drama. Selected readings from the works of representative Latin poets and playwrights of the Middle Ages.
Assistant Professors

Varouj A. Aivazian/B.S. (Massachusetts Institute of Technology), M.A., Ph.D. (Ohio State)—Finance and Business Economics
Norman P. Archer/B.Sc. (Alberta), Ph.D. (McMaster), M.S. (New York)—Management Science
Nimal V. Dissanayake/LL.B. (Ceylon), LL.M., LL.B. (Queen's)—Industrial Relations
A. John King/B.Comm. (Western Australia), M.B.A. (Chicago)—Accounting
Heinz Klein/Diplom-Kaufmann, Dr.oe.publ. (Miami)—Management Science
Clarence C.Y. Kwan/Dipl. in Math & Science (Hong Kong Baptist College), Ph.D. (Ottawa), M.B.A. (McMaster), Ph.D. (Toronto)—Finance

Lecturers

Prakash Abad/B.Tech. (Indian Institute of Technology), M.S., M.B.A., Ph.D. (Cincinnati)—Management Science
Elizabeth Cardoza/B.Sc. (Windsor), M.B.A. (McMaster)—Accounting
Marie-Louise Erickson/B.A., M.B.A. (McMaster), R.I.A. (Society of Industrial Accountants)—Accounting
R. H. George Field/B.Math. (Waterloo), M.B.A. (McMaster)—Organizational Behaviour
Shalom Hochman/B.A., M.Sc.Soc. (Hebrew University of Jerusalem)—Finance
Duane Kennedy/B.Math. (Waterloo), M.B.A. (McMaster)—Accounting
Paul M. Stillman/B.Sc. (McMaster), LL.B. (Osgood Hall)—Business Law
T. Richard Whiteley/B.Com., Dipl. in Retailing (Sir George Williams), M.B.A. (McMaster)—Marketing
Joseph Yagil/B.A., M.Sc.Soc. (Hebrew University of Jerusalem)—Finance
Paul V. Dunmore/B.Sc. (Victoria University of Wellington), Ph.D. (McMaster)—Accounting

CURRICULUM 1980-82

2A3/ 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.
3 lects.; one term.
Prerequisite: At least "C" in Economics 1A6 AND
(1) registration in the Commerce programme, or
(2) registration in the Eng./Mgt. programme, or
(3) registration in Years II or IV of any other programme.

2B3/ Cost and Managerial Accounting I. Concepts underlying the use of cost accounting information for managerial planning and control, and inventory valuation. The nature and analysis of costs, and the usefulness and limitations of accounting data for decision-making.
3 lects.; one term.
Prerequisite: At least "C" in Commerce 2A3 AND
(1) registration in the Commerce programme, or
(2) registration in the Eng./Mgt. programme, or
(3) registration in Years II or IV of any other programme.

3 lects.; one term.
Prerequisite: At least "C" in each of the Business 1 Mathematics requirements and registration in Commerce.

2E5/ Computer-Augmented Statistical Analysis. Based on the analytical and programming skills developed in 2D3, this course has as its goal the application of statistical analysis to managerial decision-making. The concepts of statistical analysis are applied to a variety of topics,
including decision making, estimation by sampling, hypothesis testing, analysis of variance, simple linear and multiple regression and forecasting.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2D3 and registration in Commerce or equivalent course(s) in the Eng./Mgt. programme.

3A3/ 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.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2B3.

3B3/ Introduction to Marketing. Introduction to marketing as a field of study, market structure, marketing institutions, marketing concepts and strategies. Stress is placed upon the analytical, managerial, and conceptual, aspects of the subject.

3 lects.; one term.

Prerequisite: At least "C" in Economics 1A6 or 1B6.

3D3/ Introduction to Managerial Finance. An introduction to the nature and administration of the finance function. The emphasis is on the development of basic concepts pertaining to the investment problem in asset management, and the financing problem in short and long-range sources of funds, capital structure, and dividend policy. Analytical and theoretical constructs are discussed in, and applied to, actual case situations.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2K3.

3E3/ Production. 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.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2E3 or equivalent course(s) in the Eng./Mgt. programme.

3F3/ Industrial Relations. Structure and process whereby labour, management and the public interact to produce terms and conditions of employment. Topics include the development, structure and objectives of organized labour, management philosophy and policy in industrial relations and governmental policy.

3 lects.; one term.

Prerequisite: At least "C" in Economics 2G3 and Economics 2H3.

3G3/ 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 behaviour determination, and income measurement for management.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2K3.

3H3/ Business Data Processing. An introduction to commercial data processing technology—I/O devices, storage, processors, software, its deployment in transaction/file processing and reporting systems, and the analysis and design of such systems.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2E3 or equivalent course(s) in the Eng./Mgt. programme.

3K3/ Financial Instruments and Institutions. This introductory course will cover both micro and macro aspects of Finance. At the micro level, this course will explore some of the basic concepts and elementary theories in Finance, in order to provide an understanding of the investment and financing decisions made by various participants in the Canadian financial markets. At the macro level, this course will describe various financial instruments and functions of financial institutions in Canada.

3 lects.; one term.

Prerequisite: At least "C" in Economics 2H3 and Commerce 2B3.

3L3/ Financial Accounting III. This course completes the coverage of intermediate financial accounting. It deals with problems related to the measurement of liabilities, accounting for income taxes and the reporting and measuring of corporate equities.

3 lects.; one term.

Prerequisite: At least "C" in Commerce 2A3.

NORMALLY SECTION SIZE IN 4TH YEAR COMMERCE COURSES WILL BE RESTRICTED TO A MAXIMUM OF 50 STUDENTS; STUDENTS WILL BE ADMITTED ON A FIRST-COME BASIS.

4A3/ 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 permitted auditing procedures are examined through a selective analysis of asset, liability, revenue, and expense items.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 3L3, and registration in either Year IV Commerce or the Eng./Mgt. programme.

4B3/ Business Policy. This course builds upon, and integrates, the students' 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.

2 lects.; one term.

Prerequisite: Registration in either Year IV Commerce or the Eng./Mgt. programme.

4C3/ Securities Analysis. The emphasis is upon 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.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 3D3, and registration in either Year IV Commerce or the Eng./Mgt. programme.

4D3/ Accounting Information Systems. Consideration of the principles underlying the role of accounting as an information system for planning and controlling business operations. Topics include: design of information systems; problems of internal control; and design, installation, and control, of computer-based information systems.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 3A3 and 3H3 and registration in either Year IV Commerce or the Eng./Mgt. programme.

4E3/ Analysis of Production Problems. 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.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 3E3 or Mechanical Engineering 4C3, and registration in either Year IV Commerce or the Eng./Mgt. programme.

4F3/ 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.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 4F3 and registration in either Year IV Commerce or the Eng./Mgt. programme.

4G3/ Organizational Psychology. The course introduces students to a number of behavioural science concepts concerning human behav­ iour in organizations. Major topics include individual differences, motivation, learning, communication and problem solving in small groups. Attention is also given to the structure and design of organizations and to the managerial function.

1 (3 hr.) lect.; one term.

Prerequisite: Registration in either Year IV Commerce or the Eng./Mgt. programme.

4H3/ Behavioural Issues In Management. Detailed analysis of employee motivation and reward systems; organizational structure; leadership and decision-making; group processes, and management of conflict and change.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 4H3 and registration in either Year IV Commerce or the Eng./Mgt. programme.

4I3/ Managerial Finance. A managerial point of view is established by the application of basic financial theory and analysis to actual case situations. Lectures and a continuous finance game are used to complement case discussions. Some topics in Finance (e.g. leasing, mergers, etc.) not adequately covered in Commerce 3D3 are further explored. The course is recommended to students interested in general management, as well as to those wishing to attain a degree of specialization in Finance.

2 lects.; one term.

Prerequisite: At least "C" in Commerce 3D3 and registration in either Year IV Commerce or the Eng./Mgt. programme.

4J3/ Marketing Communication. A study of the marketing communication process designed to introduce the student to the basic concepts and methods of advertising, personal selling and sales promotion. The problems of managing a marketing communication program and its various elements, as well as the practical aspects of producing ads.
and of selling will be studied.

4M3/ 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.

4N3/ Consumer Motivation. An analysis of the motivations underlying consumer choice behaviour such as store patronage, brand loyalty, and new-product adoption. Specifically, the course will trace the role of perception, learning, attitudes, personality, reference groups, social class and culture in the consumer decision process.

4P3/ Commercial Law. Emphasizes those areas of law which are most relevant to business activity. Particular attention is given to the law relating to contracts and business organizations. Other areas of study include sources of law, the judicial process, real and personal property, torts, agency, credit, and negotiable instruments.

4Q3/ Financial Theory. This course explores the theoretical and conceptual foundations of Finance, building on materials introduced in Commerce 3D3. Topics include: utility maximization and choices involving risk; the quantification of risk and return; concepts of value, the investment, financing and dividend decisions of firms; asset pricing in perfect and imperfect markets.

4R3/ 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.

4S3/ 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.

4T3/ Quantitative Analysis for Business. An introduction to the techniques of management science and their application to business problems. Topics include: linear programming, integer programming, decision analysis and computer simulation.

4U3/ 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.

4V3/ 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.

4W3/ 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.

4X3/ 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.

Comparative Literature CURRICULUM 1980-82

Comparative Literature is the study of literature from the point of view of more than one national literature and/or in conjunction with any other intellectual discipline. It is designed to meet the needs of those students who wish to study literary texts as an intercultural and often interdisciplinary phenomenon.

There is no B.A. programme in Comparative Literature. Courses are coordinated and supervised by members of a Committee of Instructors. Courses are offered, a general introduction to major works and forms of the Western literary tradition and an introductory course in Literary theory. Classes are held in English and texts are studied in English translation. Regular lectures will be supplemented by guest lecturers who are specialists in the languages of the original texts which the class is reading in translation.

For further advice and information consult the following:

Comparative Literature 1A6: Dr. L. Hutcheon (English)
Comparative Literature 3B3: Dr. A. Whiteside (Roman Languages).

1A6/ Introduction to the Western Literary Tradition. An introduction to the origins and continuity of the Western literary tradition from the Bible and classical antiquity through to the modern period, by means of the detailed study of both its human values and its formal patterns as seen in representative texts from major literatures and languages (in translation). In this course much attention is given to the development of critical skills in reading and writing.

3B3/ Introduction to Comparative Literary Studies. General and comparative literary theory; selected methodological approaches in literary criticism; application of theory and methods to representative texts chosen from various literatures in translation.

Other courses relevant to Comparative Literature:

- Classical Civilization 2D3/ Greek and Roman Mythology
- Classical Civilization 2E3/ Greek and Roman Drama
- Classical Civilization 3A3/ Topics in Greek Literature in Translation
- Classical Civilization 3B3/ Topics in Roman Literature in Translation
- Classical Civilization 3C3/ Greek and Roman Epic
- Classical Civilization 4A3/ The Classics and English Literature (Same as English 4A3)

Dramatic Arts 1A6/ Introduction to Drama
Dramatic Arts 3C3/ Modern European Drama in English Translation
Dramatic Arts 4C3/ Medieval Theatre of England and France
English 2C3/ Contemporary Canadian Fiction
English 2G6/ Canadian Literature
English 2X3/ Topics in the English Literary Tradition—The Bible
English 3S3/ Studies in 16th-century Literature
Computer Science

The Unit for Computer Science attached to the Department of Mathematical Sciences is responsible for the design and content of courses in Computer Science and offers a Pass programme in Computer Science. Honours and Major Computer Science programmes are offered by the Department of Mathematical Sciences and the Computer Engineering programme is offered by the Department of Electrical and Computer Engineering.

The Unit was established on July 1st, 1979 to provide focus and leadership at McMaster for both teaching and research in computer science.

Members in 1979-80 were as follows:

- D. Wood (Mathematical Sciences)/Chairman, Unit for Computer Science
- N. P. Archer (Management Science)
- J. W. Bandler (Electrical & Computer Engineering)
- P. C. Chakravarti (Mathematical Sciences)
- W. H. Fleming (Mathematical Sciences)
- G. L. Keech (Mathematical Sciences)
- T. J. Kennett (Physics and Engineering Physics)
- D. J. Kenworthy (Mathematical Sciences)
- Y. S. Kwong (Mathematical Sciences)
- K. A. Redish (Mathematical Sciences)
- N. Soltisaff (Mathematical Sciences)

Computer Science course descriptions are to be found under the Mathematical Sciences section (pp. 118-119) under the headings Computer Science, Mathematics and also Mathematics and also under Electrical and Computer Engineering (pp. 102-103) and Commerce (pp. 95-97).

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

L. Braswell (English)
A. Brennan (English)
J. Browning (Spanish)
J. Coldwell (English)
D. Duncan (English)
A. Hammond (English)/Chairman
R. Hill (Dance)
B. Jackson (English)
Christine Knight (Acting)/B.A. (McMaster)
E. Nardocchio (French)
G. Petrie (Film)
B. Pocknell (French)
G. Pratley (Film)
R. Van Dusen (German)
R. Vince (English)

CURRICULUM 1980-82

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

1A6/ Introduction to Drama. A survey of dramatic genre and mode; principles and practice of dramatic analysis; a study of selected plays
from the world’s repertory in historical perspective.
2 lec., 1 tut.; two terms.
Prerequisite: Open.

2A6/ An Introduction to the Actor’s Craft. Workshops in body movement, dance, mime and mask; voice and speech; explorations in acting methods.
2 studio practice (2 1/2 hrs.); two terms.
Prerequisite: Registration in a programme in Dramatic Arts or permission of the instructor after audition.

2B6/ The Development of English Drama. English drama from the medieval period to the close of the 18th century (excluding Shakespeare).
3 lec.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the English Department.

Same as English 2B6.

2E3/ Greek and Roman Drama. Reading of selected Greek and Roman tragedies and comedies. Lectures about the development of the drama, presentation of plays, the authors and their works, and the influence of classical drama upon later drama.
3 lec.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.
Same as Classical Civilization 2E3.

2F3/ Opera. An analysis of selected operatic works in their historical context, with a view to determining the nature and limitations of opera as a theatrical form.
3 lec.; one term.
Prerequisite: Registration in a programme in Dramatic Arts or Music, or permission of the instructor.
Alternates with Dramatic Arts 2F3.
Same as Music 2F3.

2FF3/ Studies in Opera. 1980-81: Giuseppe Verdi. A detailed study of the operatic works of Verdi in their historical and dramatic context. Eight to ten works will be examined in depth.
3 lec.; one term.
Prerequisite: Registration in a programme in Dramatic Arts or Music, or permission of the instructor.
Alternates with Dramatic Arts 2FF3.
Same as Music 2FF3.

2G6/ Introduction to Theatre History. A survey of theatre history from the Greeks through the 19th century, with special attention to sources and basic reference material.
1 seminar (2 hrs.); two terms.
Prerequisite: Dramatic Arts 1A6 or permission of the instructor.

2X6/ The Art of the Film. The film as a medium for artistic expression, as seen in the work of major European and American directors.
1 lec., 1 tut., plus one weekly evening film screening; two terms.
Prerequisite: Open to students in Years II and above.

3A6/ Styles of Acting. The study and practice of styles of acting in classic and period theatre, from the Greeks through the 19th century. Body movement, voice and speech are included, and participation in lunch hour productions is mandatory. Class meets twice a week, total 5 hrs.; two terms.
Prerequisite: Dramatic Arts 2A6 or 2A3, or permission of the instructor.

1 seminar (2 hrs.); one term.
Prerequisite: Completion of, or registration in, Dramatic Arts/English 3E3, or 3K6. Dramatic Arts 2G3 or 2G6 desirable.

3C3/ Modern European Drama in English Translation. A study of representative plays by modern European dramatists from Isean to the present.
1 seminar (2 hrs., plus playreadings); one term.
Prerequisite: Dramatic Arts 1A6 or permission of the instructor.

3 lec.; one term.
Prerequisite: Dramatic Arts 1A6 or English 1A6 or 1B6. Not available to students who have credit in Dramatic Arts/English 3K6.
Same as English 3E3.

3K6/ Shakespeare. An extensive critical reading and discussion of selected plays.
3 lec.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the English Department.

Same as English 3K6.

3P3/ Modern Drama in English. A representative selection of plays by modern British, Irish, and North American dramatists will be examined in order to study the relationship between drama and society in our age, as well as conventions and experiments in the contemporary theatre.
3 lec.; one term.
Prerequisite: Dramatic Arts 1A6 or English 1A6 or 1B6.
Same as English 3P3.

3R6/ The American Cinema. A survey of some of the predominant features of the American cinema, approached from a thematic, rather than a chronological perspective.
1 lec., 1 tut., plus one weekly evening film screening; two terms.
Prerequisite: Open to students in Years II and above.

3Y3/ French Cinema. A survey of French film from 1935 to the present day, with particular emphasis upon such major figures as Renoir, Clair, Bresson, Godard, Truffaut, and Resnais.
1 lec., 1 tut., plus one weekly evening film screening; one term.
Prerequisite: Open to students in Years II and above.
Same as French 3Y3.

4A6/ Principles of Stage Directing. A practical examination of, and experimentation in, various theories of staging and interpretation; the study of visual concepts of theatre, working with actors; rudiments of technical stagecraft. Directing a lunch hour production is mandatory. Class meets twice a week, total 5 hrs.; two terms.
Prerequisite: Dramatic Arts 3A6 or permission of the instructor.

4B3/ Topics in Theatre History: Independent Study (I). Students who wish to undertake independent study in one of the following areas must consult the Chairman of the Committee on Dramatic Arts prior to registration: Mediaeval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term.
Prerequisite: Dramatic Arts 2G3 or 2G6, or permission of the Chairman, Committee of Dramatic Arts.

4BB3/ Topics in Theatre History: Independent Study (II). Students who wish to undertake independent study in one of the following areas, which must be different from that selected for 4B3, must consult the Chairman of the Committee on Dramatic Arts prior to registration: Mediaeval Theatre, Elizabethan Theatre, Spanish Golden Age Theatre, Renaissance and Baroque scene design, Modern European Theatre.
One term.
Prerequisite: Dramatic Arts 2G3 or 2G6, or permission of the Chairman, Committee of Dramatic Arts.

1 lec., 1 tut., (2 hrs.); one term.
Prerequisite: Registration in a programme in Dramatic Arts or permission of the Instructor.

1981-82: Topic to be announced.
1 lec., 1 tut., plus one weekly evening film screening; one term.
Prerequisite: Open to students in Years II and above.

Dramatic Arts 4D3 may be repeated, if on a different topic, to a total of six units.

4G3/ Perspectives in Dance — A Cultural Survey. A survey of dance in selected cultures, studying its role in ritual, in art and in theatre.
3 hrs. (lec., seminars), one term.
Prerequisite: Permission of the Instructor.
Alternates with Dramatic Arts 4J3.

4J3/ Perspectives in Dance — Dance in Contemporary Society. A study of dance forms in the 20th century. Students will view films, dance performances and participate in dance work shops.
3 hrs. (lec., seminars), one term.
Prerequisite: Permission of the Instructor.
Alternates with Dramatic Arts 4G3.

Same as Physical Education 4J3.
ECONOMICS

Economics

Faculty as of January 15, 1980

J. A. Johnson/Chairman
J. R. Williams/Associate Chairman

Professors

Frank T. Denton/M.A. (Toronto), F.A.S.A.
James A. Johnson/M.A., Ph.D. (Minnesota)
R. Craig McIvor/B.A. (Western), M.A., Ph.D. (Chicago), F.R.S.C.
Ernest H. Oksanen/A.M. (Queen's), B.A., Ph.D. (Queen's)
William McC. Scammell/B. Comm. Sc. (Queen's, Belfast), Ph.D. (Wales) On leave 1979-80
Byron G. Spencer/B.A. (Queen's), Ph.D. (Rice)
Robert W. Thompson/B.A. (Toronto), M.A. (Queen's), Ph.D. (London)
James R. Williams/M.A., Ph.D. (Minnesota)

Associate Professors

Robert E. Anklil/part time A.B., A.M. (Michigan), Ph.D. (Illinois)
John B. Burbridge/B.A., Ph.D. (McGill)
Donald A. Dawson/A.M. (Chicago), Ph.D. (Western), N.D.C.
D. Joel Fried/part time B.A., M.A. (Stanford), Ph.D. (Northwestern)
Peter J. George/M.A., Ph.D. (Toronto) On leave 1979-80
Robert A. Hart/M.A. (Liverpool) Visiting 1979-80
Melvin L. Kliman/B.A. (Manitoba), M.A. (Queen's), Ph.D. (Minnesota)
Atif A. Kubursi/A.M. (American University of Beirut), M.A., Ph.D. (Purdue)
Stuart Mestelman/B.A. (Pittsburgh), M.S., Ph.D. (Purdue)
R. Andrew Muller/B.A. (McGill), M.A., Ph.D. (Toronto)
A. Leslie Robb/M.A. (British Columbia), Ph.D. (Essex)
William M. Scarth/B.A. (Queen's), M.A. (Essex), Ph.D. (Toronto)
Jacob J. Van Duijn/B.Sc., M.Sc. (Netherland School of Economics), Ph.D. (Illinois) Visiting 1979-80

Assistant Professors

David W. Butterfield/B.S., M.S. Eng. (Calif. Inst. of Tech.), A.B., M.A., Ph.D. (Berkeley)
Alan J. Harrison/B.A., M.A., Ph.D. (Essex)
David P. Thom/B.Sc. (Queen's, Belfast), M.Sc. (London) Visiting 1979-80

Lecturers

David K. Forrest/B.A. (Liverpool), M.A. (Manchester) Visiting 1979-80
Reza Ghaeli/M.A. (McMaster)
Michael Veall/B.A. (McMaster), M.A. (Western)

Associate Members

Ralph J. Spence/M.B.A. (Toronto)
Greg Stoddart/B.A. (Western), Ph.D. (British Columbia)

CURRICULUM 1980-82

Students are advised to consult the Department for more detailed information on current offerings.

Students with strong academic records, particularly those from other departments, may be permitted to enrol in courses for which they have not completed all prerequisites. Such students should consult the instructor of the relevant course. A 50% minimum is required in all prerequisite courses, unless a higher grade is specified.

1A6/ Introductory Economics. An introduction to the method and theory of economics, and their application to the analysis of contemporary economic problems.
3 hrs.; two terms.
Prerequisite: Open, except for students enrolled in Economics 1B6.

2B3/ Introduction to Analysis of Economic Data. Descriptive analysis of economic data with attention to Canadian sources. Topics include index numbers, descriptive simple and multiple regression.
3 hrs.; one term.
Prerequisite: At least 55% in Economics 1A6 or 1B6; an average of at least 55% in Mathematics 1K3 and 1L3. The Faculty of Business will not allow Commerce students to receive credit for this course.

2G3/ Intermediate Price Theory. Elements of consumer behaviour; production and cost, price and output determination under various market structures; employment of inputs.
3 hrs.; one term.
Prerequisite: Economics 1A6 or 1B6, and an average of at least 55% in Mathematics 1K3 and 1L3. Not open to students receiving credit for 2L6.

3 hrs.; one term.
Prerequisite: Economics 1A6 or 1B6 and an average of at least 55% in Mathematics 1K3 and 1L3. Not open to students receiving credit for 2M6.

2K6/ Economic History of Canada. The changing structure of the Canadian economy; early significance of primary product exports; emerging domestic markets and industrialization; government's role in developing the national economy.
3 lects.; two terms.
Prerequisite: Economics 1A6 or 1B6. Students may choose this course as part of their Year III or IV programmes.

2L6/ Intermediate Microeconomics. Consumer behaviour; production and cost; price and output determination under various market structures; factor pricing and distribution of factor payments; general equilibrium; welfare economics.
3 hrs.; two terms.
Prerequisite: Economics 1A6 or 1B6, and an average of least 55% (or concurrent registration with permission of the instructor) in Mathematics 1K3 and 1L3. A student receiving credit for Economics 2G3 may receive only 3 additional units of credit for Economics 2L6.

3 hrs.; two terms.
Prerequisite: Economics 1A6 or 1B6, and an average of at least 55% (or concurrent registration with permission of the instructor) in Mathematics 1K3 and 1L3. A student receiving credit for Economics 2H3 may receive only 3 additional units of credit for Economics 2M6.

3 hrs.; one term.
Prerequisite: Mathematics 1M3 and an average grade of at least 70% in Economics 2L6 and 2M6. Not open to students claiming credit for Economics 3A6.

3AA3/ Advanced Economic Theory II. Comparative static and dynamic analysis of macroeconomic models.
3 hrs.; one term.
Prerequisite: Economics 3A3. Not open to students claiming credit for Economics 406.

3B3/ Public Finance. The economics of the public sector. Topics covered include: the role of government; taxation of income, expenditure and wealth; intergovernmental fiscal relations; government budgeting.
3 lects.; one term.
Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3C6.

3C6/ Public Finance. Theory and practice of public finance with special reference to Canada. Topics include: government expenditure criteria; fiscal policy; taxation of income, wealth and expenditure; intergovernmental fiscal relations.
3 hrs.; two terms.
Prerequisite: Economics 2G3 or 2L6. Economics 2H3 or 2M6. A student who has credit for Economics 3B3 may receive only three additional units of credit for Economics 3C6.

3D3/ Labour Economics. Introduction to the economics of the labour market; demand for labour by the firm and industry; supply of labour by the individual; investment in human capital.
3 hrs.; one term.
Prerequisite: Economics 2G3 or 2L6; Economics 2H3 or 2M6.

3E3/ Topics in Labour Economics. Topics will vary from year to year. The following are given as examples: economic goals and effects of unions; labour mobility; labour force participation; wage differentials; discrimination; unemployment.
3 hrs.; one term.
Prerequisite: Economics 3D3, and Economics 2B3 or 306.
ECONOMICS

3H3/ International Economics. International finance, emphasizing balance of payments and economic problems of an open economy with special reference to Canada; the international financial system and proposals for its reform. 3 hrs. (lects. and seminars), one term. Prerequisite: Economics 2H3 or 2M6. Not open to students receiving credit for Economics 4B6.

3G3/ Economic History of the United States. The development of the U.S. economy from colonial times to the present; the role of exports; growth and structural change; the emergence of the national market; the rise of manufacturing and the corporation; technological change. 3 lects., one term. Prerequisite: Economics 1A6 or 1B6.

3J6/ Economic Development. Analysis of economic backwardness within countries as viewed mainly, but not exclusively, from an economic perspective; contemporary theory and policy concerning promotion of economic and social development. 3 hrs.; two terms. Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

3K6/ Monetary Economics and Financial Organization: Theory and Policy. Objectives, organization and operation of the financial sector; financial intermediaries in the capital market; mechanism of international payments; monetary theory and policy concerning Canadian allocative and stability objectives. 3 hrs.; two terms. Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6. A student with credit for Commerce 3K3 may receive only three additional units of credit for Economics 3K6.

3L3/ Marxist Economics. An examination of the foundations of marxist economic thought; marxism as a theory of the capitalist system; the place of marxian doctrine in contemporary economic analysis. 3 lects.; one term. Prerequisite: Economics 2G3 or 2L6.

3M6/ Economic History of Britain from 1750. The development of the British economy; the industrial Revolution; population; trade unions; business organization; transportation, finance; trade; migration; capital movements; the role of government. 3 hrs. (lects. and seminars); two terms. Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6. A student with credit for Commerce 3M3 may receive only three additional units of credit for Economics 3M6.

3N6/ Industrial Organization and Public Policy. The structure, conduct and performance of industrial markets, with emphasis upon the problems and methods of maintaining effective competition. Seminars on selected topics. 3 hrs. (lects. and seminars); two terms. Prerequisite: Economics 2G3 or 2L6. Not offered 1980-81.

3O6/ Economic Statistics. Statistical analysis as a basic research technique in economics, emphasizing estimation and statistical inferences, including linear regression models. Applications are drawn from micro and macroeconomics. 3 lects.; two terms. Prerequisite: An average of at least 65% in Mathematics 1K3, 1L3 and 1M3 (or completion of Mathematics 1A6 and 1B4) and an average of at least 60% in Economics 2G3 or 2L6 and 2H3 or 2M6; or permission of the instructor.

3P6/ Comparative Economic Systems. The organization and performance of selected contemporary economies. Topics include aspects of socialist economics and problems of economic planning in capitalist and socialist systems. 3 hrs. (lects. and seminars); both terms. Prerequisite: Economics 2G3 or 2L6, and Economics 2H3 or 2M6.

3Q3/ Contemporary Economic Issues. A study of selected issues and institutions in the Canadian and world economies. (Students should consult the Department concerning topics to be examined). 3 hrs.; one term. Prerequisite: Economics 1A6 or 1B6. Students registered in any programme in Economics may take this course only as an elective.

3S3/ Industrial Organization. A study of the structure, conduct, and performance of industrial markets, with emphasis upon the problems and methods of maintaining effective competition. 3 lects.; one term. Prerequisite: Economics 2G3 or 2L6. Not open to students receiving credit for Economics 3N6.

3T3/ Transport Economics. With emphasis on the Canadian transport sector, economic theory applied to such questions as demand for each mode of transport, cost analysis, pricing, and government regulation. 3 hrs.; one term. Prerequisite: Economics 2G3 or 2L6.

3V3/ Public Choice and Benefit-Cost Analysis. The economics of social decision-making; the logic of group decision and the political process; welfare economics, theory and application of benefit-cost analysis. 3 hrs. (lects. and seminars); one term. Prerequisite: Economics 2G3 or 2L6.

3W3/ Natural Resources. An examination of the economics of natural resources. 3 hrs. (lects. and seminars); one term. Prerequisite: Economics 2G3 or 2L6, or permission of the instructor.

3X3/ Selected Topics I. Topics will vary from year to year depending on student interests and faculty availability. Students should consult the Department on topics to be offered. 3 hrs.; one term. Prerequisite: Permission of the Department.

3Y3/ Selected Topics II. As for Economics 3X3. 3 hrs.; one term. Prerequisite: Permission of the Department.

4B6/ International Economics. Monetary aspects of the international economy; the relationship between resource use, productivity and growth, and techniques of monetary and commercial policy. 3 hrs. (lects. and seminars); two terms. Prerequisite: Economics 2G3 or 2L6; Economics 2H3 or 2M6. A student who has credit for Economics 3H3 may receive only three additional units of credit for Economics 4B6.

4C6/ History of Economic Theory. The development of economic thought from earliest times, with emphasis on the major schools from Adam Smith to Alfred Marshall; selected modern trends and controversies. 3 hrs. (lects. and seminars); two terms. Prerequisite: Economics 2G3 or 2L6; Economics 2H3 or 2M6. Not offered 1980-81.

4E3/ Topics in Microeconomics. Applications of advanced microeconomic theory. 3 hrs.; one term. Prerequisite: Economics 3A3. Not open to students claiming credit for 3A6.

4F3/ Topics in Macroeconomics. Applications of advanced macroeconomic theory. 3 hrs.; one term. Prerequisite: Economics 3A3 and Economics 2B3 or 3O6. Not open to students claiming credit for 4D6.

4G6/ Introduction to Econometrics. Estimation and analysis of single-equation models of demand, cost and production. Formulation and estimation of simultaneous equation systems in economics. Problems of economic forecasting. 3 lects.; two terms. Prerequisite: Economics 3O6, or permission of the instructor.

4H3/ Linear Economic Models. Application and interpretation in economics of linear programming, game theory, and inter-industry analysis. 3 lects.; one term. Prerequisite: Mathematics 1L3 and 1M3 with an average of at least 60% (or Mathematics 1A6 and 1B4), and Economics 2G3 or 2L6, and 2H3 or 2M6. Offered in 1981-82 and in alternate years.

4M6/ Directed Research I. A reading and/or research programme supervised by a Department member. A major paper is required. Students should consult the Department concerning admission. Prerequisite: Permission of the Department.

4N3/ Directed Research II. As for Economics 4M6. Prerequisite: Permission of the Department.

For Graduate Courses see Calendar of School of Graduate Studies.
EIGHTEENTH-CENTURY STUDIES

There is no B.A. programme in Eighteenth-Century Studies, but students wishing to make a special study of the field may group appropriate departmental listings. For information on year offered see the timetable.

Art History 2N5/ 17th & 18th Century European Art & Architecture

English 2LL61  English Literature of the 17th and 18th Centuries

French 3KK31  Eighteenth-Century French Literature

French 3P31  Special Topics in the Age of the Enlightenment

German 3A4/  Eighteenth-Century Drama

History 2M6/  European Society from Absolutism to Democracy

History 2N6/  British History, 1400 to the present

History 3M6/  Revolution and Reaction, 1789-1848

History 3S3/  British History 1888-1760

History 3SS3/  British History 1760-1830

History 4A6/  Special Topics in British History (1858-1830)

History 4F6/  Special Topics in the Age of the Enlightenment

History 4T6/  Europe in the Era of the French Revolution and Napoleon I

Italian 3G3/  Italian Theatre from the 16th to the 18th Centuries

Philosophy 3A6/  History of Modern Philosophy

Philosophy 4R3/  Hume

Philosophy 4T3/  Kant

Spanish 4H3/  Topics in Spanish Literature Before 1898

Electrical and Computer Engineering

Faculty as of January 15, 1980
D. P. Taylor/ Chairman

Professors
Arthur S. Gladwin/B.Sc., D.Sc. (Glasgow), Ph.D. (London)
Simon S. Haykin/B.Sc., Ph.D., D.Sc. (Birmingham)
Reuven Kita/M.Sc., D.Sc. (Witwatersrand)
Nareesh K. Sinha/B.Sc. (Banaras), Ph.D. (Manchester)

Associate Professors
John B. Anderson/B.S., M.S., Ph.D. (Cornell)
Charles R. Carter/B.A.Sc., M.A.Sc. (British Columbia), Ph.D. (McMaster), P.Eng.
Stephen H. Chisholm/B.A.Sc. (Toronto), Ph.D. (London)
Sushil K. Sarna/B.Sc. (Delhi), M.Sc., Ph.D. (Alberta)
Desmond P. Taylor/B.Sc., M.Sc. (Queen’s), Ph.D. (McMaster), P.Eng.

Assistant Professors
Mohamed R. M. Rizk/B.Sc. (Alexandria), M.Eng., Ph.D. (McMaster)

CURRICULUM 1980-82

A minimum grade of "D" is normally required as prerequisite for Electrical Engineering courses unless otherwise specified. Enrolment in an Electrical Engineering course may be limited to those students for whom the course is a required course.

2B3/  Electrical Science. Quantitative problems in electrostatics; electric field strength and potential. DC circuits. Electromagnetic fields; mechanical forces; induced emf; inductance. Magnetic circuits. Conducting, insulating and magnetic materials. 3 lects.; one term. Prerequisite: Applied Mathematics 107 or Mathematics 1H7, and Physics 1E4.


3H3/  Digital Systems II. Sequential logic and clocked sequential circuits. Register transfer logic; binary addition. Memory units. Introduction to computer organization. Operational experience with minicomputer and microcomputer systems. 2 lects., 1/2 lab., 1/2 tut.; one term. Prerequisite: Electrical Engineering 2H3 and registration in a program in Electrical and Computer Engineering.


3N3/  Energy Conversion I. Fundamentals of electromechanical energy conversion. DC motors and generators, transformers, polyphase, electrical and magnetic circuits, synchronous, and induction machines. 2 lects., 1/2 lab., 1/2 tut.; first term. Prerequisite: Electrical Engineering 2N3.

3S3/  Energy Conversion II. Analysis and design of energy conversion systems for industrial applications, electric power generation, rotary industrial drives, transportation systems using linear electric machines, controllable DC drives. 2 lects., 1/2 lab., 1/2 tut.; second term. Prerequisite: Electrical Engineering 3N3 or Engineering 3M3 with permission of the Department.


4H3/ Digital Systems III. Small computer organization and architecture, instruction classification and execution, interfacing, skip and interrupt modes, direct memory access, computer peripherals. 2 lects., 1/2 lab; 1/2 tut.; first term. Prerequisite: Electrical Engineering 3H3 with at least B standing.

4J4/ Thesis Project. An experimental investigation or design project to be carried out by the student, to test initiative, grasp of the subject, and capacity for independent work. 2 labs. (3); two terms. Prerequisite: Registration in a programme in Electrical Engineering and first class standing.

4K4/ Computational Methods and Design II. Least squares and minimax approximations to frequency and time-domain specifications. Time-domain sensitivity. Filter design. Design centering, tolerancing and tuning; statistical and worst-case design. 3 lects., 1 lab.; one term. Prerequisite: Electrical Engineering 3K4.


4N3/ Power Systems. An introduction to modern power system analysis and control; energy flow concepts; component representation, load flow techniques, generation scheduling, megawatt-frequency and megavar-voltage control; stability. 2 lects., 1/2 lab.; 1/2 tut.; one term. Prerequisite: Electrical Engineering 3N3.

4U4/ Biomedical Electronic Instrumentation. Generation and nature of bio-electric potentials; bio-electrodes impedances and transducers, signal, ultrasonics, lasers, telemetry, electrical safety, electromyography and instrumentation. 3 lects., 1/2 lab.; one term. Prerequisite: Electrical Engineering 3F4 or Engineering 3N3 or equivalent.

See also the Calendar of the School of Graduate Studies.
ENGINEERING PHYSICS

2 lects., 1 tut.(2) or 1 lab.(3); one term.
Prerequisite: Engineering 2A4 or 2A5.

3 lects.; one term.
Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6 or equivalent, Engineering 2P4 or 2R4, or Physics 2C5.

3Q3/ Electronic Properties of Solids. The dielectric, electric, and magnetic behaviour of insulators, semiconductors, metals, and junctions, with emphasis upon a quantitative as well as conceptual explanation of their behaviour, how to control it, and how to use it effectively.
3 lects.; one term.
Prerequisite: Engineering 2A4 or 2A5, or Physics 2A6 or 2B6 or 2K5.

3R3/ Physical Metallurgy. Properties of engineering alloys are related to production and fabrication methods and resultant microstructures. Processing by solidification, deformation, heat treatment, surface treatment and joining.
3 lects.; one term.
Prerequisite: Engineering 203 or 204. Not open to students registered in a programme administered by the Department of Metallurgy and Materials Science.

4A1/ Engineering and Management Report. Report on a topic related to career development required of each student in the Engineering and Management programme; guidelines and evaluation procedures provided by Programme co-ordinator; grades of “Complete” given for satisfactory reports.
Prerequisite: Registration in Year IV of an Engineering and Management programme.

4J3/ Metal Forming. Offered jointly by the Departments of Mechanical Engineering and Metallurgy and Materials Science. Engineering plasticity applied to rolling, forging, deep drawing, extrusion, wire drawing. The effect of solidification and mechanical working on the structure and properties of engineering alloys is exemplified by reviews of foundry practice, powder metallurgy, thermomechanical processing, and non-destructive testing.
3 lects.; one term.
Prerequisite: Engineering 203 or 204 and Mechanical Engineering 3A3 or Engineering 3P3.

4U3/ Water and Wastewater Treatment Design. Offered jointly by the Departments of Chemical Engineering and Civil Engineering and Engineering Mechanics. The process capabilities, hardware, and design equations, of the physical, chemical, and biological, processes used to improve water. Emphasis on processes such as bio-oxidation, clarification, coagulation, sludge dewaterings, and disinfection. The design by the class of a complete water quality control plant.
3 lects.; 1 tut.(2); one term.
Prerequisite: Chemical Engineering 304 or Civil Engineering 304, or Mechanical Engineering 304.

4X3/ Introduction to Biomedical Engineering. Engineering and physical science approach to human physiological systems; Cardiovascular system, with specific organ circulations, respiratory system, overall integration and control.
3 lects.; one term.
Prerequisite: Completion of a Year II Honours or Major programme in Science or a Year II Engineering programme, or permission of instructor.

5A1/ Engineering and Management Report. Report on a topic related to career development required of each student in the Engineering and Management programme; guidelines and evaluation procedures provided by Programme Co-ordinator; grades of “Complete” given for satisfactory reports.
Prerequisite: Registration in Year V of an Engineering and Management Programme or permission of the Programme Co-ordinator.

Engineering Physics
Faculty as of January 15, 1980
J. S. Kirkaldy/Chairman

Professors
Edward A. Ballik/B.Sc. (Queen’s), D.Phil. (Oxford) P.Eng.
John A. Davies/part-time B.A., M.A., Ph.D. (Toronto)
Terence J. Kennett/B.Sc., M.Sc., Ph.D. (McMaster)
John S. Kirkaldy/B.A.Sc., M.A.Sc. (British Columbia), Ph.D. (McGill)

Associate Professors
Herbert D. Barber/part-time B.Sc., M.Sc. (Saskatchewan), Ph.D. (London), P.Eng.
John P. Marton/part-time B.Sc. (Budapest), Ph.D. (Western), P.Eng.
Yannis F. Missirlis/O.Ch.Eng. (Nat. Tech. Univ. Athens), M.Sc. (Syracuse), Ph.D. (Rice)
James E. Robinson/B.Sc., M.Sc. (Manitoba), Ph.D. (Massachusetts), P.Eng.
David A. Thompson/B.Sc., Ph.D. (Reading)
Oleh A. Trojan/part-time B.A.Sc., M.A., Ph.D. (Toronto), P.Eng.

Assistant Professors
Philip C. Lichtenberger/B.Sc., M.Sc. (Guelph), Ph.D. (Waterloo)
John Reid/B.A. (Oxford), M.Sc., Ph.D. (McMaster)

CURRICULUM 1980-82
A minimum grade of “D” is normally required for prerequisites specified for Engineering Physics courses unless otherwise stated below. Special cases may be considered by the Department upon request.

2A7/ Electromagnetic Science. An introduction to electricity and magnetism, covering electrostatics, electric currents, magnetism, and electromagnetic, with applications in circuits and linear systems theory. Engineering 2A5, plus additional lectures.
3 lects., each week; 1 lab.(3) every second week; two terms.
Prerequisite: Physics 1A7 or 1E4, and registration in Mathematics 2P4, 2Q4.

3D3/ Principles of Nuclear Engineering. An introduction to the analytical techniques and the underlying physical principles of modern nuclear engineering.
3 lects.; one term.
Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6, or Engineering 2A5 or equivalent.

3E5/ Fundamentals of Opto-Electronics. Coherence, interference and diffraction phenomena, holography; reflection and refraction, optical constants of materials media, elements of lasers; metals, semiconductors and insulators; charge carriers in semiconductors and their distributions; conductivity and mobility, recombination processes and diffusion and optical absorption; solar cells, light emitting diodes, photodiode detectors and p-n junction lasers.
2 lects.; 1 tut/lab every other week; two terms.
Prerequisite: Engineering 2A4 or 2A5 or Engineering Physics 2A7, or equivalent.

3X4/ Engineering Applications in Physiological Systems. Engineering science principles, coupled with elements of anatomy, biology, and physiology, applied to the study of physiological systems. Description and analysis of the technology involved in measuring instruments and prosthetic devices.
2 lects.; two terms.
**4A/ Thesis or Design Project.** Supervised design or research problem to be arranged in consultation with faculty advisor. Thesis or design projects offered by any department in the faculty of Engineering will be accepted.

2 labs. (3); two terms.
Prerequisite: Permission of the Department.


2 lects., 1 tut.; one term.
Prerequisite: Completion of Year III Engineering Physics or completion of Year III Engineering or Physics with at least a B average, together with Physics 386 or equivalent.

**4C2/ Special Topics in Engineering Physics.** Selected topics in engineering physics. Visiting lecturers from industry, research laboratories, and institutions.

1 lect.; two terms.
Prerequisite: Completion of any Year III Engineering programme.

**4D4/ Nuclear Reactor Systems Analysis.** Elements of release and utilization of energy from nuclear processes; self-sustaining reactions and dynamic characteristics; radiation shielding and nuclear fuel analysis; systems description and component analysis; alternative nuclear reactor concepts; the McMaster University Nuclear Reactor will be used as a demonstration facility.

2 lects.; two terms.
Prerequisite: Completion of any Year III Engineering or Year III of an Honours or Major programme in Physics.

**4D6/ Nuclear Reactor Systems and Experim­ental Analysis.** Engineering Physics 4D4, plus a laboratory/tutorial. The McMaster Nuclear Reactor will be used as a teaching facility for experiments in radiation detection, radiation shielding, reactor instrumentation, control and transient response.

2 lects.; first term; 2 lects., 1 tut., 1 lab. (3); second term.
Prerequisite: Completion of any Year III Engineering or Year III of an Honours or Major programme in Physics.


3 lects., first term; 2 lects., 1 lab. (3); second term.
Prerequisite: At least B average in Year III Engineering.

**4F6/ Separation Processes in Nuclear Engineering.** Fuel cycles in nuclear reactors; extraction processes for nuclear materials. Reprocessing of thorium and uranium fuels. Isotope separation, physical principles and theory of cascades. Applications to heavy water production.

3 lects., first term; 2 lects., 1 lab. (3); second term.
Prerequisite: At least B average in Year III Engineering.


2 lects., 1 tut.; one term.
Prerequisite: Physics 3N3 or Engineering Physics 3E5.

**4H6/ Special Studies in Engineering Physics.** A special programme of studies to be arranged by mutual consent of the professor, departmental chairman, and the student. A student elects to work with a professor in his area of specialization carrying out literature surveys, experiments, theoretical investigations, etc. A written report is required.

2 tut., 1 lab. (3); two terms.
Prerequisite: Permission of the Department.

**4K3/ Optical Communications Systems.** Simple concepts of the theory of information and information transmission, the mathematics of the passage of signals through transmission media, some simple optical concepts and systems, including integrated optical methods. Modulation and demodulation, modulation systems using analogue and digital coding. Signal to noise considerations for several detection systems. Random signal considerations. Optical communication system design.

2 lects., 1 tut.; one term.
Prerequisite: Completion of Year III Engineering Physics or Year III of an Engineering or Honours or Major programme in Physics with at least a B average.

**4S4/ Introduction to Lasers and Electro-Optics.** Multiple beam interference, masers and lasers, optical resonators, complex degree of coherence, statistical optics, light detectors, non-linear optics.

2 lects.; two terms.
Prerequisite: Physics 3N3 or Engineering Physics 3E5.

**4U4/ Modern and Applied Physics Laboratory.** Selected senior, basic, and applied, experiments in the atomic, nuclear, quantum optics, and solid state, areas. This laboratory will make use of advanced solid-state electronics facilities, lasers, and optical facilities, nuclear detection instrumentation, and the McMaster Nuclear Reactor.

2 labs. (3); two terms.
Prerequisite: Completion of the R-group courses of Year III Engineering Physics.

**4W3/ Acquisition and Analysis of Experimental Information.** A system approach to experimental measurement, in which topics such as simulation, modelling, estimation, signal-processing and enhancement, data reduction techniques, and modern sensing methods, are examined.

1 lect.; 1 tut.; two terms.
Prerequisite: Applied Mathematics 3B6 or Mathematics 3C6 or permission of the Department.

**4Y3/ Physiology and Biophysics.** A physiology course for engineering and physical science students. Muscle and nerve physiology, along with examination of systems such as auditory, visual, renal, and digestive, will be covered. Provides the background and connection between physiology and biophysics with macrosystem bioengineering.

3 lects.; one term.
Prerequisite: Completion of a Year III Honours or Major programme in Science or a Year III Engineering programme, or permission of instructor.

**Physics 3B6/ Electronics.** An introduction to electronics, including: network theory and filters, semiconductor devices (diodes, bipolar and unipolar transistors), analysis and design of amplifier circuits, design consideration for D.C. power supplies, use of integrated circuit building blocks involving linear circuits (operational amplifiers) and digital circuits.

2 lects.; two terms; 6 three-hour laboratory periods each term.
Prerequisite: Engineering Physics 2A7 or Physics 2B8.

**Physics 4D6/ Digital Logic and Computer Systems.** The design and use of digital logic systems. The applications of digital systems to data acquisition and control techniques. A project-oriented laboratory will involve both hardware and software.

2 lects.; 1 lab. (3); two terms.
Prerequisite: Physics 2B6.

See also the Calendar of the School of Graduate Studies.
English

Faculty as of January 15, 1980
R. E. Morton/Chairman

Professors Emeriti
George C. Hadlow/M.A. (Toronto and Oxford)
Dorothy S. Murphy/B.A. (Toronto and Oxford), M.A. (Oxford and Toronto)
Berners A. W. Jackson/B.A. (Toronto), Ph.D. (Wisconsin).
Brian John/M.A., Dipl.Ed. (University College of North Wales), Ph.D. (Wales).
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto).
Warwick J. B. Owen/M.A. (New Zealand and Oxford), Ph.D. (Wales), F.R.S.C.
Brian John/M.A., Dipl.Ed. (University College of North Wales), Ph.D. (Wales).
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto).
Warwick J. B. Owen/M.A. (New Zealand and Oxford), Ph.D. (Wales), F.R.S.C.
Brian John/M.A., Dipl.Ed. (University College of North Wales), Ph.D. (Wales).
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto).

Professors
Alwyn Berland/M.A. (Chicago), M.Litt. (Cantab).
Andrew W. Brink/M.A. (Toronto), Ph.D. (London).
Berners A. W. Jackson/B.A. (Toronto), Ph.D. (Wisconsin).
Brian John/M.A., Dipl.Ed. (University College of North Wales), Ph.D. (Wales).
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto).
Warwick J. B. Owen/M.A. (New Zealand and Oxford), Ph.D. (Wales), F.R.S.C.
Brian John/M.A., Dipl.Ed. (University College of North Wales), Ph.D. (Wales).
Alvin A. Lee/B.D., M.A., Ph.D. (Toronto).

Associate Professors
Carl P. A. Ballstadt/M.A. (Western), Ph.D. (London).
David L. Blewett/M.A. (Manitoba), Ph.D. (Toronto).
James D. Brasch/B.A. (State University of New York), Ph.D. (Wisconsin).
Bryan N. Rosenberg/B.A. (Western), M.A. (McMaster), Ph.D. (Pittsburgh).

Assistant Professors
Linda A. M. Hutcheon/B.A. (Toronto), A.M. (Cornell), Ph.D. (Toronto).

COURSES OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME

English 2C3/ Contemporary Canadian Fiction.
English 2M3/ Practical Criticism.
English 2G3/ Topics in Renaissance Literature.

English 2R3/ Topics in Restoration and 18th-Century Literature.
English 2T3/ The Development of the English Language.
English 2X3/ Topics in the English Literary Tradition.
English 3E3/ Shakespeare: Selected Plays.
English 3EE3/ Aspects of Mutuality in 20th-Century Literature.
English 3FF3/ Techniques of Creative Writing.
English 3GG3/ Topics in 19th-Century Literature.
English 3HH3/ Topics in Poetry.
English 3I3/ Topics in Fiction I.
English 3JJ3/ Topics in Fiction II.
English 3KK3/ Topics in Critical Approaches.
English 3PP3/ Modern Drama in English.
English 3PP3/ Topics in World Literature in English.
English 3XX3/ Topics in 20th-Century Literature I.
English 3XX3/ Topics in 20th-Century Literature II.
English 3Z3/ Contemporary Canadian Poetry.
English 4A3/ The Classics and English Literature.
English 4C3/ The History and Theory of Criticism.

1A6/ Literature in English: Major Authors. A chronological study of English literature from mediaeval to modern times. In this course much attention is given to the development of critical skills in reading and writing. 2 lects., 1 tut.; two terms.
Prerequisite: Grade 13 English or permission of the Department. Not available to students with standing in 1A6.

1B6/ Literature in English: Major Forms. A study of literature according to genres (such as novel, tragedy, lyric) using predominantly modern examples. In this course much attention is given to the development of critical skills in reading and writing. 2 lects., 1 tut.; two terms.
Prerequisite: Grade 13 English or permission of the Department. Not available to students with standing in 1A6.

2B6/ The Development of English Drama. English drama from the mediaeval period to the close of the 18th century (excluding Shakespeare). 3 lects.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the Department. Not available to students with standing in 1A6.

2C3/ Contemporary Canadian Fiction. A study of the themes and structure of the contemporary Canadian novel, usually with emphasis upon the relationship of Canada’s cultural patterns and its literature. 3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or permission of the Department.

2E6/ English Literature. An introduction to the English literary tradition and modern forms of communication, including the film. 3 lects.; two terms.
Prerequisite: Registration in Year II Engineering.

2F3/ Studies in American Literature. A study of some of the most important writers who developed American literature as a distinctive mode of writing in English. 3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or permission of the Department. Not available to students with credit in English 2H6 or to students registered in Pass English.

2G6/ Canadian Literature. Major aspects of the development of Canadian literature from the late 18th century to the mid-20th century. French-Canadian work in translation will be used for comparative purposes. 3 lects.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

2H6/ American Literature. A survey of significant American writers from the 17th century to the present, which emphasizes the interrelationship between the literature and its philosophical and historical background. 3 lects.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

2I6/ Modern British Literature. A study of representative literature by British writers of the 20th century. Through the 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 an Honours programme in English, or permission of the Department.
2L6/ English Literature: Chaucer to Shakespeare. A critical reading of representative poetry, prose and drama from the end of the Middle Ages to the Age of Shakespeare. 2 lects., 2 tuts.; one term. Prerequisite: Registration in a Pass English programme or permission of the Department.

2LL6/ English Literature of the 17th and 18th Centuries. A critical reading of representative poetry, prose and drama of the period. 2 lects., 2 tuts.; one term. Prerequisite: Registration in a Pass English programme or permission of the Department.

2M3/ Practical Criticism. This 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. Before registering every student must obtain a limited enrolment permission slip from the Department.

2Q3/ Topics in Renaissance Literature, 1980-81. Christopher Marlowe. A study of Marlowe's drama, from both a literary and a theatrical point of view, and of selected poetry. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6. Not available to students with credit or registration in English 2B3 or 2B6. English 2Q3 may be repeated, if on a different topic, to a total of six units.

2R3/ Topics in Restoration and 18th-Century Literature, 1981-82: Jane Austen. A close critical reading of the six completed novels: Sense and Sensibility, Pride and Prejudice, Northanger Abbey, Mansfield Park, Emma and Persuasion. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or permission of the instructor. English 2R3 may be repeated, if on a different topic, to a total of six units.

2S3/ English as Communication: Introductory Linguistics. An introductory study of the English language in the light of its function as a system of communication. The course covers a variety of linguistic areas, such as phonetics, semantics, etymology and grammar. 3 lects.; one term. Prerequisite: Open to students in Years II and above, except to students with credit in English 2V8.

2T3/ The Development of the English Language. A study of the history and development of the English language with critical consideration of stylistic qualities. 3 lects.; one term. Prerequisite: Open to students in Years II and above.

2V6/ The English Language. An introduction to the study of English grammar, with particular reference to syntactic patterns. The following areas will be considered: English phonology, historical linguistics, morphology, transformational-generative grammar, vocabulary and word formation. 3 lects.; two terms. Prerequisite: Registration in an Honours or Pass English programme or permission of the Department.

2X3/ Topics in the English Literary Tradition, 1980-81: Mediaeval Literature. A study of selected mediaeval themes and genres from texts read mainly in translation. While the course will be devoted primarily to English writers, including Chaucer, other vernacular literatures and related media, such as art and music, will be considered. 3 lects.; one term. Prerequisite: Open to students in Years II and above, except to students with credit in English 2N3 or 4E6. 1981-82: The Bible. A literary-critical study of the Bible as a continuous narrative from the Creation to the Last Judgment, and as a major influence on other literature, especially English. 3 lects.; one term. Prerequisite: Open to students in Years II and above, except to students with credit in English 2P3. English 2X3 may be repeated, if on a different topic, to a total of six units.

3A3/ Techniques of Expository Writing. A course designed to provide practical training in the writing of clear, coherent, persuasive prose. Although there will be some study of contemporary prose models, the main work of the course will consist of regular exercises and writing assignments embracing the main types of exposition. 2 hrs. lect.; 1 hr. tut.; one term. Prerequisite: Open to students in Years II and above, except to students registered in an English programme. Before registering every student must obtain a limited enrolment permission slip from the Department.

3D3/ The Earliest English Literature. An introduction to Old English alliterative poetry through close reading of representative modes, such as heroic, lyric, elegiac and gnomic, supplemented by related prose texts. 3 lects.; one term. Prerequisite: Registration in an Honours programme in English, or permission of the Department.

3D3X/ Beowulf. An exploration of the Old English epic Beowulf, supplemented by related poetic and prose texts. 3 lects.; one term. Prerequisite: English 3D3 or permission of the Department.

3E3/ Shakespeare: Selected Plays. A study of a representative selection of plays. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6. Not open to students with credit in English/Dramatic Arts 3K6. Same as Dramatic Arts 3E3.

3E3F/ Aspects of Mutuality in 20th-Century Literature. An interdisciplinary course offered by the Departments of English, Psychology, and Religious Studies. It explores the nature of male and female relationships by utilizing literary, psychosocial and religious approaches to 20th-century literature, and deals with representative British and American works and genres. 1 lect., 2 tuts.; one term. Prerequisite: Open to students in Years II and above. Same as Religious Studies 3FF3.

3FF3/ Techniques of Creative Writing. This course will require the composition of verse and prose. Experiments with a variety of forms will be attempted in order to increase the student's mastery of verse and prose techniques. 2 lects., first term; 1 lect., second term. Prerequisite: At least "B" in six units of English, and permission of the Department. Before registering every student must obtain a limited enrolment permission slip from the Department.

3G3/ Topics in 19th-Century Literature, 1980-81: The Brontës. An introduction to the lives and literary achievement of the three Brontë sisters. The course will involve a critical reading of the seven novels of Anne, Emily and Charlotte Brontë. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or permission of the Department. English 3G3 may be repeated, if on a different topic, to a total of six units.

3H3/ Topics in Poetry, 1980-81: Poetry of the First World War. A study of poetry by such major figures as Brooke, Sassoon, Owen, Rosenberg and David Jones, with some consideration of minor poets and prose memoirs. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or permission of the Department. English 3H3 may be repeated, if on a different topic, to a total of six units.

3I3/ Studies in 18th-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 an Honours programme in English, or permission of the Department.

3I3F/ Topics in Fiction I, 1980-81: William Faulkner. The major novels and short fiction of William Faulkner in the light of the recent critical re-evaluations of his work and influence. 1981-82: James Joyce. An introduction to the literary achievement of James Joyce, with some consideration of his life, background and influence. 3 lects.; one term. Prerequisite: English 1A6 or 1B6 or permission of the Department. English 3I3F may be repeated, if on a different topic, to a total of six units.

3J3/ Topics in Fiction II, 1980-81: Children's Fiction. An examination of the literary quality and the moral and social assumptions of some generally accepted children's classics. 3 lects.; one term. Prerequisite: Open to students in Years II and above. 1981-82: Fantasy and Science Fiction. An investigation of some aspects of " speculative" literature from H. G. Wells to the present day. The course may include some films. 3 lects.; one term. Prerequisite: Open to students in Years II and above except to students with credit in English 2W3. English 3JJ3 may be repeated, if on a different topic, to a total of six units.

3K6/ Shakespeare. An extensive critical reading and discussion of selected plays. 3 lects.; two terms. Prerequisite: Registration in an Honours programme in English, or permission of the Department. Same as Dramatic Arts 3K6.
3KK3 / Topics in Critical Approaches. 1980-81: 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 this subject will be considered. Same as Social Science 3BB and Sociology 3BB. See also Social Science 3C3.

3 lects.; one term.
Prerequisite: Permission of the instructor. Not available to students with credit in English 3U3.

1981-82: 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 Years II and above.

English 3KK3 may be repeated, if on a different topic, to a total of six units.

3LL6 / 19th-Century British Literature. A critical reading of representative fiction, drama and poetry of the period.

1 lect., 3 tuts.; one term.
Prerequisite: Registration in a Pass English programme or permission of the Department.


1 lect., 3 tuts.; one term.
Prerequisite: Registration in a Pass English programme or permission of the Department.

3P3 / Modern Drama in English. A representative selection of plays by modern British, Irish and North American dramatists will be examined in order to study the relationship between drama and society in our age, as well as conventions and experiments in the contemporary theatre.

3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.

Same as Dramatic Arts 3P3.


3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or permission of the Department.

English 3PP3 may be repeated, if on a different topic, to a total of six units.

3R6 / American and Canadian Literature. A study of selected representative American and Canadian works. An attempt will be made to identify both shared and distinctive features of the two literatures through an examination of their historical development.

1 lect., 2 tuts.; two terms.
Prerequisite: Registration in a Pass English programme or permission of the Department. Not open to students with credit in English 2G6 or English 2H6.

3T3 / Spenser. The main work of the course will be close study of The Faerie Queene, but The Shepheardes Calendar, Epithalamion and Prothalamion will also be read.

3 lects.; one term.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

3V6 / 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 an Honours programme in English, or permission of the Department.

3X3 / Topics in 20th Century Literary History I. 1980-81: Form in Fiction. A close study of selected modern novels of the period 1900-1960 noting particularly the distinction between the 'traditional' and 'modern' forms of the novel.

3 lects.; one term.
Prerequisite: English 1A6 or 1B6.


3 lects.; one term.
Prerequisite: Open to students in Years II and above, except to students with credit in English 203.

English 3X3 may be repeated, if on a different topic, to a total of six units.

3XX3 / Topics in 20th-Century Literary History II. 1980-81: The Bloomsbury Group. The literary focus of the course will be upon the novels of E. M. Forster and Virginia Woolf; but such other aspects of Bloomsbury as philosophy, art, politics and economics will also be considered.

3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or permission of the Department.

1981-82: British Drama—1950 to the Present. The emergence of an important group of playwrights in post-war British theatre will be traced through the reading of representative works.

3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or Dramatic Arts 1A6.

English 3XX3 may be repeated, if on a different topic, to a total of six units.

3Z2 / Contemporary Canadian Poetry. The development of Canadian poetry from the 1940's to the present. Parallel developments in French Canadian poetry (studied in translation) will also be considered.

3 lects.; one term.
Prerequisite: English 1A6 or 1B6 or permission of the Department.

Not available to students registered in Pass English.

4A3 / The Classics and English Literature. A course devoted to an exploration of the influences of classical literature upon English writers from mediaeval to modern times, and conducted jointly by the Departments of Classics and English.

1 lect., 1 sem. (2 hrs.); one term.
Prerequisite: Registration in Years III or IV of a programme in English, Classics, Classical Civilization, Latin or Greek; or permission of the Department.

Offered in alternate years. Same as Classical Civilization 4A3.

4B6 / English Literature, 1560-1800. 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 an Honours programme in English, or permission of the Department.

4C3 / The History and Theory of Criticism. A survey of literary criticism from Plato to the present, with emphasis upon the variety and interplay of mimetic and formal theories of literary art.

1 sem. (2 hrs.); one term.
Prerequisite: Registration in Year III or IV of a programme in language or literature, or permission of the Department.

4E6 / 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 mediaeval romance, allegory and drama.

3 lects.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

4L3 / Romantic Poetry. A study of selected poems and, where appropriate, of the literary theory of the major Romantic poets. Special attention will be given to Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.

3 lects.; one term.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

4M3 / Victorian Poetry. A study of selected poems and, where appropriate, of the literary theory of the major Victorian poets. Special attention will be given to Tennyson, Browning, Arnold, Hopkins.

3 lects.; one term.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

4N6 / The British Novel. This course, in assessing and analysing approximately 12 novels, will trace the history of English fiction to the 20th century. The course focuses on the variety of narrative forms, while also exploring the intellectual, cultural and psychological contexts of fiction.

3 lects.; two terms.
Prerequisite: Registration in an Honours programme in English, or permission of the Department.

4X3 / Independent Study. In consultation with members of the English Department, students will prepare an essay designed to bring together aspects of their work over the previous years.

Prerequisite: Registration in Year IV of an Honours programme in English, and permission of the English 4X3 Committee.

Note: Courses with linguistics content are listed under Linguistics.
Film

(See Dramatic Arts 2X6, 3R6, 3Y3.) Film courses are not accepted for “Q” or “R”-group credit for students in Pass or Honours English programmes.

French

(See “Romance Languages: French”)

Geography

Faculty as of January 15, 1980
M. J. Webber/Chairman
J. A. Davies/Associate Chairman

Professors

Brian T. Bunting/M.A. (Sheffield), Ph.D. (London)
Andrew F. Burghardt/B.A. (Harvard), M.A., Ph.D. (Wisconsin)
John A. Davies/B.A. (Bristol), M.Sc. (McGill), Ph.D. (London)
Derek C. Ford/M.A., D. Phil. (Oxford)
R. Louis Gentilcore/B.A. (Toronto), Ph.D. (Maryland)
Frank G. Hannell/B.Sc., Ph.D. (Bristol)
Leslie J. King/M.A. (New Zealand), Ph.D. (Iowa)
S. Brian McCann/B.Sc. (Wales), Ph.D. (Cambridge)
George J. Papageorgiou/Dipl. in Architecture (National Technical, Athens), M.C.P., Ph.D. (Ohio State)
Lloyd G. Reeds/M.A., Ph.D. (Toronto)
Wayne R. Rouse/B.Sc. (McMaster), M.Sc., Ph.D. (McGill)
Michael J. Webber/B.S. Dipl. Agric. Sci. (Cambridge), Ph.D. (Australian National)
Harold A. Wood/M.A. (McMaster), Ph.D. (Toronto)

Associate Professors

Michael J. Dear/B.A. (Birmingham), M. Phil. (London), M.A., Ph.D. (Pennsylvania)
John J. Drake/M.A. (Oxford), M.Sc., Ph.D. (McMaster)
Frederick L. Hall/A.B. (Amherst), M.Sc. (M.I.T.), Ph.D. (Chicago)
Associate Professor of Civil Engineering and Engineering Mechanism
Philip J. Howarth/B.A. (Cambridge), Dipl. in Education (Oxford), Dipl. in Photograph, Ph.D. (Glasgow)
S. Martin Taylor/B.A. (Bristol), M.A., Ph.D. (British Columbia)
Ming-ko Woo/M.A. (Hong Kong), Ph.D. (British Columbia)

Assistant Professors

Arden C. Brummei/B.A. (Queens), M.A., Ph.D. (McMaster)
Peter R. Jones/B.A. (Stanford), M.A., Ph.D. (Pennsylvania)
Kao-Lee Liaw/B.S. (National Taiwan), M.A. (Kansas State), Ph.D. (Clark)

CURRICULUM 1980-82

For prerequisite purposes, a grade of “D” or better is required.

*Indicates a Science course

*1A6/ Introduction to Physical Geography. The principles of geomorphology, particularly erosion processes and landscape evolution; the physical basis of climatology and man’s role in modifying climate.
2 lects., 1 lab. (2); two terms. Prerequisite: Open.

1B6/ Introduction to Urban Geography. Introduction to the theory and methods of urban geography, emphasizing historical, economic, and behavioural explanations of the structure of, and relations between, urban areas.
2 lects., 1 lab. (2); two terms. Prerequisite: Open.

2A3/ Location Theory. Theories of location of economic activities, including agriculture, industry, and settlement.
2 lects., 1 lab. (2); one term. Prerequisite: Geography 1B6, or Economics 1A6 or B6, or permission of the instructor.

2B3/ Urban Geography. A detailed study of the concepts and methods of geographical analysis applied to problems at the inter- and intra-urban levels.
3 lects.; one term. Prerequisite: Geography 1B6, or permission of the instructor.

2D3/ The Geography of Settlement. An examination of the geographical development of settlement, with particular reference to Old World origins and the beginnings of European settlement in North America.
2 lects., 1 lab. (2); one term. Prerequisite: Open.

2E3/ Canada. The physical and economic geography of Canada, emphasizing problems of regional development. This course is given in the second term as Geography 2H3.
3 lects.; one term. Prerequisite: Open.

*2F3/ Climatology I. The role of solar radiant energy in the heat balance within the earth’s atmosphere and at the earth’s surface.
2 lects., 1 lab. (2); one term. Prerequisite: Geography 1A6, or permission of the instructor.

2H3/ Canada. The same as Geography 2E3.
3 lects.; one term. Prerequisite: Open.

*2K3/ Introductory Soil Studies. The composition, morphology, and description of soils; the classification and environmental relationships of soil groups; the interpretation of soil maps and survey data.
3 lects.; one term. Prerequisite: Geography 1A6 or Geology 1A6, or permission of the instructor.

*2L6/ Introduction to Quantitative Analysis. The theory and practice of collecting, describing, and analysing geographic data; automated cartography.
2 lects., 1 lab. (2); two terms. Prerequisite: Registration in Pass or Honours Geography, or permission of the instructor.

*2M3/ Physical Landscapes of Canada. A regional study of selected physical landscapes in Canada, to illustrate the role of past and present processes in landform evolution.
3 lects.; one term. Prerequisite: Geography 1A6 or B6 or Geology 1A6 or B6.

2N3/ Latin America. An introductory survey of current development trends, problems, and potentials, at both national and subnational levels.
3 lects.; one term. Prerequisite: Open.

2P3/ The United States of America. The physical and economic geography of the United States.
3 lects.; one term. Prerequisite: Open.

2R3/ Behavioural Geography. An application of theories of individual choice and behaviour to problems of urban geography.
2 lects., 1 lab. (2); one term. Prerequisite: Geography 1B6, or permission of the instructor.

*2T3/ Fluvial Geomorphology. An analysis of landforms created by running water in humid and arid environments.
2 lects., 1 lab. (2); one term. Prerequisite: Geography 1A6, Geology 1A6, or permission of the instructor.

*2W3/ Hydrology in Canada. A discussion of fresh water resources, including both surface and groundwater, and river sedimentation.
3 lects.; one term. Prerequisite: Geography 1A6.

3B3/ Europe. The physical, economic, social, and political geography of Europe, past and present.
3 lects.; one term. Prerequisite: Open.

3D3/ Historical Geography of Canada. Major themes in the historical geography of Canada, with particular reference to settlement changes in the 19th century.
3 lects.; one term. Prerequisite: Geography 2D3 or 2E3 or 2H3, or permission of the instructor.

*3E3/ Field Camp. Studies of geographical methods in the field, held in the week prior to registration in Year III, followed by seminars during term. A variety of topics is offered each year; the programme being posted in March.
Prerequisite: Registration in a programme in Geography; appropriate second year courses may be required. Students must notify the Department by June 1. 
Enrolment is limited.

*3F3/ Climatology II. Climatological approaches to evaluating radiation and energy exchanges at the earth's surface and in the atmosphere. 
2 lects., 1 lab. (2); one term. Prerequisite: Geography 2F3.

3 lects.; one term. Prerequisite: Geography 186, or permission of the instructor.

3H3/ Agricultural Geography. An introduction to the methodology of agricultural geography illustrated by case studies from Ontario; applied aspects, rural planning, and conservation of land resources. 
3 lects.; one term. Prerequisite: Geography 1A6 or 1B6, or permission of the instructor.

*3I3/ Planetary and Lunar Geology and Geomorphology. The geology and surface morphology of planets and moons of the Solar System, with particular reference to the rocky bodies. Comparative studies are emphasised. 
3 lects.; one term. Prerequisite: Geography 1A6 or 1B6, and registration in Year III or IV of a natural science programme or permission of the instructor. 
This course is identical with Geology 3G3.

*3K3/ Geography of the Soils of Canada. Field and laboratory studies of soil formation in Canada, especially of podzols, luvisols, and gleysols. The application of soils studies to land use planning. 
2 lects.; 1 lab. (2); one term. Prerequisite: Geography 2K3 or permission of the instructor.

*3L3/ Multivariate Analysis in Geography. An introduction to the application of multivariate statistical techniques to problems in physical and urban geography. 
4 hrs. (lects. and lab.); one term. Prerequisite: Geography 2L6, or 2L3; a course in linear algebra is recommended.

2 lects., 1 lab. (2); one term. Prerequisite: Geography 2T3, or permission of the instructor.

*3N3/ Spatial Interaction. Patterns and processes in trade, migration, and communication, and related explanatory factors. 
3 lects.; one term. Prerequisite: Geography 2A3 or permission of the instructor.

3O3/ Explanation in Geography. The application of the scientific model of explanation in geographical research with emphasis on the principles of research design. 
2 lects., 1 sem. (2); one term. Prerequisite: Registration in Year III or IV of a programme in Geography.

3T3/ Geography of Planning. A systematic approach to the study of the planning process, with emphasis on analysis of the social, economic, and political bases of planning. 
2 lects., 1 lab. (2); one term. Prerequisite: One of Geography 2A3, 2B3, 2R3, or permission of the instructor.

*3V3/ Remote Sensing I. The physical principles of remote sensing, with emphasis on photographic systems. Visual interpretation procedures and their application in geographical studies. 
2 lects., 1 lab. (2); one term. Prerequisite: Geography 1A6 or 1B6 or Geology 1A6, or permission of the instructor.

2 lects., 1 lab. (2); one term. Prerequisite: Geography 2B3 or permission of the instructor.

3 lects.; one term. Prerequisite: Geography 2B3 or permission of the instructor.

3Z3/ Political Geography. An introduction to the concepts and methods of political geography, with particular emphasis on the state and its administrative subdivisions. 
3 lects.; one term. Prerequisite: Registration in an Honours programme, or permission of the instructor.

3 lects.; one term. Prerequisite: Geography 3M3, or permission of the instructor.

*4B6/ Research Paper in Physical Geography. Prior to May 1, the student will select a study in physical geography supervised by a member of Faculty, and will submit a written report by April 1. Prerequisite: Registration in an Honours B.Sc. programme in Geographical and permission of the Chairman.

4C6/ Research Paper. Prior to May 1, the student will select a study in geographical supervisor by a member of Faculty, and will submit a written report by April 1. Prerequisite: Registration in an Honours B.A. programme in Geography and permission of the Chairman.

*4D3/ Coastal Geomorphology. The dynamics and morphologies of the shore zone. 
3 lects.; one term. Prerequisite: Geography 3M3, or permission of the instructor.

*4E3/ Field Course in Northern Climatology. Methods of measurement and analysis in climatology in the northern environment. Emphasis on the radiation and energy balance and its interaction with the soil moisture and thermal regimes. Held at Churchill, Manitoba, in the two weeks preceding fall registration. A report is to be submitted before the end of first term. Prerequisite: Geography 2F3 or two years in a Science programme including Geography 1A6 or its equivalent.

*4G3/ Contemporary Problems in Physical Geography. Investigation of current research problems in physical geography, emphasizing the integration of the subfields of the discipline. 
2 seminars (2); one term. Prerequisite: Any three of Geography 3F3, 3K3, 3M3, 3V3, 3W3.

4H3/ Land Use and Transportation. An analysis of models of urban land use and urban growth, with particular reference to the interrelations between transportation systems and land use changes. 
3 lects.; one term. Prerequisite: Geography 3N3 or 3X3, or permission of the instructor. 
A course in linear algebra is recommended.

4J6/ Urban Behavioural Geography. A consideration of theoretical, methodological, and empirical studies of urban cognition and urban spatial behaviour. Student research projects are a part of the course. 
2 lects., 1 lab. (2); two terms. Prerequisite: Geography 2R3 and 303, or permission of the instructor.

*4K3/ Pedology and Soil Micromorphology. Studies of soil genesis and soil micromorphology, to include field survey and sampling procedures, and the study of soils in thin section. 
3 lects.; one term. Prerequisite: Geography 3K3 or permission of the instructor.

*4L3/ Linear Models in Geography. Use of linear optimization techniques and advanced multivariate statistical models in geographical theory and empirical research. 
3 lects.; one term. Prerequisite: Geography 3L3 or permission of the instructor.

4M6/ Development Geography of Latin America. Spatial manifestations of selected problems of socio-economic development are examined within the Latin American context. Lectures are supplemented by class exercises and student seminars. 
3 lects.; two terms. Prerequisite: Geography 2N3 or permission of the instructor.

*4Q3/ Climates in High Latitudes. Aspects of the heat and water balance climatology of terrestrial ecosystems in northern areas, with emphasis on the Canadian sub-arctic and tundra. 
3 lects.; one term. Prerequisite: Geography 3F3, or permission of the instructor.

*4R3/ Models in Climatology. Discussion of global climatic models and their application. 
3 lects.; one term. Prerequisite: Geography 2F3 and a course in calculus, or permission of the instructor.

4T3/ Regional Planning. Discussion of methods and criteria for analyzing and influencing the distribution of income, employment, and population among regions of a country. 
2 lects., 1 lab. (2); one term. Prerequisite: Geography 2B3 or permission of the instructor. 
A course in linear algebra is recommended.

4US/ Selected Problems in Urban Planning. An examination of planning as a public decision process, with emphasis on land use conflicts and their resolution in the Hamilton region. 
2 seminars (2); one term. Prerequisite: Geography 3T3.

*4V3/ Remote Sensing II. A study of airborne and spaceborne remote sensing systems. The extraction, manipulation and analysis of data acquired by remote sensors, and their application in geographical studies. 
2 lects., 1 lab. (2); one term. Prerequisite: Geography 3V3.
Geology

G. V. Middleton/Chairman

Professors

Paul M. Clifford/B.Sc. (Southampton) Ph.D. (London)
Henry R. Schwarz/B.A. (Chicago), M.S., Ph.D. (California Institute of Technology)
Roger G. Walker/B.A., D. Phil. (Oxford)

Professor and Curator

Gerd E. G. Westermann/B.Sc. (Braunschweig) Dipl. Geol. D.Sc. (Tubingen)

Associate Professors

H. Douglas Grundy/B.Sc., Ph.D. (Manchester)
Michael J. Rusk/B.Sc. (Toronto) M.Sc. (Western) Ph.D. (Southern California, L.A.)

Special Lecturer

Alan E. Beck/B.Sc. (London) Ph.D. (Australian National)

CURRICULUM 1980-82

For prerequisite purposes, a grade of “D” or better is required.

1A6/ General Geology. The physical and chemical processes which are operative within and upon the earth. Laboratory work includes the study of minerals, rocks, and geological maps.
2 Lects., 1 Lab. (3); two terms.
Prerequisite: Registration in, or completion of, Natural Sciences 1.

1B6/ General Geology. An introduction to physical and historical geology. Laboratory work includes the study of minerals, rocks, fossils, and geological maps.
2 Lects., 1 lab. (3); two terms.
Prerequisite: Registration in, or completion of, Natural Sciences 1 or Geology 1A6.

2 Lects., 1 lab (2); one term.
Prerequisite: Open, except to students registered in, or have completed, Geology 1A6 or 2A6.

2B4/ Optical Crystallography and Introductory Petrography. Elementary optical theory with applications to the common rock-forming miner-
als. Descriptive study of igneous, sedimentary and metamorphic rocks. The latter part of Geology 2B6.
2 Lects., 1 lab. (2); in parts of both terms.
Prerequisite: Prerequisite: Open only to students registered in Ceramic Engineering or permission of instructor.

2B6/ Optical Crystallography and Introductory Petrography. Elementary crystallography prerequisite to optical crystallography. Elementary optical theory with applications to the common rock-forming miner-
als. Descriptive study of igneous, sedimentary, and metamorphic rocks.
2 Lects., 1 lab. (2); two terms.
Prerequisite: Geology 1A6 or 1B6.

2C6/ Earth History. The principles of continental evolution, as illustrated by North America and the classical geological areas. Field and laboratory demonstrations in earth history and geological maps.
2 Lects., 1 lab. (2); two terms.
Prerequisite: Geology 1A6 or 1B6 or permission of the instructor.

2D5/ Structural Geology I. A study of inherent and imposed structures in rocks, their modes of formation, inter-relationships, and geological environments.
2 Lects., 1 lab. (3) every other week; two terms.
Prerequisite: Geology 1A6 or 1B6.

2H1/ Computing Laboratory. Application of computing techniques to problems in geology.
1 Lab. (2); one term.
Prerequisite: Concurrent registration in Computer Science 1H3 or 2H3, and in a programme in Geology.

3 Hours of lects.; one term.
Prerequisite: First-year courses in calculus and physics, and any two science courses beyond Year I, or permission of the instructor. Alternates with Geology 3B3. Offered in 1981-82 and in alternate years.

3 Hours of lects.; one term.
Prerequisite: First-year courses in calculus and physics, and any two science courses beyond Year I, or permission of the instructor. Alternates with Geology 3A3. Offered in 1980-81 and in alternate years.

3C6/ Petrography. A sequel to Geology 2B6. An introductory course in the petrology of igneous, sedimentary, and metamorphic rocks. Laboratory studies on rock suites.
2 Lects., 1 Lab. (2); two terms.
Prerequisite: Geology 2B6.

3D6/ Palaeontology I. An introductory course in the principles of palaeontology, and in the organization and evolution of life in the past, with emphasis on invertebrate fossils.
2 Lects., 1 lab. (3); two terms.
Prerequisite: Geology 1A6 or 1B6 and Biology 1B6 or 1E6 (or equivalent), or permission of the instructor.

3E2/ Field Camp. A field camp, of about two weeks’ duration, held immediately after the April-May Examinations. This is normally taken immediately following Year II by students in Honours Geology and in Honours Chemistry and Geology, and immediately following Year III by students in Honours Geography and Geology and in Geology Major.

3G4/ Crystallography and Mineralogy. Topics in X-ray crystallography; an introduction to crystal chemistry and mineralogy; laboratory studies in symmetry and the physical and chemical properties of minerals.
3 Lects., 1 Lab. (3); three terms.
Prerequisite: Geology 2B6.

3G5/ 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: Geology 1A6 or 1B6 and registration in Year III of a Science program or permission of instructor. This course is identical with Geography 3G3.

3J3/ Physical Processes in Geology. An elementary treatment of physics of continuous media. Stress and strain analysis, dimensional analysis, behavioural models for materials and laws of fluid motion, applied to geologic problems.
3 Lects.; one term.
Prerequisite: Registration in a Geology programme; completion of Physics 1C8, or registration in, or completion of, Physics 1A7 or 1B7.

3 Lects., first term; 2 Lects., 1 Lab. (3); second term.
Prerequisite: Geology 3C6; Chemistry 2P4.
4D3/ Palaeontology II. The first term of Geology 4D6, devoted mainly to marine biology and ecology.
2 lects., 1 seminar; one term.
Prerequisite: Geology 3D6 or registration in Year IV Honours Biology or permission of the instructor.

4D6/ Palaeontology II. An introduction to palaeoecology. Surveys of selected living and fossil marine communities, marine habitats, functional interpretation of fossil skeletons, and quantitative techniques.
2 lects., 1 seminar; two terms.
Prerequisite: Geology 3D6 or registration in Year IV Honours Biology, or permission of the instructor.

4E5/ Metallic Mineral Deposits. Geochemistry and mineralogy of ore deposits, theories of ore genesis, mineralogy.
2 lects., 1 lab. (2); two terms.
Prerequisite: Registration in Year IV of a Geology programme or permission of the instructor.

4K5/ Geology Thesis. Prerequisite: Open to students in Year IV of a Geology programme subject to the approval of the Department.

4M5/ Sedimentology. A first course in the principles of chemical and physical sedimentology.
3 lects.; two terms.
Prerequisite: Chemistry 1A7, 1B7, or 1C8. Open only to Year IV Geology students; or permission of instructor.

4N4/ Structural Geology II. Emphasis is placed on advanced principles of rock deformation as inferred from theory and experiment. These principles are applied to the study of actual geological structures on all scales.
2 lects.; two terms.
Prerequisite: Geology 2D5 and 3C6. Offered in 1980-81 and in alternate years.

4P2/ Precambrian Geology. General features of Precambrian rocks throughout the world. Structural, lithological, and chronological, divisions of the Canadian Shield. Evolution of the early crust of the earth. Special problems in Precambrian geology.
2 lects.; one term.
Prerequisite: Registration in Year III or Year IV of a Geology programme.

4Q4/ Geochemistry. Review of thermodynamics and crystal chemistry; consideration of sedimentary, igneous, metamorphic, and economic geochemical cycles; special topics including origin of crust, oceans.
2 lects.; two terms.
Prerequisite: Registration in Year IV of an Honours or Major programme in Geology or Chemistry.

4S6/ Introductory Oceanography. Biological, physical, and chemical properties of sea water; geological and geophysical properties of ocean basins; mineral resources.
2 lects., 1 lab. (2); two terms.
Prerequisite: Registration in Year IV of an Honours or Major programme in Science, or permission of the instructor.

For Graduate Courses see Calendar of School of Graduate Studies.

German

Faculty as of January 15, 1980

K. Denner / Chairman
G. Teuscher / Acting Chairman (Jan. 1 to June 30, 1980).

Professor Emeritus

Professor
Kari Denner/M.A. (Kentucky), Ph.D. (Johns Hopkins).

Associate Professors
C. Gerald Chapple/B.A. (McMaster), A.M., Ph.D. (Harvard),
James B. Lawson/B.A. (New York State Teacher's College), M.A.
(Johns Hopkins),
Hans H. Schulte/ Staatsexamen (Munich), Assessorexamen (Munich),
Dr. phil. (Augsburg).
Gerhard Teuscher/ Dip.-Ubersetzer (Mainz-Germersheim), M.A.
(Toronto), Ph.D. (State University of New York, Buffalo).
Robert L. Van Dusen/B.A. (Harvard), M.A., Ph.D. (Texas),

CURRICULUM 1980-82

At least "D" is required in courses listed under "prerequisite", unless otherwise indicated.

BEGINNERS' LANGUAGE COURSE

1Z6/ Beginners' Intensive German. This course attempts to give the student the ability to express himself reasonably well in German. In addition, he will acquire the basics of German grammar and considerable reading skill. Small tutorial groups will ensure maximum participation by each student. Laboratory practice, slides and films will be an integral part of the instruction.
5 hrs., including lab, practice; two terms.
Prerequisite: Grade 13 German, or German 1Z6 (with a grade of "A") or registration in Year
IV.

Note: This course, with a grade of at least "B", will permit students to proceed to German 226; with a grade of "A", however, the course is also accepted as a prerequisite for admission to an intensive Honours Programme (Stream C: German 1A6 and 2Z6).

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

A number of the following language courses are designed for non-native speakers; therefore, the Department may recommend alternative courses for native speakers of German.

1A6/ Introduction to German Studies. An approach based upon a balanced division between the written and spoken language, and between the historical and text-oriented aspects of literary study. The two tutorials include one concentrating on the close reading and discussion of texts, and one involving grammatical study and practice in the spoken language. The lectures present an outline of the development of German literature as it appears against the background of German history, art and music. Laboratory practice in pronunciation, listening comprehension and oral expression. Lectures and tutorials in German; written reports in German and English.
A required course for those intending to enter Pass or Honours programmes in German.
5 hours (2 lects., 2 tuts., lab. practice); two terms.
Prerequisite: Grade 13 German, or German 1Z6 (with a grade of "A") or permission of the Department.

2A3/ Modern German Literature I. Discussion of selected readings from major writers; emphasis on 20th-century prose. The lectures will be supplemented by films, recordings and other related material dealing with a particular author, work or period.
2 lects., 1 tut.; one term.
Prerequisite: German 1A6 or permission of the Department.

2 lects., 1 tut.; one term.
Prerequisite: German 1A6 or permission of the Department.

2E3/ German Grammar. A systematic review, including oral practice.
3 hrs., including lab. practice; one term.
Prerequisite: German 1A6 or permission of the Department.
2F3/ German Drama of the 20th Century from Hauptmann to Dürenmatt. The plays will be studied both as individual works and in the context of their historical and intellectual background. 3 lects.; one term. Prerequisite: German 1A6 or permission of the Department.

2G3/ German Language Practice. A course designed for non-native speakers to develop language skills, with principal emphasis on vocabulary building. German 2E3 is recommended but not required as a corequisite. 3 hrs., lab. practice; one term. Prerequisite: German 1A6 and permission of the Department.

2K3/ Introductory Grammar for Reading German. An introductory course designed to give a working knowledge of German grammar for translating German into English. It will deal only with the written language. (Those interested in the spoken language should register for German 126.) The sequel to German 2K3 is German 2L3. 3 lects.; one term. Prerequisite: Open, except to students with Grade 13 German.

2L3/ German for Arts and Science Students. A reading course for students in Humanities, Social and Natural Science and Engineering. Reading and translation of scholarly and scientific prose, selected as far as possible in correlation with the student’s field of study. It is strongly recommended that the student first complete German 2K3. 3 lects.; one term. Prerequisite: Grade 13 German, German 126 or 2K3, or permission of the Department.

2Z6/ Intermediate Intensive German. The approach of German 126, which makes extensive use of the language lab, films and slides, will be continued. At the same time the student will be introduced to selected works of modern German authors. Films and texts will be the basis for class discussions in German. 4 hrs. lab. practice; two terms. Prerequisite: Grade 12 German or German 126 (with a grade of at least “B”), or permission of the Department.

3A4/ Eighteenth-Century Drama. The major dramas of Lessing and Schiller will be dealt with, primarily in the context of 18th-century thought. 2 lects.; two terms. Prerequisite: 18 units of German or permission of the Department.

3B4/ The Age of Goethe. 1 lect. (2 hrs.); two terms. Prerequisite: 18 units of German or permission of the Department.

3C4/ Advanced Oral and Written Language Practice. A variety of themes will be selected for discussion in class; these will be further treated in essays outside of class. The main emphasis is placed upon the practical use of German as a means of oral and written communication. 2 hrs., including lab. practice; two terms. Prerequisite: 18 units of German or permission of the Department.

3E4/ 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.; two terms. Prerequisite: German 1A6 and permission of the Department. Not open to students with credit in German 3E3.

3H4/ History of the German Language: Introduction to Middle High German. 4 lects.; one term. Prerequisite: 18 units of German or permission of the Department.

4A4/ German Lyric Poetry. This course examines lyric poetry as it reflects the changing styles and the main trends of literary experience in Germany from the 17th to the 20th century. 2 lects.; two terms. Prerequisite: 18 units of German or permission of the Department.

4B4/ Nineteenth-Century Drama. A study of selected dramas by Kleist, Büchner, Grillparzer and Hebbel. 2 lects.; two terms. Prerequisite: 18 units of German or permission of the Department.

4C4/ Advanced Grammar and Stylistics. Intensive practice in oral expression: composition; translation. The weekly translation exercises introduce the student to the art and techniques of translating and provide the basis for a wide range of grammatical, stylistic and lexicographical commentaries. 2 hrs., including lab. practice; two terms. Prerequisite: German 3C4.

4F4/ Modern German Literature II. Close reading of selected novels, dramas, poetry and prose by Mann, Kafka, Benn, Celan, Brecht, et al. Where appropriate the course will treat the relationship of literary works to the other arts, including painting, film and opera. Seminar (2 hrs.); two terms. Prerequisite: 18 units of German or permission of the Department.

4G4/ The Romantic Movement. A survey of writings from Tieck to Heine concentrating on the novel, novella and lyric poetry. Seminar (2 hrs.); two terms. Prerequisite: 18 units of German or permission of the Department.

4H4/ Mediaeval German Literature: Readings in Middle High German and Old High German. 4 lects.; one term. Prerequisite: German 3H4.

4J4/ The German Novel. A study of the development of the novel form from the late 19th century to the present, based on novels by Fontane, Thomas Mann, Kafka, Böll et al. 1 lect. (2 hrs.); two terms. Prerequisite: 18 units of German or permission of the Department.

4M4/ Gothic. An introduction to the Gothic language through close reading of selected texts. 4 lects.; one term. Prerequisite: German 3H4.

4Z6/ Special Topics in Language Studies. A comparative analysis of the most important grammatical structures of English and German and the study of the sound systems of these languages form the background for discussions of methods and techniques of teaching German to speakers of English. The theoretical part of the course is combined with practical application by teaching small tutorial groups of German 126. 1 lect., practice teaching (4 hrs.); two terms. Prerequisite: Registration in Year IV of any Honours programme in German and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.

Students interested in German and Austrian history are advised to take History 3J6.

For Graduate Courses see Calendar of School of Graduate Studies.

GREEK
(See “Classics: Greek”.)

HEBREW
(See “Religious Studies: Hebrew”.)
HISTORY

History

Faculty as of January 15, 1980
J. Campbell / Chairman

Professor Emeritus

Professors
Edo Cappadocia/M.A. (Toronto), Ph.D. (Chicago).
David J. Russo/B.A. (Massachusetts), M.A., Ph.D. (Yale).

Associate Professors
John P. Campbell/M.A. (Glasgow), M.A., Ph.D. (Yale).
James W. Daly/M.A., Ph.D. (Toronto).
Daniel J. Geggan/A.B. (Boston), Ph.D. (Johns Hopkins).
George J. Grinnell/B.S. (Columbia), M.A., Ph.D. (California).
Harvey A. Levenstein/B.A. (Toronto), M.S., Ph.D. (Wisconsin).
John C. Weaver/B.A. (Queens's), M.A., Ph.D. (Duke).
Thomas E. Willey/B.A. (Butler), M.A., Ph.D. (Yale).

Assistant Professors
Bernice M. Kaczynski/B.A. (Pittsburgh), M. Phil., Ph.D. (Yale).

Associate Members
Peter J. George (Economics).
George Paul (Classics).
Charles G. Roland (Medicine).

CURRICULUM 1980-82

At least “D” is required in all courses listed under “prerequisite”, unless otherwise indicated.

The Department of History offers four Year 1 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 Pass or Honours programmes in History from any one of the four courses. Students may take only one of these courses. Students in Pass History may take a maximum of 12 units in any one field of History. Students in any Honours programme in History may take a maximum of 24 units in any one field of Ancient, Asian, Canadian, British, and United States history, and 18 units of European history, including Year 1, but exclusive of electives. Students in any Honours programme in History may take a maximum of 24 units in any one field of Ancient, Asian, Canadian, British, and United States history, and 30 units of European History, including Year 1, but exclusive of electives.

In selecting courses students in Pass and Honours History and in a Combined Honours programme including History must ensure that they take at least six units in each of three fields of history. For this purpose the Department has established the following six fields: European, Ancient, Asian, Canadian, British and United States.

Students interested in Ancient History are advised to examine the offerings of the Department of Classics on Classical Civilization.

YEAR I COURSES

1A6/ Medieval Europe. A study of the principal features and the development of medieval Europe.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open except to students with credit in History 216.

1B6/ Modern European History: The Emergence of the Liberal State. A study of the problem of freedom versus authority in European society and politics in the period 1500 to 1914.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open except to students with credit in History 216.

1C6/ The Modern World: The Era of European Primacy. A study of the background and development, from the French Revolutionary Era to the present, of the principal political, intellectual, and economic factors that have shaped the 20th-century world.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open. Students may take only one Year I History course.

1L6/ Ancient History. A survey of the major civilizations of Ancient times, including the Ancient Near East, Egypt, Greece, and Rome. Special attention will be given to their cultural and intellectual contributions to Western Civilization.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open except to students with credit in History 216.
Students may take only one Year I History course.

YEAR II COURSES

2A6/ Early Modern Europe 1400-1715. A study of the transition from late medieval to early modern civilization, with emphasis upon the breakup of feudal society and the consequent changes in the character of Europe.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Years II and above.

2B6/ China: From the Opium War to the Present. The history of China in the 19th and 20th centuries. The emphasis will be on internal developments, from the disintegration of the imperial system through the rise of the Communist Party to the building of the People's Republic of today.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Years II and above, except to students with credit in History 306.

3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Years II and above, except to students with credit in History 1K6.

2I6/ Continental Europe in the Middle Ages. A survey of European history from A.D. 400-1400. Particular attention will be given to the attempts at political and social organization which led to the "birth of Europe".
3 hrs. (lects. and discussion); two terms.
Prerequisite: Open to students in Years II and above, except to students with credit in History 1A6.

2J6/ The History of Canada. A study of the major social and political forces that have contributed to the development of modern Canada.
3 lects.; two terms.
Prerequisite: Open to students in Years II and above.

2K6/ The History of Science. An introductory study of the evolution of scientific ideas and their relationship to the social and intellectual history of Europe.
3 hrs. (lects. and discussion groups); two terms.

2L6/ Greece and Rome. A study of the history of Greece and Rome from the Bronze Age to the 4th century A.D. Attention will be drawn to the political and social developments, as well as to the uses of archaeology in reconstructing historical events.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Years II and above, except to students with credit in History 1L6.

2M6/ European Society from Absolutism to Democracy. An analysis of the main political, social, and cultural forces shaping European Society from 1740 to 1918. The course will focus on the formation of modern political institutions, social classes and ideologies.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Open to students in Years II and above.

2N6/ British History 1600 to the Present. Emphasis will be placed on the main political, religious, economic and social developments.
3 hrs. (lects. and discussion groups); two terms.
Prerequisite: Registration in Pass History, any Honours programme in History, or permission of the Department. Not open to students with standing in History 1N6.
### YEAR III COURSES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A3/</td>
<td>Topics in Modern Italian History, 1815 to the Present</td>
<td>The Risorgimento, the Roman question, Fascism and contemporary issues of Catholicism and Communism</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3AA/</td>
<td>The Rise and Fall of Imperial Spain. An examination of the culture, society and politics of Spain from the 15th to the 18th century</td>
<td>Knowledge of Spanish is required.</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3K3/</td>
<td>The Liberal Tradition in the 19th Century.</td>
<td>Open to students in Years II and above.</td>
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<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3L6/</td>
<td>The World of Ancient Greece. Greek history from the bronze age to the coming of the Romans.</td>
<td>Registration in Pass History, any Honours programme in History or in Pass or Honours German.</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3M6/</td>
<td>Revolution and Reaction, 1789-1848. A study of the liberal, radical, and conservative tradition</td>
<td>Not open to students with credit in History 3U6.</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3S6/</td>
<td>The English Reformation and Revolution, 1530-1700.</td>
<td>Open to students in Years II and above.</td>
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<td></td>
<td></td>
<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3CS/</td>
<td>Ancient China: Selected topics in the history of China prior to 221 B.C.</td>
<td>Not open to students with credit in History 2M6.</td>
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<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3DS/</td>
<td>Imperial China: Selected topics in the history of China from 221 B.C. to the 18th century.</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3EE/</td>
<td>Topics in Recent History of the United States.</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3GS/</td>
<td>British History 1888-1760. An examination of select problems in the political, social, economic and cultural history of Britain.</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3SS/</td>
<td>British History 1760-1830. An examination of select problems in the political, economic and cultural history of Britain.</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3TS/</td>
<td>Topics in Twentieth-Century British History.</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<td>3 hrs. (lects. and discussion groups); one term.</td>
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<tr>
<td>3W6/</td>
<td>Canadian Intellectual History, Major ideas and themes of debate from the Conquest to the mid-twentieth century will be surveyed</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); two terms.</td>
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<tr>
<td>3X6/</td>
<td>Conservatism in the Modern World. A study of the development of conservatism from its 18th-century origins to its contemporary</td>
<td>Open to students in Years II and above.</td>
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<td>3 hrs. (lects. and discussion groups); two terms.</td>
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</table>
YEAR IV COURSES

Enrolment in any fourth-year history course will be limited to twelve students. Preference will be given to students in the following categories: Fourth-year Honours History, Fourth-year Combined Honours in History and another subject; Continuing students taking a full course load; Third-year Honours History; Third-year Combined Honours in History and another subject; Third-Year Pass History; others.

4A6/ Special Topics in British History (1688-1830). Seminar; two terms. Prerequisite: History 2N6 and registration in any Honours programme in History or permission of the Department. (limited enrolment).

4AA6/ Special Studies in the History of Stuart England. Studies in the political, religious, intellectual and social life of Stuart England, with political and religious aspects predominating. Seminar; two terms. Prerequisite: History 2N6 and registration in any Honours programme in History with a Year III Q-group standing of at least 75% or permission of the Department. (limited enrolment).

4B6/ Special Topics in the History of Pre-confederation Ontario. A course designed to acquaint the student with the mechanics of research and the effective use of archival materials. The subject matter will be drawn principally from the history of Ontario. Seminar; two terms. Prerequisite: Registration in any Honours programme in History or permission of the Department (limited enrolment). Students may take only two of History 4B6, 4N6, 4V6, 4W6, and 4Z6. Alternates with History 4C6.

4C6/ Special Topics in British Imperial History. The major emphasis of this course will be on the Victorian Empire. Seminar; two terms. Prerequisite: Registration in any Honours programme in History or permission of the Department (limited enrolment).

4D6/ Special Topics in Greek History. Detailed investigation into the historical problems in interpreting various aspects of Ancient Greek civilization and culture. Seminar; two terms. Prerequisite: History 2L6 or 3L6, and registration in any Honours programme in History with a Year III Q-group standing of at least 75% or a programme requiring History 4D6, or permission of the Department (limited enrolment).

4E6/ Special Topics in the History of Victorian Britain. An examination of such themes as the two-party system, the Irish question, working class life, religious and literary movements, evolving industrialism, imperialism and social reform. Seminar; two terms. Prerequisite: History 2N6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4F6/ Special Topics in the Age of the Enlightenment. A detailed study of the intellectual revolution of the 17th and 18th centuries. Seminar; two terms. Prerequisite: Six units of European history, registration in any Honours programme in History, a programme requiring History 4F6, or permission of the Department (limited enrolment).

4G6/ The Revolutionary Movement in Modern China. A history of 20th century China with the focus on the political movements that have been the agents of change. Seminar; two terms. Prerequisite: A course on China or on Marxism and registration in any Honours programme in History or permission of the Department (limited enrolment).

4H6/ The European Historical Tradition. Topics in the development of European historiography from the Enlightenment to the 20th century. The seminar will concentrate on the emergence of history as a scientific discipline in Europe and on the intellectual forces which affected the writing of history in England and on the Continent. Seminar; two terms. Prerequisite: Registration in any Honours programme in History, or permission of the Department (limited enrolment).

4I6/ Special Topics in Roman History. The central theme will be the process and results of Roman expansion within Italy and beyond. Seminar; two terms. Prerequisite: History 2L6 or 3D6 and registration in any Honours programme in History with a Year III Q-group standing of at least 75% or a programme requiring History 4I6 or permission of the Department (limited enrolment).

4J6/ Special Topics in the History of the United States in the 20th Century. Seminar; two terms. Prerequisite: History 1K6 or 2H6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4L6/ Special Topics in the History of the United States Before 1885. Seminar; two terms. Prerequisite: History 1K6 or 2H6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4M6/ Special Topics in the History of the Renaissance and the Reformation. Seminar; two terms. Prerequisite: Any of History 1A6, 1B6, 2A6, 3B6, and registration in any Honours programme in History with a Year III Q-group standing of at least 75% or permission of the Department (limited enrolment).

4N6/ Canadian Historiography. A study of the ideas of the major historians of Canada. Seminar; two terms. Prerequisite: History 2J6 and registration in any Honours programme in History, or permission of the Department (limited enrolment). A reading knowledge of French is required. Students may take only two of History 4B6, 4N6, 4V6, 4W6 and 4Z6.

4O6/ Russia and Revolution. The impact of modernization upon the Soviet state and society. Seminar; two terms. Prerequisite: History 3H6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4P6/ Contemporary Europe. Topics in the history of Europe during the 20th century. Seminar; two terms. Prerequisite: A course in 19th or 20th century European history, registration in any Honours programme in History, or permission of the Department (limited enrolment).

4Q6/ Special Topics in the History of Mediaeval 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; two terms. Prerequisite: History 1A6 or 2I6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4S6/ English Mediaeval History. Selected themes in the history of Mediaeval England. Seminar; two terms. Prerequisite: History 1A6 or 2I6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4T6/ Europe in the Era of the French Revolution and Napoleon I. Seminar; two terms. Prerequisite: History 3M6 and registration in any Honours programme in History or permission of the Department (limited enrolment).

4U6/ 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 any 4th-year Honours programme in History who have a Year III Q-group standing of at least 75% and permission of the Department. Qualified students interested in doing field work in Ancient Archaeology as part of this course should see Dr. E. Wightman or the Chairman of the Department.

4V6/ The Reform Tradition in Canada. The history of reform in Canada, 1860-1939, under the influence of new thought, the new industrial-urban order, immigration, war, and depression. Seminar; two terms. Prerequisite: History 2J6 and registration in any Honours programme in History or permission of the Department (limited enrolment). Students may take only two of History 4B6, 4N6, 4V6, 4W6, and 4Z6.

4W6/ 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; two terms. Prerequisite: History 2J6 and registration in any Honours programme in History or permission of the Department (limited enrolment). Students may take only two of History 4B6, 4N6, 4V6, 4W6, and 4Z6.

4X6/ Special Topics in the History of Modern Science. A study of the scientific revolution and of its impact on western culture in the 19th and 20th centuries.
Linguistics

CURRICULUM 1980-82

Linguistics is the study of language as a system of human communication. As a discipline it combines the methods of traditional scholarship and philosophy with those of observational and experimental science in order to investigate the nature, structure, and development of languages everywhere in the world and of language as a uniquely human faculty.

Courses in linguistics are supervised and co-ordinated by a Committee of Instruction in Linguistics. Advice on the selection of courses may be obtained from the chairman of the committee J. Colarusso (Anthropology) or its secretary G. Thomas (Russian).

There is no B.A. programme in linguistics, but students may enrol in courses with linguistic content offered by the various departments.

1. The following courses in linguistics are available:

   1A6/ The Study of Language. A far-reaching survey intended to acquaint the student with the numerous disciplines that deal with language and many of the crucial concepts and techniques developed within them. The course will enable the student to pursue higher studies in either linguistics or other language-related disciplines.
   2 lects., 1 tut.; two terms.
   Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
   Same as Anthropology 1B6.

   3Y3/ Comparative and Historical Linguistics. An advanced course covering the techniques for reconstructing ancestral languages. Language families, cognate sets, sound laws, internal and comparative reconstruction, and mechanisms of change will be treated.
   3 hrs., lects. and discussion; one term.
   Prerequisite: Anthropology 2M6 or permission of the instructor.
   Offered in alternate years.
   Same as Anthropology 3Y3.

2. Courses which have Linguistics 1A6 as prerequisite:

   Anthropology 2M6/ General Linguistics
   Russian 2F6/ Introduction to Slavic Linguistics

3. Other courses in Linguistics:

   Anthropology 2Q3/ Linguistics and the Study of Culture
   Anthropology 3J3/ Phonetics and Phonology
   Anthropology 4Z3/ Advanced Linguistics
   English 2S3/ English as Communication
   English 2V6/ The English Language
   French 3B3/ Semantics
   French 3E3/ Applied Linguistics and Second-Language Learning
   French 3G3/ General and Comparative Phonetics
   French 3J3/ Sociolinguistics
   French 3L3/ French Morphology and Syntax
   Italian 4L4/ Introduction to Italian Linguistics
   Russian 3F3/ Russian Language and Soviet Society

For full course descriptions and prerequisites of the above courses see the listings under each department. Other courses related to linguistics include Philosophy 4D3, Sociology 3X6 and courses in the history of specific languages.

Humanities

CURRICULUM 1980-82

1B6/ Themes in Western Civilization. A course in the methods and materials of the Humanities, drawing on selected literature, philosophy, history and art of Western culture. It concentrates on four figures crucial in shaping Western civilization, and their relationships to the cultures of their times: Socrates in the context of Greek philosophy and drama; St. Paul and the Judeo-Christian tradition; Shakespeare and Renaissance ethics; Wagner and Romantic decadence. The approach of the course will be to examine the ways in which perennial problems of conduct are treated in the four contrasted settings.
2 lects., 1 tut.; two terms.
Prerequisite: Open. (Not to be used by Humanities I students as an R-group course.)
Further information regarding this course may be obtained from Dr. G. Roebuck (English) and Prof. S. Ajzenstat (Philosophy).

ITALIAN

(See "Romance Languages: Italian".)

LATIN

(See "Classics: Latin".)
Mathematical Sciences

Faculty as of January 15, 1980
T. Husain/Chairman
I.2. Chorneyko/Associate Chairman

Professors
Bernhard Banaschewski/Dip. Math., Dr. rer. nat. (Hamburg), F.R.S.C., McKay Professor of Mathematics.
Ernest A. Behrens/D. Phil. nat. (Hamburg).
Guenter W. A. Bruns/Dr. rer. nat. (Berlin).
Tao H. Choe/B.A., M.A. (Kyungpook), Ph.D. (Florida).
Charles W. Dunnett/M.B.E., B.A. (McMaster), M.A. (Toronto), D.Sc. (Aberdeen), Professor of Clinical Epidemiology and Biostatistics.
Gerard Field/B.Sc., Ph.D. (London), Professor of Applied Mathematics.
Hans P. Heinig/B.Sc. (McMaster), M.A. (Western), Ph.D. (Toronto).
Taqdir Husain/B.A., M.A. (Ailigarh), Ph.D. (Syracuse).
Howard L. Jackson/B.A. (Western), M.A. (Queen's).
Norman D. Lane/B.A. (Queen's), M.A., Ph.D. (Toronto).
Rubens G. Lintz/B.A., Ph.D. (Sao Paulo).
Bruno J. W. Müller/B.S. (Göttingen), M.S., Ph.D. (Mainz).
Alexander Rosa/M.S. (Kiev State), Ph.D. (Slovak Acad. Sciences).
Donald W. L. Sprung/B.A. (Toronto), Ph.D., D.Sc. (Birmingham), Professor of Physics.
Anatole B. Volkov/B.Sc. (North Carolina), M.S., Ph.D. (Wisconsin), Professor of Physics.
Derick Wood/B.Sc., Diploma in Electronic Computing, Ph.D. (Leeds), Associate Professors
Minakten Behara/M.Sc. (Ulka), Dr. rer. oec. (Saarland).
Thomas M. K. Davison/B.Sc. (Sir George Williams), M.A., Ph.D. (Toronto).
Ernst O. Gadamer/Diplom Physiker (Frankfurt), M.A., Ph.D. (Toronto).
Ian Hambleton/B.Sc., M.Sc. (Toronto), Ph.D. (Yale).
Zdzislaw V. Kovarik/M.S., (Charles, Prague), Ph.D. (Toronto).
Peter D. M. Macdonald/B.Sc., M.Sc. (Toronto), D.Phil. (Oxford).
Ernest R. Mead/B.A., M.A., Ph.D. (Western).
Evelyn Nelson/M.Sc. (McMaster).
Kenneth A. Redish/B.Sc. (London), F.B.C.S.
Nicholas Staintecf/B.Sc., Ph.D. (Sydney).
James D. Stewart/B.Sc. (Toronto), M.S. (Stanford), Ph.D. (Toronto).
Patrick C. Yip/B.Sc. (Memorial), Ph.D. (McMaster).

Assistant Professors

CURRICULUM 1980-82

COMPUTER SCIENCE

For prerequisite Purposes, a grade of “D” or better is required.

*Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

1H3/ Introduction to Computing. Organization and characteristics of stored-program computers; basic programming and data representa-

tion; program testing; algorithms; computer solution of problems. 3 lects.; one term.
Prerequisite: Grade 13 Mathematics (2 credits) or equivalent, or Mathematics 1K3 and 1L3. Not open to students who are registered in, or have completed, Computer Science 1K3 or 2H3, or Applied Mathematics 1D7, 1K3, 2H3 or 2M3, or Mathematics 1H7.

1K3/ Introduction to Computing for Business. Organization and characteristics of stored-program computers; basic programming and data representation; program testing; algorithms; computer solution of problems. 3 lects.; one term.
Prerequisite: Registration in a programme in Business. Grade 13 Mathematics (2 credits) or equivalent, or Mathematics 1K3 and 1L3. Not open to students who are registered in, or have completed, Applied Mathematics 1D7, 1H3, 2H3 or 2M3, Computer Science 1H3 or 2H3, or Mathematics 1H7.

2A3/ Introduction to COBOL Programming. Data representation; COBOL; structured programming; application to report generation, data editing, and file maintenance with sequential files; sorting and merging techniques; case studies. 3 lects.; one term.
Prerequisite: Computer Science 1H3, 1K3 or 2H3, or Applied Mathematics 1D7, 1H3, 1K3, 2H3 or 2M3, or Commerce 3H3, or Mathematics 1H7, or permission of the instructor. Not open to students who have completed Applied Mathematics 3H3.

2H3/ Introduction to Computing. Organization and characteristics of stored-program computers; basic programming and data representation; program testing; algorithms; computer solution of several numerical problems. 3 lects.; one term.
Prerequisite: Completion of Mathematics 1A6 or 1C6 and either Mathematics 1B4 or 1G6 or Applied Mathematics 1C5 or 1C6. Not open to students who are registered in, or have completed, Computer Science 1H3 or 1K3, or Applied Mathematics 1D7, 1H3, 1K3, or 2M3, or Mathematics 1H7.

2K3/ Introduction to Computer Design. The basic arithmetic and logical operations and general system organization of modern computers are described in terms of basic computer elements, logical design, boolean algebra, logic elements, etc. 3 lects.; one term.
Prerequisite: Mathematics 1A6 or 1C6, Computer Science 1H3, 1K3 or 2H3, or Applied Mathematics 1D7, 1H3, 1K3, 2H3 or 2M3, or Mathematics 1H7, or permission of the instructor. Not open to students who are registered in, or have completed, Electrical Engineering 2H3.

2L3/ 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 and for many of which formal or mathematical models are not immediately obvious. 3 lects.; one term.
Prerequisite: Computer Science 1H3, 1K3 or 2H3, or Applied Mathematics 1D7, 1H3, 1K3, 2H3 or 2M3, or Mathematics 1H7 and registration in a programme in which Computer Science 2L3 is required, or permission of the Chairman of the Department or the Unit for Computer Science.

2N3/ Intermediate Computing. A second course for students who do not intend to specialize in computing. Structure programming; programming and algorithms developed in the first course; graphical output, debugging, queues, lists and trees, utility programs. 3 lects.; one term.
Prerequisite: Computer Science 1H3 or 2H3, or Applied Mathematics 1D7, 1H3, 1K3, 2H3 or 2M3, or Mathematics 1H7. Not open to students in Year II Honours or Major programmes in Mathematical Sciences, Mathematics and Computer Science, Applied Statistics and Computation, Computer Science and Mathematics, or Pass Computer Science.

3A3/ Data Structures and Programming Languages. Description of and operations on structured data: strings, lists, trees, tuples, applications from text editing, symbolic differentiation, graphics, programming languages. The Pascal-6000 programming language. 3 lects.; one term.
Prerequisite: Computer Science 2L3, or Applied Mathematics 2L3, or permission of the instructor.

3C3/ Operating Systems. The purpose of operating systems and their historical development from batch processing to interactive systems. Synchronization of concurrent processes; resource sharing; job-scheduling; resource protection. 3 lects.; one term.
Prerequisite: Computer Science 303, or Applied Mathematics 303, or permission of the instructor.

3D3/ Computer Design. The logical design of computing systems; organization of the central processing unit; peripheral facilities; features for multiprogramming and multiprocessoring; primitive software systems;
IBM 370 and CDC 6400 architecture.
3 lect.; one term.
Prerequisite: Computer Science 2K3, or Applied Mathematics 2K3, or Electrical Engineering 2H3, or permission of the instructor.

3G3/ Scientific Data Processing. Machine and software organization; programming techniques; utility programmes; file processing; graphical output.
3 lect.; one term.
Prerequisite: Computer Science 2L3, or Applied Mathematics 2L3, or permission of the instructor.

3J3/ Business Systems Analysis and Data Organization. Direct access devices; file organization; concepts and techniques; random processing with COBOL; introduction to systems analysis and design; case studies.
3 lect.; one term.
Prerequisite: Computer Science 2A3, or Applied Mathematics 3H3, or permission of the instructor. Not open to students who have completed Applied Mathematics 3H4.

3R6/ Project. The design and implementation of a large program, or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Registration in Year III Pass Computer Science and completion of Computer Science 2L3 or Applied Mathematics 2L3, or permission of the Chairman of the Department or the Unit for Computer Science.

3T3/ Assembly Languages. Storage of numeric and alphanumeric data, instruction sets, index registers, indirect addressing, pseudo operations, macro definitions and conditional assembly.
3 lect.; one term.
Prerequisite: Computer Science 2L3 or 2N3, or Applied Mathematics 2L3 or 2N3, or permission of the instructor.

4E3/ Compilers I. An introduction and overview of compiling techniques.
3 lect.; one term.
Prerequisite: Computer Science 3A3, or Applied Mathematics 3A3, or permission of the instructor.

4F3/ Compilers II. Practical compiler writing course.
3 hrs.; one term.
Prerequisite: Computer Science 4E3 or Applied Mathematics 4E3, and Computer Science 3T3 or Applied Mathematics 3T3.

4G6/ Project. The design and implementation of a large program or suite of programs, and its documentation. Students work in small teams.
Prerequisite: Registration in a programme in which Computer Science 4G6 is specified, or permission of the Chairman of the Department or the Unit for Computer Science. Not open to students who are registered in Computer Science 3R6.

3 lect.; one term.
Prerequisite: Computer Science 3A3 or Applied Mathematics 3A3, Mathematics 2F2 or 2J6 and concurrent registration in Computer Science 4E3.
Offered in 1980-81, alternating with Computer Science 4X3.

4L3/ File Design and Data Bases. Data structures useful in computer storage and file design. Topics include machine-level implementation structures, storage management, sorting and searching, input/output devices, access methods, indexed sequential accessing, file, keys, inverted files, descriptors.
3 lect.; one term.
Prerequisite: Computer Science 2A3 or 3H3 or 3L3, or Applied Mathematics 3H6 or 3I3, or registration in Computer Engineering or Computer Engineering and Management, or permission of the instructor.

4M3/ Models of Programming Languages. Run-time representations of programming languages, specifically Algol, Pascal, and PL/1, emphasizing re-entrant representation of procedures and information structures.
3 lect.; one term.
Prerequisite: Computer Science 3A3, or Applied Mathematics 3A3, or permission of the instructor.

4W3/ Computer Simulation Languages and the Simulation of Computers. Three languages for the simulation of discrete stochastic systems will be compared: GPSS, Simscript and Simula, and the GASP II package. Simulation of various operations in computer systems.
3 lect.; one term.
Prerequisite: Computer Science 2L3, or Applied Mathematics 2L3, and one of Statistics 2D4, 3M3, Applied Mathematics 3M3, Mathematics 2D4.

*4X3/ The Mathematical Analysis of Algorithms. How fast does this algorithm run? Is it the fastest algorithm? This course will deal with these and related questions as an introduction to the analysis of algorithms.
3 lect.; one term.
Prerequisite: Computer Science 3A3, or Applied Mathematics 3A3, and Mathematics 2F4 or 2J6.
Offered in 1980-81, alternating with Computer Science 4J3.

MATHEMATICS

For prerequisite purposes, a grade of "D" or better is required.

*Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

1A6/ Calculus I. This is a course in differential and integral calculus with emphasis on the fundamental processes and applications.
3 lects.; 1 tut.; two terms.
Prerequisite: Grade 13 Calculus.

1B4/ Linear Algebra I. Vectors, matrices, determinants, vector valued functions and space curves, complex numbers.
2 lects.; 1 tut.; two terms.
Prerequisite: Registration in, or completion of, Mathematics 1A6 or 1C6.

1C6/ Calculus. A course in differential and integral calculus from an advanced viewpoint for students with a strong calculus background. Emphasis is placed on fundamental processes and applications in mathematics and the physical sciences.
3 lects.; 1 tut.; two terms.
Prerequisite: Grade 13 Mathematics (at least 2 credits, including differential calculus, with an average of at least 80%), and such other criteria as the Department may consider appropriate.

1F6/ Calculus and Statistics. The rudiments of differential and integral calculus. An introduction to probability and statistics including the binomial, Poisson, and normal distributions, linear regression, and simple hypothesis testing.
3 lects.; 1 tut.; two terms.
Prerequisite: Registration in Natural Science I; not open to students who are registered in, or have completed, Applied Mathematics 1C6 or Mathematics 1B4 or Mathematics 1G6.

1G6/ Formerly Applied Mathematics 1C6. Applied Analysis. Mathematics used in science. Topics include application of the calculus and introductions to algebra, vectors, statistics and numerical methods.
3 lects.; two terms.
Prerequisite: Registration in, or completion of, Mathematics 1A6 or 1C6.

1H7/ (Formerly Applied Mathematics 1C7). Engineering Mathematics I. Mathematics used in engineering with emphasis on the solution of problems. Topics include application of the calculus and introductions to algebra, vectors, statistics, numerical methods and computing.
3 lects.; first term; 4 lects., second term.
Prerequisite: Registration in Engineering I.

3 lects.; 1 tut.; one term.
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have completed, any of Mathematics 1A6, 1C6, 1D6, 1F6, 1N6. Normally not open to students who have completed Grade 13 calculus.

1L3/ Linear Algebra and Probability for Business and the Social Sciences. An introduction to vectors, matrices, determinants, probability theory.
3 lects.; 1 tut.; one term.
Prerequisite: Grade 12 Mathematics. Not open to students who are registered in, or have completed, Mathematics 1B4 or 1F6 or 1G6 or Applied Mathematics 1C6.

3 lects.; 1 tut.; one term.
Prerequisite: Mathematics 1K3 or Grade 13 Calculus. Not open to students who are registered in, or have completed, any of Mathematics 1A6, 1C6, 1F6, 1N6.

1N6/ Calculus for Engineers. Differential and Integral Calculus with emphasis on fundamental processes and applications. Introduction to multivariate calculus.
3 lects.; 1 tut.; two terms.
Prerequisite: Grade 13 Mathematics, three credits including differential calculus.

*1Q0/ Remedial Mathematics. The number system, notion of variable and function, basic operations involving variables, simplification of algebraic expressions, solutions of quadratic equations, introduction to trigonometric functions, and logarithms.
3 lects.; 1 tut.; one term.
Prerequisite: Open.

2A5/ Calculus II. Partial differentiation and differentiability of functions of several variables, extremal problems with constraints, implicit function theorem, multiple integrals, line and surface integrals, Green's, Gauss' and Stokes' Theorems.
2 lects.; 1 tut.; first term; 2 lects., second term.
Prerequisite: Mathematics 1A6 or 1C6, and one of Mathematics 1B4,

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- **Text:** Hoffman and Kunze, Linear Algebra.
- **2 lects.; two terms.**
- **Prerequisite:** Mathematics 1A6 or 1C6, and one of Mathematics 1B4, 1G6, Applied Mathematics 1C6. Not open to students who are registered in, or have completed, Mathematics 2J6.


- **2 lects.; two terms.**
- **Prerequisite:** Registration in, or completion of, Mathematics 2A4 or 2A5. Not open to students who are registered in, or have completed, Mathematics 203 or 2G3.

2F4/ **Sets and Numbers.** Elementary operations on sets, relations, functions, ordinal and cardinal arithmetic, Axiom of Choice and some of its equivalents, the number system, topological concepts in n-space.

- **2 lects.; two terms.**
- **Prerequisite:** Registration in an Honours programme in Mathematical Sciences, or permission of the instructor. Not open to students who are registered in, or have completed, Mathematics 2J6.

2G3/ **Intermediate Calculus.** Differential calculus of several variables, multiple integrals, line and surface integrals.

- **3 lects.; one term.**
- **Prerequisite:** Mathematics 1A6 or 1C6, and one of Mathematics 1B4, 1G6, Applied Mathematics 1C5 or 1C6. Not open to students who are registered in, or have completed, Mathematics 2A4 or 2A5.

2H6/ **Ideas in Mathematics.** Selected topics from: set theory, non-Euclidean and projective geometries, number theory, probability and statistics, algebraic systems. No specific background in mathematics is assumed.

- **3 lects.; two terms.**
- **Prerequisite:** Registration in Year II, III, or IV of a non-Science programme.

2J6/ **Linear Algebra and Set Theory.** Sets, relations, and functions; the Axiom of Choice; the real number system; vector spaces, transformations, matrices and linear equations; eigenvalues and diagonalization of matrices; inner products.

- **3 lects.; two terms.**
- **Prerequisite:** Mathematics 1A6 or 1C6, and one of Mathematics 1B4, 1G6, Applied Mathematics 1C6. Not open to students who are registered in, or have completed, Mathematics 2B4 or 2F4.

2K3/ **Financial Mathematics.** Nominal and effective rates of interest and discount, forces of interest and discount, compound interest, annuities certain; amortization, sinking funds; bonds, security evaluation, determination of yields.

- **3 lects.; one term.**
- **Prerequisite:** Mathematics 1A6 or 1C6 or 1F6 or 1M3, or permission of the instructor.

2L3/ **Intermediate Calculus and Differential Equations for Business and the Social Sciences.** Functions of several variables, partial differentiation, chain rule, and extremal problems. First and second order differential equations, difference equations.

- **3 lects.; one term.**
- **Prerequisite:** One of Mathematics 1A6, 1C6, 1M3, and one of Mathematics 1L3, 1B4, 1G6, Applied Mathematics 1C6. Not open to students who are registered in, or have completed, Mathematics 2A4 or 2A5 or 2G3.


- **3 lects.; two terms.**
- **Prerequisite:** Mathematics 1N6, and Mathematics 1H7 or Applied Mathematics 1D7.


- **3 lects.; one term.**
- **Prerequisite:** Registration in, or completion of, Mathematics 2G3. Not open to students who are registered in, or have completed, Mathematics 2C4 or 2G3.


- **4 lects., 3 lects., and 1 tut. every other week; one term.**
- **Prerequisite:** Mathematics 1N6, and Mathematics 1H7 or Applied Mathematics 1D7.
tion and integration, and the solution of transcendental, differential and matrix equation.
2 lcts., 1 lab. (3) every other week; two terms.
Prerequisite: Mathematics 2A4 or 2A5, and 2C4; or 2G3 and 203;
Computer Science 1H3 or 2H3. Not open to students registered in, or have completed, Applied Mathematics 3F4.

3R3/ Linear Programming. The general linear programming problem, simplex procedures, dual problems, degeneracy procedures, parametric linear programming, additional procedures and applications.
3 lcts.; one term.
Prerequisite: Mathematics 1A6 or 1C6, and one of Mathematics 1B4, 1G6, Applied Mathematics 1C8.

3S3/ Optimization. Non-linear programming methods, integer programming, quadratic programming, stochastic programming, and dynamic programming.
3 lcts.; one term.
Prerequisite: Mathematics 2A4 or 2A5 or 2G3, and Mathematics 3R3.

3T3/ Complex Analysis I. Analytic functions, power series, elementary conformal mappings, Cauchy's theorem, residue calculus.
3 lcts.; one term.
Prerequisite: Mathematics 2A4 or 2A5 or 2G3.

3V6/ Engineering Mathematics III. Topics in mathematics of interest for mechanical, metallurgical and ceramic engineering, including probability and statistics, partial differential equations, numerical analysis.
2 hrs., first term; 4 hrs., second term.
Prerequisite: Mathematics 2M2, or Applied Mathematics 2J5; or their equivalent.

3W3/ Directed Reading. Directed reading in areas of mathematics of interest to the student and instructor.
Prerequisite: Permission of the Chairman of the Department.

3X3/ Life Contingencies I. Single life functions and probabilities, forces of mortality, commutation functions, life annuities, insurance benefits, premium reserves.
3 lcts.; one term.
Prerequisite: Statistics 2D4, or Mathematics 2D4; Mathematics 2K3; or permission of the instructor.

3Y3/ Life Contingencies II. Joint life and last survivor functions and probabilities, contingent functions, stationary population theory, multiple decrement theory.
3 lcts.; one term.
Prerequisite: Mathematics 3X3.

3Z4/ History of Mathematics. An introduction to the history of mathematics, including interaction with other phases of culture, with special emphasis on the past three centuries.
2 lcts.; two terms.
Prerequisite: At least two second-year mathematics courses other than Mathematics 2G3, 2H6, 2K3, 2L3.

4A6/ Functions of a Complex Variable. Study of analytic functions, their various representations, and their properties.
3 lcts.; two terms.
Prerequisite: Mathematics 3A6.

4B4/ Differentiable Manifolds. Introduction to differentiable manifolds, differentiable forms.
Text: Hicks, Notes of Differential Geometry; Matsushima, Differentiable Manifolds.
2 lcts.; two terms.
Prerequisite: Mathematics 3P4.

4C4/ Combinatorics and Graph Theory. Inversion formulae, systems of distinct representatives, block designs and other configurations, trees, bipartite graphs, connectivity, graph colouring, matrix representations, applications.
3 lcts.; two terms.
Prerequisite: Mathematics 2A4 or 2A5 or 2G3, and Mathematics 2B4 or 2G3; or permission of the instructor.

4D4/ (Formerly Applied Mathematics 4C4). Mathematical Physics II. Some mathematical techniques and their applications to physics and engineering. Typical topics and applications are: integral equations, integral transforms, tensor analysis, calculus of variations, hydrodynamics, elasticity, general relativity, field theory.
2 lcts.; two terms.
Prerequisite: Mathematics 3C6 or Applied Mathematics 3B6, and registration in an Honours or Engineering programme.

4E6/ Algebra II. Semi-simple modules and rings, group theory, polynomial and group rings, ideal theory, Galois theory.
Text: Van der Waerden, Modern Algebra.
3 lcts.; two terms.
Prerequisite: Mathematics 3E4.

4F3/ (Formerly Applied Mathematics 4K3). Methods and Applications of Integral Transforms. Theory and application of Fourier, Laplace, Hankel, and other integral transforms, with emphasis on applications to problems of Cauchy's theorem, residue calculus; introduction to discrete transforms, z-transforms, Walsh functions and their applications to science and engineering.
3 lcts.; one term.

Prerequisite: Mathematics 3C6, or 3T3, or Applied Mathematics 3B6.

4K4/ Measure Theory. Introduction to the theory of measure and integration with applications.
2 lcts.; two terms.
Prerequisite: Mathematics 3A6 or 306.

4N4/ Topics in Advanced Mathematical Analysis. Orthogonal functions; Fourier series and integrals; summability theorems; linear differential equations; integral equations; eigenfunction expansions; non-linear differential equations; calculus of variations.
2 lcts.; two terms.
Prerequisite: Mathematics 3A6 or 306.

4O3/ Complex Analysis II. Consequences of Cauchy's theorem; entire functions; analytic continuation; theory of conformal mapping; and other selected topics.
3 lcts.; one term.
Prerequisite: Mathematics 3T3.

4Q6/ 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 lcts.; 1 lab. (3) every other week; two terms.
Prerequisite: Mathematics 3G4, or Applied Mathematics 3F4.

4R4/ Special Functions. Gamma functions of a complex variable; asymptotic expansions; Watson's lemma; Sturm-Liouville theory; eigenfunc­tion expansions; generating functions and recurrence relations; orthogonal polynomials, other selected topics.
2 lcts.; two terms.
Prerequisite: Mathematics 2A4 or 2A5, and 2C4; or Mathematics 2G3 and 203.

2 lcts.; two terms.
Prerequisite: Registration in Year IV of a Mathematical Sciences programme.

4T4/ Generalized Functions. Some concepts of the Lebesque integrals, functions represented by series and integrals, theory of distributions, Fourier and Laplace transforms of distributions and applications.
2 lcts.; two terms.
Prerequisite: Mathematics 3A6 or 306.

4U4/ Algebraic Topology. Fundamental properties of polyhedra; simplices and complexes; simplicial homology; Betti numbers and torsion coefficients; barycentric subdivision and simplicial approximation; invariance of homology groups and applications.
2 lcts.; two terms.
Prerequisite: Mathematics 3P4 and 3E4, or permission of the instructor.

4W4/ Directed Readings. Directed reading in areas of mathematics of interest to the student and instructor.
Prerequisite: Registration in Year 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

For prerequisite purposes, a grade of "D" or better is required.

Course is not necessarily offered every session; consult the Chairman of the Department or a Dean of Science (Studies).

2D4/ Probability Theory I. Elementary theory of probability; random variables; discrete and continuous distributions including binomial, Poisson, hypergeometric, uniform, normal, f; moment-generating functions, limiting distributions, central limit theorems; applications.
2 lcts.; two terms.
Prerequisite: One of Mathematics 1A6, 1C6, 1M3, and one of Mathematics 1B4, 1L3, 1G6, Applied Mathematics 1C6.

2F6/ Statistics for Psychology and Life Sciences. Descriptive statistics, plotting data, computation of measures for data, probability, random variables, hypothesis testing, parameter estimation, analysis of variance, chi-square tests, distribution-free tests.
3 lcts.; two terms.
Prerequisite: One of Mathematics 1A6, 1C6, 1F6, 1M3, or 1N6. Not open to students who have completed Statistics 2D4 or 3M3, or Mathematics 2D4, or Applied Mathematics 3M3, or Psychology 2R6 or 2R3, or equivalent.

3D6/ Mathematical Statistics I. The multivariate normal distribution, point and interval estimation, sampling distributions, tests of hypotheses, elementary linear regression, and other topics.
Mechanical Engineering

Faculty as of January 15, 1980

J. H. T. Wade/Chairman

Professors
Mohammed A. Dokainish/B.Sc. (Cairo), M.A.Sc., Ph.D. (Toronto), P.Eng.
Brian Latto/B.Sc. (London), Ph.D. (Glasgow), P.Eng.
George F. Round/B.Sc., Ph.D., D.Sc. (Birmingham), P.Eng.

Associate Professors
David S. Weaver/M.A.Sc., (Toronto), Ph.D. (Waterloo), P.Eng.

Assistant Professor
Hoda A. ElMaraghy/B.Sc. (Cairo), M.Eng., Ph.D. (McMaster), P.Eng.

Lecturers
Richard S. Budny/B.A.Sc., M.A.Sc. (Toronto)
Robert W. Hamilton/(part-time) B.Sc. (Los Angeles College of Art)

CURRICULUM 1980-82

A minimum grade of "C" is normally required in prerequisites specified for courses offered by the Department, except where otherwise indicated. Special cases may be considered by the Department upon request. Enrolment in Mechanical Engineering courses by students in programmes other than those administered by the Department may be limited.

Manufacturing Engineering

2C2/ Engineering Design II. One or two projects in small teams involving modeling, analysis and synthesis, with emphasis on analysis. Individual reports are required with complete assembly and detail drawings. 1 lect., 1 lab. (3) alternating weeks and 1 lab. (3) every week; one term. Prerequisite: Engineering 1C4 and 2P4.

3M3/ Manufacturing Laboratory. Laboratory exercises in metalworking practices, measurements and solid mechanics. 2 labs. (4-1/2); two terms. Prerequisite: Registration in Manufacturing Engineering.

4A3/ Computer Aided Manufacturing. Computer aided planning of factory layouts, group technology and coding, Machine loading and scheduling, computer aided planning and control. Integration of computer aided design and computerized manufacturing. 3 lect.; one term. Prerequisite: Mechanical Engineering 3C3.

4M4/ Project. A major project in the area of manufacturing engineering. It may be of a design or experimental nature. 1 lab. (3); first term; 3 labs. (9); second term. Prerequisite: Registration in Manufacturing Engineering.

4P2/ Manufacturing Laboratory. Laboratory exercises in metalworking practices, solid mechanics and controls. 1 lab. (3); two terms. Prerequisite: Registration in Manufacturing Engineering.

Mechanical Engineering

2A3/ Kinematics of Mechanisms. Computations, and projects in mechanical engineering, introduction to the design of mechanisms. Analysis and synthesis of revolute pairs, gears, and planar mechanisms. Force analysis of machine members. 2 lects., 1 lab. (3); first term: 1 lab (3); second term. Prerequisite: Applied Mathematics 1C7 or 1D7 or Mathematics 1H7,
Mechanical Engineering Description

2B3/ Mechanical Engineering Measurements. Introduction to the theory and practice of engineering measuring techniques. Theory of measurements, precision shop measurements and optical tools; measurements of pressure, flow, temperature, and power; combustion analysis and gas analysis, measurement of strain and force; elementary statistical analysis. 1 lect., 1 lab. (3); first term. 1 lab. (3) second term. Prerequisite: Applied Mathematics 1C7 or 1D7 or Mathematics 1H7, Physics 1A7, or 1D3 and 1E4.

2C2/ Engineering Design II. One or two projects in small teams, involving modeling, analysis and synthesis, with emphasis on analysis. Individual reports are required with complete assembly and detail drawings. 1 lect., 1 lab. (3) alternate weeks, and 1 lab. (3) every week; one term. Prerequisite: Engineering 1C4 and 2P4.


3C3/ Manufacturing Engineering. A general introduction to manufacturing engineering encompassing the wide field of activities from iron and steel making through casting, rolling, forging, to cold forming, metal cutting, welding, bonding, electrical machining, finish treatment, mechanical handling, assembly, cleaning, packaging. 2 lects., 1 lab. (3); one term. Prerequisite: Registration in Manufacturing Engineering or Mechanical Engineering or permission of the department.

3D3/ Mechanical Engineering Thermodynamics. The thermodynamic laws, as developed in Engineering 2W4, are re-examined. Also covered are: Advanced engineering thermodynamic processes, psychrometry, introduction to direct energy conversion, and chemical equilibrium, with emphasis on combustion. 3 lects.; one term. Prerequisite: Engineering 2W4.

3E4/ Engineering Design III. Introduction to elements of mechanical analysis. Static and dynamic analysis of machine elements, members and mechanical systems. The laboratory consists of problems and case studies. 3 lects., 1 lab. (3) one term. Prerequisite: Engineering 2P4, 2Q4; Mechanical Engineering 3A3.

304/ Fluid Mechanics. Fluid properties and statics are introduced. Basic equations of continuity, energy and momentum for internal and external flows are discussed. Similitude, dimensional analysis and compressible and inviscid flows are introduced. 3 lects., 2 tuts.; one term. Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6.

3M2/3M3/ Composite Laboratory. Laboratory exercises in fluid mechanics, thermodynamics, and solid mechanics. 3M2: 1 lab. (3); two terms. 3M3: 2 labs. (4/2); two terms. Prerequisite: Registration in Mechanical Engineering or Mechanical Engineering and Management.

3R3/ Heat Transfer. The study and application of the laws of conduction, convection, and radiation, to problems in heat transfer. Steady and transient conduction in solids. Laminar and turbulent convection. Radiation heat transfer processes. Special topics in heat transfer. 3 lects.; one term. Prerequisite: Applied Mathematics 2J5 or Mathematics 2M6, Engineering 2W4 or Mechanical Engineering 304.

4A3/ Advanced Strength of Materials. The application of strength of materials to practical engineering calculations in design and in the working of metals. Plastic deformation and creep. Elastic behaviour and rapid, approximate methods are emphasized more than detailed techniques of numerical analysis. 2 lects., 1 tut.; one term. Prerequisite: Mechanical Engineering 3A3 or equivalent.


4F3/ Engineering Acoustics. Propagation of sound; "near" and "far" fields, the diffusive field, reverberation time and transmission loss. Generation of noise by fluid flow, vehicular traffic and industrial machinery. Muffler and barrier design. Measurement techniques and noise analysis. Laboratory demonstrations. 2 lects. 1 lect. or tut.; one term. Prerequisite: Registration in the senior year of Mechanical Engineering or permission of the Department. This course is offered in 1981-82 and alternate years.

4G3/ Theory of Design. The theory and methods of modern analytical design theory are presented, including the topics of value theory, optimization, probabilistic design and reliability. The laboratory period will be devoted to several 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: Applied Mathematics 3V6 or Mathematics 3V6.

4L3/ Industrial Design. Introduction for engineering students to the techniques of industrial design, case studies and introduction to illustration techniques. 3 lects.; one term. Prerequisite: Registration in Year IV Mechanical Engineering or Year IV or V Mechanical Engineering and Management.

4M4/ Project. A major project will be undertaken which may be related to any option or branch of engineering. It may be of a design nature or of an experimental nature. 1 lab. (3); first term; 3 labs. (9); second term. Prerequisite: Registration in a programme in Mechanical Engineering, or permission of the Department.

4P2/ Composite Laboratory. Laboratory exercises in vibrations, transients, machine structures, controls, heat transfer, gas dynamics, fluid mechanics, and thermodynamics. 1 lab. (3); two terms. Prerequisite: Registration in a programme in Mechanical Engineering.


4R3/ Control Systems. Control systems in a design context with emphasis on digital computer control techniques. An introduction to continuous linear systems with analog control will be followed by discrete time systems, digital control, and the use of microcomputers. 3 lects.; one term. Prerequisite: Applied Mathematics 3V6 or Mathematics 3V6, Engineering 3N3.

4S3/ Fluid Mechanics. A continuation of Mechanical Engineering 304. Laminar and turbulent flows, boundary layers, unsteady flows, turbomachinery. 2 lects., 1 lect./tut.; one term. Prerequisite: Mechanical Engineering 304 or equivalent.

4T3/ Finite Element Applications. The finite element method and its application to mechanical systems including static and dynamic analysis. 3 lects.; one term. Prerequisite: Mechanical Engineering 4Q3.

4U3/ Advanced Thermodynamics. An advanced approach to material covered in Mechanical Engineering 303, with emphasis on practical aspects of energy conversion and conservation, optimization of thermodynamic systems and the thermodynamics of working fluids. Direct energy conversion and energy collection systems. 3 lects.; one term. Prerequisite: Mechanical Engineering 303.

4V3/ Thermo-fluids System Design and Analysis. The analysis and synthesis of realistic thermo-fluid devices and systems, including choice of failure modes and engineering modeling of performance. There is some extension of previous theory, but the emphasis is on applications. 3 lects.; one term. Prerequisite: Mechanical Engineering 3R3, 3D3 and 4S3.

4W3/ Aerothermal Dynamics. A study of the aerodynamics and thermo-dynamics of compressible flow including wave propagation, shock formation and the effects 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.
Metallurgy and Materials Science

Faculty as of January 15, 1980

G. R. Purdy/Chairman

Professors

J. David Embury/B.Sc. (Manchester), Ph.D. (Cambridge), P.Eng.

M. Brian Ives/B.Sc., Ph.D. (Bristol), F.A.S.M., P.Eng.

D. Alan R. Kay/B.Sc., Ph.D. (Glasgow)


Wei-Kao Lu/B.Sc. (Chen-Kung), Ph.D. (Minnesota)/Steel Company of Canada Chair of Metallurgy


G. Robert Piercy/M.A.Sc. (British Columbia), Ph.D. (Birmingham), P.Eng.


Assistant Professors

Gordon A. Irons/B.Sc. (Toronto), Ph.D. (McGill)

David S. Wilkinson/B.A.Sc. (Toronto), Ph.D. (Cambridge)

CURRICULUM 1980-82

For prerequisite purposes, a grade of "D" or better is required.

Ceramics

4A1/ Summer Essay. Students are required to work in the ceramic industry the summer before entering Year IV Ceramic Engineering and write a report about their activities. The Chairman should be consulted before the end of Year III.

4K4/ Ceramic Projects. Each student will be given either an individual experimental project or an industrial design problem. The results of the experimental project or design problem are to be presented in the form of a thesis at the end of the academic session.

4L4/ General Ceramic Laboratory. A series of laboratories relevant to glass and ceramics technology. In addition, a series of industrial seminars and design problems will be included in the laboratory sessions in the second term.

4O4/ Ceramics and Glasses. The production of ceramics; raw materials survey; green-ware production, and firing processes for traditional and space-age ceramics; glasses; enamels and glazes; special techniques for production of ceramic materials of specific properties.

4P4/ Glasses and Refractories. Structure and physical properties of glasses. Raw materials used in glass and glass-ceramic production; phase diagrams in glass-forming systems; production and heat treatment. The structure, properties and uses of refractories.

Materials

1A6/ The Science of Materials. An introductory course for non-specialists about the structure of materials, its control, and effect on properties. The basic concepts and elementary scientific models are used to explain the behaviour of both natural and man-made materials.

2F3/ Experimental Methods and Computation. The basic experimental methods of acquiring, analyzing and presenting data are applied to experiments which demonstrate the properties exhibited by solid materials. Computer methods and computation solution of problems in materials science.

3S2/ Crystallography. A laboratory course, complemented by lectures, about crystal structure and its determination by X-ray diffraction.


3D6/ Thermodynamics of Materials I. The first half of Materials 3D6, with emphasis on "classical" topics such as equilibrium, solid solutions, and phase diagrams.

METALLURGY AND MATERIALS SCIENCE

convection and radiation, with application to metallurgical and ceramic processing. Emphasis on the setting up of kinetic relationships using conceptual models.


3 lects.; two terms. Prerequisite: Mathematics 2M6 or Applied Mathematics 2J5 or Mathematics 2G3 and 203, or equivalent.

3G2/ Microstructures Laboratory. Characterization and measurement of microstructures of metals, alloys and ceramics and their correlation with phase equilibria.

2 labs. (3); one term. Prerequisite: Completion of at least 13 units of Year I Chemistry, Mathematics, or Physics.

3H3/ Thermodynamics of Materials II. The second half of Materials 3D6, with emphasis on “atomistic” topics such as statistical mechanics, ordering, interfaces, and defects.

3 lects.; one term. Prerequisite: Chemistry 2P4 or 274, or Engineering 2W4, or Physics 2H3 or Chemical Engineering 2D4, 2F4.

4D3/ Corrosion. The oxidation of metals and alloys; electrochemical principles and methods applied to aqueous corrosion and its control.

3 lects.; one term. Prerequisite: Chemistry 2P4 or 274 or Chemical Engineering 2F4, or permission of the Department.

4E3/ Phase Transformations. The thermodynamic, kinetic, and crystallographic aspects of phase transformations, with applications to the preparation and processing of materials. Solidification, recrystallization and heat treatment of steels, aluminum alloys and non-metallic materials.

Text: Shewmon, *Transformations in Metals*

3 lects.; one term. Prerequisite: Materials 3D6 or permission of the Department.


Text: Hull, *Introduction to Dislocation Theory*

3 lects.; one term. Prerequisite: Engineering 3P3, or permission of the Department.

Metallurgy

2C3/ Introduction to Chemical Metallurgy. The application of chemical principles to metallurgy. Thermodynamics of oxides, sulphides and halides; general classification of extraction processes; electrochemistry; reaction kinetics and their application to heterogeneous reactions; interfacial phenomena; corrosion.

3 lects.; one term. Prerequisite: Registration in, or completion of, Chemistry 2T4.

3C3/ Chemical Metallurgy I. Mineral dressing; slags and mattes; the iron and zinc blast furnaces; extraction from sulphide ores; electro-winning of aluminum and magnesium; halide metallurgy for production of beryllium, titanium, uranium and zirconium.

2 lects., 1 lab. (3); one term. Prerequisite: Chemistry 2P4 or 274, or Engineering 2W4, or permission of the Department.

4A1/ Summer Essay. An essay is required of each student entering Year IV of Honours Metallurgy and Materials Science or Metallurgy and Materials Science Major or Metallurgical Engineering. The Chairman must be consulted before the completion of Year III.

4C4/ Chemical Metallurgy II. A sequel to Metallurgy 3C3. Refractories and their application; physical chemistry of steelmaking processes; extraction and refining by aqueous reactions; modern analytical techniques.

3 lects. 1 lab. (3); one term. Prerequisite: Metallurgy 3C3 or registration in Year IV Ceramic Engineering or permission of department.

4K4/ Thesis. Each student will have an individual problem which will be mainly experimental in nature. A preliminary report is required before the end of the first term. The results of the investigation must be presented in thesis form at the end of the academic session.

1 lab. (3); first term; 3 labs. (3); one term.

Prerequisite: Completion of Year III in Honours Metallurgy and Materials Science or Metallurgical Engineering or Engineering Physics, or permission of the Department.

4L4/ General Laboratory and Seminar. Major laboratory exercises drawing upon a broad spectrum of material covered in other metallurgical courses; student seminars in the second term.

2 labs. (3); first term; seminar 1 lab. (3), second term. Prerequisite: Completion of Materials 3B2, 3G2 and 3D6 or permission of department.


3 lects.; one term. Prerequisite: Materials 3E5, which may be taken concurrently, or permission of the instructor. Offered in 1980-81 and alternate years.

4Q3/ Case Studies. The analysis of current industrial problems involving background science, cost analysis and process design.

2 lects., 1 tut.; one term. Prerequisite: Materials 3D6, 3E6 and 3G2, or permission of Department.

Engineering

203/ Structure and Properties of 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. 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 Year I Chemistry, Mathematics, or Physics. Not open to students who are registered in, or have completed, Materials 1A6.

204/ Structure and Properties of Materials. Engineering 203 with a laboratory, involving experiments which illustrate the properties of crystals, glasses, magnetic materials, electrical conductors, and steels.

Self-paced study, 1 lab. (3); one term. Prerequisite: Completion of at least 12 units of Year I Chemistry, Mathematics, or Physics. Not open to students who are registered in, or have completed, Materials 1A6.


3 lects.; one term. Prerequisite: Engineering 2P4 or 2R4 or Physics 2C5; and Mathematics 2M6, or 2G3 and 203, or Applied Mathematics 2J5 or equivalent.

3Q3/ Electronic Properties of Solids. The dielectric, electric, and magnetic behaviour of insulators, semiconductors, metals, and junctions between them, with emphasis upon a qualitative as well as conceptual explanation of their behaviour, how to control it, and how to use it effectively.

3 lects.; one term. Prerequisite: Engineering 2A4 or 2A5 or Physics 2A6 or 2B6.

3R3/ Physical Metallurgy. Properties of engineering alloys are related to production and fabrication methods and resultant microstructures. Processing by solidification, deformation, heat treatment, surface treatment and joining.

3 lects.; one term. Prerequisite: Engineering 203 or 204. Not open to students who are registered in a programme administered by the Department of Metallurgy & Materials Science.


3 lects.; one term. Prerequisite: Engineering 203 or 204, and either Engineering 3P3 or Mechanical Engineering 3A3.

For Graduate Courses see Calendar of School of Graduate Studies.
Music

Faculty as of January 15, 1980

F. Hall/ Chairman (Effective July 1, 1980)

A. Walker/ Chairman

Professors

Marta Hidy/ Mus. Mas. (Budapest), F.R.H.C.M. (Hon.).
Alan Walker/ B.Mus., D. Mus., (Durham) A.R.C.M., L.G.S.M., F.G.S.M. (Hon.).
William Wallace/ B.Mus., Ph.D. (Utah).

Associate Professors

F.R.H.C.M. (Hon.).

Zdenek Konicek/ Dipl. in Music (Prague), M.A.

Assistant Professors

Frederick Hall/ Assoc. Dip., B.Mus., M.A., Ph.D.
Paul Rapoport/ A.B., M.Mus., Ph.D.

Lecturer

Sharyn Hall/ A.Mus., B.A., Ph.D. (Toronto).

Instructors

Reginald Bedford/piano.
Richard Birney-Smith/harpischord
Alta Brat/piano
Scott Cameron/guitar
Dennis Driscoll/organ, A.R.C.C.O. Dipl.
Antal Dvorak/trombone, tuba, and recorder, Dipl. in Music (Budapest).
Paula Elliott/flute, B.Mus., M.M.
Roger Flock/percussion
Robert Grim/trumpet, Mus.Bac.
Myrtle Guerrero/piano
Robert Hansen/horn, Mus.Bac.
Ailine Hess/bass
Peter Hughes/concert band, B.A. (McMaster).
Gary Kidd/clarinet, B.Mus.
June Kowalchuk/voice, Dipl. Merito
Eileen McMarnamy/piano, A.R.C.T., F.R.H.C.M. (Hon.)
Jon Peterson/oboe
Steven Pettes brass methods, tuba
John Price/saxophone, B.Mus. (McMaster).
Ryan Scott/woodwinds methods, Mus.Bac., A.Mus.
Wayne Strongman/university choir, Mus.Bac., M.A.
Sasha Weineltangel/violin and string methods, B.A., B.Mus., M.Mus.
Arlene Wright/basic keyboard skills, A.R.C.T., L.Mus.

Artist-in-Residence

Valerie Tryon (piano)

CURRICULUM 1980-82

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

1A6/ Introductory Music. A panoramic survey of music from c. 500 to the present. The course is designed to stimulate the student's interest in music and to awaken his critical faculties. History, aesthetics, and elementary theory. An elective course for students not registered in Honours Music.

3 lects.; two terms.
Prerequisite: Open.

1BB4/ History of Music (c.500-1750). A study of the development of Western music from early Christian times, culminating in the work of Bach. Particular attention will be paid to the great schools of composition which emerged during the Middle Ages, the Renaissance and the Baroque. All studies in the history of music will include a consideration of performance practices of the various periods, as well as influences upon music by the other arts and from the social circumstances of the day.

2 lects.; two terms.
Prerequisite: Registration in a Music programme.

1C6/ Harmony and Counterpoint. Traditional elementary harmony up to the level of diatonic modulation. Studies will be pursued both in written form and at the keyboard. The contrapuntal idiom of the Renaissance in two voices. All studies in harmony and counterpoint, throughout all four years, will be linked with the creative practices of given historical periods from the Renaissance to the present.

3 lects.; two terms.
Prerequisite: Registration in a Music programme.

1D2/ Aural Training and General Musicanship. Based on the Kodály concept of music education, this course includes the dictation of simple melodic, harmonic and rhythmic ideas; sight-singing with instruction in Tonic Sol-Fa.

1 lect.; two terms.
Prerequisite: Registration in a Music programme.

1E4/ Principal Practical Study. The technique and repertoire of any stringed, brass, or woodwind instrument common to the modern orchestra. Saxophone, recorder, voice, organ, or piano also may be studied.

1 half-hour lesson weekly; two terms.
Prerequisite: Registration in a Music programme.

1G2/ Ensemble. Student's own choice of orchestra, band, choir, or any other ensemble approved by the Chairman of the Department. Alternatively, keyboard students enrolled in a Music programme may receive credit for work in accompanying. Acceptance for any ensemble work is subject to a satisfactory audition. Work is evaluated on a Pass/Fail basis only.

Prerequisite: Registration in a Music programme.

2A6/ History of Music. A study of the major musical periods from 1750 to the present. An elective course for students not registered in Honours Music.

3 lects.; two terms.
Prerequisite: Music 1A6 or permission of the instructor.

2B4/ History of Music (1600-1750). A study of the development of music from Monteverdi to Bach, in which the chief schools of the Baroque period will be dealt with in depth.

2 lects.; two terms.
Prerequisite: Music 1B4 and registration in a programme in Music. Offered in 1980-81 only.

2BB4/ History of Music (1750-1890). A study of the development of music from Haydn to Wagner, in which the Classical and Romantic schools will be dealt with in depth.

2 lects.; two terms.
Prerequisite: Music 1BB4 and registration in a programme in Music. Not open to students with credit in Music 3B4.


2 lects.; two terms.
Prerequisite: Music 1C6 and registration in a programme in Music.

2D2/ Aural Training and General Musicanship. Advanced melodic, harmonic, and rhythmic dictation. Transposing at sight. Score-reading. Singing and playing from memory.

1 lect.; two terms.
Prerequisite: Music 1D2 and registration in a programme in Music.

2E4/ Principal Practical Study.

1 half-hour lesson weekly; two terms.
Prerequisite: Music 1E4 and registration in a programme in Music.

2F3/ Opera. An analysis of selected operatic works in their historical context, with a view to determining the nature and limitations of opera as a theatrical form.

1 lect.; first term; 2 lects.; second term.
Prerequisite: Registration in a programme in Music or Dramatic Arts, or permission of the instructor. Available only as an elective for students in Music programmes. Alternates with Music 2FF3.

Same as Dramatic Arts 2F3.

2FF3/ Studies in Opera. 1980-81: Giuseppe Verdi. A detailed study of the operatic works of Verdi in their historical and dramatic context. Eight to ten works will be examined in depth.
3G2/ Ensemble. Student’s own choice of orchestra, band, choir, or any other ensemble approved by the Chairman of the Department. Alternatively, keyboard students enrolled in a Music programme may receive credit for work in accompanying. Acceptance for any ensemble work is subject to a satisfactory audition. Work is evaluated on a Pass/Fail basis only.

Prerequisite: Registration in a Music programme.

2H4/ Musical Form and Analysis. The forms of music—fugue, sonata and concerto. A study of musical structure as it emerges through the works of Bach, Mozart, Beethoven, and Brahms.

2 lects.; two terms.

Prerequisite: Registration in a Music programme.

3A6/ Music Education. This course includes a survey of the Carl Orff and Kodaly methods of music education, of the classroom repertory, and of the rudiments of music. An elective course for students not registered in Honours Music.

3 lects.; two terms.

Prerequisite: Music 1A6 or 2A6, or permission of the instructor.

3BB4/ History of Music (1880-present). A study of music from the late 19th century to the present, with attention to major developments such as impressionism, serialism, neoclassicism, and indeterminacy.

2 lects.; two terms.

Prerequisite: Music 2BB4 and registration in a programme in Music. Not open to students with credit in, or registration in Music 4BB4.

3C4/ Harmony and Counterpoint. Special studies in the harmonic and contrapuntal idioms of the Baroque. Double counterpoint, invention and fugue.

2 lects.; two terms.

Prerequisite: Music 2C4 and registration in a programme in Music.

3E4/ Principal Practical Study. 1 half-hour lesson weekly; two terms.

Prerequisite: Music 2E4 and registration in a programme in Music.

3G2/ Ensemble. Student’s own choice of orchestra, band, choir, or any other ensemble approved by the Chairman of the Department. Alternatively, keyboard students enrolled in a Music programme may receive credit for work in accompanying. Acceptance for any ensemble work is subject to a satisfactory audition. Work is evaluated on a Pass/Fail basis only.

Prerequisite: Registration in a Music programme.

3H4/ Musical Form and Analysis. A study of musical structure as it emerges through the music of such composers as Bartok, Schoenberg, and Stravinsky.

2 lects.; two terms.

Prerequisite: Music 2H4 and registration in a programme in Music.

3J4/ Orchestration. A study of the individual instruments of the orchestra. The art of scoring music for full ensemble.

2 lects.; two terms.

Prerequisite: Music 1J6 and registration in a Music programme.

3K3/ Instrumental Course Methods: Brass. A study of the basic techniques and the fundamentals of proper breathing, tone production, and care of brass instruments of bands and orchestras through course instruction. No previous study required. The student will take part in simple brass ensemble music. Although concentrating on one instrument the student will receive a working knowledge of them all.

1 lect.; two terms.

Prerequisite: Registration in a Music Programme.

3L3/ Instrumental Course Methods: Woodwind. A study of the basic technique and the fundamentals of proper breathing, tone production, and care of the instruments, through course instruction. No previous study required. Although concentrating on one instrument, the student will receive a working knowledge of them all.

1 lect.; two terms.

Prerequisite: Registration in a Music programme.

3M4/ Instrumental Course Methods: Strings. A study of the basic technique and the fundamentals of proper bowing, fingering, vibrato, and care of string instruments, through course instruction. No previous study required. Although concentrating on one instrument, the student will receive a working knowledge of them all.

2 lects.; two terms.

Prerequisite: Registration in a Music programme.

3N3/ Vocal Course Methods. This course is designed to give the choral conductor an insight into the nature and problems of choruses, their organization, rehearsal discipline, and programme building. It will include fundamentals of voice production, breathing and diction, principles of sight-reading, a survey of choral literature for various grade levels.

1 lect.; two terms.

Prerequisite: Registration in a Music programme.

3O3/ Conducting and Repertoire Course. Combined student ensemble directed by 3rd and 4th Year conducting students. Orchestral and wind-band repertoire will be studied.

1 lect.; two terms.

Prerequisite: Registration in a Music programme.

3R3/ Research Methods and Bibliography. An examination of the important reference and bibliographic sources available to the student. Various historical, analytical and critical methods of research will be considered. The student will be introduced to the techniques of identifying and dating scores and to methods of utilizing non-music sources for information, e.g. publisher’s catalogues and newspapers.

2 lects.; one term.

Prerequisite: Registration in a Music programme.

3T3/ Studies in Canadian Music. An introduction to the musical history of Canada as it emerges from its composers and performers. Students will be expected to analyze selected works in depth.

2 lects.; one term.

Prerequisite: Music 1A6, or registration in a Music programme or permission of the Department.

3U3/ Theory and Practice of Jazz. A study of influential performers and arrangers in the history of jazz, focusing upon the evolution of melodic improvisation. Extensive outside listening will be required.

2 lects.; one term.

Prerequisite: Music 1A6 or registration in a Music programme, or permission of the instructor.

4A4/ Free Creative Writing in a Contemporary Idiom. Times to be arranged between student and instructor.

Prerequisite: Registration in a Music programme, and permission of the instructor.

4BB4/ Topics in the History of Music. Seminars in special historical topics. The course will give the student an opportunity to undertake advanced work in the discipline.

2 lects.; two terms.

Prerequisite: Music 3BB4 and registration in a Music programme or permission of the Department. Beginning in 1901-62.


2 lects.; two terms.

Prerequisite: Music 3C4 and registration in a programme in Music.

4E4/ Principal Practical Study. 1 half-hour lesson weekly; two terms.

Prerequisite: Music 3E4 and registration in a Music programme.

4G2/ Ensemble. Student’s own choice of orchestra, band, choir, or any other ensemble approved by the Chairman of the Department. Alternatively, keyboard students enrolled in a Music programme may receive credit for work in accompanying. Acceptance for any ensemble work is subject to a satisfactory audition. Work is evaluated on a Pass/Fail basis only.

Prerequisite: Registration in a Music programme.

4H4/ Musical Form and Analysis. A consolidation of the methodology acquired in previous formal studies through its application to specific problems related either to particular genres or to the music of particular composers or to both.

2 lects.; two terms.

Prerequisite: Music 3H4 and registration in a programme in Music.

4I4/ Music Aesthetics and Criticism. Concepts of different periods, from Scheibe to Hanslick, will be discussed. The art of criticism and evaluation will be studied and practised.

2 lects.; two terms.

Prerequisite: Registration in a Music programme. Not available to students with standing in Music 3I4.

4K3/ Instrumental Course Methods: Brass 1 lect.; two terms.

Prerequisite: Music 3K3 and registration in a programme in Music.

4L3/ Instrumental Course Methods: Woodwind. 1 lect.; two terms.

Prerequisite: Music 3L3 and registration in a programme in Music.

4M4/ Instrumental Course Methods: Strings. 2 lects.; two terms.

Prerequisite: Music 3M4 and registration in a programme in Music.

4N3/ Vocal Course Methods. 1 lect.; two terms.

Prerequisite: Music 3N3 and registration in a programme in Music.

4O3/ Conducting and Repertoire Course. 1 lect.; one term.

Prerequisite: Music 3O3 and registration in a programme in Music.

4P2/ Instrumental Course Methods: Percussion. The rudiments of stick technique, as applied to the snare drum and the timpani, and the selection and care of percussion instruments.

1 lect.; one term.

Prerequisite: Registration in a Music Programme.

4S4/ Special Studies. A course of supervised study in any area offered by
the Department of Music approved by the Chairman of the Department.
Prerequisite: Registration in Year IV of an Honours programme in Music.

For further information, see also "Admission: Humanities I, Music I" and programme requirements for: "Honours Programme for Mus. Bac. Degree; Pass Music".

Philosophy

Faculty as of January 15, 1980

J. H. Noxon/ Chairman

Professors Emeriti

Frederick W. Waters/B.A., B.D. (McMaster), Ph.D. (Yale).

Professors

James H. Noxon/M.A. (Queen’s), Ph.D. (Edinburgh).

Associate Professors

Samir M. Najm/A.A. (Beirut), B.A. (Wesleyan), M.A., Ph.D. (Yale).
Michael Radner/B.A. (Carleton College, Minn.), M.A., Ph.D. (Minn.).

Assistant Professors

Samuel Ajzenstat/M.A. (Toronto).
John R. M. Bristol/part-time M.A., Ph.D. (Toronto).
Nicholas J. Griffin/B.A. (Leicester), Ph.D. (Australia).
David L. Hitchcock/B.A. (McMaster), Ph.D. (Claremont).
Spiro Panagiotou/B.Sc., M.A. (Guelph), Ph.D. (St. Andrews).

CURRICULUM 1980-82

The Department of Philosophy offers two Year I courses, each of which is designed to introduce the student to the study of philosophy. No student may take more than one of these courses.

The Department of Philosophy offers courses in five major areas of Philosophy, namely History of Philosophy, Logic, Theory of Knowledge, Ethics and Theory of Value, and Metaphysics. Students are advised to include courses from each of these areas in their programmes.

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

1D6/ Philosophy and Society. An introduction to contemporary philosophy, through the social-political thought of Plato, Hobbes, and Marx, emphasizing human nature in relation to the structure of the world.
2 lec., 1 tut.; two terms.
Prerequisite: Open, except to students who have credit in or are registered in Philosophy 1D6.

1D6/ Problems in Philosophy. A critical investigation of man’s claim to know God, himself, and the external world, concentrating on moral, religious, political, and aesthetic values.
2 lec., 1 tut.; two terms.
Prerequisite: Open, except to students who have credit in or are registered in Philosophy 1B6.

2A6/ Ancient Greek Philosophy. A study of Western philosophical thought from its earliest beginnings to the triumph of Christianity in the Roman Empire, with emphasis on Plato and Aristotle.
3 lec.; two terms.
Prerequisite: Open to students in Years II and above.

2B3/ Introductory Logic. Sentential and quantification logics are introduced and applied to arguments in English.
3 lec.; one term.
Prerequisite: Open to students in Years II and above.

2C6/ Early Modern Philosophy. A study of the development of metaphysical thought, beginning with the rise of science and including representatives of Continental Rationalism and British Empiricism.
3 lec.; two terms.
Prerequisite: Open to students in Years II and above.

2D3/ Moral Issues. An introduction to moral philosophy accenting biomedical ethics, issues like abortion, human experimentation, euthanasia, and genetic screening will be investigated in cooperation with members from the Faculty of Health Sciences.
2 lec., 1 tut.; one term.
Prerequisite: Open to students in Years II and above. May be taken by students registered in a programme in Philosophy, but, if both Philosophy 2D3 and Philosophy 2G3 are taken, at least one must be taken as an elective.

2F6/ Philosophical Psychology. An introduction to the body/mind problem as formulated by some philosophers and by some medical writers.
Among the former: Plato, Aristotle, Aquinas, Descartes.
Among the latter: Descartes, Fernel, Willis, Whitty.
1 lec. (2 hrs.), 1 tut.; two terms.
Prerequisite: Open to students in Years II and above.

2G3/ Social and Political Issues. A philosophical examination of some contemporary social and political issues, such as the distribution of wealth, coping with ecological problems and the enforcement of morals.
2 lec., 1 tut.; one term.
Prerequisite: Open to students in Years II and above. May be taken by students registered in a programme in Philosophy, but, if both Philosophy 2D3 and Philosophy 2G3 are taken, at least one must be taken as an elective.

2H3/ Aesthetics. An introduction to some main theories of the nature of art, criticism, and the place of art in life and society.
3 lec.; one term.
Prerequisite: One previous course in Philosophy, or permission of the Department.

2J3/ Reasoning. This course aims to improve skills in analyzing and evaluating arguments and presentations found in everyday life and academic contexts, and to improve critical judgement.
2 lec., 1 tut.; one term.
Prerequisite: Open to students in Years II and above. May be taken by students registered in Philosophy programmes but as an elective only.

2K3/ Scientific Reasoning. The evaluation and utilization of scientific information. Topics include reasoning about scientific theories; causes, correlations and statistical reasoning; values and decisions.
2 lec., 1 tut., one term.
Prerequisite: Philosophy 2B3 or Philosophy 2J3.

2L3/ Introduction to Philosophy of Biology. Introduction to philosophical problems arising from Biology: the nature of biological laws and explanations, the presuppositions of taxonomy, the status of sociobiology and evolutionary theory.
2 lec., 1 tut.; one term.
Prerequisite: One course in Biology or Philosophy 2B3, or permission of the Instructor.
Offered annually beginning in 1981-82.

3A6/ History of Modern Philosophy. Kant, Hegel, and a number of their immediate predecessors, including Rousseau, are studied in the context of the Enlightenment, Romanticism, and the French Revolution.
1 lec. (2 1/2 hrs.); two terms.
Prerequisite: Philosophy 2G6 or permission of the Department.

3B3/ Philosophies of Existence. An examination of the 19th-century forerunners of contemporary existential philosophy, concentrating principally on the thought of Kierkegaard and Nietzsche.
1 lec. (2 1/2 hrs.); one term.
Prerequisite: One previous course in Philosophy.

1 lect. (2 hrs.); one term.
Prerequisite: One previous course in Philosophy.
Offered in alternate years.

3E3/ Plato. A critical examination of Plato's writings with reference to selected central philosophical issues.
1 lect., 1 seminar (2 hrs.); one term.
Prerequisite: Philosophy 2A6 or permission of the Department.
Offered in alternate years.

3F3/ Symbolic Logic. The method of semantic tableaux will be used to prove the completeness and soundness of the classical sentential and functional calculi, Church's Theorem, and Gödel's Theorem. A continuation of Philosophy 2B3.
3 lects.; one term.
Prerequisite: Philosophy 2B3 or permission of the Department.
Offered in alternate years.

3G3/ Types of Ethical Theory. An introduction to influential types of ethical theory emphasizing the meaning of ethical terms, sources of ethical disputes and limits of justification in ethical arguments.
3 lects.; one term.
Prerequisite: One previous course in Philosophy or permission of the Department.

3H3/ Philosophy of Religion. A discussion of the nature of religious belief and a discussion of some of the arguments purporting to prove the existence of God.
3 lects.; one term.
Prerequisite: One previous course in Philosophy or permission of the Department.

1 seminar (2 1/2 hrs.); one term.
Prerequisite: Philosophy 2A6 or permission of the Department.
Offered in alternate years.

3K3/ Philosophy of Education. An introduction to the philosophy of education and a study of the role which this branch of philosophy may play in dealing with contemporary educational issues.
2 lects., 1 tut.; one term.
Prerequisite: One previous course in Philosophy, or permission of the Department.

3L3/ Probability and Induction. A relatively non-technical introduction to the calculus of probability, the various "theories" of probability, and an examination of the bearing of probability estimates on decision making.
3 lects.; one term.
Prerequisite: Registration in Year III or IV of a programme in Philosophy, or permission of the Department.
Offered in alternate years.

3N6/ Social and Political Philosophy. An examination of such main ideas in social thought as liberty, justice, and equality. Special attention is given to liberalism and radicalism.
3 lects.; two terms.
Prerequisite: One previous course in Philosophy or permission of the Department.

3O3/ Introduction to Theory of Knowledge. A systematic examination of key concepts and problems of knowledge, including such concepts as perception, experience, belief, inference, verification and truth.
1 lect. (2 hrs.); one term.
Prerequisite: One previous course in Philosophy or permission of the Department.
Offered in alternate years.

3R3/ Bertrand Russell. A survey of Russell's philosophical thought, including his theory of knowledge and metaphysics and his political and social ideas.
1 lect. (2 hrs.), 1 seminar; one term.
Prerequisite: One previous course in Philosophy or permission of the Department.
Offered in alternate years.

3W3/ Reading Course. Topics to be arranged between individual students and instructors.
Prerequisite: Open to students in Year III or IV of a programme in Philosophy, subject to permission of the Department. A written proposal must be submitted to the Department prior to the term in which the course is to be taken.

1 seminar (2 hrs.); one term.
Prerequisite: Philosophy 2C6 or permission of the Department.
Offered in alternate years.

4B3/ Theory of Value. A study of human practices of evaluation in morality, politics, art, religion, and economics.
1 lect., 1 seminar (1 1/2 hrs.); one term.
Prerequisite: Registration in Year III or IV of a programme in Philosophy, or permission of the Department.
Offered in alternate years.

4C3/ Epistemology. A critical discussion of selected topics in contemporary contributions to the theory of knowledge.
1 seminar (2 hrs.); one term.
Prerequisite: Philosophy 3O3 or permission of the Department.
Offered in alternate years.

4D3/ Philosophy and Language. A study of relationships among language, thought and reality.
1 lect., 1 seminar (1 1/2 hrs.); one term.
Prerequisite: Registration in Year III or IV of a programme in Philosophy or permission of the Department.
Offered in alternate years.

Seminar (2 1/2 hrs.); one term.
Prerequisite: Philosophy 3B3 or permission of the Department.

4H3/ Metaphysics. An investigation of metaphysical concepts, such as substance, individuation, identity, essence, quality, process, mind, time and causality. Some contemporary criticisms of metaphysics will be discussed.
Seminar (2 1/2 hrs.); one term.
Prerequisite: Registration in Year III or IV of a programme in Philosophy or permission of the Department.

1 seminar (2 1/2 hrs.); one term.
Prerequisite: Either Philosophy 2A6 or 3E3 or 3J3 or permission of the Department.
Offered in alternate years.

1 seminar (2 hrs.); one term.
Prerequisite: Philosophy 2C6 or permission of the Department.

4S3/ Philosophy and Science. Philosophy of science is considered as a branch of the theory of knowledge and developed from the period of Descartes and Kant to the present.
3 lects.; one term.
Prerequisite: One previous course in Philosophy or permission of the Department.

4T3/ Kant. A study of the Critique of Pure Reason with reference to the metaphysical and epistemological problems raised by Hume.
1 seminar (3 hrs.); one term.
Prerequisite: Philosophy 4R3 or permission of the Department.
Offered in alternate years.

4W3/ Reading Course. Topics and times to be arranged between individual students and instructors.
Prerequisite: Registration in Year 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.
PHYSICAL EDUCATION

Physical Education

Faculty as of January 15, 1980

M. E. Keyes/Chairman

Professors

Frank J. Hayden/B.A. (Western), M.A., Ph.D. (Illinois)/Director, School of Physical Education and Athletics
Allan J. Smith/B.S.A., M.Ed. (Toronto), D.Ed. (SUNY, Buffalo).

Associate Professors

William H. Fowler/B.A. (Western), M.P.E. (Springfield)
Rose M. Hill/B.P.H.E. (Toronto), M.A. (State University of Iowa)
Raymond B. Johnson/B.A. (Western), M.Ed. (SUNY, Buffalo)
Mary E. Keyes/B.A., M.A. (Western)
J. Duncan MacDougall/B.A., B.P.H.E. (Queen's), M.S. (Oregon), Ph.D. (Wisconsin)
Fredrick A. Moyes/Dip. (Florida), M.A., Ph.D. (Wisconsin)

Assistant Professors

Jane A. Alasziewicz/B.A. (Western)
James S. Frank/B.Sc., M.Sc. (Waterloo)
Susan E. Inglis/B.P.E., M.A. (Alberta)
Judith M. Kent/B.P.H.E., B.Ed. (Toronto)
Catherine A. Miller/B.A. B.P.E. (McMaster)
Cindy Plach/B.A., B.P.H.E., B.Ed., M.A. (Queen's)
Janet Starkes/B.A. (Western), M.Sc. (Waterloo)
Susan Summers/B.P.E. (McMaster), M.A. (Western)
Philip N. Tollestrup/B.Sc. (Bingham Young)
Sharon L. Tsukamoto/B.A. (Rhodes) MA, Ph.D. (Florida)

Lecturers

Judy A. Aslakson/B.A. (Western)

CURRICULUM 1980-82

The following courses are open only to students registered in the four year Bachelor of Physical Education programme, except where otherwise designated.

Required courses are as follows: 1A6, 1B3, 1E3, 2A3, 2B3, 2C6, 2D3, 2E3, 2F3, 3A6, 3E3. Elective offerings include: 3B3, 3C3, 3D3, 3F6, 3G3, 3H3, 3J3, 3K3, 3M3, 3P3, 3Q3, 4A3, 4B6, 4C3, 4D3, 4E3, 4F3, 4G3, 4J3, 4L3, 4M3, 4O3, 4P3, 4R3.

CURRICULUM (YEAR I)

1A6/ Human Anatomy. A study of macroscopic and microscopic anatomy, with particular reference to the locomotor, nervous, cardiovascular, respiratory, digestive, endocrine, and urogenital systems.
   3 hrs. (lects., labs.); two terms.

1B3/ Sociology of Sport. A discussion of the sociological perspective as applied to sport and related physical activities; critical examination of contemporary issues and problems in Canadian society.
   3 hrs. (lect. and discussion); one term.

1E3/ Motor Development. A study of physical growth patterns and the manner in which human beings develop perceptual-motor abilities. Age-appropriate motor behaviour, from infancy to old age, is investigated.
   3 hrs. (lects., labs.); one term. Practicum two units.

CURRICULUM (YEAR II)

2A3/ Kinesiology. Motor skills analyzed in terms of elementary mechanical principles.
   1 lect., 2 labs; one term.

2B3/ Psycho-Motor Aspects of Physical Activity. Motor learning principles and performance determinants are investigated, together with other relevant psychological determinants of gross motor behaviour.
   2 lects., 1 lab; one term.

   2 lects., 1 lab; two terms.

2D3/ Philosophy of Physical Education and Sport. Critical examination of the concepts, slogans, and assumptions, associated with physical education and sport, as well as a delineation of one's personal philosophy.
   3 hrs. (lects. and discussion); one term.

2E3/ Sociology of Sport. A discussion of the sociological perspective as applied to sport and related physical activities; critical examination of contemporary issues and problems in Canadian society.
   3 hrs. (lects. and discussion); one term.

2F3/ History of Physical Education and Sport in Canada. A historical study of the origins and development of modern physical education and sport in Canada, including individual leaders and contributing cultural factors.
   3 hrs. (lects., seminars); one term. Practicum four units

CURRICULUM (YEAR III)

3A6/ Kinesiology. Motor skills analyzed in terms of elementary mechanical principles.
   4 hrs. (lecture, labs) (2); two terms.

3B3/ Adapted Physical Activity and Movement. An introduction to theories of perceptual motor learning as related to special physical activity programmes.
   2 lects., 1 lab; one term.

3C3/ Measurement and Evaluation I. Analysis of test results; concepts of correlation, reliability, and validity.
   3 hrs. (lects., lab.); one term.

3D3/ Measurement and Evaluation II. Implication of testing in the motor domain; test construction and measurement of individual motor performance and physical activity programmes.
   3 hrs. (lects., lab.); one term.

3E3/ Psycho-Motor Aspects of Physical Activity. Motor learning principles and performance determinants are investigated, together with other relevant psychological determinants of gross motor behaviour.
   2 lects., 1 lab; one term.

3F6/ Sport and Physical Education Administration. Theoretical bases and task specifics of administrative practices found in sport and physical education environments. Units include: management, planning, programme formalization, communication, motivation, and selected topics.
   3 hrs. (lects., seminars); two terms.

3G3/ Individual Aspects of Play and Game Involvement. Traditional and contemporary concepts related to participation in work, play, and athletic pursuits, are examined and discussed.
   2 lects., 1 seminar; one term.

3H3/ Historical Interpretations of Physical Activity. A historical survey of physical education and sport, beginning with ancient Greece, and with special emphasis on recent developments in Europe and North America.
   2 lects., 1 seminar; one term.

3J3/ Aesthetics of Sport and Dance. An inquiry into man's involvement in sport and dance as he seeks to find meaning and reality in these non-verbal forms of expression and communication.
   3 hrs. (lect., seminars); one term.

3K3/ Sports Injuries. Methods of dealing competently with sport injuries under following headings: prevention; preliminary assessment and response; first aid; and post-medical care of injured athletes.
   1 lect., 1 tut., 1 lab; one term.
   Prerequisite: Permission of instructor. Open to Year IV students.

3M6/ Theory and Practice of Coaching. The practical application of physical education theory to the tasks of coaching. Feedback on field experience will be the central focus.
   3 hrs.; two terms.
3P3/ Sport and Social Processes. A macro-analysis of sport in society; investigation of the relationship between sport and other social institutions focusing on social processes.
(2 lect. 1 seminar; one term.
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

3Q3/ Sport and Small Group Dynamics. A micro-analysis of sport in small social systems; investigation of the dynamics of involvement in sport encounters, the team as a small group, and sport sub-cultures.
3 hrs. (lect. and discussion; one term.
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.

CURRICULUM (YEAR IV)

4A3/ Biomechanics of Human Movement. Study of the mechanics (statics and dynamics) of human movement applied to specific position and movement problems. Interaction of selected neurophysiological mechanisms which may be operative.
3 hrs. (lects., labs., discussion; one term.
Prerequisite: Permission of instructor. Above average performance in 3A 6 and completion of Physics 2M3.

4A6/ Biomechanics of Human Movement. Mechanical and neurophysiological principles, and their interaction, applied to specific static and dynamic human movement problems.
3 hrs. (lects. labs.; two terms.
Prerequisite: Permission of instructor. Above average performance in 2A3 and completion of Physics 2M3.
Offered 1982-83.

4B6/ Selected Aspects of Adapted Physical Activity. An in-depth study of physical activity and movement designed to meet the needs, interests, and abilities, of individuals referable to special physical activity programmes.
2 lects., 1 lab. (field work); two terms.
Prerequisite: Satisfactory completion of Physical Education 3B3, and permission of instructor.

2 lects., 1 lab. (2); one term.
Prerequisite: Permission of instructor; registration in Year IV of the B.P.E. programme.

2 lects. 1 lab.; two terms.
Prerequisite: Permission of instructor; registration in Year IV of the B.P.E. programme.
Offered 1983-84.

4E3/ Motor Control. A study of psychological principles and neurophysiological mechanisms underlying motor skill performance. Topics include basic neuroanatomy, mechanisms of sensation and regulation of voluntary movement.
2 lects., 1 lab.; one term.

4F3/ Programme Planning and Design. Attention given to programme planning and design of human movement programmes in physical education, sport and recreation.
3 hrs. (lects., seminars); one term.

4G3/ Perspectives in Dance—A Cultural Survey. A survey of dance in selected cultures, studying its role in ritual, in art and in theatre.
3 hrs. (lect., seminars); one term.
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Same as Dramatic Arts 4G3.

4J3/ Perspectives in Dance—Dance in Contemporary Society. A study of dance forms in the 20th century. Students will view films, dance performances and participate in dance work shops.
3 hrs. (lect., seminars); one term.
Prerequisite: With permission of the instructor, this course may be taken as an elective for B.A. credit by undergraduates not in Physical Education.
Same as Dramatic Arts 4J3.

4L3/ Comparative Physical Education and Sport (Selected topics). An examination of contemporary physical education in selected countries, with special attention given to international sports competition.
2 lects., 1 seminar; one term.

4M3/ Psycho-Social Aspects of Skill. Perceptual and social-psychological principles are applied to specific problems in skill development. Research on motivation, arousal, perception, personality and competition is discussed.
2 lects., 1 lab.; one term.

4O3/ Health Science: Physical and Environmental. Selected transactions between man, his environment, and disease agents, are explored as these transactions influence human diseases.
3 hrs. (lects., seminars); one term.
Prerequisite: Open to Year IV B.P.E. students.

4P3/ Health Science: Behavioural. Development of an understanding of those health topics based primarily on the behavioural sciences. Specifically included are mental health, psychoactive drugs, and human sexuality.
3 hrs. (lects., seminars); one term.
Prerequisite: Open to Year IV B.P.E. students.

4R3/ Individual Study Project. A detailed investigation of a selected theoretical or applied problem mutually acceptable to instructor and student.
Open to Year IV B.P.E. students.
Practicum four units.

PROCEDURE FOR SELECTION OF PRACTICUM CLASSES

In the four years, each B.P.E. student must complete a minimum of 14 units of practicum (1 unit = 6 week course = 4 hours per week).
The course requirements are as follows:
Yr. I — normally two units of practicum PR01 Basic Aquatics, PR02 Basic Gymnastics
Yr. II — normally four units of practicum including PR03 Track and Field, PR04 Games, PR05 Dance
Yr. III — normally four units of practicum
Yr. IV — normally four units of practicum

In Years III and IV a variety of basic (Level I) and advanced (Level II and III) courses are offered. See Practicum Calendar for specific course offerings.

GENERAL REGULATIONS

(1) In order for a student to attend a Level II course, e.g., Hockey, Level II, the permission of the appropriate instructor must be obtained.
(2) Students requiring direct entry into an advanced-level course without meeting the requirements of the appropriate preceding level(s), must satisfy the instructor, both practically and theoretically. The prerequisite standard for advanced level courses does not give credit for, nor does it count as, one of the 14 units required by the Department.
(3) A student wishing to take more than four courses a year, or more than one course per session, must obtain written permission to do so from the Chairman of the Department.
(4) The Physical Education student is expected to satisfy the requirements of each activity course he selects and pursues:

A Yr. I student is required to withdraw unless he/she completes PR01 Basic Aquatics and PR02 Basic Gymnastics with a minimum grade of 50% in each course.
A Yr. II student is required to complete PR03 Track and Field, PR04 Games, PR05 Dance and one unit of elective practicum with a minimum of 50% in each course.

In Year III and IV four units of practicum must be completed with a minimum of 50% in each course.

OUTDOOR ACTIVITY COURSES

Courses in outdoor activities, e.g., canoeing, orienteering, sailing, etc., will be offered in a camp situation prior to the commencement of the academic year. Courses in skiing will be offered during the winter, but outside the regular time-tabled programme. It is not compulsory to take a course from the outdoor activity area, but interested students will receive comparable recognition for satisfactory completion of such courses, that is one unit credit for each 24 hour course completed with 50% average.
For prerequisite purposes, a grade of "D" or better is required.

1A7/ Mechanics, Wave Motion, Optics, and Electricity. A course, organized in sections of 60-80 students, of lectures, demonstrations, and laboratory work in general physics with stress on wave motion, optics, mechanics, electricity and magnetism, and modern physics. Primarily intended for students proceeding in the physical sciences. 3 lects., 1 lab. (3) every other week; two terms.

1B7/ General Physics I. Lectures, demonstrations, and laboratory work in general physics. This course places less stress on the use of mathematics, and covers a wider range of topics, than Physics 1A7. Intended primarily for students proceeding in the life sciences. 3 lects., 1 lab. (3) every other week; two terms. Prerequisite: Grade 13 Physics and registration in Mathematics 1A6 or 1C6 or 1F6.

1C8/ Introductory Physics. Lectures and demonstrations in physics, with particular stress on topics in mechanics, wave motion, optics, and electricity, for students without Grade 13 Physics. 3 lects., 1 tut., 1 lab. (3) every other week; two terms. Prerequisite: Registration in Mathematics 1A6 or 1C6 or 1F6.

1D3/ Mechanics. A course for Engineering students. Topics will include statics, kinematics, Newtonian dynamics, energy and momentum. 3 lects.; one term. Prerequisite: Registration in Year I Engineering.

1E4/ Electrical Science. A course for Engineering students. Topics include: oscillations and waves; interference and diffraction; charges; electrical fields, potential; capacitance, current and circuits. 3 lects., 1 term; 1 lab (3) every other week, two terms. Prerequisite: Registration in Year I Engineering.

2A6/ General Physics II. A sequel to Physics 1B7. Electricity and magnetism and radiation physics. Intended primarily for students proceeding in the life sciences. 3 lects.; two terms. Prerequisite: Physics 1A7 or 1B7 or 1C6 and Mathematics 1A6 or 1C6 or 1F6. Not open to students in Honours Chemistry and Physics, Honours Physics, Honours Applied Physics, Physics Major, or Pass Physics.

2B6/ Electricity and Magnetism. Electrostatics, electrodynamics, D.C. and A.C. circuit analysis. 3 lects., first term; 2 lects., second term; 1 lab. (3) every other week; two terms. Prerequisite: Physics 1A7 or 1B7 or 1C8, and concurrent registration in Mathematics 2G3 and 2O3, or equivalent.

2C5/ Mechanics. First term: vectorial treatment of the dynamics of a particle, central field problem. Second term: many-particle systems, introduction to the mechanics of rigid bodies, Lagrange’s equations, introduction to the special theory of relativity. 2 lects., 1 tut.; two terms. Prerequisite: Registration in a programme in which Physics 2C5 is required or is a specified option. Not open to students who are registered in, or have completed, Physics 2C3.

2E6/ Introduction to Astronomy and Astrophysics. A survey of general astronomy, including the solar system, stars and stellar evolution, star clusters and galaxies. Modern astrophysics, including radio and x-ray astronomy; pulsars and quasars will also be discussed. 3 lects.; two terms. Prerequisite: Physics 1A7 or 1B7 or 1C6, and Mathematics 1A6 or 1C6 or 1F6.

2G3/ Mechanics of a Particle. First term of Physics 2G5: Vectorial treatment of the mechanics of a particle in three dimensions. 2 lects., 1 tut.; one term. Prerequisite: Physics 1A7 or 1B7 or 1C6, and Mathematics 1G6 or Applied Mathematics 1C6 or registration in Mathematics 2G3, or equivalent. Not open to students who are registered in, or have completed, Physics 2C5.

2H3/ Thermal Physics. Phenomenological heat; introduction to the kinetic theory of gases, to thermodynamics and to statistical entropy. 2 lects., 1 lab. (3); one term. Prerequisite: Physics 1A7 or 1B7 or 1C6, and Mathematics 1A6 or 1C6.

2J3/ The Physical Basis of Musical Sound. The physical properties of sound and radio waves; vibrating bodies and musical instruments; the ear; computer music; the structure of music; acoustics and the design of auditoria. 3 lects. with demonstrations; one term. Prerequisite: Registration in Year II, III, or IV of a non-science programme. Knowledge of mathematics is not required.

2L2/ Rigid Body Motion and Special Relativity. The second term of Physics 2C5. 2 lects., 1 tut.; one term. Prerequisite: Physics 2G3 and permission of the instructor. Not open to students who are registered in, or have completed, Physics 2C5.

2M3/ Mechanics. An introduction to mechanics with applications primarily based on kinesiology, cinematics; dynamics; rotational dynamics. 3 lects., one term. Prerequisite: Registration in Year II, III or IV of a non-science programme. Knowledge of mathematics is not required.

386/ Electromechanics. Network theory and filters, semiconductor devices, amplifier circuits, D.C. power supplies, integrated circuits, operational amplifiers, and digital circuits. 2 lects.; both terms; 1 lab. (2); two terms. Prerequisite: Engineering Physics 2A7 or Physics 286.

3H4/ Laboratory. Experiments in atomic physics, optics, mechanics, and heat. 1 lect. (3); two terms. Prerequisite: Physics 2B6.

3K4/ Thermodynamics and Statistical Mechanics. The laws of thermodynamics, with emphasis on the mathematical structure of the theory; classical and quantum statistical mechanics. 2 lects.; two terms. Prerequisite: Physics 2H3, and Mathematics 2G3 and 2O3, or equivalent. Not open to students who have completed Chemistry 3Y3.


3N3/ Physical Optics. Interference, Fraunhofer and Fresnel diffraction; Maxwell's equations and the electromagnetic character of light; polarization and double refraction; interference of polarized light; selected topics in modern optics. 3 lects.; one term. Prerequisite: Physics 2B6 or Engineering Physics 2A7, and Mathematics 2G3 and 2O3, or equivalent.


3R4/ Astronomy and Astrophysics. A qualitative discussion of the solar system, the physics of stars, and cosmology. 2 lects., and occasional laboratory periods; two terms. Prerequisite: Physics 2B6 or Engineering Physics 2A7, and either Physics 2C5 or 2G3. Offered in 1981-82, alternating with Physics 3S4.

3S4/ Physics of the Earth. The origin, age, evolution, and physical properties of the earth. 2 lects.; two terms. Prerequisite: Physics 2B6 or Engineering Physics 2A7, Mathematics 2G3 and 2O3, or equivalent; Geology 1A6 or 1B6; or permission of the instructor. Offered in 1980-81, alternating with Physics 3R4.

3T3/ Interaction of Radiation with Matter. The interactions of nuclear radiations with matter: detectors, dosimetry, tracer methods, the production and use of X-rays, etc. For students interested in radiation biology, radiochemistry, and geology. 3 lects.; one term. Prerequisite: Physics 2A6 or 2B6.

3Z2/ Energy Sources and the Physics of Energy Conversion. An applica-
tion of physical principles to the utilization of fossil, geothermal, nuclear, and solar energy sources. 3 lects.; one term. Prerequisite: Completion of Natural Sciences I including Physics 1A7 or 1B7 or 1C8. Some knowledge of electricity and thermodynamics beyond Year I will be assumed. This is an open elective which cannot be chosen to satisfy a Physics requirement. Offered in 1981-82, and in alternate years.

Mathematics 3C6 (formerly Applied Mathematics 3B6)//Mathematical Physics I. Partial differential equations, orthogonal systems and eigenvalue problems for differential equations, special functions, vector analysis, linear algebra, wave motion, functions of a complex variable. 3 lects.; two terms. Prerequisite: Mathematics 2A4 or 2A5 and 2C4, or 2G3 and 2O3; Physics 2C5 or 2G3; or permission of the instructor.

4A2/ Special Topics. Independent study of the scientific literature, including the preparation of seminars on assigned topics. 1 lect. or seminar; two terms. Prerequisite: Registration in a programme in which Physics 4A2 is required or is a specified option.

4B4/ Electromagnetic Theory. Development of Maxwell's equations; electromagnetic waves; reflection, refraction and dispersion; waveguides; radiation from oscillating dipoles. 2 lects.; two terms. Prerequisite: Physics 2B6 or Engineering Physics 2A7; Mathematics 3C6 or Applied Mathematics 3B6.

4C4/ Physics of Continuous Media. Advanced dynamics. Fluid mechanics. Elasticity. 2 lects.; two terms. Prerequisite: Mathematics 3C6 or Applied Mathematics 3B6 and registration in anHonours or Engineering programme, or permission of the instructor.

4D6/ Digital Logic and Computer Systems. The design and use of digital logic systems and their application to data acquisition and control techniques. The project-oriented laboratory involves both hardware and software. 2 lects.; 1 lab. (3); two terms. Prerequisite: Physics 2B6.

4E3/ Introductory Nuclear Physics. Nuclear masses and stability; radioactivity and nuclear reactions; elementary nuclear models. 3 lects.; one term. Prerequisite: Physics 3M6 or 3P3 and registration in anHonours programme or Year IV Physics Major.

4F3/ Quantum Mechanics. A sequel to Physics 3M6, including general structure of quantum mechanics, matrix mechanics, perturbation theory, and variational method. 3 lects.; one term. Prerequisite: Physics 3M6 and Mathematics 3C6 or Applied Mathematics 3B6.

4G4/ Modern Physics Laboratory. Projects in atomic, nuclear and solid state physics. Three or four projects, one of which may be associated with a faculty research programme, are required. 1 lab. (3); two terms. Prerequisite: Registration in a programme in which Physics 4G4 is required or is a specified option, or permission of Chairman of Department.

4H3/ Introductory Solid State Physics. Crystal structure and binding; lattice vibrations; electron energy bands; metals and semiconductors; magnetism. 3 lects.; one term. Prerequisite: Physics 3M6 or 3P3, and registration in an Honours programme or Year IV Physics Major.

4J3/ Foundations and Concepts. The aim and structure of physical theory and experiment; metaphysical foundations; causality and determinism in classical and quantum physics; physical concepts, e.g., time and space. 3 lects.; one term. Prerequisite: Physics 2B6; Mathematics 2G3 and 2O3, or equivalent, or permission of the instructor. Offered in 1981-82, and in alternate years.

4K4/ Research Project. An experimental or theoretical project to be arranged by mutual consent of a professor, the departmental chairman, and the student. It may be carried out in a professor's research area or in health physics, radiology, or nuclear medicine. A report will be required. Lab. (6); two terms. Prerequisite: Registration in Year IV of a Physics programme and permission of the Department.

4R3/ Techniques of Applied Radioactivity. Radioactive source production techniques, counting systems, dosimetry, activation analysis, imaging, detectors, counting of distributed sources, counting losses, random summing, time mark derivation, isotope dilution techniques, etc. 1 lect., 1 lab. (3) every other week; two terms. Prerequisite: Physics 2B6 or Engineering Physics 2A7 and permission of the instructor. Enrolment is limited.

Mathematics 4D4 (formerly Applied Mathematics 4C4)//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. 2 lects.; two terms. Prerequisite: Mathematics 3C6 or Applied Mathematics 3B6 and registration in an Honours or Engineering programme.

Note: The Department reserves the right to withdraw a senior division course which is not specifically required in a Physics programme if the registration falls below four.

Students in senior division Physics programmes will find a number of relevant electives among offerings of the Department of Biology and the Department of Engineering Physics.

For Graduate Courses see Calendar of School of Graduate Studies.
Political Science

Faculty as of January 15, 1980

M. B. Stein/Chairman

Professors

Adam Bromke/M.A. (St. Andrews, Ph.D. (Montreal and McGill)).
Derry Novak/B.A. (Toronto).

Associate Professors

Henry J. Jaczk/B.S.S. (Fairfield), M.A., Ph.D. (Georgetown).
Thomas J. Lewis/B.A. (Carleton), M.A., Ph.D. (SUNY, Buffalo).
Klaus H. Pringsheim/B.A. (California, Los Angeles), M.A. (Columbia).

Assistant Professors

George B. Breckenridge/M.A. (Glasgow and Duke), Ph.D. (Duke).
Stefanid S. Miller/M.A., M.A. (McMaster), Ph.D. (Toronto).

CURRICULUM 1980-1982

The Department of Political Science offers courses in four main areas: Canadian Politics, Comparative Politics, International Politics and Political Theory. For a list of instructors and the courses falling in each area, students should consult the Department’s Handbook for Undergraduates, 1980-1981 and 1981-1982. This Handbook will be available for undergraduates on or before April 1 of each academic year. Students should also consult the Handbook in order to determine which courses are offered in a given year.

All students are encouraged to seek advice from members of the Department in developing a programme of study. All Honours students are required to discuss their programme with the Honours Adviser and to have it checked to ensure that it meets with Departmental requirements.

A 50% minimum is required in all prerequisite courses unless otherwise specified. Students wishing to enter courses without the necessary prerequisites must receive permission from the instructor.

1A6/ An introduction to the Study of Politics. An introduction to various aspects of political science which students will encounter in subsequent years in the Department. The course is taught in a number of sections; each section is directed by one or two members of the Department. 3 hrs. (lects. and tuts.); two terms. Prerequisite: Open.

266/ Politics in the U.S.A. A study of the development, nature and functioning of the political system of the U.S.A. 3 hrs. (lects. and tuts.); two terms. Prerequisite: Open.

26/ Culture and Politics of Southern Asia and North Africa. An introduction to the civilizations of Islam and Hinduism and a survey of social movements and contemporary political trends across North Africa and Southern Asia. 3 hrs. (lects.); two terms. Prerequisite: One previous course in Political Science.

26/ International Politics. A study of the institutions and processes of the international political system. 3 hrs. (lects. and tuts.); two terms. Prerequisite: Political Science 1A6.

2G7/ The Systematic Study of Politics. An introduction to the study of concept and theory formation, and an overview of the scope, methods, and techniques of political science. 3 hrs. (lects. and tuts.); two terms. Prerequisite: Open. Note: Recommended for all Honours and Combined Honours students.

2G6/ Politics in Canada. A study of the development, nature and functioning of the political system of Canada. 3 hrs. (lects. and tuts.); two terms. Prerequisite: Open, except to students who have completed Political Science 2G6.

2K6/ Politics in the U.S.S.R. An analysis of the political ideology, institutions, and practices of the U.S.S.R. 3 lects.; two terms. Prerequisite: Open.

1G6/ 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. Offered 1980-81 and alternate years.

1G6/ 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.

2P6/ Politics in Western Europe. An introduction to comparative political analysis with an emphasis on the politics of France, West Germany, Italy, and Great Britain. 3 hrs. (lects.); two terms. Prerequisite: Open, except to those who are registered in or have completed Political Science 3G6.

3A6/ History of Political Ideas. A study of the political ideas of some eminent thinkers from classical times to the 19th century. 3 lects.; two terms. Prerequisite: A previous course in Social Science or Philosophy.

3C3/ Comparative Politics: South Asian Systems. A comparative analysis of political processes in India, Pakistan, Bangladesh, and Sri Lanka in the post-colonial era. 3 hrs. (lects. and seminars); one term. Prerequisite: A previous course in Political Science or Asian Studies.

3D6/ 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.

3G3/ Introduction to Inductive Statistics. An outline of levels of measurement and descriptive statistics, and a study of the logic of statistical inference and its applications. 3 hrs. (lects. and labs.); one term. Prerequisite: High school algebra.

3PH/ Statistical Applications. This course builds upon the concepts taught in Political Science 3G3, and examines how statistical techniques can be used to analyze political problems. 3 hrs. (lects.); one term. Prerequisite: Elementary algebra.

3G6/ Canadian Political Ideas. The purpose of this course is to discover, understand, and analyze the major ideological trends in Canadian society. 3 hrs. (lects. and seminars); two terms. Prerequisite: Political Science 2G6.

3K6/ Comparative Politics: Theory and Method. A study of the foundations of the contemporary study of comparative political systems; critical evaluation of approaches and techniques through empirical case studies. 3 hrs. (lects. and seminars); two terms. Prerequisite: A previous course in Political Science.

3M6/ Comparative Politics: Eastern European Systems. An analysis of the political ideologies, institutions, and practices of selected states of Eastern Europe (excluding the U.S.S.R.) 3 hrs. (lects. and seminars); two terms. Prerequisite: A previous course in Political Science.

3O6/ Modern Political Thought. A critical analysis of modern political ideas, from the early nineteenth century to the present time, with special emphasis on the theories of modern conservatism, liberalism, socialism, fascism, and democracy. 3 lects.; two terms. Prerequisite: A previous course in Social Science or Philosophy.

3P6/ Foreign Policy of the U.S.S.R., China, and the West. An examination of the foreign relations of the U.S.S.R. and China with the United States and the West, and with each other. 3 lects.; two terms. Prerequisite: Political Science 2E6, 2M6, 2K6, 3EE3, 3FF3 are
3Q6/ **Politics in Japan.** An introductory survey of Japanese political institutions, ideas, and practices, from ancient to modern times. 3 hrs.; two terms.
Prerequisite: Permission of the instructor. Not open to students who have completed Political Science 2N6.
Offered 1980-81 and alternate years.

3R6/ **Democracy and Political Change.** An examination of the logical and historical connections between the idea of equality and both liberal and non-liberal forms of democracy.
2 hrs.; two terms.
Prerequisite: A previous course in political theory.

3S6/ **Comparative Politics: Canada and the U.S.A.** An analytical comparison of the structural and functional dimensions of politics in Canada and the U.S.A.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Permission of the instructor.

3U6/ **Research Techniques.** An examination of various research procedures, multi-variate techniques of analysis, and advanced explanation theory.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Political Science 2F6.

3V6/ **Comparative Politics: Political Change in France and Germany.** A critical examination in a comparative context of the causes and consequences of regime instability.
3 hrs. (lects. and seminars); two terms, alternating with Political Science 3W6.
Prerequisite: A previous course in Political Science.

3W6/ **Politics in Britain.** A study of the development and functioning of the British political system, including political culture, political parties and parliamentary institutions.
3 hrs. (lects. and seminars); two terms, alternating with Political Science 3V6.
Prerequisite: Permission of the instructor.

3X6/ **Public Policy Analysis.** A critical analysis of the process of public policy formation, the content of public policies, and their impact upon society.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Political Science 2F6 is required. Political Science 2G6, and 2P6 are recommended.

3Y6/ **Comparative Legislatures.** An institutional and behavioural analysis of legislative bodies and executive-legislative relations in the United Kingdom, Western Europe, Canada, the United States, and developing areas.
3 hrs. (lects. and seminars); two terms.
Prerequisite: A previous course in Political Science.

3Z6/ **Public Administration.** Bureaucracy, administrative responsibility, policy process, delegated powers, administrative law, staffing and staff relations will be studied in a primarily Canadian context.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Two courses in Political Science (one of which might be taken concurrently). Not open to students who have completed Political Science 2J6.

3AA3/ **International Politics in the Postwar 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); one term.
Prerequisite: Political Science 2E6.

3BB3/ **Approaches to the Study of International Politics.** An examination of the theoretical approaches to the study of international relations.
3 hrs. (lects. and seminars); one term, alternating with Political Science 3CC3.
Prerequisite: Political Science 2E6.

3CC3/ **International Organization.** An analysis of the origins and development of the United Nations and selected regional organizations.
3 hrs. (lects. and seminars); one term, alternating with Political Science 3BB3.
Prerequisite: Political Science 2E6.

3DD6/ **Political Parties, Movements and Elites in Canada.** An analysis of parties, movements and elites and their operation within the Canadian socio-economic and cultural setting.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Political Science 2G6. Not open to those who have taken Political Science 2S6.

3EE3/ **The Foreign Policy Process in Canada.** An examination of the influences on foreign policy decision-making in Canada and the elements of Canadian foreign policy.
3 hrs. (lects. and seminars); one term.
Prerequisite: Political Science 2E6 or Political Science 2G6.

3FF3/ **Issues in Canadian Foreign Policy.** An analysis of recent issues in Canada's external relations designed to indicate themes, problems and constraints in the making and execution of foreign policy in Canada.
3 hrs. (lects. and seminars); one term.
Prerequisite: Political Science 2E6 or Political Science 2G6.

3GG3/ **Canadian Federalism.** An analysis of the constitutional framework, historical background and evolution of federalism in Canada, emphasizing post-World War II issues.
3 hrs. (lects. and seminars); one term.
Prerequisite: Political Science 2G6.

3HH3/ **Intergovernmental Relations in Canada.** An analysis of selected policy areas focusing on governmental resources, strategies, tactics and the outcomes of bargaining between governments in Canada.
3 hrs. (lects. and seminars); one term.
Prerequisite: Political Science 2G6.

3II3/ **Elections and Electoral Behaviour in Canada.** A study of the development, nature and functioning of the electoral process in Canada and the basis of voters' decisions.
3 hrs. (lects. and seminars); one term.
Prerequisite: Political Science 2G6.

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 2G6.

3KK6/ **Marxist Thought.** A study of Marx through a reading of his writings from various stages in his development.
3 hrs. (lects. and seminars); two terms.
Prerequisite: A course in Political Theory or Philosophy or Political Science 2K6. Not open to students who have completed Political Science 4G6.

3LL6/ **Theories and Mass Society.** A study through Tocqueville of equality and liberty in the modern world and the problem posed for constitutional democracy by "mass" cultural and political phenomena.
3 hrs. (lects. and seminars); two terms.
Prerequisite: One course in political or social theory and permission of the instructor.
*Same as Sociology 3U6.*

3MM6/ **The Politics of Modern and Contemporary China.** An introduction to the political ideas, institutions and practices of mainland China and Taiwan in the period from 1911 to the present.
3 lects.; two terms.
Prerequisite: Permission of the instructor.

3NN6/ **Public Law.** A study of the nature and function of public law, with special reference to constitutional law and judicial behaviour.
3 hrs. (lects. and seminars); two terms.
Prerequisite: Political Science 2G6. Not open to students who have completed Political Science 2R6.

4A6/ **Pressure Group Politics.** An analysis of research designed to explain the origins and nature of group influence upon the political process. Original research projects.
3 hrs., seminars; two terms.
Prerequisite: A previous course in Political Science. Political Science 2F6, 2G6, 2P6, 3X6, and 3Z6 are recommended.

4C6/ **Psychology and Politics.** A seminar course in personality theories and their application to the study of politics.
3 hrs. (seminars); two terms.
Prerequisite: Open only to Year IV students.

4D3/ **Comparative Studies in Ethnicity and Politics.** A study of the impingement of the ethnic and racial factor upon the political process in comparative contexts, but principally focussing on South Africa.
3 hrs. (seminars); one term.
Prerequisite: Previous course in Political Science.
*Same as Sociology 4V3.*

4E6/ **Liberal-Democratic Theory and Market Society.** This course seeks to trace the emergence and to assess the adequacy of the contemporary liberal-democratic theory of the welfare and regulatory state.
2-3 hrs. (seminars); two terms.
Prerequisite: Previous course in political theory.

4F6/ **Directed Readings and Independent Research for Honours Students.** Directed reading assignments and independent study of a research problem through published materials and/or field inquiry. Students will be required to formulate the result of their inquiry in scholarly fashion. The subject matter is to be different from that covered in 426 if the student is enroled in both courses.
Two terms.
Prerequisite: Registration in Year IV Honours Political Science. Students must obtain permission of the instructor concerned prior to registering in this course.

4J6/ **Comparative Politics: Communist Political Systems.** A comparative analysis of the political ideologies, institutions, and practices of communist political systems.
Seminar; two terms.
Prerequisite: Permission of the instructor.
Offered 1981-82 and alternate years.
Comparative Foreign Policy. A theory-oriented analysis of selected elements of foreign policy and examination of problems in foreign policy decision-making. 2 hrs. (seminars); two terms.

Prerequisite: Political Science 2E6, and a total of six units in international politics at the third-year level. Open only to Year IV students.

The Politics of Self-Government. This course will examine the institutions and philosophy of decentralized power in the past and present. Particular attention will be given to the workers councils' movement, and the commune. 3 hrs. (lects. and seminars); two terms.

Prerequisite: Previous course in political theory and comparative government. Not open to students who have completed Political Science 3N6.

Canadian Public Policy. An examination of the patterns of public policy in Canada and a critical evaluation of several types of explanation. Seminar (3); two terms.

Prerequisite: Political Science 2G6 and another course in Political Science beyond Year 1. Open only to Year IV students. Not open to students who have completed Political Science 3J6.

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.

Developing Political Systems. Application of comparative techniques to the analysis of politics in selected systems of the non-Western world. 3 hrs. (seminars); two terms.

Prerequisite: Permission of the instructor.

Political Parties. A critical examination of theoretical approaches to parties and party systems, and a selective application of these ideas to different societies. 3 hrs. (seminar); one term.

Prerequisite: Previous course in Comparative or Canadian Politics. Not open to students who have completed Political Science 4P6.

Canadian Political Theory. An examination 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.

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: Completion of Political Science 2F6, with a minimum grade of 60%. Open only to Year IV students.

Problems of Political Philosophy. A study in detail and in depth of writings by a limited number of political thinkers, focusing upon one of the central problems of political philosophy. 2 hrs. (seminars); two terms.

Prerequisite: A previous course in political theory.

International Communist Movement. This seminar is designed to examine the role of Communism as a major force in contemporary international politics. 3 hrs. (seminar); two terms.

Prerequisite: Political Science 2E6.

Quebec Politics. The political ideology of Quebec-based parties and movements, the impact of industrialization upon Quebec culture, and the economic implications of separatism. The ability to read French would be highly desirable. 3 hrs. (seminar); two terms.

Prerequisite: Political Science 2G6 and another course in Political Science beyond Year 1.

Comparative Politics: Federal Systems. An examination of federalism and its socio-economic and political determinants in a number of selected federal systems. 3 hrs. (lects. and seminars); two terms.

Prerequisite: Two courses in Political Science. 2G6, 2K6, 2P6, 3C6, 3K6, 3M6, 3G33, and 3H3 are recommended.

Honours Essay. A major piece of scholarly writing designed to cap the undergraduate Honours programme in Political Science. The subject matter is to be different from that covered in 416, if the student is enrolled in both courses.

Two terms.

Prerequisite: Registration in Year IV Honours Political Science.
2W6  Social Psychology. A study of research and theory in areas such as communication, social perception, crowds, social motivation, attitudes, and group processes. 3 lects.; 1 tut.; 2 terms. Prerequisite: Psychology 1A6.

2D6  Sensation and Perception. An intensive study of sensory and perceptual processes. The emphasis is on experimental findings, theoretical explanations, and methods employed in the study of these processes. 3 lects.; 2 terms. Prerequisite: Psychology 1A6.

2G3  Psychological Statistics. An introduction to descriptive statistics and to the logic of statistical inference. This course is intended to provide an understanding of statistical procedures commonly found in the psychological literature. 3 lects.; 1 term. Prerequisite: Registration in Pass Psychology, or permission of the instructor. Not open to students who are registered in, or have completed Mathematics 1F6, or Psychology 2R6, or 2R3, or Statistics 2R6, or an equivalent course. Level 5 Mathematics is recommended.

2H3  Human Learning and Cognition I. Topics included are pattern recognition in vision and speech, learning and memory of meaningful material, and problem solving. Examples will be drawn from reading and study skills. 3 lects.; 1 term. Prerequisite: Psychology 1A6.

2J3  Theories of Human Development. The same as Psychology 2A3, but offered in the second term.

2K3  Personality. The same as Psychology 2B3, but offered in the second term.

2P3  Human Learning and Cognition II. Selected topics will be drawn from such areas as reading, concept learning, problem solving and creativity. 3 lects.; 2 terms. Prerequisite: Psychology 2H3.


2U3  Laboratory in Animal Learning. 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. 2 labs., lab. by appointment: 1 term. Prerequisite: Completion of Psychology 2L6 (without laboratory credit) or at least one term of Psychology 2T6.

2V3  Laboratory in Animal Learning. The same as Psychology 2U3, but offered in the second term.

2W6  Brain and Behaviour. An overview of the brain and the physiological basis of perception, motor activity, memory, learning, and motivation. Psychology students in the Faculty of Science should consider taking Psychology 3F6 in their third year in lieu of this course. 3 lects.; 2 terms. Prerequisite: Psychology 1A6. Not open to students who have completed Psychology 3F6.

3B3  Developmental Psychopathology. A study of the etiology of abnormal human behaviour, including a survey of behavioural abnormalities and adjustment problems specific to children. 3 lects.; 1 term. Prerequisite: Completion of or concurrent registration in Psychology 3N6; or permission of the instructor.

3C6  Social Psychology Laboratory. Students gather, analyse, and interpret data, and in the second term carry out a research project of their own design. 2 lects., 1 lab. (3); 2 terms. Prerequisite: Psychology 2C6, one of 2R6, or 2R3, or Statistics 2R6, and permission of the instructor.

3E3  Sensory Processes and Perception Laboratory. 1 lab., 1 lab. (3); 2 terms. Prerequisite: Psychology 2D6; one of Psychology 2G3, or 2R6, or 2R3, or 3W6, or Statistics 2R6; or permission of the instructor.

3F6  Physiological Psychology I. Topics include membrane physiology, neurochemistry, sensory and motor functions, and the physiology of motivation, learning, and memory. Designed particularly for students in the Faculty of Science. 3 lects.; 2 terms. Prerequisite: Registration in Honours or Pass Psychology, or registration in the senior division of a Biology or Biochemistry programme, or permission of the instructor.

3K3  Psychological Measurement. Theory of psychological testing and measurement. Topics include the statistical bases and assumptions of measurement, test validity and reliability and the measurement of human characteristics. 3 lects.; 1 term. Prerequisite: Psychology 1A6 and Psychology 2G3, or 2R6, or 2R3, or Statistics 2R6, or permission of the instructor.

3M6  Intellectual Development. Research and theory relevant to intellectual and linguistic behaviour. Topics include the developmental aspects of perception, concept formation, problem solving, logical thought, memory, and language. 3 lects.; 2 terms. Prerequisite: Psychology 1A6 and registration in or completion of Psychology 2G3, or 2R6, or 2R3, or Statistics 2R6, or permission of the instructor.

3N6  Abnormal Psychology. Topics basic to clinical psychology, including models of behavioural disorder, classification of abnormal behaviour, evaluation of diagnostic practice, and determinants and treatment of mental illness. 3 lects.; 2 terms. Prerequisite: Completion of or registration in one of Psychology 2T6, 2L6, 2W6, or 3F6; or registration in Year III or Year IV of Nursing; or permission of the instructor.

3Q/  Individual Study I. A laboratory or library project that may extend over both terms. Students intending to register must first consult with a Faculty member or the course co-ordinator. Prerequisite: Permission of course coordinator.

3R3  Animal Behaviour I. Research and theory in the field of instinctive behaviour. Adaptive and evolutionary significance of behaviour and interaction between learned and innate behaviour are discussed. 3 lects.; 1 term. Prerequisite: Registration in Honours or Pass Psychology, or in a four-year programme in Biochemistry or Biology, or permission of the instructor.

3S3  Animal Behaviour Laboratory. Experiments involving a wide variety of animal species, both vertebrate and invertebrate. 1 lab. (3); 2 term. Prerequisite: Psychology 3R3, and permission of the instructor.

3T3  Animal Behaviour II. Advanced topics in the study of animal behaviour. Topics discussed will include animal reproduction, communication, and the development of behaviour patterns. 3 lects.; 1 term. Prerequisite: Psychology 3R3.

3U3  Human Memory. Theories of human memory are contrasted. Empirical demonstrations of encoding, storage and retrieval are used to show the strengths and weaknesses of each theory. 3 lects.; 1 term. Prerequisite: Registration in Year III or IV of a Psychology Programme; or permission of the instructor.

3V3  Laboratory in Human Memory and Cognition. Experiments illustrating important issues in human memory and cognition. Problems in the design, analysis, and reporting of experiments will be emphasized. Individual projects required. 1 lab. (3); 1 term. Prerequisite: Psychology 3U3 and registration in or completion of Psychology 2G3, or 2R6, or Statistics 2R6.

3W6  Psychophysics and Perception. Theories, methods, and data of psychophysics are presented and used in the analysis of perception, attention, and memory. Quantitative theories and data are stressed. 3 lects.; 2 terms. Prerequisite: Psychology 2G3 or 2R6 or 2R3, or Statistics 2R6, or permission of the instructor.

3X3  Selected Topics in Behaviour Modification. Major issues and controversies in contemporary behaviour modification. Consideration is given to rival theoretical accounts, and to experimental bases for such techniques as systematic desensitization, aversion therapy, and punishment. 3 lects.; 1 term. Prerequisite: Psychology 2L6 or 2T6, and registration in Honours or Pass Psychology or permission of the instructor.

3Y3  Selected Topics in Behaviour Theory. Issues of contemporary interest to behaviour theory will be examined in depth. 3 lects.; 1 term. Prerequisite: Psychology 2L6 or 2T6, or an equivalent; registration in a Psychology Programme.

4A3  Contemporary Topics in Historical Perspective. Discussion of the background and current status of several issues of contemporary interest. 3 hrs. (lects. and seminar); 1 term. Prerequisite: Registration in Honours Psychology, or permission of the instructor.
Religious Studies

Faculty as of January 15, 1980

A. E. Combs/Chairman

Professors

John G. Arapura/B.A. (Serampore College, and Bishop’s College, Calcutta), S.T.M. (Union Theological Seminary), M.A., Ph.D. (Columbia).


George P. Grant/B.A. (Ladywood), M.A., Ph.D. (Columbia).

Yün-hua Jan/M.A., Ph.D. (Visva-Bharati).


Johannis J. Mol/B.D. (Union Theological Seminary), M.A., Ph.D. (Columbia).

Ed. P. Sanders/B.A. (Texas Wesleyan), B.D. (Southern Methodist), Th.D. (Union Theological Seminary).


Associate Professors

Louis I. Greenspan/M.A. (Dalhousie), Ph.D. (Brandeis).


Krishna Sivaraman/M.A. (Annamalai, Madras), Ph.D. (Banaras).

Assistant Professors


Alan M. Cooper/A.B. (Columbia), M. Phil., Ph.D. (Yale).

Phyllis Granoff/B.A. (Radcliffe College), Ph.D. (Harvard).


Alan Mendelson/A.B. (Kenyon College), M.A. (Brandeis), Ph.D. (Chicago).

Koichi Shinohara/B.L., M.L. (Tokyo), Ph.D. (Columbia).


Ian G. Weeks/M.A., Ph.D. (Melbourne).

Wayne K. Whillier/B.A. (Sir George Williams), Ph.D. (McMaster).

Visiting Faculty


McMaster Fellow


CURRICULUM 1980-82

Students are advised to consult the department’s Handbook, which will be available prior to registration, for a list of the courses offered in the current year. There are no co-requisite requirements for part-time students. The courses offered in the Department, above Year I, are in three different areas of work:

Group A: Courses in Asian Religion;

Group B: Courses in Early Mediterranean Religion;

Group C: Courses in Modern Western Religion.

A 50% minimum is required in all prerequisite courses, unless otherwise specified.

Many of the advanced courses in the Department have open prerequisites. Some background in religious studies or philosophy may be helpful.

YEAR I RELIGIOUS STUDIES

1B6/ World Religions. An introduction to religion through an examination of Hinduism, Jainism, Buddhism, Confucianism, Taoism, Shinto, Judaism, Christianity, and Islam. 1 lect., 2 tuts.; two terms. Prerequisite: Open.

1C6/ Texts, Traditions, and Thought. The study of selected scriptural texts, their place in religion, and their contribution to human thought and life. 2 lects., 1 tut.; two terms. Prerequisite: Open.

1D6/ Foundations of Judaism and Christianity. An examination of the foundations of Judaism and Christianity through a study of the theme of divine justice, focusing on the origins of the issue in ancient thought and concluding with selected modern treatments. 2 lects., 1 tut.; two terms. Prerequisite: Open.

1E6/ Ideas of Love. A conceptual and historical study of the ideas of love that have shaped Western thought, experience and belief. 2 lects., 1 tut.; two terms. Prerequisite: Open.

1F6/ Religion and Contemporary Problems. The themes of Truth, Freedom, Justice, and War are examined in an introduction to comparative religion through readings, lectures, and films. 2 lects., 1 tut.; two terms. Prerequisite: Open. Offered in 1980-81.

YEAR II RELIGIOUS STUDIES

GROUP A:

2AA3/ Pathways of Indian Mysticism. An exploration of the unique characteristics of Indian mysticism, both in its philosophical and popular...
expression through the study of selected mystics and their writings.
2 lects.; one term.
Prerequisite: Open.

2G6/ The Sacred Cosmos in Religious and Scientific Thought. This course will be conducted as an inquiry into the relationship between religious and scientific perspectives of the nature of the universe. A sequence of theories will be presented which will include materials from Eastern and Western religious traditions.
2 lects.; 1 tut.; one term.
Prerequisite: Open.
Offered in 1981-82.

206/ Introduction to the Religious Traditions of Asia. The history of the major religious traditions of Asia will be examined through a study of their literature, thought, and art.
3 lects.; two terms.
Prerequisite: Open.

2G6/ The Sacred Cosmos in Religious and Scientific Thought. This course will be conducted as an inquiry into the relationship between religious and scientific perspectives of the nature of the universe. A sequence of theories will be presented which will include materials from Eastern and Western religious traditions.
2 lects.; 1 tut.; two terms.
Prerequisite: Open.
Offered in 1981-82.

206/ Introduction to the Religious Traditions of Asia. The history of the major religious traditions of Asia will be examined through a study of their literature, thought, and art.
3 lects.; two terms.
Prerequisite: Open.

2P3/ Buddhist Art in Asia. Buddhist art in India, Ceylon, Central Asia, China, Korea, and Japan; the change and development of Buddhism as reflected in the changing iconography during the migration of Buddhism from India throughout Asia.
2 lects.; one term.
Prerequisite: Open.

GROUP B:

2D3/ The Five Books of Moses. The central teachings of the Pentateuch (Genesis—Deuteronomy) in the religious life and history of ancient Israel and in western thought.
2 lects.; 1 tut.; one term.
Prerequisite: Open, either 1C6 or 1D6 is recommended. For a study of the whole Hebrew Bible 2D03, 2E3E, and 3M3 are recommended.

2E3E/ 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; either 1C6 or 1D6 is recommended.

3 lects.; two terms.
Prerequisite: Open, 1D6 is recommended.

2X3/ Greek and Roman Background to Early Christianity. Same as Classical Civilization 2X3.
Offered in 1981-82.

223/ Greek and Roman Religion. Same as Classical Civilization 223.
Offered in 1980-81.

GROUP C:

2A6/ Death and Dying: A Comparative Religious Enquiry. Same as 2A6 under Year II, Group A.

2D6/ Religion, Ethics and Politics in Russell's Early Writings. A study of the development of Russell's liberal humanism as it evolves in his writings from the late 19th century until W.W.I. Topics will include Russell on mysticism, his response to Marxism, and his relation to the new liberalism.
2 lects.; 1 tut.; two terms.
Prerequisite: Open.

YEAR III RELIGIOUS STUDIES

GROUP A:

3A3/ Religion in Contemporary India. A study of major reformers of the Indian tradition, with special attention given to those such as Gandhi, who have had a major impact upon the political course of modern India.
3 lects.; one term.
Prerequisite: Open. Religious Studies 206 is recommended.
Offered in 1980-81.

2 lects.; 1 tut.; one term.
Prerequisite: Open. Religious Studies 206 is recommended.
Offered in 1981-82.

3G3/ Human Nature in Classical Confucian Thought. A study of the discussion of human nature in Mengzi ("the original nature of man is evil") and Hsun-tzu ("the original nature of man is evil"), with consideration of the implications of these positions in education, morality, and government.
2 lects.; 1 tut.; one term.

REQUIESCE ME
3H3/ 'Mind' in Traditional Chinese Thought. An examination of the concept of 'mind' in Chinese Buddhism (especially Ch'an/Zen) and Neo-Confucianism (Chu Hsi and Wang Yang-ming), focusing on the transformation of mind and its relationship to morality.

2 lects., 1 tut.; one term.
Prerequisite: Open. First year courses with Asian content or 2B6 or 206 are recommended. 
Offered in 1980-81.

3I6/ The Hindu Temple. The art, history, sociological role, and ritual pattern of Hindu temple worship, the most enduring expression of classical religious behaviour in the modern world.

2 lects.; 1 tut.; two terms.
Prerequisite: Open. Religious Studies 206 is recommended. 
Offered in 1981-82.


2 lects., 1 tut.; two terms.
Prerequisite: Open. Same as Anthropology 3JJ6.
Offered in 1980-81.

3K6/ The Buddhist Tradition. A course in two parts; an historical and philosophical study of Buddhism in India, its background, founding teachings and historical development; a study of Buddhism in China and Japan, its introduction, penetration, assimilation, transformation, and encounter with East Asian civilization.

3 lects.; two terms.
Prerequisite: Open. First year courses with Asian content or 2B6 or 206 are recommended. 
Offered in 1981-82.

3V3/ Indian Art and Religion. Indian art in relation to its religious background; the problem of the relationship between art and religion.

2 lects.; one term.
Prerequisite: Open.

3WW3/ Yoga: Theory and Practice. A study of both the theoretical and practical sides of Yoga, beginning with the famous aphorisms of Patanjali; its importance and relevance for today.

2 lects.; one term.
Prerequisite: Open.

3XX3/ Studies in Hindu Sacred Literature. Consideration of the various images and techniques used by the visionary poets to talk of those experiences which are beyond everyday understanding. Selections from the Rg Veda and the Bhagavad Gita will be studied.

2 lects.; one term.
Prerequisite: Open. Offered in 1981-82.

GROUP B:

3M3/ Religion and Literature in Ancient Israel. An exploration of the relationship between literary art and religious expression through a consideration of biblical poetry and wisdom literature.

2 lects.; one term.
Prerequisite: Religion 1C6 or 1D6, or 2D3, and 2EE3, or permission of the instructor.


2 lects.; one term.
Prerequisite: 1D6 or 2E6 or permission of the instructor.
Offered in 1981-82.

3T3/ Modern Research in the Life and Teachings of Jesus. An examination of the views of representative modern scholars with an analysis of the texts on which their views rest, along with a consideration of the problem of the relationship between faith and historical events.

2 lects.; one term.
Prerequisite: 1D6 or 2E6 or permission of the instructor.

3X3/ The Letters of Paul. An examination of the principal themes in Paul's letters, with special emphasis on his Christology, anthropology, and soteriology. Modern scholarly views will be considered.

2 lects.; one term.
Prerequisite: 1D6 or 2E6, or permission of the instructor. 
Offered in 1980-81.

3YY6/ Biblical Interpretation: Traditional and Contemporary. A seminar on traditional and contemporary modes of interpreting the Hebrew Bible with special reference to the impact of interpretation on religious thought and belief.

1 two hour seminar; two terms.
Prerequisite: Religion 2D60/2EE3, or the equivalent as approved by the instructor.

GROUP C:


2 lects., 1 tut.; one term.
Prerequisite: Any first year course in Anthropology, Philosophy, Religious Studies, Sociology. 
Same as Sociology 3Q3.

3BB3/ Major Denominations in Canada. A study of the major denominations in Canada, their history and their relation to national, regional and class identity.

2 lects., 1 tut.; one term.
Prerequisite: Any first year course in Anthropology, Philosophy, Religious Studies, Sociology. 
Same as Sociology 3BB3.

3DD/ The Possibility of Religious Belief. An analytical and constructive approach to the concepts and conditions necessary for responsible religious belief with particular attention given to problems of religious language and the existence of evil.

2 lects., 1 tut.; two terms.
Prerequisite: Open. 
Offered in 1980-81.

3FF3/ Aspects of Mutuality in 20th Century Literature. An interdisciplinary course offered by the Departments of English, Psychology and Religious Studies. It explores the nature of male and female relationships by utilizing literary, psycho-social and religious approaches to 20th century literature, and deals with representative British and American works and genres.

1 lect., 2 tuts.; one term.
Prerequisite: Open. 
Same as English 3E3.

3JJ6/ Religion and Modern Society. An introduction to the thoughts and theories of scholars who have studied the relationship 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 first year course in Religious Studies, Philosophy, Sociology or Anthropology. 
Same as Sociology 3M6.

3JJ6/ Primitive Religion. 
Same as 3JJ6 under Year III, Group A. 
Offered in 1980-81.

3KK3/ Church and Secular Order in the Middle Ages. This course will study the development of Christian thought in the Middle Ages, and focus on the discussion about the nature of the Church up to the Reformation.

2 lects., 1 tut.; one term.
Prerequisite: Open. 
Offered in 1981-82.

3M6/ The Jewish People and the Modern World. A topical study including Judaism and the Enlightenment, the rise of Zionism, the Jews and modern revolution and the Holocaust.

2 lects., 1 tut.; two terms.
Prerequisite: Open. 
Offered in 1981-82.

3QQ3/ Protestant Reformation and Catholic Reform. This course will study the developments of the Christian tradition since the Reformation, and focus on the relationship between Church and society.

2 lects., 1 tut.; one term. 
Prerequisite: Open. History 2A6 is recommended. 
Offered in 1981-82.


2 lects., 1 tut.; one term.
Prerequisite: Open. 
Offered in 1981-82.

3U3/ The Idea of "Religion". This course will study the emergence of the concept of "religion" in the West since the Roman times.

2 lects., 1 tut.; one term.
Prerequisite: Open. 
Offered in 1981-82.

3Z3/ The Sacred and the Sacramental. Some recent Christian re-thinking (e.g., Vatican II, Rahner, Segundo, Barth) of the meaning of the sacraments and their function within both the religious and the wider human community.
**YEAR IV RELIGIOUS STUDIES**

Fourth year Honours students in Religious Studies are normally expected to register (1) in one or more advanced study course(s) listed below, and (2) in two three-unit required seminars.

**ADVANCED STUDY COURSES:**

The format of these courses will vary from year to year depending partly on the number of students interested in participating in them. Thus, a given advanced study course may take the form of a seminar in one year and that of a reading course in another. Students are advised to consult and plan their programme with the Undergraduate Advisor.

Prerequisite: Permission of the instructor and the Undergraduate Advisor.

**GROUP A:**
- 4AA6/ Advanced Study in Hindu Religious History
- 4BB6/ Advanced Study in Buddhist and East Asian Religious History
- 4E6/ Advanced Study in Indian Philosophy

**GROUP B:**
- 4I6/ Advanced Study in Hebrew Bible and Interpretation
- 4CC6/ Advanced Study in Early Jewish and Christian Sources

**GROUP C:**
- 4DD6/ Advanced Study in Religion and Western Thought
- 4EE6/ Advanced Study in Religion and Western Society

**DEPARTMENTAL:**
- 4W6/ Advanced Study of Religion
- 4Y3/ Advanced Study of Religion

**SEMINARS:**
- 4FF3/ Approaches to the Study of Religion. A seminar required for all fourth year Honours students in Religious Studies in which important works representing different methodologies for the study of religion will be examined and discussed in detail.
  1 (2 hr.) seminar; first term.
  Prerequisite: Enrolment in Honours Religious Studies or permission of the instructor.
- 4GG3/ Honours Seminar. A seminar required for all fourth year Honours students in Religious Studies 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.
  Prerequisite: Enrolment in Honours Religious Studies.
  1 (2 hr.) seminar; second term.

**LITERARY CHINESE**
- 4A6/ Introduction to Literary Chinese. Standard introductory course, covering the essentials of Chinese grammar and including basic readings. The textbook used in Shadick's "A First Course in Literary Chinese".
  3 lects.; two terms.
  Prerequisite: Open.

**SANSKRIT**
- 4A6/ Introduction to Sanskrit Grammar. Basic course in the elements of Sanskrit Grammar. No previous knowledge of Sanskrit is required.
ROMANCE LANGUAGES

Romance Languages

Faculty as of January 15, 1980
G.A. Warner / Chairman

Professors Emeriti
Harold A. Freeman / B.A. (Saskatchewan), M.A. (Toronto).
Marie L. Stock / B.A. (Queen’s), M.A. (McGill), Ph.D. (Columbia).

Professors
Antonio G. Alessio / D. Litt. (Genoa), (Italian).
César Rouben / L. ès S. (Paris), B.A. (Sir George Williams), M.A., Ph.D. (McGill), (French).

Associate Professors
John D. Browning / B.A. , M. Phil. (London), Ph.D. (Essex), (Spanish).
Maria Amparo Gonzalez-Nicolau / Lic. en F.L., Dra. en Fil. y Let. (Barcelona), (Spanish)—part-time.
W. Norman Jeeves / M.A. (Cambridge), L. ès L. (Bordeaux), (French).
Pilar Martinez / M. Chem. (Madrid), M. Litt. (Middlebury), Ph.D. (Madrid), (Spanish).
Owen R. Morgan / M.A. (Nottingham), (French).

Assistant Professors
Caroline Bayard / L. ès L., M. ès L. (Toulouse), Ph.D. (Toronto), (French).
L. Diane Dyer / M.A., B.L.S., Phil. M. (Toronto), (Italian).
Gabriele Erasmi / B.A. (Yale), M.A., Ph.D. (Minnesota), (Italian).
William F. Hanley / B.A. (Toronto), M. ès L. (Sorbonne), D. Phil. (Oxford), (French).
Charles E. Jose / B.A. (Western), M.A. (Toronto), (French).
Michael D. Kliffer / B.A. (British Columbia), M.A. (Michigan), Ph.D. (Cornell), (French).
Florigio Minelli / B.A., M.A. (Western), Ph.D. (Brown), (Spanish).
Elaine F. Nardocchio / B.A. (St. Francis-Xavier), M.A. (Middlebury), Ph.D. (Laval), (French).
Anna Whiteside / B.A. (Nottingham), M.A., Ph.D. (British Columbia), (French).

Lecturers
Vittorina Cecchetto / B.A., M.A. (Toronto), (Italian)—part-time.
Fernando De Toro / B.A., M.A. (Carleton), (Spanish).
Dominique Lepiec / L. ès L. (Caen), M.A. (Ottawa), (French).
Gabriel Moyal / B.A. (McGill), M.A. (Toronto), (French).

CURRICULUM 1980-82

FRENCH

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME

French 2B3/ An Introduction to the Civilization of French Canada
French 2D3/ Mediaeval French Literature in Translation
French 2P3/ Eighteenth-Century French Literature in Translation

BEGINNERS’ LANGUAGE COURSES

1Y3/ Reading French. Designed to provide a working knowledge of French grammar for purposes of translating French into English; deals with the written language only. 2 tuts.; two terms.
Prerequisite: Open, except to graduates of Grade 12 or Grade 13 French. Credit in French 1Y3 does not allow registration in a French Honours or Pass programme. (Not to be used by Humanities 1 students as an R group course). (Limited enrolment.)

1Z6/ Beginners’ Intensive French. An intensive audio-visual course for developing the four language skills (listening, speaking, reading and writing) with emphasis on the first two. The normal sequel to this course is either French 22Z6 or 1B6. 5 hrs. (including lab. practice); two terms.
Prerequisite: Open, except to graduates of Grade 12 French or Grade 13 French. Not open to Francophones. (Limited enrolment.)

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

1A6/ Introduction to French Studies: Advanced Level. Review of grammar, oral and written practice, and introduction to literary analysis by the reading of selected French and French Canadian texts. This course is designed for students intending to enter Pass or Honours French. 4 tuts.; two terms.
Prerequisite: Grade 13 French, or permission of the Department. Not open to students with credit in or registration in French 1B6 or 2Z6.

1B6/ Intermediate French. Review of grammar, oral and written practice. This course is designed for students not intending to enter a programme in French. 4 tuts.; two terms.
Prerequisite: Grade 12 or Grade 13 French, or French 1Z6, or permission of the Department. Not open to students with credit in or registration in French 1A6 or 2Z6.

2A4/ French Language Practice. 2 tuts., 1 lab.; two terms.
Prerequisite: French 1A6 or 1B6

2B3/ An Introduction to the Civilization of French Canada. The role of such factors as the church, the family, language, education and nationalism in the evolution of Quebec, and their reflection in the artistic expression of French Canada. 3 lects.; one term.
This course is taught in English.
Prerequisite: Grade 13 French or six units of French, or permission of the Department. Not open to students registered in a programme in French, or with credit in, or registration in French 2F3 or French 2FF3.

2C3/ French Oral Practice. 2 tuts.; two terms.
Prerequisite: Registration in a programme in French and permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.

2D3/ Mediaeval French Literature in Translation. An introduction to the literature and culture of Mediaeval France through the study of selected works in modern English translation. A reading knowledge of French is not required. 3 lects.; one term.
Prerequisite: Open to students in Years II and above. Open as an elective only to students registered in a programme in French or to students with credit in French 203.

2F3/ The Civilization of French Canada I. The church, the family and nationalism in the evolution of Quebec; their reflection in French
Canadian literature, painting and architecture.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6. Not open to students with credit in French 2B3.

2FF3/ The Civilization of French Canada II. Such social factors as language and education in the evolution of contemporary Quebec; their reflection in French Canadian literature, journalism, music and cinema.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6. Not open to students with credit in French 2B3.

3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

2JJ3/ Nineteenth-Century French Literature II. Selected themes appearing in the works of the major French writers of the 19th-century.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

2N3/ France as a Nation. Perspectives on the culture and civilization of France, past and present.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

2P3/ Eighteenth-Century French Literature in Translation. The study of major writings of the 18th century in their literary, social and intellectual context. Authors include Montesquieu, Voltaire, Diderot and Rousseau. A reading knowledge of French is not required.
3 lects.; one term.
Prerequisite: Open to students in Years II and above, except to students registered in a programme in French.

3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

2WW3/ Twentieth-Century French Literature II. Aspects of the development of 20th-century literature since the Second World War.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

3 lects.; one term.
Prerequisite: French 1A6 or 1B6.

2Z2S/ Sequel to Beginners' Intensive French. An intensive audiovisual course emphasizing speaking, listening, reading and writing skills.
3 tuts., 2 labs.; two terms.
Prerequisite: French 126. Not open to students with credit in or registered in French 1A6 or 1B6.
Before registering, every student must obtain a limited enrolment permission slip from the Department.

3A3/ Stylistic Studies in the Language of French Poets. Analysis of selected poems of major poets of the modern French era, with stress on such aspects as versification "rules", rhythms and sound effects, vocabulary structures, imagery and word-positioning.
Seminar; one term.
Prerequisite: Registration in a programme in French and permission of the Department.
Offered in alternate years.

3AA3/ The Modern French-Canadian Novel. Representative novels by contemporary authors with emphasis upon the relationship between technique and meaning.
3 lects.; one term.
Prerequisite: French 2F3 or 2FF3, or permission of the Department.

3B3/ Semantics. An introduction to various theories of meaning, treating issues such as reference, synonymy, paraphrase, cultural overlap, distinctive features and lexicography. Examples will be drawn primarily from French, with an occasional look at English and other European languages.
3 lects.; one term.
Prerequisite: Credit in or registration in French 2A4 or 2E4, or permission of the Department.
Alternates with French 3L3.

3BB3/ Contemporary Quebec Theatre. Contemporary experimental theatre, and representative playwrights such as Marcel Dubé and Michel Tremblay.
3 lects.; one term.
Prerequisite: French 2F3 or 2FF3, or permission of the Department.

3C4/ French Language Practice.
3 hrs.; two terms.
Prerequisite: A mark of at least 60 in French 2A4 or 2E4, or permission of the Department.

3CC3/ Translation Techniques. Oral and written translations, covering a number of styles (descriptive, narrative, abstract, journalistic, etc.); training in the use of pertinent reference material (grammars, dictionaries).
3 tuts.; one term.
Prerequisite: French 2A4, or permission of the Department. Before registering, every student must obtain a limited enrolment permission slip from the Department.

3E3/ Applied Linguistics and Second-Language Learning. An examination of various aspects of second language acquisition as applied to the teaching of French, with special emphasis on psycholinguistic factors.
3 tuts.; one term.
Prerequisite: At least six units of Linguistics and registration in a programme in French. Not open to students with credit in French 3N3 or 3N3N.
Alternates with French 3Z3.

3G3/ General and Comparative Phonetics. Elementary questions of phonetic theory (physiological basis, speech sounds in isolation and in sequence, the syllable, the phoneme, prosodic features, graphemics) followed by a comparison of the modern French and English systems of sounds.
3 lects.; one term.
Prerequisite: French 1A6 or 1B6, or permission of the Department.

3JS/ Sociolinguistics. The study of linguistic variations within French-speaking communities with special reference to the Canadian situation.
3 tuts.; one term.
Prerequisite: At least six units of Linguistics and registration in a programme in French. Not open to students with credit in French 3N3 or 3N3N.
Alternates with French 3Z3.

3K3/ Eighteenth-Century French Literature I. The early 18th-century with emphasis on Montesquieu, Marivaux and Prévost, and on the early writings of Voltaire.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

3K3/ Eighteenth-Century French Literature II. Texts representing the main aspects of Enlightenment thought and literature from the publication of the preliminary discourse of the Encyclopédie to the Revolution.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

3L3/ French Morphology and Syntax. After a brief introduction to basic linguistics, and in particular transformational grammar, concepts thus acquired will be applied to the systematic description of word forms (morphology) and their relationship within sentences (syntax).
2 lects., one tut.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French or permission of the Department.

3Q3/ Seventeenth-Century French Literature I. A study of selected plays of Molière, Racine and Corneille.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

3QQ3/ Seventeenth-Century French Literature II. A consideration of selected themes as they appear in the works of major French writers of the 17th-century.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

3R3/ Medieval French Language. This basic introduction to the Old French language provides a reading knowledge of medieval French.
3 lects.; one term.
Prerequisite: Registration in a programme in French, or permission of the Department.

2UL/ Balzac's Novels. A study of the style and structure of Balzac's novels.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.
Offered in alternate years.

2Y3/ French Cinema. A survey of French film from 1896 to the present day, with particular emphasis upon such major figures as Renoir, Clair, Bresson, Truffaut and Resnais.
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ROMANCE LANGUAGES

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4A4/ French Language Practice.
3 hrs.; two terms.
Prerequisite: A mark of at least 70 in French 3C4 and registration in Year IV of an Honours programme in French, or permission of the Department.

4B5J/ Comparative Stylistics and Translation Techniques. A course designed for the systematic comparison of French and English with reference to problems in translation.
3 tuts.; one term.
Prerequisite: French 3C03.

4E3J/ 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.
Seminar; one term.
Prerequisite: Credit in or registration in a programme in French, or permission of the Department.
Offered in alternate years.

4F3J/ Topics in Eighteenth-Century French Literature.
1980-81: Voltaire. Specific texts related to the works of other writers of the time. Not open to students with credit in French 4V3.
1981-82: The Early 18th Century French Novel. Representative novels of the early 18th-century with emphasis on the works of Lesage, Crébillon fils and Marivaux. Not open to students with credit in French 3M3.
Seminar; one term.
Prerequisite: 19 units of French, including French 3K3 or 3Kk3, and registration in a programme in French, or permission of the Department.
French 4F3 may be repeated, if on a different topic, to a total of six units.

4G3J/ Short Stories of French Canada. A study of traditional and modern story-telling in French Canada, with the folktale as the basic model.
Seminar; one term.
Prerequisite: 19 units of French, including French 2F3 or 2FF3 and registration in a programme in French, or permission of the Department.
Offered in alternate years.

4H3J/ Quebec Poetry. An analysis of selected writings of Nelligan, Saint-Denys Garneau, Anne Hébert, and the group of poets known as l'Hexagone, emphasizing poetic techniques and the socio-cultural context of Quebec.
Seminar; one term.
Prerequisite: 19 units of French, including French 2F3 or 2FF3 and registration in a programme in French, or permission of the Department.
Offered in alternate years.

Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.
Offered in alternate years.

Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.
Offered in alternate years.

4J3J/ French Literature of the Renaissance. Characteristic themes of Renaissance humanism as they appear in the works of Rabelais, Montaigne, and selected poets.
Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

4K3J/ Topics in French African and Caribbean Literature.
Seminar; one term.
Prerequisite: 19 units of French, including 223, and registration in a programme in French, or permission of the Department. French 4K3 may be repeated, if on a different topic, to a total of six units.
Offered in alternate years.

4K3J/ Topics in the Twentieth-Century French Novel.
Seminar; one term.
Prerequisite: 10 units of French and registration in a programme in French, or permission of the Department. French 4K3 may be repeated, if on a different topic, to a total of six units.

4K3J/ Twentieth-Century French Theatre. A study of the ideas and dramatic techniques of the playwrights of the modern period who have influenced the development of today's theatre in France.
3 lects.; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department.

4K3J/ Topics in the Nineteenth-Century French Novel.
1981-82: Zola. A close reading of selected novels of Emile Zola and an appraisal of recent critical studies of his work. Not open to students with credit in French 4TT3.
Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department. French 4K3 may be repeated, if on a different topic, to a total of six units.

4K3J/ Topics in Seventeenth-Century French Literature.
Seminar; one term.
Prerequisite: French 3Q3 and registration in a programme in French, or permission of the Department. French 4K3 may be repeated, if on a different topic, to a total of six units.
Offered in alternate years.

4K3J/ Studies in Mediaeval French Literature. The Lais of Marie de France: a selection from "short stories" in verse to illustrate the author's conception of love, her portrayal of characters, and her use of Celtic themes, including supernatural elements.
Seminar; one term.
Prerequisite: French 3R3 and registration in a programme in French, or permission of the Department.

4X3J/ Critical Trends (theory and practice) in Modern French Literary Criticism including Structuralism and Semiotics.
Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department. Not open to students with credit in French 4X3.

4Y3J/ Topics in Twentieth-Century French Literature.
1981-82: Sartre. A study of selected readings from the works of Sartre. Not open to students with credit in French 4W3.
Seminar; one term.
Prerequisite: 19 units of French and registration in a programme in French, or permission of the Department. French 4Y3 may be repeated, if on a different topic, to a total of six units.

4Z3J/ The Development of the Romance Languages. A general introduction to the history and present state of the principal Romance Languages (French, Italian and Spanish). The course will trace the evolution of sound systems (phonology), forms (morphology) and sentence structures (syntax) through a study of representative texts.
3 lects.; one term.
Prerequisite: Completion of 60 or more units and registration in a French programme.
Offered in alternate years.
Same as Italian 4Z3 and Spanish 4Z3.
ITALIAN

At least 'D' is required in all courses listed under "prerequisite", unless otherwise indicated.

COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME

Italian 2H3/ Aspects of Italian Culture and Civilization
Italian 2I6/ Italian Literature in Translation

BEGINNERS' LANGUAGE COURSES

1Z6/ Beginners' Intensive Italian. An intensive beginners' course designed for students from a non-Italian background. This course gives the student a basic knowledge of Italian grammar, while emphasizing spoken Italian. 5 hrs.; two terms.

Prerequisite: Open, except to graduates of Grade 12 or Grade 13 Italian, or students with credit in or registered in Italian 1ZZ6. No student who either speaks or understands an Italian dialect or Standard Italian may register in the course without the permission of the Department. Students with Grade 12 Italian will be required to take a placement test during registration week.

1ZZ6/ Beginners' Intensive Italian for Dialect Speakers. The same course as Italian 1Z6, but designed for those students who come from an Italian background and speak or understand an Italian dialect or Standard Italian. 5 hrs.; two terms.

Prerequisite: Open, except to graduates of Grade 13 Italian, or students with credit in or registered in Italian 12Z6.

1Y3/ Italian for Reading Knowledge. An introductory grammar course designed to give students a knowledge of the basic structures of the language for the purpose of reading and translating Italian into English. 2 hrs.; two terms.

Prerequisite: Open, except to students registered in a programme in Italian or with credit in Italian 126 or Italian 1Z6, or Italian 1A6. (Not to be used by Humanities I students as an R group course).

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES

1A6/ Intermediate Italian. An intermediate review of the grammatical structures of Italian and an introduction to composition, together with oral practice.

3 hrs.; two terms.

Prerequisite: Grade 13 Italian, Italian 126, Italian 12Z6, or permission of the Department.


2 hrs.; two terms.

Prerequisite: Italian 126, Italian 1Z26, or permission of the Department. Available as an elective only to students registered in a programme in Italian.

2D6/ Advanced Italian. This course studies the basics of Italian syntax in order to improve the student's written and oral proficiency in the language.

3 hrs.; two terms.

Prerequisite: Italian 1A6, or permission of the Department.

2E6/ Introduction to Italian Literature. A study of the development of Italian literature from its beginnings to the 20th-century. Special emphasis will be placed on major authors and works.

3 lects.; two terms.

Prerequisite: Italian 1A6, registration in a programme in Italian, or permission of the Department.

2H3/ Aspects of Italian Culture and Civilization. Lectures will be based on literary texts in English translation, slide presentations, films and other auxiliary techniques. The course is designed to provide the student with a broad knowledge of Italian culture and its influence on Western Civilization. A reading knowledge of Italian is not required.

3 lects.; one term.

Prerequisite: Open to students in Years II and above. Alternates with Italian 2I6.

2I6/ Italian Literature in Translation. A survey course exploring the major Italian writers from Dante to the present. Texts will be read in English translation. A reading knowledge of Italian is not required.

3 lects.; two terms.

Prerequisite: Open to students in Years II and above, except to students enrolled in a programme in Italian. Alternates with Italian 2I3.


3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Not open to students with credit in Italian 3F6. Alternates with Italian 3G3.

3D4/ Italian Stylistics & Oral Practice. An introduction to the study of Italian stylistics for the purpose of developing a sense of style in the written language.

2 hours.; two terms.

Prerequisite: Italian 2D6, or permission of the Department.


3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 3A3.

3L3/ Italian Humanism. An analytical and comparative study of the scientific and literary ideas of the 14th, 15th and 16th centuries.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 3O3.


3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of Department. Alternates with Italian 4J3.


3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 3L3.

3P3/ Italian Theatre of the 19th and 20th Centuries. A study of 19th and 20th-century Italian drama with special emphasis on the works of Pirandello.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 3O3.

3Q3/ Italian Theatre from the 16th to the 18th Centuries. A study of Italian Theatre from the 16th to the 18th century.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Not open to students with credit in Italian 3N3 or 4Q3. Alternates with Italian 3P3.

3R6/ The Italian "Trecento". The historical background of the 14th-century. A study of the major works of Dante, Petrarch and Boccaccio.

3 lects.; two terms.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Not open to students with credit in Italian 3I3, 3K3, or 4Q3.

4A3/ Italian Criticism. A study of the major trends in Italian literary criticism from De Santis to the present day.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of Department. Alternates with Italian 4C3.

4C3/ The Literature of the "Risorgimento". A study of the period of 1816–1873 in Italian literature through selected texts, with reference to the political and social background.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 4A3.

4J3/ Contemporary Italian Poetry. A study of the major Italian poets of the 20th-century with special emphasis on Saba, Montale, Ungaretti, Quasimodo.

3 lects.; one term.

Prerequisite: Italian 1A6 and 2E6, or permission of the Department. Alternates with Italian 4C3.

4L4/ Introduction to Italian Linguistics. An introduction to the study of synchronic and diachronic Italian linguistics, to the problem of dialect fragmentation, to the "Questione della Lingua" and to early documents of Italian.

2 lects.; two terms.

Prerequisite: Italian 1A6 and 2E6, or permission of Department.


3 tuts.; one term.

Prerequisite: Italian 2D6 with a mark of at least 75, Italian 3D4, or permission of Department.

4P3/ Dante. The vision of Dante: a study of Paradiso and readings from the Vita Nuova, and the Convivio.
SPANISH CURRICULUM 1980-82

At least "D" is required in all courses listed under "prerequisite", unless otherwise indicated.

BEGINNERS' LANGUAGE COURSE
126/ Beginners' Intensive Spanish. A course designed to cover the rudiments of the language, to teach correct expression in writing and in conversation, and to provide preparation for more advanced work in Spanish.

2 tuts.; two terms.
Prerequisite: Open, except to students with credit in Grade 12, Grade 13 Spanish or equivalent. Students who have become fluent by residence in Spanish-speaking countries must consult the Department before registering.

INTERMEDIATE AND ADVANCED LANGUAGE AND LITERATURE COURSES
1A6/ Intermediate Spanish. A course designed to further the student's command of the language in its oral and written forms. There will be some review of basic grammar, but emphasis will be upon the study of the subtler aspects of the language, composition, and the expansion of vocabulary.
4 hrs.; two terms.
Prerequisite: Grade 12 Spanish (with the permission of the Department), Grade 13 Spanish, Spanish 126, or permission of the Department.

2A6/ 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.
3 tuts.; two terms.
Prerequisite: Spanish 1A6, or permission of the Department.

2B3/ Introduction to the Culture of Spain. A course which surveys the development of Spanish art, literature, and politics from the earliest times.
3 lects.; one term.
Prerequisite: Spanish 1A6 or 126, or permission of the Department.

2C3/ Introduction to the Culture of Spanish America. A survey of the development of Spanish America from Maya times to the present day.
3 lects.; one term.
Prerequisite: Spanish 1A6 or 126, or permission of the Department.

2E3/ 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.
Seminar; one term.
Prerequisite: Spanish 1A6 or registration in a programme in Spanish.

3A4/ Syntax. A course which provides opportunities to develop a deeper awareness of style and a greater command of the spoken and written language.
2 tuts.; two terms.
Prerequisite: Spanish 1A6.

Seminar; one term.
Prerequisite: Spanish 1A6 and six additional units of Year II Spanish. Spanish 3BB3 may be repeated, if on a different topic, to a total of six units.

Seminar; one term.
Prerequisite: Spanish 1A6 and six additional units of Year II Spanish. Spanish 3BB3 may be repeated, if on a different topic, to a total of six units.

Seminar; one term.
Prerequisite: Spanish 1A6 and six additional units of Year II Spanish. Spanish 3CC3 may be repeated, if on a different topic, to a total of six units.

3CC3/ Topics in Modern Spanish American Literature II. 1980-81 and 1981-82. The Novel from the 19th Century to 1948. A study of the development of the Spanish American novel from Isacac to Azuela. Other authors included will be Icaza, Alcides Arguedas, Gallegos, and Rivera.
Seminar; one term.
Prerequisite: Spanish 1A6 and six additional units of Year II Spanish.

Seminar; one term.
Prerequisite: Spanish 1A6 and six additional units of Year II Spanish.

4A4/ Advanced syntax and stylistics. The study of basic stylistic concepts applied to literary texts. Further oral and written practice.
2 tuts.; two terms.
Prerequisite: Spanish 3A4, or permission of the Department.

Seminar; one term.
Prerequisite: Spanish 1A6 and 12 additional units of Year II or Year III Spanish, or permission of the Department. Spanish 4B3 may be repeated, if on a different topic, to a total of six units.

4C3/ El Quijote. An analytical study of Cervantes' masterpiece with some consideration of the interpretations and viewpoints of major critics.
Seminar; one term.
Prerequisite: Spanish 1A6 and 12 additional units of Year II or Year III Spanish, or permission of the Department. Not open to students with credit in Spanish 3EE3.

4E3/ Topics in 20th Century Spanish American Literature. 1980-81 and 1981-82—The Spanish American Novel since 1950. An examination of the themes and trends of the Spanish American novel over the past 30 years. Works by some of the following will be studied: Ruffo, Cortázar, García Márquez, Sábado, Fuentes, and Asturias.
Seminar; one term.
Prerequisite: Spanish 1A6 and 12 additional units of Year II or Year III Spanish, or permission of the Department. Spanish 4E3 may be repeated, if on a different topic, to a total of six units.

1981-82—Poetry of Spain. A survey of poetry produced in Spain from the early 19th century until the present day. Works by some of the following will be studied: Beccquer, Juan Ramón Jiménez, Antonio Machado, Lorca, and Cernuda. Not open to students with credit in Spanish 4F3 (1978-79).
Seminar; one term.
Prerequisite: Spanish 1A6 and 12 additional units of Year II or Year III Spanish, or permission of the Department. Spanish 4F3 may be repeated, if on a different topic, to a total of six units.

4H3/ Topics in Spanish Literature before 1900. 1980-81—The 18th Century. A study of Spain's major writers of the period 1728-1830, their confrontations with the intellectual and social problems of their times, and the solutions they offered. 1981-82—Spanish Medieval Literature. A survey of the major themes present in writings of the period 1100-1492. Early love poetry, the Poema de mio Cid, the Libro de Buen Amor, and the Celestina will be studied. Modern versions of the earlier works will be used.
Russian

Faculty as of January 15, 1980

G. Thomas/Chairman

Professor
Louis J. Shein/B.A. (Dubuque), M.A., Ph.D. (Toronto), D.D. (Honoris Causa), Knox College (Toronto).

Associate Professors
Samuel D. Cioran/B.A. (McMaster), Ph.D. (Toronto).

Assistant Professors
Nina S. Kolesnikoff/M.A. (Moscow State), Ph.D. (Alberta).
Walter Smyrnis/B.A. (McMaster), M.A., Ph.D. (Toronto).

Lecturer
William Zao (part-time, Chinese)/B.A. (Wagner Lutheran).

CURRICULUM 1980-82

At least 'D' is required in all courses listed under "prerequisite", unless otherwise indicated.

COURSES TAUGHT IN ENGLISH AND OPEN AS ELECTIVES TO QUALIFIED STUDENTS REGISTERED IN ANY UNIVERSITY PROGRAMME

Russian 1B6/ Aspects of Modern Russian Culture
Russian 2A6/ Nineteenth-Century Russian Literature in Translation
Russian 3G3/ Studies in the Russian Novel: Gogol
Russian 3K6/ Twentieth-Century Russian Literature in Translation

BEGINNERS' LANGUAGE COURSE

126/ Beginners' Intensive Russian. An introduction to basic conversation- al Russian as spoken in the Soviet Union today. The basic skills of speech and aural comprehension, plus the essential grammar of Soviet Russian.
4 hrs. (lects. and lab. practice), two terms.
Prerequisite: Open.

BEGINNERS' CIVILIZATION COURSE

186/ Aspects of Modern Russian Culture. A survey of major developments in Russian philosophy, religion, literature and the arts from the 18th century to the present day.
3 lects.; two terms.
Prerequisite: Open.

INTERMEDIATE AND ADVANCED LANGUAGE, LITERATURE AND CIVILIZATION COURSES

2 lects., 1 tut.; two terms.
Prerequisite: Open to students in Years II and above, or permission of the Department.

3 lects., 1 lab.; two terms.
Prerequisite: Grade 13 Russian, or Russian 126, or permission of the Department.

2 lects., 1 tut.; one term.
Prerequisite: Russian 126, or permission of the Department.

2F6/ Introduction to Slavic Linguistics. An introduction to the Slavic languages emphasizing their historical development from a common source and including material about their structure and development as literary languages.
3 lects.; two terms.
Prerequisite: Linguistics 1A6 or permission of the instructor.
Offered in alternate years.

1 lect., 1 tut.; one term.
Prerequisite: Russian 2C6 and 2E3.

3B3/ The Russian 'Povest'. Readings in Russian.
2 lects., 1 tut.; one term.
Prerequisite: Russian 2C6 and 2E3.
Offered in alternate years.

3C6/ Advanced Language Study.
3 lects., 1 lab.; two terms.
Prerequisite: Russian 2C6.

3F3/ Special Topics in Russian Language or Literature. 1980-81: The Russian language in Soviet Society, including changes since 1917, with special emphasis on developments caused by societal factors, and on dialects and sub-standard usage, colloquial language and officialese.
3 lects.; one term.
Prerequisite: Russian 2C6, or permission of the Department.
Offered in alternate years.

2 lects., 1 tut.; one term.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

3K6/ Twentieth-Century Russian Literature in Translation. Prominent Soviet writers, such as Gorky, Leonov, Sholokhov, Pasternak, and Solzhenitsyn, viewed against the broader cultural, historical, and social spectrum. Soviet films will supplement the lectures and readings.
2 lects., 1 tut.; two terms.
Prerequisite: Open to students in Years II and above.
Offered in alternate years.

4C6/ Conversation and Advanced Composition.
3 lects.; two terms.
Prerequisite: Russian 3C6.

4E3/ Russian Drama since 1800. Readings in Russian.
2 lects., 1 tut.; one term.
Prerequisite: Russian 2C6 and 2E3.
Offered in alternate years.
4F3/ Special Topics in Russian Language or Literature. 1981-82: Pushkin. A study in the original of Pushkin’s verse, with accent either on his lyric or narrative verse. 3 lects.; one term. Prerequisite: Russian 2C6 and 2E3. Offered in alternate years.

4G3/ Studies in the Russian Novel: Tolstoy. A detailed study of the major novels of Lev Tolstoy in translation, with particular emphasis on his literary, philosophical and religious problems encountered in his work. 2 lects., 1 tut.; one term. Prerequisite: Open to students in Years II and above. Offered in alternate years.

4H6/ Independent Research. A reading and research programme under the supervision of at least two members of the Department. A major paper is required together with a formal oral examination. Prerequisite: Open to students in a Year IV Honours programme in Russian who have achieved a Year III Q group Russian weighted average of at least 75%, and permission of the Chairman of the Department.

CHINESE

12E/ Elementary Chinese. An introduction to basic pronunciation, conversation patterns and reading skills. 3 hrs. (including lab); two terms. Prerequisite: Permission of the instructor. Alternates with Chinese 2Z6.

12Z6/ Elementary Chinese for Dialect Speakers. An intensive course for those students who come from a Chinese background with the knowledge of written Chinese. Mandarin pronunciation and Chinese culture are emphasized. 3 hrs. (including lab); two terms. Prerequisite: Permission of the instructor. Alternates with Chinese 2Z6.

22E/ Intermediate Chinese. The course will enable a student to speak, write, and read Mandarin Chinese. Methods and technique of translation of minor materials in Chinese are also discussed. 3 hrs. (including lab); two terms. Prerequisite: Chinese 126 and permission of the instructor. Alternates with Chinese 126.

22Z6/ Intermediate Chinese for Dialect Speakers. A sequel to Chinese 12Z6, the course will provide the opportunity for the students to practice their spoken Mandarin Chinese from selected materials of both classical and modern vernacular Chinese. Translation and study of selected Chinese literary works are also emphasized. 3 hrs. (including lab); two terms. Prerequisite: Chinese 1Z26 and permission of the instructor. Alternates with Chinese 1Z26.

SERBO-CROATIAN

12E/ Introduction to Serbo-Croatian. An introduction to basic conversational and written Serbo-Croatian. The essential grammar of the language will be taught. Readings will be in both the Cyrillic and Latin scripts. 3 hrs. (lects. and lab practice); two terms. Prerequisite: Open.

UKRAINIAN

12E/ Introduction to Ukrainian. Basic elements of Ukrainian grammar, elementary composition, selected prose readings. 4 hrs. (including lab); two terms. Prerequisite: Open. Not available to students with standing in Ukrainian 1Q6. Offered in alternate years.

2A6/ Intermediate Ukrainian. Review of grammar, oral practice, and compositions; readings in the original from representative authors. 4 hrs. (including lab); two terms. Prerequisite: Ukrainian 126, or permission of the Department. Not available to students who have standing in Ukrainian 186. Offered in alternate years.

3A6/ Advanced Ukrainian. Review of syntax, study of idiomatic expression, weekly composition exercises, intensive oral practice in the language lab. and in conversational class, readings in major 19th and 20th century authors. 2 hrs.; 1 hr. conversation; two terms. Prerequisite: Ukrainian 2A6, or permission of the instructor.

2A6/ The Nature of Matter. Contemporary ideas about the structure of the 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.; two terms. Prerequisite: Registration in Years II, III, or IV, of a non-science programme. No mathematics is required.

2B3/ Parasites, Animals, and Man. A survey of animal parasites, with special emphasis on parasites infecting man and his domestic animals. 3 lects.; one term. Prerequisite: Registration in Years II, III, or IV, of a non-science programme.

2C3/ Shifting Continents. Theory of plate tectonics, a scientific revolution of earth science; explanations of earthquakes, volcanoes, evolution, climates. 2 lects., 1 tut.; one term. Prerequisite: Registration in Years II, III or IV of a non-science programme; not open to students who are registered in or have completed Geology 1A6 or 1B6.

2D6/ Astronomy. A survey of modern and historical concepts in astronomy. Light and the telescope; distance measurement in space; the structure and evolution of stars, galaxies, cosmology. 3 lects., including films, planetarium, and observations; two terms. Prerequisite: Registration in Years II, III, or IV, of a non-science programme. Grade 12 mathematics required.

2E6/ Space and Time. Aristotle's, Newton's, and Einstein's views of space and time. Different behaviour of very small and very large objects. Reversibility of space and time. 3 lects.; two terms. Prerequisite: Registration in Years II, III, or IV, of a non-science programme. No mathematical background is assumed.

2G3/ Man's Supply of Food. Man's food requirements; how food is produced; alternative approaches to alleviating world hunger. 3 lects. or 2 lects., 1 tut.; one term. Prerequisite: Registration in Year II, III, or IV, of a non-science programme.

2H3/ Viruses and the Nature of Life. Viruses as agents for the transfer and utilization of biological information; their role in diseases of man, animals, and plants. 3 lects.; one term. Prerequisite: Registration in Year II, III, or IV, of a non-science programme.

2J3/ Physics Looks at the Energy Crisis. Man's supply of fossil fuels is dwindling. Alternatives (e.g., solar, wind, nuclear reaction, fusion) will be examined from the point of view of a physicist. 3 lects.; one term. Prerequisite: Registration in Year II, III, or IV, of a non-science programme. No mathematics beyond Grade 12 required. Offered in 1980-81 and in alternate years.

2K3/ Heredity, Man, and Society. An introduction to the principles of human genetics with special reference to problems concerning society in the area of genetic screening and genetic counselling, genetic engineering and recombinant DNA, and the genetic aspect of environmental hazards, sexism, racism, I.Q., and behaviour. 3 lects. or 2 lects., and 1 tut.; one term. Prerequisite: Open, except to students who have completed, or are registered in, Biology 1A6, 1C6, 1G6, 2C3.

2 lectures, 1 tutorial; one term.
Prerequisite: Registration in Years II, III or IV of a non-science programme; not open to students who are registered in or have completed Geology 1A6 or 1B6.

Social Science

CURRICULUM 1980-82

2E3/ Selected Topics in Interdisciplinary Studies I. An interdisciplinary examination of selected topics of current interest to social scientists. Topics will vary from year to year. Students interested in this course should consult the Office of the Associate Dean of the Faculty of Social Sciences (Studies) concerning the topics to be examined in any year.
3 hours (lectures and seminars); one term.
Prerequisite: Permission of the Co-ordinator.

2F3/ Selected Topics in Interdisciplinary Studies II. Same as Social Science 2E3.
3 hours (lectures and seminars); one term.
Prerequisite: Permission of Co-ordinator.

3B3/ Creativity and Human Interaction I. The main psycho-social theories of creative behaviour, illustrated with examples from modern literature.
2 lectures, 1 tutorial; one term.
Prerequisite: Permission of the instructor.

3C3/ Creativity and Human Interaction II. Obsessional creativity as an organizing mode in the culture of periods of accelerated change, the Renaissance and the modern age.
2 lectures, 1 tutorial; one term.
Prerequisite: Social Science 3B3 and permission of the instructor.

Social Work

Faculty as of January 15, 1980
K. I. Kinanen/Director

Professors

Cyril Greenland/M.Sc. (North Wales)

Harry L. Penny/Dip. Theol. (Union College, British Columbia), B.A., M.S.W. (British Columbia)


Associate Professors

Jean McCauley 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), Dip. Social Admin. (Southern California)

Assistant Professors

L. William Lee/B.A. (St. Thomas, Texas), M.S.W. (Toronto)

James J. Rice/B.A. (Sir George Williams), B.S.W., M.S.W. (Calgary), Ph.D. (Oxeter)

Muriel Santilli/B.A. (Hunter College), M.A. (Columbia), M.S.W. (Suny, Buffalo)

Boris Stein/B.A., M.S.W. (McGill)

David J. Tucker/B.A. (New Brunswick), M.S.W. (McGill), D.S.W. (Toronto)


Lecturer

Maureen J. Orton/B.A., B.S.W. (Toronto), M.A. (McMaster)

Associate Members

John A. Byes/B.A. (Western), M.S.W. (Toronto), D.S.W. (Washington), Dept. of Psychiatry

Melvin L. Kilman/B.A. (Manitoba), M.A. (Queen's), Ph.D. (Minnesota), Dept. of Economics

Ian S. Meadows/Dipl. Appld. Chem. (Melbourne), M.B.A. (York), Ph.D. (London), Faculty of Business

CURRICULUM 1980-82

Except when otherwise designated, the following courses are open only to students registered in the four-year Combined Pass Arts and Social Work programme, or registered in the B.S.W. programme for a second degree.

This course may be taken for B.A. credit by undergraduates registered in the Labour Studies programme.

2C6/ Theory for Social Work Practice. Knowledge base; social work values, fields of practice and types of intervention. Human growth and development. Interpersonal communication skills. Lectures, films, discussions, small task groups; two terms.

(Lectures, discussion and selective use of community resources; one term.)
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

3D9/ The Practice of General Social Work 1. Social work intervention processes; interviewing; development of basic skills in formation of relationships with individuals, families, groups and communities. Students participate in defining learning goals and experiences.
Seminars, workshops, field practice one day per week; two terms.
Prerequisite: Social Work 2B6, 2C8.
Enrolment is limited.


Seminars; one term.
This course may be taken for B.A. credit by undergraduates registered in the Labour Studies programme.

3J3/ Technology and Social Welfare. Problems of social policy posed by the impact of technology in such areas as work and leisure, income maintenance, participation in decision making and social planning.
Seminars; one term.
This course may be taken as an elective for B.A. credit by undergraduates not in Social Work.
Enrolment is limited.

3K3/ Direct Currents in Social Work Practice. Examination of the conceptual framework of scientific inquiry relating to social work research and practice. Survey of selected research from other disciplines relevant to social work.
Seminars; one term.

3L3/ Family in Social Work Practice. Examination of relevant aspects of family theory for social work practice; models of family intervention and therapy; agencies and programmes serving families. Seminars; one term.
Prerequisite: Sociology 2U3 is recommended as preparation for this course.

3Q3/ 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.

3P3/ Directed Readings in Social Work. Completion of a major project focusing on a selected social work problem or issue.
Sociology

Faculty as of January 15, 1980
W. B. Shaffir / Chairman

Professors
Peter C. Pineo / B.A. (University of British Columbia), M.A. (McGill), Ph.D. (Chicago).

Associate Professors
W. Peter Archibald / B.A. (Mt. Allison), M.A. (University of British Columbia), Ph.D. (University of Michigan).
Jack W. Haas / B.S. (SUNY, Buffalo), Ph.D. (Syracuse).
Franklin W. Henry / Ph.B. (Marquette), M.A., Ph.D. (Catholic University of America).
Roy W. Hornosty / B.S.P., M.A. (University of British Columbia), Ph.D. (SUNY, Buffalo).
D. Ralph L. Matthews / B.A. (Memorial), M.A., Ph.D. (Minnesota).

Assistant Professors
Ellen O. Derow / A.B. (Massachusetts), A.M. (Rutgers), Ph.D. (Toronto).
Graham K. Knight / B.A. (Kent), M.A., Ph.D. (Carleton).

Lecturers
Bruce Curtis / B.A. (Queen's), M.A. (Toronto).

Associate Members
L. Greenspan / Religious Studies
J. Mol / Religious Studies

CURRICULUM 1980-82

Students should consult the Department’s Handbook for Undergraduates, 1980-81 or 1981-82 which will be available prior to registration, for fuller course descriptions and any changes in the list of courses offered in 1980-81 or 1981-82. Students should check the Department’s Handbook in order to find the term in which “one term” courses are offered.

The University reserves the right to limit enrolment in any course. Sociology 1A6 and several other courses are divided into independent sections. For more information, see the Sociology Department’s Handbook for Undergraduates. This booklet gives course descriptions for the various Sociology 1A6 sections.

A 50% minimum is required in all prerequisite courses unless otherwise specified. There are no co-requisite requirements for part-time students.

1A6: An Introduction to Sociology. A survey of the areas of research which interest the sociologist: interpretation of human action from the standpoint of the group. Emphasis is given to contemporary
Sociology

2MM/ Sociological Inquiry. Sociological literature is examined as a source of unsolved research questions, rather than as a reservoir of information. Emphasis is placed upon the development of classic problems and the discovery and formation of new issues in various areas of the discipline. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

2CA/ Deviant Behaviour. An analysis of deviant behaviour and conformity in relation to social structure and processes, and a discussion of problems of control within the social system. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor. Enrolment in this course may be limited.

2D6/ The Human Group. An examination of the individual in social interaction, with emphasis upon relationships between these and social structure. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

2EE/ Racial and Ethnic Group Relations. The course will deal primarily with the study of racial and ethnic group relations in Canada and the United States. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

2H6/ A Sociological Analysis of Canadian Society. The application of sociological concepts to the character and social structure of Canada, with particular emphasis on its major social class, regional, and ethnic divisions. 3 hrs. (lects. and discussion); two terms. Prerequisite: Open.

2J3/ The Sociology of Organizations I. A theoretical and empirical analysis of formal and informal organizational structures and processes in major sectors of modern industrial society. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6, 283 or permission of the instructor. Not open to those students who have taken Sociology 3P3 prior to 1973-4.

2L3/ Current Problems in Sociological Analysis. Selected problems in contemporary sociology. Topics will vary and the Department should be consulted for details for any particular year. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor.

2K3/ Current Problems in Sociological Analysis. Selected problems in contemporary sociology. Topics will vary, and the Department should be consulted for details in any particular year. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor.

2M6/ Industrialization and Development. Introduction to theories of modernization and underdevelopment with comparative empirical content. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

2MP/ The Social Dimension of Religion. Same as Religious Studies 2M3.

2NN/ The Social-Psychological Dimension of Religion. Same as Religious Studies 2NN.

2Q6/ Social Stratification. A broad comparative study of social class and social mobility. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

2P6/ The Sociology of Education. A comprehensive analysis of educational institutions in modern society. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor. Enrolment in this course may be limited.

2Q3/ 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); one term. Prerequisite: Sociology 1A6 or permission of the instructor. Not open to students who have completed Sociology 2J3 in 1973-74. Enrolment in this course may be limited.

2S6/ Introduction to Sociological Theory. An introduction to the foundations, rise and development of sociological theory. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor. Not open to students who have completed Sociology 283 or 3A6.

2U3/ Sociology of the Family. An analysis of kinship and family units in comparative and contemporary perspective. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor. Not open to those who completed Sociology 3D3 during or prior to 1977. Enrolment in this course may be limited.

2V6/ Occupations, Ancestry and Profession. An examination of the occupational structure of industrial society, the changing nature of work, and problems associated with such change. 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor. Not open to students who have taken Sociology 3Q3.

2Y3/ Introduction to Quantitative Studies. The course is designed to develop those skills necessary to understand and evaluate research studies in sociology using quantitative methods. Descriptive statistics and basic inferential techniques will be examined. 3 hrs. (lects. and discussion); one term. Prerequisite: Registration in Honours or Pass Sociology, and Sociology 1A6, or by permission of the instructor. Not open to students who have taken or are taking a statistics course. Enrolment in this course may be limited.

2Z3/ Introduction to Sociological Research. This course is designed to develop those skills necessary to pursue and understand research. Several general methods of sociological research will be examined. 3 hrs. (lects. & discussion); one term. Prerequisite: Registration in Honours or Pass Sociology and Sociology 1A6, or permission of the instructor. Enrolment in this course may be limited.

3A3/ European Sociological Theory. An advanced examination of classical and contemporary European sociological theory. 3 hrs. (lects. & discussion); one term. Prerequisite: Sociology 253 or 256 or permission of instructor. Not open to students who have taken Sociology 2A5.

3A3/ The Sociology of Mass Media. The development of the mass media (the press, magazines, radio, television), with particular attention to their social organization, how information and news are produced, and effects upon social attitudes and behaviour. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor.

3B3/ Selected Topics in the Sociology of Education. An examination of selected topics in the sociology of education. 3 hrs. (seminars and discussion); one term. Prerequisite: Sociology 1A6 or either 2P6; 206, 213 or permission of instructor. Enrolment in this course may be limited.

3BB3/ Major Denominations in Canada. Same as Religious Studies 3BB3.

3C6/ Socio-Economic Development. Selected topics in the sociology of underdeveloped countries, including social stratification, revolution, the place of women, and processes of social change. 3 hrs. (lects. and seminars); two terms. Prerequisite: Sociology 2M6 or permission of instructor.

3CC3/ Social Mobility. An examination of the determinants and consequences of movements up and down the social scale. Such movements will be considered in comparative and historical perspective. Students should have a quantitative background. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 2Y3 or 223 or equivalent, or permission of instructor.

3D3/ Special Topics in the Sociology of the Family. An advanced course allowing detailed study of selected topics in the Sociology of the Family. 3 hrs. (lects. and discussion); two terms. Prerequisite: Anthropology 2F3 or Sociology 2U3. Enrolment in this course may be limited.

3E3/ Age Related Studies. Investigation of selected phenomena related to age structures and age groupings. Focus varies yearly. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor.

3F6/ Political Sociology. A survey of social and state institutions, focusing on current debates in the field. 3 hrs. (lects. and discussions); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

3G3/ Sociology of Health Care. The social determinants of illness and of the organization of the health care sector. 3 hrs. (lects. and discussion); one term. Prerequisite: Sociology 1A6 or permission of the instructor. Enrolment in this course may be limited.

3H6/ Research Techniques and Data Analysis. A comprehensive introduction to the principles of research methods and data analysis in the social sciences. 3 hrs. (lects. and labs.); two terms. Prerequisite: Sociology 1A6 or permission of the instructor.

3J3/ Special Topics in Sociological Analysis. An examination of selected topics in sociology, 3 hrs. (lects. and discussion); two terms. Prerequisite: Sociology 1A6 or permission of the instructor. Not open to those who completed Sociology 3D3 during or prior to 1977. Enrolment in this course may be limited.
topics of contemporary interest to sociologists. Students should consult the Department concerning the topics to be examined.

3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 1A6 or permission of the instructor.

3K3/ Special Topics in Sociological Analysis II. Same as Sociology 3J3.
3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 1A6 or permission of the instructor.

3L3/ Selected Topics in Occupational Sociology. An advanced course allowing detailed study of one or more topics of special interest.
3 hrs. (lects. and discussion); one term, alternate years only.
Prerequisite: Sociology 2V6 or permission of the instructor.

3 hrs. (lect. and discussion); two terms.
Prerequisite: Sociology 1A6 or permission of the instructor.

3N3/ The Sociology of Knowledge. An analysis of the role of ideas in the development of social theory and the impact of society upon the formation of belief systems and expressive forms.
3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 1A6 or permission of the instructor.

3O3/ Advanced Sociological Research. This course will provide a more detailed study of selected qualitative methods in Sociology.
3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 2Z3.

3 hrs. (lects. & discussion); one term.
Prerequisite: Sociology 2S3 or 2S6, or permission of the instructor.
Not open to students who have taken Sociology 3A6.


3S3/ Creativity and Human Interaction. Parts I and II. Part I is the same as Social Science 385. Part II is the same as Social Science 3C3.
Only three units from this pair of courses is allowed to count for "R" credit in Sociology.
Prerequisite: Permission of the instructor.

3T3/ The Sociology of Urban Areas. Sociological analysis of urban structure and development, and the social consequences of urbanization.
3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 1A6 or permission of the instructor.

3U6/ Theories of Mass Society. This course will be a careful study of a few books by writers who have looked at the possible tension between equality and liberty in the modern world and at the problem posed for constitutional democracy by "mass" cultural and political phenomena.
3 hrs. (lects. & discussion); two terms.
Prerequisite: A previous course in Sociological or Political theory and permission of the instructor.
Same as Political Science 3L6.

3V6/ Comparative Industrial Societies. The similarities and differences of various modern industrial societies will be examined through discussion of various postulated determinants of the structure and processes of such societies.
3 hrs. (lects. & discussion); two terms.
Prerequisite: Sociology 2M6. Not open to students who have taken Sociology 2F8.

3 hrs. (seminar and discussions); one term.
Prerequisite: Sociology 1A6 or permission of the instructor.

3Y3/ The Sociology of Organizations II. An advanced course which allows detailed examination of relevant theories and research, including those to which the student was introduced in Sociology 213.
3 hrs. (lects. & discussion); one term, alternate years only.
Prerequisite: Sociology 213 or permission of the instructor.

3Z3/ Ethnic Relations. An analysis of political, social, and economic change in selected locales.
3 hrs. (lects. and discussion); one term.
Prerequisite: Sociology 2E6 or permission of instructor.
Enrolment in this course will be limited.

4A3/ Issues in the Nature of Social Scientific Explanation. An analysis of the differences and similarities between social science and natural science forms of explanation. The basic structure of positivist, subjectivist, and dialectical forms of explanation will be examined and compared.
3 hrs. (seminar); one term.
Prerequisite: Sociology 2S3 or 2S6 and Registration in Year IV Honours Sociology.

4B6/ Field Study Methodology. This course provides students an opportunity to engage in first hand sociological research using field study methods, particularly participant observation.
3 hrs. (seminar); two terms.
Prerequisite: Registration in Year IV Honours Sociology or permission of instructor.

4C6/ Selected Problems in Sociological Research. Students will undertake a class project.
3 hrs. (seminar); two terms.
Prerequisite: Sociology 3H6.

3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology and Sociology 2S3 or 2S6, or permission of the instructor.

4E3/ Computer Application. A class in sociological research involving computer use.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology and Sociology 3H6 or permission of instructor.

4F3/ Special Topics in Comparative Sociological Research I. A critical discussion, centring on selected books and articles, of various strategies using comparative methods for studying societies.
3 hrs. (seminar); one term, alternate years only.
Prerequisite: Registration in Year IV Honours Sociology and Sociology 2S3, or permission of the instructor.

4H3/ Selected Topics in the Sociology of Organizations. An advanced course allowing detailed study of aspects of organizational analysis of special interest.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology and Sociology 2S6, or permission of the instructor.

4I3/ Special Topics in Sociological Theory. An advanced critical analysis of special topics/issues in sociological literature. The content of this course will vary from year to year; please consult the departmental handbook.
3 hrs. (seminar); one term.
Prerequisite: Sociology 2S3 or 2S6 and registration in Year IV Honours Sociology or permission of the instructor.

4J3/ Selected Topics in Sociology I. Topics of contemporary interest to sociologists, with emphasis upon current theory and research. Students should consult the Department concerning the topics to be examined.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.

4K3/ Selected Topics in Sociology II. Same as Sociology 4J3.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology or permission of instructor.

4L3/ Special Topics in Comparative Sociological Research II Same as description Sociology 4F3.
3 hrs. (seminar); one term, alternate years only.

4M3/ Directed Research I for Honours Students. Directed study of a research problem through published materials and/or field inquiry and/or data analysis. Students will be required to write up the results of their inquiry in scholarly form.
One term.
Prerequisite: Permission of the instructor plus registration in Year IV Honours Sociology or permission of the Department.

One term.
Prerequisite: Permission of the instructor plus registration in Year IV Honours Sociology or permission of the Department.

4O3/ Regionalism and Regional Development in Canada. An examination of regional divisions and disparities in Canada as a social, cultural, and economic phenomenon. Emphasis will be placed on the causes of uneven development in Canada, and the impact of regional development policy on the society and economy of Canada's regions.
3 hrs. (seminar); one term.
Prerequisite: Completion of Sociology 2H6 or permission of the instructor.

4Q3/ Individual and Society I. An intensive examination of selected problems involving the relationship of individuals to social structures.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.

4R3/ Individual and Society II. An intensive examination of selected problems involving the relationship of individuals to social structures.
3 hrs. (seminar); one term.
Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.
4S3/ **Special Topics in Canadian Society I.** An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.

4T3/ **Special Topics in Canadian Society II.** An examination of questions which have sociological relevance for Canadian society. The specific questions may vary in different years. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.

4U3/ **Special Topics in Canadian Society III.** 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 Year IV Honours Sociology or permission of the instructor.

4V3/ **Special Topics in Racial and Ethnic Relations.** A study of the influence of ethnic and racial factors in various societies. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor. *Same as Political Science 423.*

4X3/ **Labour and Society.** The course will focus on the emergence of labour organizations during the course of modernization and the factors determining the political outlook of labour. 3 hrs. (seminar); one term. Prerequisite: Registration in Year IV Honours Sociology or permission of the instructor.

*For Graduate Courses see Calendar School of Graduate Studies.*

**SPANISH**

(See “Romance Languages: Spanish”)

**UKRAINIAN**

(See “Russian: Ukrainian”)

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UNDERGRADUATE ACADEMIC AWARDS

Undergraduate Academic Awards

The University Senate, acting on behalf of its generous benefactors and donors, bestows academic awards on entering, in-course and graduating students in order to encourage and recognize high levels of scholarship. In recognizing such scholastic achievement the University requires all recipients of academic awards to fulfill a set of general conditions outlined below in addition to meeting the particular conditions attached to individual academic awards. Such general conditions have been established in order to ensure both equity in competition and an adequate overall academic standing. Any interpretation of these general conditions is solely the prerogative of the Undergraduate Council.

I GENERAL CONDITIONS FOR ENTERING STUDENTS

1.1 A candidate must fulfill the University requirements for admission to a Year I programme.

1.2 All applications for early admission to the University directly from secondary school will be considered as applications for entrance scholarships.

1.3 To be considered for an entrance scholarship, a candidate must obtain on the first attempt an average of at least 80.0% in the credits required for University admission.

1.4 In order to retain those entrance scholarships which provide for awards in Years beyond Year I, students must take at the University, during each successive Winter Session (September to April), a full load corresponding to the number of units specified in the University Calendar for their programme and Year and maintain a weighted average corresponding to first-class standing attained by the end of the April examination period with no mark lower than 50 in any course.

1.5 In the absence of qualified candidates, entrance scholarships may be awarded at the discretion of the Undergraduate Council on more general conditions than those here set out.

1.6 Unless otherwise specified a recipient may hold a scholarship while registered in a baccalaureate degree programme and until graduation or for four years, whichever is less.

1.7 Entrance scholarship recipients will begin their studies at the ensuing Winter Session (September to April) unless an application for deferment is submitted to the Academic Awards section of the Office of the Registrar and is approved. A deferment is not normally granted for more than one calendar year.

II GENERAL CONDITIONS FOR IN-COURSE AND GRADUATING STUDENTS

2.1 In order to qualify for any academic award, except for those provided for part-time studies, a student must take a full load corresponding to the number of units specified in the Calendar for the student's programme and Year, with no mark lower than 50 in any course. This work must be completed within one Winter Session (September to April, hereinafter referred to as Winter Session).

2.2 Students studying for second undergraduate degrees are not eligible for academic awards.

2.3 Applications are not required, although letters expressing interest in travel scholarships are welcome and will be referred to the appropriate Faculty awards committee not later than December 1 in any year.

2.4 A "major award" is an award with a monetary value of $300 or greater.

2.5 To be eligible for a major award a student must obtain a weighted average corresponding to a first-class standing on the best 18 units of work and an overall weighted average of at least second-class standing on the whole work of the Winter Session with no mark lower than 50 in any course. A minor award requires a weighted average of at least 75.0% on the best 18 units of work, a weighted average of at least second-class standing on the whole work of the Winter Session and no mark lower than 50 in any course.

III CONDITIONS RELATING TO THE DISPOSITION OF BENEFITS ATTACHING TO ALL ACADEMIC AWARDS

3.1 A student qualifying for more than one award may enjoy the monetary benefit of no more than one major award and one minor award, or of two minor awards. Any award for which a student is not permitted to retain the monetary benefit will be shown on the student's official record. Students with travel scholarships, book prizes, medals and trophies, or scholarships continuing from a previous year (including entrance scholarships) may receive in addition one major and one minor award, or two minor awards. Students holding continuing entrance scholarships may not receive the 3-Years' Fees Scholarships.

3.2 There are no additional general conditions beyond those noted in 3.1 above attaching to the receipt of travel scholarships, book prizes, medals and trophies, or to the monetary benefits of awards explicitly provided for part-time studies and graduating students. Such awards are made directly to the student, normally not later than November following the Session in which they were earned.

3.3 The monetary benefits of all academic awards not excluded in 3.2 above are credited to the academic fee account of the student in the November following the earning of the award.

3.4 Academic awards benefits credited to academic fee accounts are not refundable in cash under any circumstances.

3.5 Benefits credited to academic fee accounts may be used only to defray academic fees for baccalaureate degree courses taken during the Winter Session in which the account is credited with the award funds, unless an application to apply the benefits to academic fees incurred at a later date is submitted to the Academic Awards section of the Office of the Registrar and is approved.

Students holding 3-year or 4-year full-fee scholarships who choose to accelerate their programmes by completing Summer Session courses and thereby complete their degrees earlier than normal should consult the Academic Awards section of the Office of the Registrar regarding the possibility of reimbursement for Summer Session fees.

3.6 The maximum amount of academic awards funds which may be credited to one academic fee account in any one Winter Session shall be equal to the full-time Winter Session academic fee for the programme and Year in which the recipient is registered.

3.7 If the monetary value of awards received is in excess of the full-time Winter Session academic fee for the programme and Year in which the student is registered, such excess is paid directly to the student in November, provided that the student is then registered in a baccalaureate degree programme for a full load of work as defined in the Calendar for the programme and Year.

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.

ACADEMIC AWARDS BY CATEGORY

The undergraduate academic awards are set out in the following sequence:

AWARDS FOR ENTERING STUDENTS
Scholarships Open to Ontario Students
Merit Awards Open to Ontario Students
Scholarships Open to Canadian Students
Scholarships Open to Canadian Students from Outside Ontario

AWARDS FOR STUDENTS IN COURSE
Medal
UNDERGRADUATE ACADEMIC AWARDS

Scholarships for Entering Students

SCHOLARSHIPS OPEN TO ONTARIO STUDENTS

The following scholarships are open to any student applying for admission from an Ontario Secondary School. The recipients of these scholarships will be determined primarily on the basis of the overall average on the Grade 13 (Level 5) 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 $500.

The Chancellors' Scholarships. A variable number will be awarded to students entering a full-time programme of study. Value—one year's academic fees.

The Helen M. Currey Scholarship. Established in 1941 by bequest of Helen Maud Currey of Drumbo, Ontario.

Value—up to four years' academic fees. To be awarded every four years, the tenth award to be made in 1990.

The Dofasco Scholarship. Established in 1955 by the Dominion Foundries and Steel Company. To be awarded to a student who is a Canadian citizen and is entering an engineering programme.

Value $4,000 ($1,000 a year for four years).

The Governors' Scholarships. Six scholarships will be awarded to students entering a full-time programme of study.

Value—up to four years' academic fees.

The Nellie P. Hogg Scholarship. Established in 1965 by bequest of Nellie P. Hogg of Hamilton. To be awarded to a woman student entering a full-time programme of study.

Value—up to four years' academic fees.

The Amelia Morden, Paardeburg Chapter, I.O.D.E., Scholarship. Established in 1968 by the Paardeburg Chapter, I.O.D.E. To be awarded to a student from a Secondary School in Hamilton who attains an average of at least 70.0% in Grade 13 and who has a satisfactory record with respect to character, personality and activities. Preference to be given to children of service or ex-service personnel.

Value $150.

The Jury Scholarship. Established in 1941 by bequest of J. H. Jury of Bowmanville, Ontario. To be awarded to a student from a Bowmanville High School, preference to be given to students enrolling in humanities or social sciences.

Value—up to four years' academic fees.

The Lloyd Memorial Scholarship in Science. Established in 1956 in memory of Henry Hoyes and Lizzie Lloyd by their children. Grade 13 subjects to be included are: Physics, Chemistry, two credits of Mathematics, and either Biology or a third credit of Mathematics.

Value—up to four years' academic fees.

The Albert Matthews Scholarship in Foreign Languages. Established in 1920. Grade 13 subjects to be included are Latin and a language other than English.

Value—up to four years' academic fees.

The Harold Matthews Memorial Scholarship in Modern Languages. Established in 1917. Grade 13 subjects to be included are French and either German or Spanish.

Value—up to four years' academic fees.

The McMaster Entrance Scholarships. Four scholarships will be awarded to students entering a full-time programme of study with the highest standing in Grade 13.

Value $4,000 ($1,000 a year for four years).

The Isabella Campbell Mcnee Scholarship in Mathematics and Physics. Established in 1915 and augmented in 1926. Grade 13 subjects to be included are three credits of Mathematics and Physics.

Value—up to four years' academic fees.

The Spectator Scholarship. Established in 1955 by the Hamilton Spectator. To be awarded to a student from Hamilton and district.

Value $4,000 ($1,000 a year for four years).

The D. E. Thomson Scholarship in English. Established in 1909 and augmented in 1915. Grade 13 subjects to be included are English and either Latin or French.

Value—up to four years' academic fees.

The Frank Thorolfson Memorial Scholarship. Established in 1978 in memory of Professor Frank Thorolfson, first Chairman of the Department of Music. One or two scholarships to be awarded to students entering the Year 1 programme in Music who, in the judgment of the Department, have attained high scholastic achievement and musical proficiency.

Value $250 each.

The Wheeler Scholarship in History. Established in 1915. Grade 13 subjects to be included are: History, English and a language other than English.

Value—up to four years' academic fees.

MERIT AWARDS OPEN TO ONTARIO STUDENTS

Merit Awards are granted on the basis of academic standing and contribution to school and community life in extracurricular activities and work.

The McMaster Merit Awards. Made available from time to time by authorization of the Board of Governors of the University.

Value—Forty awards of $500 each.

The Leslie A. Prince Merit Awards. Established in 1979 in honour of Leslie A. Prince, Dean of Students, by his friends and colleagues upon the occasion of his retirement and in recognition of his outstanding contribution to the University community.

Value—Two awards of $500 each.

SCHOLARSHIPS OPEN TO CANADIAN STUDENTS

Alumni Association Scholarships. Established in 1961 by the McMaster University Alumni Association as a memorial to former members of the McMaster faculty in recognition of their contribution to higher learning. Awarded on the basis of general proficiency in the subjects required for admission to students from any province or territory of Canada.

Value—Three scholarships, each up to four years' academic fees.

The George and Nora Elwin Canadian Scholarships. Established in 1979 by bequest of George and Nora Elwin of Hamilton. Awarded to excellent students of the provinces and territories of Canada on the basis of academic performance preceding entry to the University.

Value—Nine scholarships of $2,200 to $2,600 each, payable over two years.
SCHOLARSHIP OPEN TO CANADIAN STUDENTS FROM OUTSIDE OF ONTARIO

Josephine Magee Scholarship. Established in 1959 by bequest of Josephine Magee of Hamilton. Awarded on the basis of general proficiency in the subjects required for admission, preference to be given to a student from one of the provinces or territories of Canada outside Ontario.

Value—up to four years’ academic fees.

Medal, Scholarships, Prizes and Bursaries for Students in Course

MEDAL

The Governor General’s Medal. Given by His Excellency the Governor General of Canada. To be awarded to the student who at the end of Year III ranks highest in scholarship, in personal character and in influence.

SCHOLARSHIPS AND PRIZES

The Aaron Prize. Established in 1964 by Fannie Aaron. To be awarded to the student who attains the highest standing in the required work of Year II of Pass English.

Value $25.

The American-Standard Book Prize. Established in 1978. To be awarded to the student entering Year III of the Ceramic Engineering programme who attains the highest overall standing in the previous Year.

Value $100.

The American Society for Metals (Ontario Chapter) Scholarship. Established in 1971 by the local Chapter. To be awarded to the student achieving highest standing in Year II or III of Honours Metallurgy and Materials Science or Metallurgical Engineering.

Value $900.

The Association of Professional Engineers Undergraduate Scholarships. Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to students in engineering on the basis of scholarship.

Value $250 (One award in each of Years I, II, and III).

The A. H. Atkinson Prize. Established in 1980 by Group Eight Engineering. To be awarded to the student in Year III of the Civil Engineering programme or Year IV of the Civil Engineering and Management programme who achieves the highest average in Civil Engineering 3G4 and 3J4.

Value $200.

The J. Douglas Bankier Memorial Prize. Established in 1977 in memory of Professor J. Douglas Bankier by his friends, colleagues, and former students. To be awarded to the student who attains the highest standing in Year III or Year IV of an Honours or Major programme in the Department of Mathematical Sciences and who in that Year achieves at least second-class standing in Mathematics 3D6.

Value $250.

The M. Banker Bates Prize. Established in 1975 by Dr. M. Banker Bates and augmented in 1978 in his memory by his family, friends and colleagues. To be awarded to the student in Year III of the programme in Commerce who attains the highest overall average in Commerce 3B3, 3D3, 3E3 and 3K3.

Value $250.

The Beauty Counselors of Canada Scholarship. Established in 1956 by Beauty Counselors of Canada Limited. To be awarded to the student entering Year II of Honours Chemistry or Honours Applied Chemistry who attains the highest standing in Year I chemistry.

Value $200.

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 Year II of Honours Geology, Honours Chemistry and Geology, or Honours Metallurgy and Materials Science, and the other to the student entering Year II of Chemical Engineering or Metallurgical Engineering, who secure the highest average in any two of chemistry, geology, physics in Year I. A scholarship is tenable for three years provided the recipient maintains a standing satisfactory to the Undergraduate Council.

Value for Year II $900, Year III $700, Year IV $400 (two awards).

The Brian Blakey Memorial Prize. Established in 1979 in memory of Dr. Brian Blakey, Professor of French, by his friends, colleagues and former students, on behalf of his wife, Dorothy. To be awarded to the student who attains the highest standing in Year III of an Honours programme in Dramatic Arts, French, Italian, Spanish, Classics, English, German or Russian. Students in all programmes except Dramatic Arts must have taken at some point Linguistics 1A6 or Anthropology 186 and achieved in it at least a second-class standing.

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 any year in the School of Social Work who submits the most significant research paper or essay in the field of social justice.

Value $250.

The BP Canada Scholarships. Established in 1976. Two scholarships to be awarded: one to the student entering Year IV of an Honours programme in Chemistry who has attained the highest standing in Year III and one to a student entering Year V of Chemical Engineering and Management who has achieved notable standing in Year IV and is otherwise deemed meritorious.

Value $500 each.

The Brien Scholarship in Philosophy. Established in 1944 by Dr. J. W. Brien of Windsor. To be awarded to the student in Year II of an Honours programme in Philosophy who has the highest standings in philosophy courses taken in Years I and II.

Value $350.

The Josephine Staples Brien Prize. Established in 1936 by Dr. J. W. Brien of Windsor. To be awarded to a woman student at the end of Year II or III who qualifies on the basis of academic standing and interest in undergraduate activities.

Value $250.

The Dr. and Mrs. F. R. Britton Scholarship in Mathematics. Established in 1962 by Dr. and Mrs. F. R. Britton. To be awarded each year to the student in Year II of an Honours programme in Mathematical Sciences who attains the highest standing in the mathematics of that year and is not the holder of an award of greater monetary value than this scholarship. Tenable in Years 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 $600 ($300 each year).

The Ruby Brown Prize in English. Established in 1970 by bequest of Mrs. Edgar Brown. To be awarded to a student in Year I for the most creative essay in an English course.

Value $125.

The Crispin Calvo Prize. Established in 1978 in memory of Professor C. Calvo by his family and friends. To be awarded to a student completing Year III of an Honours programme in Chemistry who, in the judgment of the Department, shows particular promise in thermodynamics.

Value $125.

The Ella Halstead Campbell Prize. Established in 1978 by Mrs. Verna Caskey and Miss June Caskey in memory of Ella Halstead Campbell. To be awarded to a keyboard student registered in Music 1E4, 2E4, 3E4, or 4E4 who is outstanding in the judgment of the Department of Music.

Value $100.
The Canadian Club of Hamilton Scholarship. Established in 1956 by the Canadian Club of Hamilton. To be awarded to the student who attains the highest standing in the Canadian history of Year III. Value $150.

The Canadian Refractories Scholarships. Established in 1975 by the Canadian Refractories Division, Dresser Industries Canada, Limited. Two scholarships to be awarded to students entering Years II, III, or IV of Ceramic Engineering who, in the judgment of the Department of Metallurgy and Materials Science, show particular promise in the field of Ceramic Engineering or Materials Science. Value: $500 each.

The Canadian Ukrainian Women’s Committee (Hamilton Branch) Prizes. Established in 1972. To be awarded to the student who attains:
(a) the highest standing in Ukrainian 1Z6.
(b) the highest standing in Ukrainian 2A6.
(c) the second highest standing in Ukrainian 2A6.
Value (a) and (b) $100 each.
(c) Book.

The Chemical Institute of Canada Prizes. Established in 1947 by the Chemical Institute of Canada. (a) To be awarded to a Year III student in an Honours programme in Chemistry, Chemistry Major, or Honours Biochemistry, who attains high standing in chemistry. (b) To be awarded to the student with the highest standing in Year III of Chemical Engineering. Value $25 and medal (two awards).

The Clarkson Gordon Scholarship. Established in 1952 by Clarkson Gordon. To be awarded to the student in the programme in Commerce who attains the highest average in Commerce 2A3 and 2B3. Value $350.

The Classical Civilization Prize. Established in 1978 by Professor D. M. Shepherd. To be awarded at the end of Year II to the student registered in an Honours programme in Classical Civilization who, in the judgment of the Department of Classics, shows most promise. Value $100.

The Classics Book Prizes. Two prizes established by Professor A. G. McKay in 1963. To be awarded to the student who attains:
(a) the highest average in Classical Civilization 2B3 and 2C3 or Art History 2B3 and 2C3.
(b) the highest standing in Latin 2G3.

The Cranston Scholarship. Established in 1958 by William H. Cranston of Midland in honour of his parents, J. Herbert Cranston (’05) and Eva Wilkins Cranston (’07). To be awarded for excellence in the study of Canadian literature. Value $200.

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 entering Year III of Commerce, Honours Economics or Honours Economics and Mathematics who ranks highest in the work of the qualifying group of Years I and II. 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, tenable in Years III and IV. Value $500 ($250 each year).

The Cyanamid Canada Inc. Scholarships. Established in 1961. To be awarded to the students entering Year III of an Honours programme in Chemistry and entering Year III of Chemical Engineering who have attained the best academic records in Year II of the same programmes. Value of first award is $500, and second award $275, one to be awarded in each department.

The Domtar Scholarship. Established in 1974. To be awarded to the student entering Year IV of Ceramic Engineering with the highest academic standing in the previous Year. Value $750.

The Dow Chemical of Canada, Limited Scholarship. Established in 1976. To be awarded to the student entering Year IV of the Chemical Engineering programme who has achieved notable standing in Year III, has demonstrated leadership in extracurricular activities, and is not a holder of another scholarship. Value $750.

The Dramatic Arts Book Prize. Established in 1974 by Professor Ronald W. Vince. To be awarded to the student who attains the highest standing in Dramatic Arts 1A6.

The 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 in the judgment of the Department of Philosophy, has achieved the most notable standing in Year III of an Honours programme in Philosophy. Value $125.

The Engineering Institute of Canada (Hamilton Section) Prize. Awarded to the student in Year I Engineering who attains the highest weighted average in the Mid-year Tests. Value $50.

The L. F. Eull Prize. Established in 1980 by Group Eight Engineering. To be awarded to the student in Year III of the Electrical Engineering programme or Year IV of the Electrical Engineering and Management programme who achieves the highest average in Electrical Engineering 3N3 and 3S3. Value $200.

The French Government Book Prizes. Awarded from time to time for proficiency in Year I and in Year II French.

The General Contractors Association of Hamilton Scholarships. Established in 1979. Two scholarships to be awarded on the basis of scholarship to students completing Year II, Civil Engineering, or Year II or III Civil Engineering and Management. Recipients should be willing to accept summer employment in the construction industry. Value $600 each.

The Geology Book Prize. Established in 1955 by an anonymous graduate of year ’47 in memory of Dean C. E. Burke. To be awarded at the end of Year II to a student in an Honours programme in Geology who, in the judgment of the Department, attains high standing in geology. Value $50 in books.

The German Embassy Book Prize. Awarded from time to time for proficiency in Year III German.

The J. L. W. Gill Scholarships. Established in 1944 by bequest of J. L. W. Gill, B.A., Principal of Hamilton Technical School. Six scholarships awarded on the basis of Q group standings in Year III of Honours B.Sc. programmes and tenable in Year IV. Ordinarily, not more than one scholarship will be awarded to students in any one programme. Value $350 each.

The Gilmour Memorial Prize. Established in 1927 by Year ’27, in memory of Dr. Joseph Leeming Gilmour, Honorary President of their first year in 1923, and subsequently enlarged by his children. To be awarded to the student who attains the highest standing in Religious Studies 2E6. Value $50.

The H. B. Greening Book Prize. Established in 1969 by bequest of Gladys Powis Greening in memory of her husband, Herald Benjamin Greening. To be awarded on the recommendation of the Department of Music for excellence in Year II of Honours Music. Value $75 in books.

The Ronald K. Ham Memorial Prize. Established in 1971 in memory of Professor R. K. Ham by his friends and former colleagues. Awarded at the end of Year III to the student who, in the judgment of the Department of Metallurgy and Materials Science, shows most promise as a materials scientist or engineer. Value $75.

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 honours student in Year II who, in the judgment of the Department of Chemistry, has attained the highest standing in the classes of that department. Value $125.
The Hamilton Economic Development Commission Scholarships. Established in 1975. Two scholarships to be awarded to students entering each of Years II, III, and IV of the Commerce program, who have achieved the highest overall weighted average in the required courses at the end of the previous Year. Students must have obtained all their secondary school education in the Hamilton-Wentworth region.
Value $500 each (six awards).

The Dr. Thomas Hobley Prize. Established in 1936 by bequest of Mrs. A. McNee of Windsor. To be awarded to a woman student entering her graduating year, on the basis of academic work done in undergraduate economics or political science.
Value $150.

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 Year I history.
Value $100.

The Institute of Electrical and Electronics Engineers (Hamilton Section) Prizes. Established in 1961. To be awarded to those two students in Year III of Electrical Engineering who attain the highest and second highest standings in the Electrical Engineering courses.
Value $100 and plaque; and $75.

The Internationale Limited Scholarship. Established in 1977. To be awarded to the student entering Year IV of the programme in Mechanical Engineering or Mechanical Engineering and Management who, in the judgment of the Department, attains notable standing in the previous Year.
Value $450.

The Inter Nationes (Bonn) Book Prize. Awarded from time to time for proficiency in German studies.

The Ivey Scholarship. Established in 1971 by Professor and Mrs. G. S. French in memory of Mr. & Mrs. I. H. Ivey, the parents of Mrs. French. To be awarded to the student who, in the judgment of the Department of Music, ranks highest in Year III of Honours Music.
Value $125.

The A. I. Johnson Scholarship. Established in 1977 in memory of Dr. A. I. Johnson by his friends and former colleagues. To be awarded to a student entering Year V of an Engineering and Management programme. Award to be based on distinguished academic performance during the student's undergraduate career. Consideration will also be given to noteworthy contribution in extracurricular activities.
Value $350 and plaque.

The Kathleen Mary Johnston Memorial Prize. Established in 1963 by Lawrence D. Johnston in memory of his wife. To be awarded to the student in Year II of an Honour programme in Religious Studies who attains the highest standing in Year II religious studies.
Value $75.

The Jury Prize. Established in 1941 by bequest of J. H. Jury of Bowmanville. To be awarded to the student who attains the highest standing in Year II of the Honours History programme.
Value $150.

The Stanford N. Katambala Geology Book 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 at the end of Year III to a student in Honours Geology who attains high standing in geology.
Value $40 in books.

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 on completion of Year II or Year III on the basis of journalistic ability or, on completion of Year III, on the basis of high standings in English taken in Year III.
Value $100.

The Dr. S. P. Klimasko Prize. Established in 1973. To be awarded to the student who attains the highest standing in Ukrainian 3A6.
Value $50.

The Sam Lawrence Prize. Established in 1957 by the East Hamilton Independent Labour Party C.C.F. Club in honour of Sam Lawrence. To be awarded to the student who, in the judgment of the Department of Economics, has attained notable academic standing in Labour Economics.
Value $125.

The Ray Lawson Scholarships. Established in 1975 by the Honourable Ray Lawson, O.B.E., D.C.L., D. Laws, LL.D., K.G.St.J., Lieutenant-Governor of Ontario from 1946 to 1952. Two scholarships, one at the end of Year III and one at the end of Year IV, to be awarded to the students who attain the highest overall weighted average in an Engineering and Management programme.
Value $500 each.

The MacGibbon Scholarship. Established in 1970 by bequest of Professor Duncan A. MacGibbon ('08). To be awarded to the student in an Honours programme in Economics who, in the judgment of the Department of Economics, stands highest in economic history.
Value $250.

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, attains the highest academic standing in Economics 3J6 (Economic Development) or, in exceptional circumstances, for work of distinction in a cognate area.
Value $100.

The Betty MacMillan Book Prize. Established in 1960 by her classmates in memory of Elizabeth Johnstone MacMillan ('50). To be awarded to the student in Honours Sociology who, in the judgment of the Department of Sociology, is the most promising student in Year III.
Value $75 in books.

Value $50.

The McGregor-Smith-Burr Memorial Scholarship. Established in 1910 by the Class of 1912 in Arts, in memory of their classmates, Percy Neil McGregor, Lee Wilson Smith, father of Lee Wilson Smith. To be awarded to the student who attains the highest standing in Honours English and History in Year III.
Value $400.

The Boyd McLay Prize in Physics. Established in 1977 to commemorate the contributions of Dr. A. Boyd McLay (22') to teaching and research in optics and spectroscopy at McMaster University from 1930 to 1967. To be awarded to a student who, in the judgment of the Department of Physics, achieves high standing in Year III of an Honours or Major programme in Physics.
Value $200.

The Simon McNally Scholarships. Established in 1972 by S. McNally and Sons, Limited, in honour of Simon McNally. One or two scholarships to be awarded to Canadian citizens completing Year II of a Civil Engineering programme. Awards to be based on scholarship and evidence of practical engineering experience and background.
Value $600.

The Michael J. Morton Memorial Book Prize. Established in 1979 in memory of Dr. M. J. Morton. To be awarded at the end of Year III to a student in an Honours or Major programme in Chemistry who, in the judgment of the Department of Chemistry, is outstanding in the field of inorganic chemistry.
Value $100 in 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 in any Year at the discretion of the Undergraduate Council. Value $350.

The Moulton College Scholarship. Established in 1957 from funds originally subscribed by the Alumnae of Moulton College during the years 1946 to 1949 for the expansion of Moulton College. To be awarded for general proficiency to a woman student of Moulton Hall at the end of Year II. Value $800 ($400 in each of Years III and IV).

The Neosid Ceramic Engineering Book Prize. Established in 1978 by Neosid (Canada) Limited. To be awarded to the student entering Year IV of the Ceramic Engineering programme who attains the highest overall standing in the previous Year. Value $50.

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 standing in the Nursing and Health Sciences courses in Year II of the B.Sc.N. programme. Value $400.

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 at the end of Year III to a student in an Honours or Major programme in Chemistry who, in the judgment of the Department of Chemistry, shows particular promise as an experimental scientist. Value $75 in books.

The Paikin Scholarship. Established in 1957 in memory of Barney David Paikin ('33), by Mrs. Barney David Paikin and Morris Paikin. To be awarded to the student who attains the highest standing in Year III of the Honours History programme. Value $400.

The Gladys Ballantyne Parker Prize. Established in 1953 in memory of Gladys Ballantyne Parker by her father, Harry Ballantyne. To be awarded to the student at the end of Year II in classical studies who, in the judgment of the Department of Classics, is most promising. Value $50.

The Price Waterhouse and Co. Scholarship. Established in 1959 by Price Waterhouse and Co. To be awarded at the end of Year III to the outstanding student on the basis of his/her qualifications and academic record in the first three years of the Commerce programme. Preference will be given to students who plan to continue their studies after graduation with a practising firm of chartered accountants. Value $350.

The Proctor Limited Scholarship. Established in 1962. To be awarded to the student entering Year III of a programme with concentration in Russian studies who attains the highest standing in Russian 2A6. Value $150.

The Dr. John A. Pylypiuk Scholarship. Established in 1967 in memory of Dr. John A. Pylypiuk and in recognition of Canada's Centennial Year. To be awarded to the student in Year II who attains the highest standing in History 2U6 (Canadian history). Value $300.

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 in Year III who, in the judgment of the Department of English, has made the most notable original contribution to student publications. Value $150.

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, in the judgment of the Department, attains the most notable standing in Year III of an Honours programme in History. Value $50 and book(s).
The T. H. B. Symons Scholarship in Canadian Studies. Established in 1976. To be awarded to the student who attains the highest average in the Q group courses in Year III of a Combined Honours Canadian Studies programme.
Value $200.

The Kenneth W. Taylor Book Prize. Established in 1976 by his children in memory of Dr. Kenneth W. Taylor (’21), LL.D. (’50). To be awarded to the student who, in the judgment of the Department of Economics, has the best academic standing in courses within the area(s) of Monetary Economics and Financial Institutions and of Public Finance.
Value $75.

The Hugh R. Thompson Memorial Prize. Established in 1960 in memory of Dr. Hugh R. Thompson. To be awarded for general proficiency in Year II of Honours Geography or Honours Geography and Geology.
Value $75.

Value $200.

The Michael Thomson Memorial Book Prizes. Established in 1975 by the members of the Departments of German and Russian in memory of Michael Thomson, Supervisor of the McMaster University language laboratories from 1961 to 1975. Two prizes, one to be awarded to the student who attains the highest standing in German 126, and the other, to the student who attains the highest standing in Russian 2C6.

The Thorne Riddell and Company Scholarship. Established in 1956 by Pettit, Hill and Bertram, Toronto, and continued after amalgamation of firms. To be awarded at the end of Year III to an outstanding student on the basis of his qualifications and academic record in the first three years of the Commerce programme. Preference will be given to students who plan to continue their studies after graduation with a practising firm of chartered accountants.
Value $300.

The Three-Years’ Fees Scholarships. A variable number (based on quota for each Faculty and the School of Nursing) awarded to students who have completed Year I with the highest overall weighted average. The Scholarships are tenable for three years provided the recipients maintain a standing satisfactory to the Undergraduate Council.
Value—up to three years’ academic fees.

The Touche Ross and Company Scholarship. Established in 1962. To be awarded to the student in Year III who attains the highest standing in Commerce 3A3 or 3C3, and 3G3.
Value $300.

The University Prizes for Special Achievement. Established in 1973. Two prizes to be awarded in each Faculty to students who exhibit exceptional skill and originality in a creative project (such as an essay, poem, sculpture, mathematical or scientific problem, engineering design) or a related series of such projects.
Value $150 each.

The 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 standing in the penultimate year of her programme.
Value $300.

The UWC Past Presidents’ Prize. Established in 1976 by the Past Presidents of the University Women’s Club of Hamilton on the occasion of the Club’s 50th anniversary. To be awarded to the woman student who attains the highest standing in Year III of a programme in Engineering.
Value $50.

The Varey Scholarship. Established in 1978 by J. C. Varey, Dundas, in memory of Albert E. Varey. To be awarded to the student who, in the judgment of the Department of Biology, attains high standing in Biology 4J3 or 1D6, and shows an innovative approach to the study of ecology. Preference to be given to students in Biology 4J3.
Value $250.

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 $100 in books.

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 attains the highest standing in the physics of Year II.
Value $650.

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 attains the highest standing in Year II of the Honours History programme.
Value $30.

The Women’s Art Association of Canada Prizes. Established in 1969 by the Hamilton Branch. Two awards to be made, one to a student entering Year II, and the other to a student entering Year III, of a programme in Honours Art or Honours Art History, who attain the highest standing in the previous Year. The recipients must be from the Hamilton-Wentworth Region.
Value $100 each.

The Ivor Wynne Memorial Prize. Established in 1971 in memory of Ivor Wynne, Dean of Students. To be awarded to a student in the Physical Education programme at the end of Year III, for outstanding achievement in Years I, II and III.
Value $175.

The Marguerite Z. Yates Prize. Established in 1960 by bequest of Mrs. W. H. Yates. To be awarded for general proficiency to a student in any Year at the discretion of the Undergraduate Council.
Value $75.

SENIOR SCHOLARSHIPS

The following scholarships are those awarded for general academic proficiency at the discretion of the Undergraduate Council.

Each year, quotas of Senate Scholarships are established for full-time undergraduate students in the Faculties of Business, Engineering, Humanities, Social Sciences, and Science (or in any programme administered jointly by any of these Faculties) or in the School of Nursing, which are funded by the donors listed below.

The Edgar R. Ashall Scholarship. Established in 1965 by bequest of his wife, Edith M. Ashall.


The Nellie P. Hogg Scholarship. Established in 1965 by bequest of Nellie P. Hogg of Hamilton. To be awarded to women students.

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.
UNDERGRADUATE ACADEMIC AWARDS


The Hilda Savage Memorial Scholarship. Established in 1960 by bequest of Bertha Savage.


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.


TRAVEL SCHOLARSHIPS

The A. G. Alexander Scholarship. Established in 1938 and augmented in 1946 by Sir Douglas Alexander, and members of his family, in memory of Archibald Greig Alexander. To be awarded to a man at the end of Year III on the basis of excellence in a modern language or languages, English and history (with emphasis on French). The purpose of the scholarship is to enable the winner to study abroad during the vacation before the final Year. Students who would like to be considered for this award are invited to consult the Chairman of the Faculty of Humanities Prizes and Scholarships Committee before December 1 of Year III.

Value $3,000.

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 registered in Year III of an Honours programme in English for excellence in the work of the qualifying group of Years I and II (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 Year. Students who would like to be considered for this award are invited to consult the Chairman of the Faculty of Humanities Prizes and Scholarships Committee before December 1 of Year III.

Value $2,500.

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 year 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. Students who would like to be considered for this award are invited to consult the Chairman of the Prizes and Scholarships Committee of their Faculty before December 1 of Year II or III.

Value $500.

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 at the end of Year III of an Honours or Major programme in any one of the following subject fields (singly or in combination): Biochemistry, Biology, Chemistry, Geology, Metallurgy and Materials Science, Physics. Candidates for this Scholarship must have attained high standing in the subjects of their programme and must, in addition, have demonstrated a lively interest in the humanities and 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 Year in travel and study outside Canada. Students who would like to be candidates for this Scholarship are invited to consult the Chairman of the Prizes and Scholarships Committee of the Faculty of Science before December 1 of Year III.

Value $3,000.

Medals, Ring, Scholarships And Prizes For Graduating Students

MEDALS

The Chancellor’s Gold Medal. Established in 1938. To be awarded to the student in the graduating class of an Honours programme who, on the basis of scholarship and leadership, is judged to be the outstanding member of the class.

The E. H. Ambrose Gold Medal. Established in 1971 by Clarkson Gordon in memory of their former Hamilton partner, E. H. Ambrose, member of the University’s Board of Governors from 1957 to 1967 and its Chairman, 1965 to 1967. To be awarded to the student in the graduating class of the Commerce programme who, on the basis of scholarship and leadership, is judged to be the outstanding member of the class.

The Association of Professional Engineers Gold Medal. Established in 1961 by the Ontario Professional Engineers Foundation for Education. To be awarded to the graduand in Engineering at McMaster University having the highest standing.

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 the end of Year IV for distinguished achievement in an Honours programme in which economics is a major field of study.

The Medal in the Creative and Performing Arts. Established in 1973 by the Faculty of Humanities. To be awarded on recommendation of the Faculty of Humanities to a student for outstanding achievement in studio art, creative writing, or in either the compositional or performing aspects of music, the dance, multi-media, the theatre, or film.

RING

The Burke Memorial Ring. Presented by science graduates of the University in memory of Dean C. E. Burke. To be awarded to a graduate of a B.Sc. programme who is named to the Deans’ Honour List and who has made the most outstanding contribution to undergraduate activities.

SCHOLARSHIPS AND PRIZES

The Cameron D. Allen Book Prize. Established in 1978 in memory of Cameron D. Allen. To be awarded to a student in Year IV of an Honours programme in Geography who, in the judgment of the Department, shows outstanding achievement in studies in climatology.

Value $50.

The William and Lida Barnes Memorial Prize in History. Established in 1969 by their son, William D. Barns, of Morgantown, West Virginia. To be awarded to the graduand who, in the judgment of the Department of History, has attained the most notable standing in Honours History.

Value $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 1946 to 1964. To be awarded to a student at the end of Year IV for high standing in the Canadian history of an Honours programme in History.

Value $50 in books.

The Ruth Burke Memorial Prize. Established in 1963 by Dr. and Mrs. Herbert S. Armstrong in memory of Mrs. Charles E. Burke. To be awarded to the student in Nursing who attains the highest academic standing in the final Year of her programme. The prize is six engraved sterling silver coffee spoons.
The Iroquois Trophy. Established in 1970 by the Department of Mechanical Engineering. Presented to a graduating mechanical engineer on the basis of academic excellence, participation in campus societies, clubs, or other activities, and general leadership. A replica of the Trophy is permanently held by each winner.

The Burton R. James Memorial Prize. Established in 1974 by his friends and colleagues in honour of Burton R. James (’39), Controller, 1963–71, Assistant Vice-President—Administration, 1971–73, McMaster University. To be awarded to the student who obtains the highest standing in Year IV of the Commerce programme. Value $150.

The Agnes and John MacNeill Memorial Prize. Established in 1946 by bequest of Annie May MacNeill (’03). To be awarded to the student in Year IV of an Honours programme in English who has attained the most notable standing in English throughout the degree programme. Value $125.

The Catherine MacNeill Prize. Established in 1946 by bequest of Annie May MacNeill (’03). To be awarded in her graduating year to a woman student in Arts or Science who has attained notable standing in scholarship and has shown qualities of leadership. Value $125.

The Walter Scott McLay Scholarship. Established in 1938 in honour of Dean McLay, by his daughter, Mrs. R. R. McLaughlin (Marjorie McLay ’25) and further enlarged in 1950 by A. H. Wilson of Woodstock. To be awarded to the student in Year IV who attains the highest standing in at least fourteen units of senior division English. Value $200.

The E. S. Moore Prize in Geology. Established in 1956 by Elwood S. Moore, LL.D. (’55). To be awarded to the student graduating in an Honours programme in Geology who, in the judgment of the Department of Geology, has attained the most notable standing in geology. The prize is a Brunton-type compass.

The Society of Chemical Industry Merit Awards. Established in 1961. These gold keys are awarded to the (a) Chemical Engineering graduand, (b) Honours Biochemistry or Honours Biochemistry and Chemistry graduand, and (c) Honours Applied Chemistry, Honours Chemistry, Honours Chemistry and Geology, or Honours Chemistry and Physics graduand, who have attained the highest standing in the final Year of the programme, a minimum of 80.0%, and have completed the programme in the normal number of years. Three awards.

SCHOLARSHIPS AND PRIZE FOR PART-TIME STUDENTS IN COURSE

The Alumni Association Scholarships (Part-time Studies). Established in 1974 by the McMaster University Alumni Association. Two scholarships to be awarded to part-time students for highest standing achieved; one on completion of the unit equivalent of Year I and one on completion of the unit equivalent of Year II. Value $350.

The T. C. Truman Prize (Part-time Studies). Established in 1978 in honour of Professor Tom C. Truman by his colleagues and friends upon the occasion of his retirement from McMaster University. To be awarded to the part-time student who attains the highest standing in Political Science 1A6. Value $50.

The University Scholarships (Part-time Studies). Established in 1978. To be awarded on the basis of academic achievement to part-time students who have completed the unit equivalent of Year I or the unit equivalent of Year II. Value $175 each.

**Financial Assistance**

**BURSARIES**

Unless otherwise specified, application should be made to the Office of the Dean of Men or to the Office of the Dean of Women.

The Elizabeth Arbuckle Memorial Bursary. Established in 1979 in memory of Elizabeth Arbuckle by her husband, Brendan Arbuckle, to assist any full-time female student with dependent children.

The ATA Trucking Industry Educational Foundation Bursaries. Established in 1959 by the ATA Trucking Industry Educational Foundation, Inc., for assistance to undergraduates in Years II or III who, because of extenuating circumstances, would be unable to continue their studies without such assistance.

The Atkinson Charitable Foundation Bursaries. A fund has been made available for the assistance of able students resident in Ontario. A number of awards will be made on the basis of scholarship and other considerations, according to regulations suggested by the Foundation.

The J. P. Bickell Bursaries. The J. P. Bickell Foundation provides a sum of money for the assistance of students specializing in geology.

The Edith E. Ferrie Bursaries. Established in 1965 by the late Edith E. Ferrie. To be awarded to students in any programme.

The Emma Fox Bursary. Established in 1961 by the Wallingford Hall Committee of which she was the Treasurer from 1918–1958. The income is to be awarded at the discretion of the Dean of Women.

The Wilfrid N. Paterson Bursaries. Established in 1953 by Friends of McMaster Inc., and in 1978 named in memory of Wilfrid N. Paterson (’31) who was one of their active members. To be awarded to students in any programme.

The James Edward Grader Memorial Bursary. Established in 1964 by his sister. To be awarded to an able student specializing in geology.

The City of Hamilton Bursaries. Established in 1959 by the City of Hamilton to commemorate the visit of Her Majesty Queen Elizabeth II and His Royal Highness Prince Philip to Hamilton in July, 1959. To assist Hamilton students.

The Hamilton Citizens' Memorial Bursaries. Established in 1947 by the Hamilton Citizens' Committee for War Services. Proceeds to be used for undergraduate bursaries primarily to aid dependent children of veterans from Wentworth County killed or disabled in World War II.

The Edwin W. Hilborn Bursary. Established in 1965 by bequest of Edwin W. Hilborn. To be awarded to students in any programme.

The Mary A. Hill Bursary. Established in 1976 by bequest of Mary A. Hill. To be awarded to a woman student in any programme, preference to be given to one who has obtained matriculation standing from a secondary school in Hamilton.

The IBM Canada Bursaries. Established in 1962 by International Business Machines Canada Limited. A sum of $1000 is provided annually for bursaries for students who have satisfactory standing and who demonstrate financial need.

The Khaki University and Young Men's Christian Association Memorial Bursaries. Established in 1921 by the Khaki University of Canada and the Young Men's Christian Association. To assist students in any programme, preference to be given to children of soldiers of World War, 1914–1918.
The Raymond C. Labarge Memorial Bursaries. Established in 1973 by friends and associates in memory of Raymond C. Labarge (’36), Ottawa, Deputy Minister of National Revenue, Customs and Excise Division; an active member of the Alumni Association, and a member of the University’s Board of Governors. Four bursaries will be available for students experiencing financial problems in completing their university Programmes. The bursaries will be provided to the most deserving students in each of: (a) Year II and III of the Programme in Commerce (b) Year II of a Pass Programme in the Faculty of Social Sciences (c) Year III of an Honours Programme in the Faculty of Social Sciences. A student who applies for a bursary should have a record of academic performance that has normally been at the upper second class level or higher. He or she should also have demonstrated a sense of social awareness, interest in and concern for others and been an active participant in University or general community affairs. Selection will be made in March each year from those who submit applications to the Office of the Dean of Men or to the Office of the Dean of Women.

Value $500 each.

The Procter & Gamble Bursaries. Established in 1957 by the Procter & Gamble Company of Canada, Limited. A sum of $2,100 is provided annually to assist students in any programme. Recipients must expect to maintain permanent residence in Canada, but there are no other restrictions. It is hoped by the Company that any student who benefits from the fund will later contribute to the general bursary funds of the University when in a financial position to do so.

Value: Minimum of $100 each.

The James & 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.

The Sam Smurlick Bursary. Established in 1978 by the Smurlick family in memory of Sam Smurlick (’35). To be awarded to students in any programme.

The University Women’s Club of Hamilton Bursaries. Established in 1960 by the University Women’s Club of Hamilton, to be awarded to a woman student at the discretion of the Dean of Women.


LOANS

Unless otherwise specified, application should be made to the Office of the Dean of Men or to the Office of the Dean of Women.


The Dean of Women’s Emergency Fund. Established and continued by the McMaster Alumnae and individual benefactors to assist needy women students.

The Engineering Institute of Canada (Hamilton Section) Student Loan Fund. The Hamilton Section of the E.I.C. has instituted a fund for the provision of loans for undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

The HAC Past Presidents Memorial Loan Fund. Established in 1963 by the Hamilton Automobile Club as a tribute to its deceased past presidents. To be used to assist engineering students. Application should be made to the Associate Dean of Engineering.


The I.O.D.E. Loan Funds. Through the generosity of a number of the local Chapters, Imperial Order Daughters of the Empire, funds are provided for students in any programme or as specified. The amount of money available thus varies from year to year.


B/ Princess Marina Chapter, I.O.D.E., Loan Fund. Established in 1957. Disposition of the funds is at the discretion of the Dean of Women, to whom application should be made.

C/ Emma Frances Pratt Chapter, I.O.D.E., Loan Fund. Established in 1958. To assist students in Years 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.


G/ Margaret B. Sutterby Memorial Loan Fund. Established in 1955 by the 67th University Battery Chapter, Imperial Order Daughters of the Empire.


The Institute of Electrical and Electronics Engineers Loan Fund. Established in 1968 by the Hamilton Section of the I.E.E.E. To assist students in a programme in engineering. Applications to be directed to the Associate Dean of Engineering.

The Russell E. Love Memorial Loan Fund. Established in 1951 by bequest through the Optimist Club of Hamilton. To assist men students in the penultimate or final year of an Arts programme.

The Mclroy Loan Fund. Established in 1956 by the University Women’s Club of Hamilton. To assist women students in the final year of any programme.

The McMaster Engineering Society Loan Fund. Established in 1971 by the 1970-71 McMaster Engineering Society Executive on behalf of the members of the M.E.S. for the provision of short-term loans to undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

The Pi Beta Phi Fraternity Loan Fund. Established in 1958 by the local alumnae of Pi Beta Phi. To assist honours women students in Year IV of an Arts or Science programme.

The Professional Engineers’ Wives’ Association Loan Fund. Established in 1972 for the provision of loans for undergraduate engineering students. Loan applications should be made to the Associate Dean of Engineering.

The Society of Automotive Engineers (Ontario Section) Student Loan Fund. Established in 1962 by the Ontario section of the S.A.E. To assist students in a programme in engineering. Loan applications should be made to the Associate Dean of Engineering.

The Ivor Wynne Memorial Loan Fund. Established in 1971 in memory of Ivor Wynne, Dean of Students to assist needy students in any programme.

The University Loan Funds. Small short-term emergency loans from University funds are not normally available to incoming students. However, assistance of this nature may be available to registered full-time students who can demonstrate need.
General Information

University Library

The Library is now more than a century old, its beginning dating back to the 1860's and Woodstock College, which with the Toronto Baptist College became McMaster University. After McMaster came from Toronto to Hamilton in 1930, the Library was housed in University Hall. In 1951 it was moved to its own building, Mills Memorial Library, gift of the Davella Mills Foundation of Montclair, New Jersey, and memorial to Mr. and Mrs. David B. Mills. Since then, extensions have more than tripled the available space of this general University library.

The Science and Engineering Library formerly housed on the second floor of the Burke Science Building moved into the new H.G. Thode Library building during the summer of 1978. Other libraries on the campus which provide specialized service are: the Map Library in the Burke Science Building, the Health Sciences Library in the large Health Sciences and Medical Centre complex, and the Innis Room (Business) in Kenneth Taylor Hall.

In 1978 the library contained over 1,000,000 printed volumes; almost 900,000 microform items; 86,000 maps; 10,000 sound recordings; 6,500 films, filmstrips, slides and videotapes; 9,000 sheets of music; 12,000 satellite photos; and more than 1,300,000 items of manuscript and archival material. Current periodical subscriptions number almost 10,000.

In 1976 the McMaster University Library was accepted as a member by the Association of Research Libraries, an organization which represents the leading research libraries of North America.

All catalogued books and microforms in the McMaster system are listed in the catalogues in Mills Library, which is supplemented with computer-produced lists of periodicals and microform catalogues of government documents. Each special library has its own complete catalogue. Access to the stacks is open to all library users. Beginning in May 1978 all new catalogue entries are on microfiche, based on the Unicat-Telecat System of which McMaster has been a member since its beginning. The Science & Engineering Library catalogue is completely on microfiche. The Division of Archives and Research Collections in Mills Library contains rare books, manuscripts, and special book and archival collections which afford many opportunities for original research. Of outstanding interest are the Bertrand Russell Archives, a massive collection of correspondence and manuscripts supported by books, journal articles, secondary literature, tapes, films and personal memorabilia. The 35,000 volume collection of eighteenth-century material is one of the major Canadian collections in the field. Among more modern material are the papers of Vera Brittain, Samuel Beckett, Margaret Laurence, Anthony Burgess, Pierre Berton, Farley Mowat, Peter Newman and many others. Business interests are reflected in such files as the General Steel Wares Archives, and Canadian social and political interests in papers from the Canadian Union of Students, the Cooperative Commonwealth Federation, the Quebec radical archives, and other related collections.

PUBLICATIONS

McMaster University Library Research News
Russell, the Journal of the Bertrand Russell Archives
Monographs with the imprint of the McMaster University Library Press

University Art Gallery

Opened in 1967, the University Art Gallery is located in Togo Salmon Hall, Room 114. With two galleries of over 3,000 square feet, it has all the professional facilities for a year-round programme of exhibitions, either organized by McMaster or loaned to the University by such organizations as the National Gallery of Canada and the Art Gallery of Ontario.

The Permanent Collection consists of approximately 1,600 Canadian and European art works with a specialized collection of over 140 German Expressionist prints.

The Gallery is open daily except Fridays and Saturdays. Call Local 4685 for further information.

Residences

For many years, the University has owned and operated residences for students, both men and women, on campus. The rooms are provided with staple articles of furniture—tables, chairs, beds, mattresses, pillows, and all necessary bedding. Roomers are required to supply towels at their own expense. The services of the infirmary, which is staffed by graduate nurses, are available to all students.

The women's residences (752 beds) are administered by the Dean of Women, and the men's residences (848 beds) as well as the co-educational residence (236 beds) by the Dean of Men.

An additional 503 beds are available in an apartment-style residence, with stove and refrigerator, draperies and wall-to-wall carpeting. All other furnishings are supplied by students themselves. Enquiries from both men and women should be directed to the Dean of Men.

Students applying to McMaster will receive a letter of instruction concerning application for residence. When students receive their Letters of Acceptance, forms concerning residence application will be enclosed. Confirmation of residence will require a deposit, which will be applied to residence fees. If space is available and assigned, this deposit is non-refundable.

Students wishing to stay in residence during summer school should apply in advance by writing directly to the Conference Office, Commons Building, room 101B. It is urged that this be done at the earliest possible date before Summer School registration.

Athletics

So that all students have the opportunity to keep fit, compete in athletics at their own level, and enjoy sports of their choosing, the School of Physical Education and Athletics offers a variety of programmes.

For those who wish to relax and enjoy their leisure time, a wide recreational programme is offered, including everything from sauna baths and swimming to squash and weight training. Most of the traditional club activities are offered and instruction is provided to assist beginners with the skills involved.

For those with a more competitive outlook, a highly developed and very popular intramural programme is in full swing from early fall until late spring.

For those students who possess still higher skills, the intercollegiate programme provides an exciting challenge to both men and women. The fine performances of student athletes and the social involvement of student spectators are focal points of student life on campus.

Services to the students

DEAN OF MEN, AND DEAN OF WOMEN

The Dean of Men, and Dean of Women are available to all students with grievances, problems or questions of a varied nature. Requests for emergency financial assistance through small University loans or bursaries should be made to these offices. The office of the Dean of Men is in the Commons Building, Room 101E, and the office of the Dean of Women is in the Divinity College, Room 236. See also Residences.

CHAPEL SERVICES

One each weekday of the university session, there is a chapel service at 10:30 a.m. in the University Chapel. These services are conducted by members of the student body or by members of the faculty. From time to time members of the University community lead special services. The Chapel is open for private devotions each weekday from 8:15 a.m. to approximately 10 p.m. After 5 p.m. it may be necessary to enter the chapel through the Divinity College building.
UNIVERSITY CHAPLAINS

Catholic and Protestant chaplains on campus provide for a wide range of student services in worship, discussion groups, pastoral counselling, and social action. At least one of the chaplains is available during the day in the office, and students can always call the chaplain’s residences for appointments at other times. The chaplains support many student activities as well as caring for personal and religious needs. Their office is in Hamilton Hall, room 312; telephone ext. 4207, 4208.

STUDENT COUNSELLING SERVICE

The Student Counselling Service is a resource provided by the University to promote the personal, academic and career development of McMaster students. A wide range of counselling, assessment and information services and programs is 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. In addition to individual counselling services, comprehensive group programs are presented regularly in such areas as educational and career planning, communication and assertiveness skills and effective reading and essay writing. 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.

Problems which students commonly bring to the office include such concerns as unsatisfactory social and family relationships, difficulties with studies, undefined interests and abilities, major course and career decisions, and feelings which interfere with academic and personal functioning.

The office maintains a comprehensive and continually updated career and educational resource centre containing material which is available for reference use to all members of the University community and the general public.

The office also acts as an administration centre for such frequently required academic tests as the Graduate Record Examinations, the Law School Admission Test and the Medical College Admission Test.

Contacts and transactions between students and counsellors are made under voluntary, private and confidential conditions. Whenever required, students are given assistance in locating other specialized helping sources both on and off campus.

Students who wish to talk with a counsellor are invited to visit the office in 302 Hamilton Hall or telephone ext. 4711. In addition to the regular daytime hours, the office and resource centre are open Wednesday evenings until 9 p.m. during the academic term.

OVERSEAS STUDENTS’ ADVISER’S OFFICE

This office is available to all overseas students for consultation, advice, and direction, in a wide range of problems. The office is responsible for orientation programmes and special assistance for accommodation. The office is located in Divinity College, room 223.

STUDENT HEALTH SERVICE

Health services are available for the use of all students throughout the academic term. The physician holds daily office hours on week days from 9:30 a.m. to 3:30 p.m. Registered nurses are on duty continuously from Monday at 8:00 a.m. to Friday, at 5:00 p.m. Infirmary card is available for short term illnesses or accidents. The office is located on the ground floor of McKay Hall. Tel: 522-0942 or 525-9140, ext. 4441, 2.

OFF-CAMPUS HOUSING SERVICE

This office maintains a daily updated listing of available accommodations in the Hamilton and surrounding areas. The Off-Campus Housing Service is located in the Commons Building, Room 101C, ext. 4347.

STUDENT PLACEMENT SERVICE

The Canada Employment Centre, in conjunction with the University, has made available on campus a Student Placement Office. Students desiring assistance in finding suitable employment are interviewed by the Placement Officer to determine interests, abilities, and qualifications. These students may then be introduced by the Placement Officer to appropriate employers. This is done by direct referral to local or out-of-town employers, or through interviews scheduled for visiting recruiters. Almost all of the major national employers are active in this recruiting, and a large number of these firms send a recruiter to the University.

The Student Placement Service concentrates mainly on the placement of graduating students. However, assistance in finding summer jobs and part-time employment is also given to undergraduates.

All students are encouraged to register with the office during their freshman year, and to become familiar with the office facilities, even though they are not seeking immediate employment. Office hours are 8:30 a.m. to 4:30 p.m., Monday through Friday.

FOOD SERVICE

The University operates a number of eating places on campus serving a variety of food items. Dining rooms for the use of students registered in meal plans are located in the Refectory and in the Commons Building. Students not normally eligible for meal plans may purchase plans through the Department of Food Services in the Commons Building. The University reserves the right to limit the number of meal plans as and when it sees fit. Several coffee shops are strategically located throughout the campus, in Senior Sciences Building, Togo Salmon Hall, Kenneth Taylor Hall, and the lower level of the Refectory Building (Rathskellar). There is also food service available in a student-operated facility in Wentworth House, and in the cafeterias in McMaster University Medical Centre. Supplementing these facilities are vending machines at many locations about the campus dispensing cigarettes, drinks, sandwiches and pastries.

A Food Services Board of Management, made up of students and non-students, formulates policy for food services. Students are urged to address comments and suggestions to the Board’s attention.

BOOKSTORE

The University Bookstore, owned and operated by the University, is located in the lower level of Gilmour Hall. In addition to course books, the Bookstore maintains a wide range of supplementary reading materials, both academic and general. Stationery supplies and other items are also stocked. Charge accounts may be opened after registration, and students, faculty, and staff of McMaster are allowed a 10% discount on all books.

POST OFFICE

Located in the basement of Gilmour Hall, the Post Office offers full postal service.

Student Government and Activities

The McMaster Students Union Inc. operates, directly or indirectly, all student clubs and organizations, and a variety of student services, concerts, and similar events. The Students Union also owns and operates the Silhouette newspaper and McMaster Radio, CFMU-FM 93.1. FULL TIME undergraduate registered students are members in good standing as well as those part-time students taking any day winter-session courses, and, as such, entitled to all its benefits and services. The MSU is owned and operated by the undergraduate body.

The Union itself is governed by the Student Representative Assembly, a council of up to 35 undergraduates. All but two are elected in March by their fellow students in the various faculties; each has a proportionate number of seats relating directly to the size of the faculty. The president and treasurer of the MSU are the remaining two members of the SRA. The president is elected in February by the entire student body, and the treasurer is elected by the SRA from the general student body. Students having questions about student government, or wishing to bring a matter before the SRA, should contact their representative, President or Vice-President.

The duties of the SRA are to vote on all matters of policy for the MSU. It is the SRA, for example, which decides how funds will be
allocated, what programmes undertaken, and who will run them. The SRA elects from its own ranks members of the Administrative Board, which is charged with making recommendations on most matters to the full SRA.

STANDING COMMITTEES

Under the direction of the Student Representative Assembly, four standing committees have been formulated, covering the spheres of academics, student services, finances and external affairs. Composition of the committees is a combination of student assembly members and interested MSU members at large. Undergraduate student involvement is encouraged at the committee level. Vacancies are announced in the student newspaper, The Silhouette. All inquiries should be directed to the MSU Office, 217, Hamilton Hall.

Within the MSU, several commissions have been established to organize and run certain services and activities:

The Programming Director organizes social and educational programmes for MSU; the Director is available to assist any organization or undergraduate to organize an event.

The Ticket Commission organizes the sale of tickets for MSU-sponsored campus-wide events.

The Club Commission coordinates for the MSU all campus clubs and activities.

The Ombudsman and Researcher do research into student concerns and help students with problems they have with the University and OSAP.

All commissions, and further information about them, are available in the MSU office, Hamilton Hall.

SERVICES

The MSU also provides for undergraduates these services:

The Downstairs John, located in the basement of Wentworth House, is open 11:30 a.m. to 1:00 a.m. weekdays, and from 7:00 p.m. to 1:00 a.m. Saturdays, for food, draft beer, liquor, wine and relaxation. A McMaster student identity card is required for admission; each student may invite one guest.

The Rafteskeller is located in the basement of the Recotory. The "Raft" is a quiet folksy alternative to the "John's" rock and roll and is open Monday through Saturday in the evening with live entertainment. A McMaster student identity card is required for admission.

The Blast Furnace is located in the basement of Wentworth House and is an unlicensed entertainment facility. It is open during the week and over the weekends for a variety of musical tastes and entertainments.

Poor Boys is located on the 4th floor of Hamilton Hall.

The Day Care Centre, operated by the MSU for the children of McMaster students, faculty members, staff and community members is located in MacNeill Baptist Church, King Street at Cline Avenue in Westdale. For further information, phone 526-1544.

The Bread Bin, a grocery store in Hamilton Hall, Room 101, stocks groceries, tobacco, and sundries, all sold on a non-profit basis.

The Sexual Education Centre provides information and/or referrals upon request. A service operated for the whole campus community, the Centre is located in Hamilton Hall, Room 317; telephone 522-5053 or ext. 2041.

Campus Cinema provides all members of the McMaster community with low cost, popular films twice weekly.

The Information Office, located in Room 226, Hamilton Hall provides a variety of services including information about the MSU, the University, and the Hamilton community, ticket sales, exam reprint sales and Skool Aid.

The Games Room, located on the fourth of Hamilton Hall is equipped with pinball machines, billiard tables and all sorts of board games and ping pong tables. A McMaster Students Identity card is required to obtain balls and games.

In addition to most of the above services, and the MSU itself, Hamilton Hall, is the home of many other student organizations and services. Undergraduates are encouraged to familiarize themselves with the building, organizations and services.

ONTARIO PUBLIC INTEREST RESEARCH GROUP

The Hamilton office of the Ontario Public Interest Research Group (OPIRG), was established in 1975, when McMaster Students voted to support a local chapter by imposing on themselves a membership fee which is now $4.00 per person, refundable, to those not wishing to support the ideals and objectives of the organization. OPIRG is composed of people working to improve society through constructive social change. The organization aims to articulate and pursue . . . through public education forums and seminars, the media, and government bodies . . . the concerns of students and of the community at large about issues of substantial public interest. Issues OPIRG is presently concentrating on include occupational and environmental health hazards, energy, human rights, the food industry in Canada, and the effects of corporate concentration on peoples lives. OPIRG is non partisan, non-profit research and public education oriented. It is directed by staff and an elected Board of Directors drawn mainly from undergraduate students.

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, students and visitors.

Limited parking facilities are available on campus, for which parking permits are required. These may be obtained from the Parking Administration Office in the E.T. Clarke Centre upon payment of the prevailing parking charge and upon presentation of a current student identification card and vehicle registration.

Drivers are responsible for becoming familiar with parking regulations. Violations are subject to fine. Disregard of violation charges may result in suspension of parking privileges, tow-away at owner's expense, and/or prosecution under the Petty Trespass Act of Ontario.

Discipline

The regulation of discipline within the University is delegated by the Senate to the President and Faculty, and by them is entrusted to the Dean of Student Affairs, and through him to the Dean of Women and the Dean of Men.

Consultation will be held with the Students' Executive Council when circumstances warrant.

Fines may be imposed for breaches of university regulations and, in more serious cases, a student may be placed on probation or a recommendation may be made to the Senate for the suspension of university privileges. It is expected that students will co-operate in encouraging a wholesome student opinion, observing all regulations, and in every way upholding the good name of the University.

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 40,000 alumni.

The affairs of the association are managed by its council, which includes elected officers and representatives, branch presidents, committee chairpersons, and the alumni representatives on McMaster's Board of Governors and Senate. Between the regular meetings each year of this council, the association is directed by an executive committee which includes the officers and selected councillors.

At the grass roots level, several geographic branches operate; most active are those in Hamilton, Toronto, London and New York City. Each of the growing number of professional branches includes alumni who shared a common discipline while at McMaster; nursing, medicine, divinity and business chapters currently are active.

The link between the association and the University is provided by the Office of Alumni Affairs, located on the second floor of the Alumni Memorial Hall. Initiating and coordinating alumni activities and providing the association, its branches and committees, with support services, this office has the continuous task of maintaining up-to-date records of all graduates and former students.

Together, this office and the association attempt to be responsive to the many and diverse interests of the alumni by providing
continuing education programmes, publishing a quarterly magazine, arranging for alumni summertime accommodation at campuses across Canada, sponsoring an annual Grads' Day (when all alumni are encouraged to return to campus for reunions), among other activities.

In turn, the association works to benefit the alma mater by encouraging alumni to acquaint worthy students with the advantages of attending the University and to serve as informal public relations representatives for McMaster in their own communities, by electing able representatives to the University Board of Governors and Senate, and by inviting alumni to give financial support to the University.

Of course, such efforts represent only the tip of the iceberg; there is much more of value that can be accomplished in the future through the energetic involvement of more alumni.

To spur such commitment among future alumni, the association is attempting to become involved in a substantive and helpful way in student life on campus. This outreach to students is being spearheaded by a Student-Alumni Relations Committee, an informal group of interested recent and future alumni which welcomes . . . encourages . . . the active interest of McMaster students.

Secondary school teaching

Students interested in secondary school teaching and in taking qualifying courses at an authorized Ontario college of education, should consult the following basic pamphlets, which are available from the registrar at the universities mentioned:

Calendar of the Faculty of Education, University of Toronto, Toronto, Ontario.
Calendar of the Faculty of Education, Queen's University, Kingston, Ontario.
Calendar of the Faculty of Education, Lakehead University, Thunder Bay, Ontario.
Calendar of the School of Education, University of Ottawa, 1245 Kilborn Avenue, Ottawa, Ontario.

These calendars may also be consulted in the Registrar's Office and in the offices of the deans of studies at McMaster. The deans of studies can advise regarding the interpretation of these documents with respect to programmes offered at McMaster.

in addition, further information may be obtained from:

The Director,
Teacher Education and Certification Branch,
17th Floor, Mowat Block,
Queen's Park,
Toronto, Ontario,
M7A 1L2

Students interested in receiving further information with respect to Type 'B' certificates for secondary school teaching should consult any of the following:

The Director,
Committee of Advanced Standing,
The Faculty of Education,
University of Toronto,
Toronto, Ontario.
M5S 1A1

The Associate Registrar,
Althouse College of Education,
University of Western Ontario,
London, Ontario.
N6A 3K7

The Faculty of Education,
Queen's University,
Kingston, Ontario.
K7L 3N6

Faculty of Education,
Lakehead University,
Thunder Bay, Ontario.
P7B 5E1

School of Education,
University of Ottawa,
1245 Kilborn Avenue,
Ottawa, Ontario.
K1N 6N5

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Shepard, Robert K. / Computer Service Co-ordinator, Science & Engineering, (ACS)
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Fleming, William Herbert, M.Sc., Ph.D. / Reactor Consultant
Harvey, John W., B.Sc., Ph.D. / Senior Health Physicist
Marshall, Kenneth / Assistant Supervisor
McDougall, John Blackwood, B.Sc. / Reactor Superintendent

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Stewart, Charlotte, B.A. (Toronto), M.L.S. (Western), Director of Research Collections
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P. 10  F) 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. And further, that Faculty guidelines for such assessment be reviewed and approved by Undergraduate Council.

P. 14  Revise —
"Senate Grievance Procedures" to "Student Appeal Procedures".

P. 26  under  Civil Engineering and Management
Year II:  Add:  Civil Engineering 2C4
Delete:  Engineering 2Q4

Year III:  Civil Engineering 2C4 (1980-81 only)
Add:  Engineering 2Q4 (1981-82)

under  Computer Engineering
Year II:  Change to 39 units
Add:  Computer Science 2H3
Change:  Engineering 2O4 to 2O3

under  Computer Engineering and Management
Year II:  Change to 38 units
Add:  Computer Science 2H3
Delete:  Engineering 2O4

Year III:  For 1980-81 only

P. 43  Honours Biology and Psychology (Life Sciences)
Year III
R — Add Biology 3I3 to list of Biology options
Year IV
R — Add Biology 4M3, 4M6 to list of Biology options
Add E/Electives, at least six units of which may not be Biology or Psychology, to make a total of 33 to 36 units.

P. 48  Note should read:
**The attention of students is drawn to Economics 306, 4G6; Commerce 4U3, Mechanical Engineering 4C3 or Commerce 4E3.

P. 55  Honours Economics and Mathematics —
Year II, Q/ Delete Mathematics 2D4, substitute Statistics 2D4.

P. 61  The MAPS Office and Lounge are not open on Fridays. The hours of both Office and Lounge are: Monday to Thursday, noon until 9:30 p.m.

P. 81  Prerequisite for Art 1D6, delete —
Not open to students with previous standing in Art 1A6.
Prerequisite for Art History 4L3, should read —
Art History 2B3 and registration in ...

P. 84  Biology 1H6/Human Physiology,
Prerequisite: Open, except to students in Natural Sciences I and students who have completed Physical Education 1C3. May be taken only as an elective by students registered in a Biology programme.

P. 97  Add:
Comparative Literature 2C6/Topics in the Study of Literary Forms.
An introduction to theoretical and practical aspects of literary types and forms. In 1980-81, special attention to the novel as genre; concepts of structure, social form, representational strategies, and to various modes of approaching analysis and criticism: structural, sociological, mythic, biographical.
2 lect, 1 tut.; two terms.
Prerequisite: Open to students in Years II and above.

P. 102  Add:
under heading "Professors" —

P. 111  Geology 3E2/Field Camp. A field camp of about two weeks' duration held immediately after the April-May Examinations. Normally taken immediately following Year II by students in all Geology and combined programmes, with the exception of Honours Biology and Geology.

P. 132  Physics 1B7/General Physics I
Prerequisite: At least 60% in Grade 13 Physics and registration in Mathematics 1A6 or 1C6 or 1F6.

P. 132  Physics 1C8/Introductory Physics. Lectures and demonstrations in physics, with particular stress on topics in mechanics, wave motion, optics, and electricity. For students without or with less than 60% in Grade 13 Physics.

P. 132  Physics 2A6/General Physics II
Not offered in 1981-82.

P. 147  Add:
Russian 3E3/Studies in the Russian Novel: Dostoevsky,
A detailed study in translation of the major novels of Feodor Dostoevsky, with particular emphasis on the literary, philosophical and religious problems encountered in his work.
2 lects.; one term.
Prerequisite: Open to students in Years II and above.

P. 148  Science 2E6/Space and Time.
Not offered in 1980-81.

P. 148  Science 2X6/Canadian Environment Studies. A survey course in which the state of the Canadian environment will be examined within an ecological framework.
3 lects.; two terms.
Prerequisite: Registration in Years II, III or IV of a non-science programme.
Offered in 1980-81.

P. 149  Social Science 2G6/Introduction to Gerontology
The purpose of the course is to introduce the student to demographic, biological, economic, psychological and sociological aspects of aging. The course will also focus on health and social policies in respect to the elderly population.
2 hrs. (lects. and discussions); two terms.
Prerequisite: Open.
ADD:

LABOUR STUDIES COURSES

Labour Studies 1A3/The Canadian Labour Movement. The impact of economic, social and cultural factors on the development, growth, structures and functions of the Canadian labour movement, and the problems of union self-government. Lectures and discussions; one term.
Prerequisite: Open.

Labour Studies 1B3/The Theoretical Foundations of the Labour Movement. An examination of the leading classical and contemporary theories of the labour movement. Lectures and discussions; one term.
Prerequisite: Open.

P. 17  RESIDENCE AND FOOD SERVICE FEES

REGULAR SESSION 1980-81

Residence fees in 1980-81 for students living on campus for the period September 1 to end of the spring examinations are as follows:

Residences — room and board ............................................... $1,795.00
Apartments — one-bedroom (per person) room only. .......... 950.00
— four-bedroom (per person) room only. .................. 950.00
— six bedroom (per person) room only. .................. 950.00
— Food Plan only ............................................................... 845.00

FEE CHANGES, Effective September 1, 1980.

Transcripts .......................... $2.00 for up to 6 copies (processed at the same time)
Deferred Examination at another Centre ....................... $25.00
Letters of Permission ....................................................... $10.00
### TOTAL FEES — 27 UNITS OR MORE (1980-81)

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24-26 Units

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* Please note that an amount of $15 is added to fees arranged on an instalment basis. Fees, not arranged by instalment, will be charged a late payment fee of $1 plus $1 for each additional day up to a maximum of 10% of the amount owing, unless other arrangements have been made during registration.

### REFUNDS ON WITHDRAWAL FROM THE UNIVERSITY (BASED ON TUITION FEES OF $810.00 PER SESSION)

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<td>Oct. 27 — Nov. 2</td>
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<td>Nov. 7 — Nov. 16</td>
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<td>Nov. 17 — Nov. 23</td>
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<td>Nov. 24 — Nov. 30</td>
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<td>Dec. 1 — Dec. 7</td>
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<td>Dec. 8 — Jan. 4</td>
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<td>Jan. 5 — Jan. 11</td>
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<td>Jan. 12 — Jan. 18</td>
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<td>Jan. 19 — Jan. 25</td>
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<td>Jan. 26 — Feb. 1</td>
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<td>Feb. 2 — Feb. 8</td>
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<td>(2) Feb. 9 — Feb. 15</td>
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<td>Feb. 16 — End</td>
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(1) Refund in total if withdrawn before September 14.
(2) Last day for cancellation of registration without failure by default — February 13, 1981.
(3) Changes of registration will be permitted until September 19 without penalty.
(4) Full charge assumed immediately.
(5) Second instalment set at $254.50. Initial payment including $15.00 part payment fee is $650.00

NOTE: Where total fees differ by $5.00 or $10.00, the schedule is adjusted accordingly. Above figures based on 1980-81.

Four weeks should be allowed for processing of refund cheques. A portion of the refund may be withheld for students having outstanding Bookstore and Miscellaneous Accounts.
The following changes are NOT included in this addendum:

1. promotions, appointments, or resignations of faculty or staff;
2. changes to the term or session in which courses are offered.

The 1981-82 Timetable should be consulted to determine:

1. if a course is to be offered in 1981-82, and
2. the term in which a course is to be offered.

The fee schedule for the session 1981-82 has not yet been approved and students are advised to consult the registration material for tuition and residence fees.
33. Pass English
Delete: Years II and III
Substitute:
A. For students in Year III
✓ Year III: 30 units (1961-82 only)
R/ English 2I6; one of English 2G6 and 2H6; six units from English 4L3, 4M3 and 4N6.
E/ 12 units elective, six of which may be English.
B. For students entering Pass English in 1981-82, and subsequent years.
✓ Year II: 30 units
R/ 12 units of English from English 2B6, 2G6, 2H6 and 2I6; six units Humanities.
E/ 12 units elective, six of which may be English.
Year III: 30 units (beginning in 1982-83)
R/ 18 units of English from English 3D3, 3DD3, 3I3, 3K6, 3T3, 3V6, 4B6, 4E6, 4L3, 4M3, and 4N6.
E/ 12 units elective, six of which may be English.
Students wishing to graduate in Pass English should plan their programmes, in consultation with the Departmental Counsellor, so as to take a minimum of six units of work from at least five of the six areas indicated below.
Area I: English 3D3, 3DD3, 4E6 (Medieval)
Area II: English 3I3, 3K6, 3T3 (Renaissance)
Area III: English 3V6, 4B6 (17th & 18th Centuries)
Area IV: English 2I6, 4L3, 4M3 (19th & 20th Centuries)
Area V: English 2G6, 2H6 (North American)
Area VI: English 2B6, 4N6 (Genre Studies)
(Note on programme standing and language requirement still apply to all the above.)

38. Pass Italian
Year III: Delete: ... six units Humanities.
Substitute: Italian 2D6 (if not previously completed) or 3D4; Italian 3R6; Italian 4P3; additional units of Humanities to total 18-19 units.

39. Honours Spanish
Delete: Year II
Substitute:
✓ Year II: 30-31 units
Q/ Spanish 1A6 (if not previously completed) or 2A4; 2B3, 2C3 and 2E6.
R/ Three units Humanities.
E/ Electives, at least six excluding Spanish, to make a total of 30-31 units.

38. Combined Honours in Spanish and Another Subject
Year II:
Delete: Q/ Spanish 1A6 (if not previously completed) or 2A4; 2B3, 2C3 and 2E6.
Substitute: Q/ Spanish 1A6 (if not previously completed) or 2A4; 2E6; and either 2B3 or 2C3.

38. Pass Spanish
Delete:
Substitute:
✓ Year II: 30-31 units
R/ Spanish 1A6 (if not previously completed) or 2A4; and 2E6; and either 2B3 or 2C3.
E/ Electives, at least six excluding Spanish, to make a total of 30-31 units.
✓ Year IV (History & Theory): Delete: 31 units
Substitute: 30 units

41. YEAR I PROGRAMME
NATURAL SCIENCES I
6 units Mathematics 1A6 or 1C6 or 1F6
THREE OF 1A6, 1C6, 1F6, 1G6, 1H6
16-22 units i/Chemistry 1A7 or 1C8
iii/Physics 1A7 or 1B7 or 1C3

42. Honours Biology - Admission (Beginning in 1981-82):
University Standing in Natural Sciences I, including Biology 1A6 or 1B7, and Chemistry 1A7 or 1C8, and Physics 1B7 (or 1A7 or 1C8), with at least 70% in Biology 1A6 and 70% in six additional units acceptable to the department.

43. Honours Biology and Psychology (Life Sciences)
Year III
R — Add Biology 3I3 to list of Biology options

44. Pass Biology
Admission: Add following Biology 1A6: “or 1B7” to all above programmes.

48. Honours Computer Science and Applied Mathematics
Year II:
Change to read: R/ Computer Science 2K3 (if not completed), 3A3, 3D3, 3T3; ...; five to nine units from the courses prescribed†.
Delete from †Prescribed Courses: Computer Science 3D3.

49. Computer Science and Applied Mathematics Major
Year III —
Change to read: R/ Computer Science 2K3 (if not completed), Computer Science 3A3, 3D3, 3T3; ...; three to six units from the courses prescribed below†.
Delete from †Prescribed Courses: Computer Science 3D3.

40. Note should read:
**The attention of students is drawn to Economics 3O6, 4G6; Commerce 4U3, Mechanical Engineering 4C3 or Commerce 4E3.
50. Honours Metallurgy and Materials Science
Metallurgy and Materials Science Major

51. Honours Physics
Year IV:
R/ Delete: Physics 3R4, Substitute: Physics 3X3, or 3Y3,

52. Honours Theoretical Physics and Applied Mathematics
Year III:
R/ Delete: Physics 3R4, Substitute: Physics 3X3, or 3Y3,

53. Physics Major (Health and Radiation Physics Option)
Year IV:
R/ Delete: Biology 403,

55. Honours Economics and Mathematics —
Year II, Q/ Delete Mathematics 2D4, substitute Statistics 2D4.

56. Pass Geography
Year III: Delete: 30-32 units
Substitute: 30 units

57. PROGRAMME FOR B.P.E. AS A SECOND DEGREE
Individuals already holding an undergraduate degree may be admitted to the Physical Education Programme. Application should be made to the Undergraduate Physical Education Programme prior to May 15th for the Fall term. Enrolment is limited.

Students are required to take courses to total 60 units physical education courses. The required courses Physical Education 1A8, 1B3, 1E3, Biology 1H6, 2A3, 2B3, 2C6, 2D3, 2F3 and 14 units of practicum must be taken in sequence. The additional minimum 30 units elective physical education may be taken from Year III and IV courses offered in the programme. The B.P.E. degree will be granted only if the student maintains a minimum of 50% in each course taken and a weighted average of 60%.

61. The MAPS Office and Lounge are not open on Fridays. The hours of both Office and Lounge are: Monday to Thursday, noon until 9:30 p.m.

87. Add: Chemical Engineering 4C3 (6C3)/Statistics for Engineers
1. 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 (term 1)
Prerequisite: Registration in the final year of Chemical Engineering or permission of the department.

88. Add: Commerce 3M3/Managerial Accounting
1. Concepts underlying the use of cost accounting information for managerial planning and control, and inventory valuation. The nature and analysis of costs, and the usefulness and limitations of accounting data for decision-making. (This course replaces Commerce 2B3 and is equivalent for satisfying course prerequisite requirements).

92. Add: Comparative Literature 2C6/Topics in the Study of Literary Forms
An introduction to theoretical and practical aspects of literary types and forms. In 1981-82, special attention to the novel as genre; concepts of structure, social form, representational strategies, and to various modes of approaching analysis and criticism: structural, sociological, mythic, biographical.
2 lect.; 1 tut.; two terms.
Prerequisite: Open to students in Years II and above.

103. Engineering (General)
Add: Engineering 1D3/Engineering Computation
103. Delete: Engineering 2A4  
Add: Engineering 2C3/Electrical Circuits and Measurements  
Electrical quantities and circuit elements; Kirchhoff's law and network theory; transient response of circuits; simple measurement devices and transducers; characteristics of motors.  
2 lects., 1 lab/tut.: one term.  
Prerequisite: Physics 1E4 and registration in Mathematics 2M6 or 2P4 and 2Q4.

104. Delete: Engineering Physics 3D3  
Substitute: Engineering Physics 3D3/Principles of Nuclear Engineering  
An introductory course to the field of nuclear energy encompassing the principles of fission and fusion energy systems. Topics covered include the energetics of nuclear reactions, interactions of radiation with matter, radio-activity, the fission reactor (including the criticality and reactor control, fuel cycles and breeding) and the fusion reactor (including magnetic and inertial confinement).  
2 lects., 1 lab and term project: one term  
Prerequisite: Completion of Year II Engineering or Physics. Not open to students who have registered in, or completed, Engineering Physics 403.

105. Delete: Engineering Physics 4D4  
Substitute: Engineering Physics 4D3/Nuclear Reactor Systems Analysis  
Release and utilization of energy from nuclear processes: study state and dynamics of chain reactions; neutron distributions and nuclear fuel cycle analysis; systems analysis of alternative nuclear energy concepts (hybrids, spallation breeders, etc.); the McMaster Nuclear Reactor will be used as a demonstration facility.  
3 lects.: one term  
Prerequisite: Completion of Year III Engineering Physics or Physics.

106. English 2B6, 2G6, 2H6, 2I6 —  
Delete: Prerequisite: ....  
Substitute: Prerequisite: Registration in a programme in English, or permission of the Department.

107. 108. Delete: English 2L6, English 2LL6  
Add: English 3L6, English 3LL6

108. English 3D3, 3I3, 3K6, 3L6, 3M3, 4B6, 4E6, 4L3, 4M3, 4N6 —  
Delete: Prerequisite: ....  
Substitute: Prerequisite: Registration in Years III or IV of a programme in English, or permission of the Department.

An introduction to the role of energy in contemporary society: a social, economic and geographical perspective on the availability and utilization of man-made and natural energy.  
3 lects., one term.  
Prerequisite: Open.

Substitute: Geography 4M3/ Development Geography of Latin America.  
Spatial manifestations of selected problems of socio-economic development are examined within the Latin American context.  
3 lects.: one term.  
Prerequisite: Geography 2N3 or permission of the instructor.

111. Geography 4W3  
Prerequisite: Geography 3W3, or permission of the instructor.

112. Geology 3E2/Field Camp. A field camp of about two weeks' duration held immediately after the April-May Examinations. Normally taken immediately following Year II by students in all Geology and combined programmes, with the exception of Honours Biology and Geology.  
3 lects., one term.  
Prerequisite: Geography 2N3 or permission of the instructor.

113. Delete: History 316/ Latin America  
Substitute: History 2C6/ Latin America (previously listed as History 316)

114. History 2N6 - Delete: British History 1400 to the Present.  
Substitute: British History 1500 to the Present.

115. History 3EE3 -  
Delete: Offered in 1980-81 only, unless renewed thereafter.

115. Add:  
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. & discussion): one term.  
Prerequisite: One of History 136, 138 or 2M6 or permission of the Department. (Standing in History 3J6 or 3H6, or concurrent registration therein, is recommended).  
Offered in 1981-82, and in alternate years thereafter.

115. Delete: History 3T3  
115. History 3W6 —  
Delete: Offered in 1980-81 only, unless renewed thereafter.
History 3Y6/British History 1815-1945
An examination of the social and political evolution of Modern Britain, with particular emphasis on the democratization of politics, the problem of class, the growth of government, and the impact of war. 3 lecs.; 2 terms. Prerequisite: History 2N6 or permission of the Department.

History 4Z6 — Delete: Title and description. Substitute: History 4Z6/Introduction to Social History. First term: comparative approaches to the history of society, drawing on Canadian, French, British and American models. Second term: individual research and reporting on aspects of the social history of Victorian Ontario. Seminar; two terms. Prerequisite: Registration in any Honours programme in History or permission of the Department (limited enrolment). Students may take only two of History 4B6, 4N6, 4V6, 4W6, and 4Z6.

Add:
Computer Science 2B3/Introduction to Computer Science. A course in computing, programming, algorithms, data representation, data structures, computer organization. The programming language PASCAL will be used. 3 lecs.; 1 term. Prerequisite: Registration in a programme in which Computer Science 2B3 is required.

Computer Science 2L3
Prerequisite: Add the following:
Computer Science 1H3, 1K3, "2B3"...

Computer Science 3D3/Title should read: Computer Systems Architecture. Prerequisite should read: Computer Science 2L3 or permission of instructor.

Computer Science 4E3/Title should read: Compilers.

Delete:
Computer Science 4F3
Substitute: Computer Science 4F3/Software Engineering Project. Students work in large teams on a large-scale project to produce high-quality production software. 3 hrs.; 1 term. Prerequisite: At least three senior level computer science courses, including completion or registration in Computer Science 3G3.

Computer Science 4W3
Delete: Prerequisite: .......
Substitute: Prerequisite: Computer Science 2L3 or 2N3, or Applied Mathematics 2L3 or 2N3.

Delete:
Mathematics 1H7
Substitute: Mathematics 1H5/Engineering Mathematics I. Vectors, matrices, determinants, complex numbers, numerical methods and an introduction to ordinary differential equations. 3 lecs., first term; 2 lecs., second term. Prerequisite: Registration in Engineering I.

Statistics 3M3
Prerequisite: Add following Mathematics 1F6 "or 1M3"

Metallurgy and Materials Science
Delete: Materials 3B2
Add: Materials 3B4/Crystallography and Microstructure. A laboratory course, complemented by lectures, concerned with crystal structure, X-ray diffraction, microstructures of metals, alloys and ceramics and their correlation with phase equilibria. 1 lec., 1 lab., one term; 2 labs. one term. Prerequisite: Completion of at least 13 units of Year I Chemistry, Mathematics and Physics.

Delete:
Materials 3G2/Microstructure Laboratory.

Delete:
Music 4A4/........ Substitute: Music 4A4/Composition. The composition of various instrumental and/or choral works. Times to be arranged between student and instructor. Prerequisite: Registration in a Music programme, and permission of the instructor.

Music 4S4/Special Studies
Change description to read: Advanced supervised study in any area offered by the Department of Music approved by the Chairman of the Department.

Physics 1B7/General Physics I
Prerequisite: At least 60% in Grade 13 Physics and registration in Mathematics 1A6 or 1C6 or 1F6.

Physics 1C8/Introductory Physics. Lectures and demonstrations in physics, with particular stress on topics in mechanics, wave motion, optics, and electricity. For students without or with less than 60% in Grade 13 Physics.

Delete:
Physics 2A6/Substitute: Physics 2A3/General Physics II. A sequel to Physics 1B7. Electricity and magnetism. Intended primarily for students proceeding in the life sciences. 3 lecs.; 1 term. Prerequisite: Physics 1A7 or 1B7 or 1C8 and Mathematics 1A6 or 1C6 or 1F6. Not open to students in Honours Chemistry and Physics, Honours Physics, Honours Applied Physics, Physics Major or Pass Physics.

Delete:
Physics 3R4


Physics 3T3
Prerequisite: Physics 2A6 or 2A3 or 2B6.

Add:
Political Science 4BB6/The Trial of Socrates. Plato's understanding of the status of philosophy with respect to politics and rhetoric on the basis of the dialogues thematically connected to the trial and death of Socrates. 3 hrs. (seminars); two terms. Prerequisite: Political Science 3A6 or permission of the instructor.
146. Delete: Spanish 2A6  
Substitute: Spanish 2A4 (previously listed as Spanish 2A6)  
Delete: 3 tuts.; two terms.  
Substitute: 2 tuts.; two terms.

146. Delete: Spanish 2E3  
Substitute: Spanish 2E6 (previously listed as Spanish 2E3)  
Delete: Seminar; one term.  
Substitute: Seminar; two terms.

146 Delete: Spanish 4F3  
Spanish 4H3

147. Add:  
Spanish 4X4/Translation Techniques.  
A course designed to develop linguistic skills and to prepare students interested in doing post-graduate work at a school for translators. 
2 tut.; two terms.  
Prerequisite: Spanish 3A4.  
Available as an elective only.

147. Add:  
A detailed study in translation of the major novels of Feodor Dostoevsky, with particular emphasis on the literary, philosophical and religious problems encountered in his work. 
Lects. (2 hrs.); one term.  
Prerequisite: Open to students in Years II and above.

148. Delete: Science 2A6  
Substitute: Science 2A3 (previously listed as Science 2A6)  
Delete: 3 lects.; two terms.  
Substitute: 3 lects.; one term.

Not offered in 1980-81.

148. Science 2G3  
Prerequisite: Registration in Year II, III or IV of any programme.

148. Science 2X6/Canadian Environment Studies. A survey course in which the state of the Canadian environment will be examined within an ecological framework.  
3 lects.; two terms.  
Prerequisite: Registration in Years II, III or IV of a non-science programme.  
Offered in 1980-81 only.

149. Social Science 2G6/Introduction to Gerontology  
The purpose of the course is to introduce the student to demographic, biological, economic, psychological and sociological aspects of aging. The course will also focus on health and social policies in respect to the elderly population.  
2 hrs. (lects. and discussions); two terms.  
Prerequisite: Open.  
ADD:  
LABOUR STUDIES COURSES  
Lectures and discussions; one term.  
Prerequisite: Open.  
Labour Studies 1B3/The Theoretical Foundations of the Labour Movement. An examination of the leading classical and contemporary theories of the labour movement.  
Lectures and discussions; one term.  
Prerequisite: Open.