UNIVERSITY OF WESTERN ONTARIO CALENDAR 1970-1971

LONDON CANADA

The University of Western Ontario Calendar for 1970·1971

TRANSCRIPTS

General Information

Faculty of Arts

Faculty of Science

Faculty of Social Science

School of Business Administration

Faculty of Dentistry

Faculty of Engineering Science

Faculty of Graduate Studies

School of Library and Information Science

Faculty of Law

Faculty of Medicine

Medical Rehabilitation Program

Faculty of Music

Faculty of Nursing

Affiliated Colleges — Huron College • Brescia College • King's College

1970

JANUARY

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THE UNIVERSITY OF WESTERN ONTARIO

COMPOSITE CALENDAR

1970-71

IMPORTANT NOTICE

1. In view of increasing costs of supplies and labor, residence fees and other charges set forth in this Calendar are subject to change by the Board of Governors.
2. The Councils of the Faculties reserve the right to withdraw any course or subject listed in this Calendar.
3. The courses of study listed in this Calendar are subject to the restrictions of timetable.
4. The possession of the minimum admission requirements does not in itself guarantee admission to the Faculty.

General Information

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Faculty of Science	S
Faculty of Social Science	SS
Faculty of Dentistry	D
Faculty of Engineering	E
Faculty of Law	L
Faculty of Medicine	M
Program in Medical Rehabilitation (Physical Therapy)	MR
Faculty of Music	MUS
Faculty of Nursing	N
Faculty of Graduate Studies	GS
School of Business Administration	BUS
School of Library and Information Science	SLIS
Affiliated Colleges	
Brescia College	BR
Huron College	H
King's College	K

THE BOARD OF GOVERNORS

Officers of the Board

Captain J. Jeffery, Chairman
Mr. R.M. Ivey, Vice Chairman
Mr. B.E. Smith, Secretary

Chairman Emeritus

Colonel D. B. Weldon

Honorary Members

Mr. W. L. Duffield, Mr. C. F. Stevens

Ex-Officio Members of the Board

The Chancellor, The President, The Mayor of the City of London, The Warden of Middlesex County

Appointed by the City Council of London

Mr. W. C. P. Baldwin, Captain Joseph Jeffery, Mr. Harry J. Fraleigh, Mr. W. J. Evans

Appointed by the Lieutenant Governor in Council

Mr. J.W. Adams, Mr. R.M. Ivey, Brigadier W.H. Hemphill, Dr. W.H. Rea

Alumni Representatives

Miss J. MacFarlane, Dr. C. S. Ward

Elected by the Senate

Dr. M. L. Barr, Professor W. Balderston, Dr. J. A. F. Stevenson, Associate Dean W. A. Thompson

Elected by the Student Body

Dr. T. H. Pearce

Elected by the Board of Governors

Mr. W. J. Blackburn, Mr. J. A. Taylor, Mr. A. E. Shepherd, Dr. O. H. Warwick, Dr. A. H. J. Lovink, Mr. R. B. Willis, Dr. R. J. Rossiter

UNIVERSITY ADMINISTRATIVE OFFICERS

Official Visitor: His Honor, the Lieutenant Governor of Ontario

Chancellor: A. W. Trueman, BA, MA, DLitt, LLD

President and Vice-Chancellor: D. C. Williams, BA, MA, PhD

Vice President (Academic): R. J. Rossiter, BSc, BA, DPhil, BMBCh, MA, DM, FRIC, FCIC, FRSC

Vice President (Administration and Finance): A.K. Adlington, BA

Vice President (Health Sciences): O. H. Warwick, MD, CM, MA, MRCP, FRCP(C), FACP

Dean of Men: T. L. Hoskin, MA

Assistant Dean of Men: A. E. D. MacKenzie, MA

Dean of Women: Leola E. Neal, MA, PhD

Registrar: J. K. Watson, MA, PhD

Associate Registrar: Margaret P. May, BA

Deputy Registrar: B.G. Browning, BA

Assistant Registrar: D. G. Henderson, BA

Secondary School Liaison Officer: J.A.S. McNeil, BA, BPE

Admission Supervisor: Jan Van Fleet (Mrs.), BA

Chief Librarian: R. E. Lee, BA, BSLS, MFA, PhD

Deputy Chief Librarian: J. F. MacPherson, BA, MA, ALA

Director, Summer School and Extension: Angela M. Armitt, BA, MA

Director, French Summer School: F. K. Harper, BA, MA

Director, Intercollegiate Athletics: J. P. Metras

Director, Health Services: R. J. Bowen, BA, MD

Director, Financial Aid: E. J. McLeod, BA

Director, Placement and Off-Campus Housing: C. F. Way, BA

Comptroller: R. R. Glover, BA

Director, Information Services and University Publications: G. C. McDonald, BA

Director, Alumni Affairs: G. C. McDonald, BA

Director, Physical Plant: J. Shortreed, BASc, PEng

Director, Food Services: G. A. Bullas

SENATE ELECTIONS – 1970

Student Representation

Call for nominations of eligible candidates to represent the student body as required by the University of Western Ontario Act, 1967: up to October 15th, 1970.
Polling of Ballots: October 24 – 31, 1970.

Faculty Representation

Call for nominations of eligible candidates to represent the academic units, other than the Faculty of Graduate Studies, as required by the University of Western Ontario Act, 1967: up to September 15, 1970.
Polling of Ballots: September 23 – 30, 1970.

Faculty of Graduate Studies Representation

Call for nomination of eligible candidates to represent the Faculty of Graduate Studies as required by the University of Western Ontario Act, 1967; up to October 15, 1970.
Polling of Ballots: October 24 – 31, 1970.

DEGREES OFFERED

The University of Western Ontario offers Programs leading to the following degrees:

Bachelor of Arts (BA)	See Section A
Bachelor of Engineering Science (BESc)	See Section E
Bachelor of Laws (LLB)	See Section L
Bachelor of Music (MusB)	See Section MUS
Bachelor of Musical Arts (BMusA)	See Section MUS
Bachelor of Science (BSc)	See Section S
Bachelor of Science in Medical Rehabilitation (Communication Disorders) (BScMR(CD))	Details to be announced in future publications
Bachelor of Science in Medical Rehabilitation (Occupational Therapy) (BScMR(OT))	Details to be announced in future publications
Bachelor of Science in Medical Rehabilitation (Physical Therapy) (BScMR(PT))	See Section PMR
Bachelor of Science in Nursing (BScN)	See Section N
Bachelor of Social Welfare (BSW)	See Section K
Master of Arts (MA)	See Section GS
Master of Business Administration (MBA)	See Section GS

Master of Clinical Science (MClSc)	See Section GS
Master of Engineering (MEng)	See Section GS
Master of Engineering Science (MESc)	See Section GS
Master of Library Science (MLS)	See Section GS
Master of Music (MusB)	See Section GS
Master of Science in Nursing (MScN)	See Section GS
Master of Science (MSc)	See Section GS
Doctor of Dental Surgery (DDS)	See Section GS
Doctor of Medicine (MD)	See Section GS
Doctor of Philosophy (PhD)	See Section GS

NOTE: For information regarding Programs in Theology, consult the Affiliated Colleges Section.

ADMISSION REQUIREMENTS

Faculty of Graduate Studies

Students who wish information additional to that appearing below should write to: The Dean, The faculty of Graduate Studies, Stevenson Hall, The University of Western Ontario, London 72, Ontario.

Graduate Programs in Business Administration

Information on these programs may be obtained from: The Dean, School of Business Administration, The University of Western Ontario, London 72, Ontario.

Admission to Undergraduate Programs and to the Faculties of Dentistry, Law and Medicine

For application forms or for information write to: The Director of Admissions, Stevenson Hall, The University of Western Ontario, London 72, Ontario.

Students applying for First Year undergraduate studies at The University of Western Ontario are required to hold successful standing, in subjects appropriate to the program to which admission is sought, in studies at the level of Ontario Grade 13 (or its equivalent). Students from other provinces or from overseas may apply for admission to First Year at this University if their academic records meet, in subject matter and standing, the requirements for admission to a recognized university in their home province or country.

All applicants to the First Year of all programs are required to present the results of an appropriate admission test series. The required tests, together with the agency to which a student should write for information, follow:

All First Years of Undergraduate Programs

Tests Required: Scholastic Aptitude Test (verbal and mathematical) AND three Achievement Tests where available

Agency: S.A.C.U. (Service for Admission to College and University) OR C.E.E.B. (College Entrance Examination Board)

First Year Dentistry

Test Required: Dental Aptitude Test (D.A.T.)

Agency: Canadian Dental Association

Graduate Studies

Test Required: Graduate Record Examination (G.R.E.): Miller Analogies Test (M.A.T.)

NOTE: The requirement for these tests varies according to the Department to which admission is being sought. For further details, consult the Faculty of Graduate Studies Section of this Calendar.

Agency: Educational Testing Service; The Psychological Corporation

First Year Law

Test Required: Law School Admission Test (L.S.A.T.)

Agency: Educational Testing Service

First Year Medicine

Test Required: Medical College Admission Test (M.C.A.T.)

Agency: The Psychological Corporation

First Year MBA

Test Required: Admission Test for Graduate Studies in Business

Agency: Educational Testing Service

Enrollment in undergraduate programs is restricted by limitations on the size of the Freshman class.

The recommendations of Secondary School principals or guidance officers, scores in aptitude and achievement tests, and formal academic records are each considered carefully in the final selection of applicants. Possession of the academic qualifications stated in this publication or elsewhere guarantees the applicant consideration for admission only.

Students Applying from Other Universities or Colleges

A student applying to transfer from another environment to The University of Western Ontario must be eligible, without condition, to register as a full-time intramural student at the previous college or university attended.

Each application for admission to this University with advance standing will be considered by the Admissions Committee of the Faculty to which application is made. Advance standing is not normally granted for:

(a) A course in which the final grade is not at least one grade above the lowest passing grade;

(b) A course passed as part of a failed year;

(c) A course passed as part of a year's program in which the overall average is not at least one grade above the lowest passing grade;

(d) A course contained within a program which has already been completed and recognized by the granting of a Bachelor's degree.

NOTE: All applicants for admission at all levels of placement whose primary language is not English may be required to present proof of competence in English. The results of two tests are accepted as proving such competence: The Test of English as a Foreign Language OR The English Language Institute Test (University of Michigan).

Final Application Dates – 1970

February 1	Faculty of Medicine
March 1	Faculty of Dentistry
April 6	Evening Summer School
May 31	The Program in Medical Rehabilitation
June 1	Day Summer School
September 1	Auditions for Faculty of Music (Earlier completion of this requirement is strongly recommended because of enrollment limitations of this program.)
September 17	Winter Extension and Correspondence

ACADEMIC RIGHTS OF STUDENTS

The Senate has established procedures for petitions and appeals.

Petition

A petition is an instrument whereby a student may seek to have a regulation of the University waived on academic or compassionate grounds.

Procedure: The student may initiate a petition in the Office of the Dean of his Faculty on a form provided for the purpose. He will be notified later of the Dean's decision.

Reconsideration by Senate: A student shall have the right to require the Senate to consider the decision of the Dean by making application to the Secretary of the Senate on a form provided for the purpose.

Appeal

An appeal is an instrument by which a student may be protected against an error in grading or final standing, unfair prejudice of a professor, or serious negligence in instruction.

Procedure: A student is required to make a formal complaint to the Chairman of the Department concerned. If the problem cannot be solved in this way, a written appeal setting forth the grounds of the complaint may be

instituted to the Dean of the academic unit concerned. The Dean may appoint or request an appropriate committee composed of students and faculty to advise him.

Reconsideration by Senate: A student shall have the right to require the Senate to consider the decision of the Dean by making application to the Secretary of the Senate on a form provided for the purpose.

ACADEMIC REGULATIONS (Undergraduate)

Residence Requirements for a Degree

A candidate for a degree must have attended intramural classes of this University for two academic years, or for one academic year and two summer sessions, or for five summer sessions. This requirement may be reduced to one year of intramural classes, or three summer sessions, if other courses for the degree have been obtained through attendance at extension classes of this University or by transfer of credits from an approved college or university. A minimum of five senior courses must be taken at this University.

Class and Laboratory Attendance

Freshmen and sophomore students are required to attend 80 per cent of their lecture and laboratory classes. Any student who, in the opinion of his instructor, is absenting himself too frequently from class or laboratory periods will be reported to the Dean of his Faculty. On recommendation of the Department concerned, and after due warning has been given him by the Dean, the student may be debarred from taking the regular examinations in that course.

Term Work

Term work in a course will not be credited to a student beyond the year in which the course is taken.

Extra Courses

Permission to take an extra course must be obtained in writing from the Dean of the Faculty in which the student is registered.

Adding and Dropping Courses

Following registration, a student may add a course only with the joint approval of the Dean of the Faculty and the Head of the Department concerned. A course cannot be added after October 7.

A student may drop a course only with the joint approval of the Dean of the Faculty or his designate, and the Head of the Department concerned. A course dropped after January 15 will be considered a failure.

Substituting Courses

A student may substitute a course only with the consent of the Head of the Department of his Honors or Major subject and cannot do so without penalty after October 7. All substitutions must conform to the basic requirements as laid down by the Senate.

Unsatisfactory Knowledge of English

Any student who shows an inadequate command of spoken and written English must improve his style until his work satisfies his instructor.

PROGRESSION AND STANDING

The following statement is made in regard to students enrolled within the Three-Year BA and BSc Programs:

Progression Eligibility

Following admission to the University and initial registration, continued acceptance of registration for further work is subject to the following limitations:

(a) a Grade Point Total of at least *six* in the first *five* full courses attempted must be accumulated;

(b) a Grade Point Total of at least *14* in the first *ten* full courses attempted must be accumulated;

(c) not more than *five* failures (i.e., Grades of E, F, FNW, DRP, FTW, INC) may be accumulated;

(d) a minimum average of 60 per cent must be achieved in the *15* courses completed within the first *20* attempts* which includes repeated courses.

*An attempt is a course registration not formally cancelled with the Registrar by January 15th in the Winter Session and by July 15th in the Summer Session.

When a student's achievement is such that any of the above minimum requirements are not met, the student must withdraw from the University for one year or longer at the discretion of the Senate Admissions Committee.

Grade Points	Letter Grade	% Range
5	A+	90–100
4	A	80–89
3	B	70–79
2	C	60–69
1	D	50–59
0	F	0–49

All other students are governed by regulations pertaining to progression in Honors programs or by regulations of their Faculty.

Prerequisites for Progression

A First Year student who has successfully completed an introductory course at The University of Western Ontario, or its equivalent elsewhere, will be permitted to enroll in a senior course upon the recommendation of the department concerned and with the approval of the student's Dean.

THE GENERAL BA AND THREE-YEAR BSc DEGREES

(Prior to July 1, 1970)

The following General degree requirements were in effect prior to July 1, 1970, and remain optional until 1972 for students registered prior to 1970.

For a General Program BA a student must pass 16 courses which must include:

(a) one appropriate course from Division C;

(b) two courses at the 20 level from: English, Mathematics or Applied Mathematics, a language other than English;

(c) six courses from one of the First Year Programs, including courses in Divisions A and B.

At least seven of the 16 courses must be senior courses (numbered 30 and higher). A student in a General BA Program must obtain at least 60 per cent average in four senior courses of the major subject and at least 60 per cent in each of three of those courses in order to graduate.

At the beginning of the Second Year of study, the student must choose a major subject which shall consist of at least four senior courses in the subject selected, in consultation with the Department concerned; a Department at its discretion may specify that certain courses in the subject of the major are required of all students majoring in the subject.

General Regulations for BSc Degree

For a Three-Year BSc a student must:

Pass 16 courses of which at least ten must be from Division C.

Select, before he enters the Second Year, a major subject from Division C, which shall consist of at least four senior courses (numbered 30 or higher) in a particular subject (see above).

Consult with the major Department in his choice of Division C courses.

Obtain a minimum average of 60 per cent in the courses of the major subject and a minimum passing grade of 50 per cent in every course.

Take in the Second Year: two courses in the major subject; one other course from Division C; two other courses.

Take in the Third Year: two courses in the major subject; two other courses from Division C; one other course.

Students transferring from Honors Programs are not bound by the above sequence.

At the discretion of the Departments in question a student may be permitted to or, in some cases, be required to take Honors courses (number 100 or higher).

No more than six senior courses in any one subject may be counted towards a degree.

Out of the ten courses required in the last two years of the program, at least eight must be senior courses.

Out of the 16 courses counted towards the degree a minimum of three courses (but not more than six) must be from Divisions A and B.

In addition to these course requirements, see attendance requirements on page GI 9.

The revised requirements for these degrees are described subsequently and students registering in 1970 for the first time are governed by them.

THE FIFTEEN-COURSE PROGRAMS FOR BA AND BSc DEGREES (Effective July 1, 1970)

First Year

The purpose of the First Year General Program is to offer one year of basic general education and to postpone the selection of a specific program until the second year. Thus the student can make a final decision as to his future program on the basis of university work which will include subjects not available in the secondary school. On the successful completion of the First Year General Program, the student is eligible to register in the Second Year of one of the Three-Year Programs or the Second Year of one of the Honors Programs.

General Requirements for the BA Degree

The requirement for graduation in the General BA Program is completion of a program of 15 courses subject to the following conditions:

(a) inclusion of at least one course each from any two of the Faculties of Arts, Science and Social Science;

(b) inclusion of at least seven senior courses (courses numbered 30 or higher);*

(c) inclusion of not more than eight courses in any one subject;

(d) achievement of a D grade or higher in each course counted for graduation;

(e) achievement of an overall numerical average of 60 per cent or higher, in the courses counted for graduation;

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*Optional areas of concentration are offered, at the discretion of each of the Departments of the Faculties concerned, subject to the following provisions:

(i) an area of concentration is defined as four senior courses specified by the Department concerned as meeting its requirements; additional courses offered by the Department may be taken subject to the General BA Program regulations [see section (c) above];

(ii) declaration of an area of concentration in the General Program should be made by the student at the beginning of Year Two;

(iii) the area of concentration will be designated on the official transcript upon graduation.

General Regulations for the BSc Degree

The student shall select on entering the Second Year a major subject or approved area of concentration in the Faculty of Science and include in this program at least FOUR senior courses in this particular subject or approved area of concentration. The major Department or the advisor for the approved area of concentration should be consulted in the choice of the Faculty of Science courses. The student's choice of program and any changes in that program must be approved by the Dean of the Faculty of Science.

The requirement for graduation in a three-year BSc program is completion of a program of 15 courses subject to the following conditions:

(a) inclusion of at least ten courses from the offerings of the Faculty of Science;

(b) inclusion of at least two courses offered outside the Faculty of Science;

(c) inclusion of at least eight senior courses;

(d) achievement of a D grade or higher in each course counted for graduation;

(e) achievement of a minimum average of 60 per cent in the courses counted for graduation and a minimum average of 60 per cent in four senior courses of the major subject or approved area of concentration.

HONORS PROGRAMS

Students in the Arts, Music, Science and Social Science Programs are not registered in specific honors programs during their first year at this University.

There are specific requirements for admission to the Second Year of all four-year Honors Programs based upon the courses selected and the standing obtained in the First Year.

Three types of Honors Programs are offered:

(1) Four-year Honors Programs in the Arts and Social Sciences, leading to the Bachelor of Arts (BA) degree;

(2) Four-year Honors programs in Natural Sciences, Medical Biological Sciences and Computer Science, leading to the Bachelor of Science (BSc) degree;

(3) Four-year Honors Programs in Music leading to the Bachelor of Music (MusB) degree or Bachelor of Arts (BA) degree.

The Department of Education accepts a degree in an Honors Program as the academic qualifications for a High School Assistant's Certificate, Type B, for teaching in the elementary and secondary schools of Ontario.

A student expecting to enter an Honors Program should consult that program before selecting his options in his first year.

In all years of all Honors Programs options must be approved by all departments concerned.

Honors Programs — Admission to Second and Subsequent Years

A student will be automatically accepted if he has an average of at least 70 per cent with no grade of less than 60 per cent in the courses listed as principal courses by the Department(s) of the subject(s) in which he is specializing. He must also have a passing grade in each of the courses listed as subsidiary courses by the Department(s) concerned.

A student with an average of 60 to 69 per cent in the principal courses of his Honors Program, and a passing grade in each of the subsidiary courses, may be accepted by special permission of the Department(s) concerned.

Honors Graduation Requirements

The graduating average is the grade average of all principal courses in the Third and Fourth years. A student will automatically graduate with an Honors degree if he has a graduating average of at least 60 per cent, a grade average of at least 60 per cent in the principal courses of the Fourth Year, and a passing grade in every course.

A student who has a graduating average of at least 60 per cent and a passing grade in every course, but whose grade average in the principal courses of the Fourth Year falls below 60 per cent, may graduate with an Honors degree only on the recommendation of the Department(s) concerned.

A student who passes all courses in the Fourth Year of an Honors Program for the degree of Bachelor of Arts or Bachelor of Science and satisfies all other requirements for graduation, but fails to qualify for an Honors degree, shall be awarded a BA or BSc degree without designation. Such a student may write a subsequent examination in order to qualify for an Honors degree. When these qualifications have been met he must return his ordinary diploma to the Registrar in order that it may be replaced.

EXAMINATIONS

Regular

Examinations for students registered in intramural, extension and correspondence courses are conducted in April and May, and for those in the Summer School in August.

Supplemental

Supplemental examinations are not offered by the Faculties of Arts, Science and Social Science.

All supplemental examinations offered by other Faculties must be written at The University of Western Ontario or at another Canadian university located more than 150 miles from London. This rule does not apply to students serving in the Armed Forces.

Special

A special examination is any examination other than the regular or supplemental examination, and it may be offered only with consent of the Department concerned and with the permission of the Dean.

A special examination may be written only at this University or at one of its Affiliated Colleges.

Comprehensive Examinations

Students should observe that the purpose of their university work is not simply the creditable passing of courses term after term, but the gradual acquisition of a broad and deep knowledge of the chosen subjects and an intelligent appreciation of their bearing upon general knowledge and culture. Some Departments have introduced comprehensive examinations for Honors students. These examinations, which may be written, or oral, or both, are given at the end of the senior year to cover the broad aspects of the student's Honors Program. They are additional to the course examinations.

Deferred Examinations

Permission to defer an examination is given by the Deans only on compassionate grounds. A student must petition his Dean for this privilege. A deferred examination is normally written during the supplemental examination period. No supplementals will be allowed for a student who is permitted to defer examinations. No fee is charged for deferred examinations.

A deferred examination may be written only at the University or at one of its Affiliated Colleges.

Failure to Appear at Examination

A student who fails to appear for an examination at the time set in the timetable will not be allowed to write the examination thus missed. He may, with the approval of the Head of the Department concerned, petition his Dean for permission to write a special examination. Petitions will be entertained only when they are submitted on compassionate grounds with supporting documents.

Aegrotat Standing in the Three-Year Programs

Aegrotat Standing (academic standing without examination) may be given to students in the graduating year of the Three-Year Programs. On compassionate grounds, and with supporting documents, a student may petition his Dean for:

(a) the privilege of writing deferred examinations

OR

(b) Aegrotat Standing which would be 50 per cent in non-major courses and 60 per cent in major courses

Examination Timetable

Many courses offered have an examination code number. This will be found in the course description following the designation of the number of class hours (e.g., 3 hours – 1).

Final examinations in 1971 will be held according to the following schedule:

First Week		Second Week		Third Week	
Monday	9 a.m. – 1	Monday	9 a.m. – 13	Monday	9 a.m. – 25
April 12	2 p.m. – 2	April 19	2 p.m. – 14	April 26	2 p.m. – 26
Tuesday	9 a.m. – 3	Tuesday	9 a.m. – 15	Tuesday	9 a.m. – 27
April 13	2 p.m. – 4	April 20	2 p.m. – 16	April 27	2 p.m. – 28
Wednesday	9 a.m. – 5	Wednesday	9 a.m. – 17	Wednesday	9 a.m. – 29
April 14	2 p.m. – 6	April 21	2 p.m. – 18	April 28	2 p.m. – 30
Thursday	9 a.m. – 7	Thursday	9 a.m. – 19	Thursday	9 a.m. – 31
April 15	2 p.m. – 8	April 22	2 p.m. – 20	April 29	2 p.m. – 32
Friday	9 a.m. – 9	Friday	9 a.m. – 21	Friday	9 a.m. – 33
April 16	2 p.m. – 10	April 23	2 p.m. – 22	April 30	2 p.m. – 34
Saturday	9 a.m. – 11	Saturday	9 a.m. – 23	Saturday	9 a.m. – 35
April 17	2 p.m. – 12	April 24	2 p.m. – 24	May 1	2 p.m. – 26

COURSE NUMBERING SYSTEM

Courses numbered 1 are equivalent to corresponding subjects of Secondary School Grade 12 (Ontario).

Courses numbered 2 are equivalent to corresponding subjects of Secondary School Grades 12 and 13 (Ontario)

Courses 10 to 19 are equivalent to corresponding subjects of Secondary School Grade 13 (Ontario).

Courses 20 to 29 are First Year General Courses.

Courses 30 to 99 are Second and Third Year General Courses.

Courses 200 to 299 are Second Year Honors Courses.

Courses 300 to 399 are Third Year Honors Courses.

Courses 400 to 499 are Fourth Year Honors Courses.

Courses numbered 500 or higher are offered within the Faculty of Graduate Studies.

A course number followed by "a" is offered in the first term only; followed by "b" in the second term only.

A half course is one which meets fewer than two hours a week throughout the academic year or fewer than four hours a week in one term.

Unless otherwise indicated, lecture and laboratory hours are listed on a weekly basis throughout the academic year.

GENERAL INFORMATION

Summer School and Extensions

In the summer of 1969 over 3,000 students attended day and evening classes on the Western Campus where over 100 courses were offered. In addition to the Summer School in London there was also a Summer School at Owen Sound. More than 150 students took advantage of the ten courses available at this location in 1969.

Courses during evenings and on Saturdays are offered on the London campus and in eight Western Ontario centres during the Fall and Winter.

The School of Business Administration offers a number of in-residence Executive Development programs during the summer, and some Evening Programs during the regular academic term. They include a five-week Marketing Management Course, as well as programs for Industrial Relations Managers and Production Managers, and special topics such as Interpersonal Skills and Management Science.

The Faculty of Graduate Studies offers summer courses in several subjects. For information about these, write to the Dean of Graduate Studies, The University of Western Ontario, London 72, Ontario.

Trois-Pistoles Summer School

Since July 1933, The University of Western Ontario has conducted a six-week summer school at Trois-Pistoles, 145 miles from Quebec City on the south shore of the St. Lawrence. The courses offered include French for English-speaking students, methodology for teachers of French, English for French-speaking students, and landscape painting.

For further information, write to the Director, Trois-Pistoles Summer School, The University of Western Ontario, London 72, Ontario.

Libraries

The general library is housed in the Lawson Memorial Building. Libraries and reading rooms are also located in the Josephine Spencer Niblett Faculty of Law Building, Alexander Charles Spencer Faculty of Engineering Building, Medical Sciences Building, Kresge School of Nursing Building, Natural Sciences Centre, University College, Middlesex College, Talbot College, Richard Ivey School of Business Administration Building, A.E. Silverwood Faculty of Music Building, Althouse College of Education and the School of Library and Information Science. The Affiliated Colleges (Huron College, Brescia College and King's College) each provide good undergraduate libraries with collections meant to complement holdings of the other libraries.

The book collections of the University total over 600,000 volumes and 400,000 microforms. Currently the University receives annually about 7,500 periodicals in all subjects and in many languages.

The D. B. Weldon Library, now under construction, is planned for completion late in 1970, and will house more than one million volumes.

Placement

Each year a placement program is conducted under the direction of the Placement and Off-Campus Housing Office, Room 23, Thames Hall. During the scheduled portion of the program, over 200 employer firms and agencies visit the campus to interview students, as follows: Engineering and the Sciences, November through mid-December; Arts, Social Sciences and Law, January through mid-February.

The majority of these employers conduct interviews for career employment, but a number are also interested in recruiting undergraduates for summer jobs. Details of the placement program are advertised throughout the University.

As well as the scheduled program, the Placement Office receives, from various employers throughout the year, opportunities for career, summer or part-time employment. Advertisements for these are displayed in the Placement Office where inquiries may be made by interested students.

Students who require career counselling or who wish to register for employment, are invited to visit the Placement Office. The Placement Library, located in Room 26C, Thames Hall, contains brochures and literature of employer firms for student reference.

Living Accommodation

RESIDENCES FOR WOMEN

The University of Western Ontario has three residences for women, Spencer Hall, Delaware Hall and Maitland Hall. Spencer Hall, 551 Windermere Road, with accommodation for 86, is situated on a 35-acre landscaped property less than two miles from the main campus. Regular bus service is provided to and from the University campus at no charge to residents. Delaware Hall, located on the main campus, accommodates 452 students. Maitland Hall, 289 Windermere Road, has accommodation for 306, and is part of the Glenmore Residences complex on campus.

At Spencer Hall, two, three or four students occupy a room, while at Delaware Hall and Maitland Hall, there are single and double rooms only. The residences are handsomely appointed with dining facilities, study rooms and lounges. Towels and bedding, including two blankets, are supplied, with no charge for laundering of these items. Coin-operated washers, dryers and ironing facilities are available.

Application forms for admission to women's residence may be obtained from the Dean of Women. Acceptance is granted *after* a student has received a Permit to Register at the University. Priority is given to undergraduate students.

RESIDENCES FOR MEN

Medway Hall, Sydenham Hall and Saugeen Hall are Western's three men's residences and are located near the main campus of the University. Medway Hall accommodates 300 students. Sydenham Hall accommodates 292 and Saugeen Hall accommodates 901. Medway Hall and Sydenham Hall are located on University Drive. Saugeen Hall is located at 289 Windermere Road and is part of the Glenmore Residences complex. Each residence is within five minutes' walking distance of the main campus.

Although the residences differ in design, each has its own kitchen and dining room. Each also contains study rooms, lounges, music rooms, laundries, TV rooms, hi-fi rooms, and single and double bedrooms. All residences are air-conditioned.

Three meals are served daily in the residences during the term. Towels and bedding are supplied, and there is no charge for the laundering of these items.

Application forms may be obtained from the Residence Admissions Office, Saugeen Hall, 289 Windermere Road, London 72, Ontario.

NOTE: Students must be registered in the Constituent University to be eligible for accommodation in any of the above women's and men's residences.

MARRIED STUDENTS' APARTMENTS

The student housing complex, Western Road, has accommodation for married students, including 300 one-bedroom apartments and 100 two-bedroom apartments. For information and application forms write to The Business Manager, Married Students' Apartments, The University of Western Ontario, London 72, Ontario

AFFILIATED COLLEGE RESIDENCES

Brescia College, for women, Western Road, has accommodation for 128 students. Only students enrolled in Brescia College are accepted for residence. For information write to: Dean, Brescia College, Western Road, London 72, Ontario.

Huron College, adjacent to the University campus on Western Road, has accommodation for 200 men and 100 women registered at Huron College. A few students of other colleges are accepted. For information write to: Warden, Huron College, Western Road, London 72, Ontario.

King's College, near the main campus, has accommodation for 310 students (men and women). For information write to: The Business Office, King's College, 266 Epworth Avenue, London 11, Ontario.

OTHER RESIDENCES

Westminster College

Westminster College is a co-educational residence for students at The University of Western Ontario. It is located on the north side of the campus and has accommodation for 230 men and women. The College has its own dining room and the usual furnishings and facilities of a university residence. For information write to: The Bursar, Westminster College, London 72, Ontario, or telephone 434-8471 (area code 519).

OFF-CAMPUS HOUSING

A wide variety of student accommodation in private homes and apartments in the London area is listed with the Off-Campus Housing and Placement Office. Apply, in person, to Room 23, Thames Hall, The University of Western Ontario.

Students registered in an Affiliated College should apply to the Dean of Residence of their College for asistance in finding private accommodation.

Alumni Involvement on Campus

Alumni Hall is one of the most striking contributions Western's graduates have made to the University. This multi-purpose building houses one of the finest concert halls in North America. It was financed by a $1,000,000 gift from Western alumni and an equal amount from the Ontario government.

From the time of its opening in March 1967, Alumni Hall became the cultural hub of the Western campus. The Alumni Great Artists' Concerts series has hosted many of the world's most famous orchestras and entertainers and in its first year of operation more than 100,000 students, alumni and visitors from the general community used and enjoyed the facilities.

Much of campus life centres around Alumni Hall. This is where students begin and end their stay as Western students. They are welcomed to the University in the auditorium, and on their last day at Western receive their degrees there.

Alumni Hall is also headquarters of the Alumni Association, the organization that unites all Western graduates. Addresses and family and career data are kept on file on a confidential basis. An informative magazine, The *Alumni Gazette,* provides a communications link between the University and its graduates and between the alumni themselves. Alumni Homecoming Weekend in the fall is one of the highlights of campus life, combining many social and cultural events and continuing education opportunities for returning alumni.

Decisions on alumni policies and activities are made and effected through a working body of alumni known as the Alumni Executive Council. Alumni members of this council are elected each year and represent all schools and faculties.

Western alumni elect or appoint two voting members to the Board of Governors. In addition, of the six persons representing the general community on the academic Senate, at least four always are alumni. The Alumni Council has working relations with all members of the University community, including students, faculty and administration.

Western's Alumni Association is ready to assist the activities of Western students individually and through their clubs and students' council. The Alumni Council meets monthly, is willing to hear proposals from student representatives, and is always eager to help them achieve goals of benefit to the university community.

Initiation

"Hazing" and/or "initiation" of University students is prohibited by virtue of a 1934 resolution of the Board of Governors.

Students may not engage in any public activity as a group or body representing the University or any organization within the University without the express permission of the Board of Governors; nor may the name of the University be used in the title of any publication without the permission of the Board.

Traffic and Parking

Information on traffic and parking on campus may be found in the University publication "Vehicle Parking and Traffic Regulations".

Health Services

PHYSICAL EXAMINATION

A Physical examination by a practising physician is required of all students who are enrolling in this University for the first time as intramural students in the winter session. The submission of this report on the *pro forma* supplied is the responsibility of the incoming student prior to registration.

Health Services on Campus

The Health Service clinic is in Somerville House where students, while at University, may consult the University physicians for general medical care. A counselling service for students with personal problems is also available.

Testing for Tuberculosis

All students must take a skin test for tuberculosis at the time arranged during the school year. Students showing a positive reaction must have a chest X-ray which is to be repeated each year. No further skin testing will be carried out on previous known positives. Students showing a negative reaction are to have the skin test repeated each year.

Hospital Services Insurance

Hospital insurance is NOT provided by the University. Hospital insurance offered by the Ontario Hospital Services Commission is the only form of basic hospital insurance permitted in Ontario. It is the student's responsibility to obtain the necessary coverage under the Ontario Hospital Services Insurance Plan (OHSIP). Coverage does not become effective for three months from time of application for Ontario Hospital Insurance. The premium is $16.50 for three months for a single person and $33.00 for three months for a family, payable in advance.

Students from other provinces who already have hospital insurance are urged to ascertain, before coming to Ontario, if their policies will be honored in Ontario hospitals and for how long.

Students from outside Canada should apply for Ontario Hospital Insurance as soon as possible after arriving in Ontario. For the three-month waiting period, they may avail themselves of Blue Cross Insurance.

Students are reminded that, if they do not hold hospital services insurance and are required, by reason of accident or illness, to enter hospital, they will incur charges of approximately $50.00 per day.

Medical Services Insurance

The only medical services insurance allowed in Ontario at the present time is the Ontario Health Services Insurance Plan (OHSIP) administered by the provincial government. This plan is comprehensive and may be purchased through OHSIP directly or through one of its agents. Coverage does not become effective for three months from time of application. The premium is $17.70 for three months for a single person, $35.40 for three months for a couple, and $44.25 for three months for a family, payable in advance. Persons who have been resident in the Province for twelve months may receive assistance in paying premiums in accordance with regulations relating to personal income. More detailed information may be obtained from Health Insurance Registration Board, 2195 Yonge Street, Toronto 7, Ontario, telephone 482-1111 (area code 416).

Undergraduate Fees

FEES

Full-time Students (all years)

Faculty of Arts	$542.50
Faculty of Science	542.50
Faculty of Social Science	542.50
Faculty of Business Administration	542.50
Faculty of Engineering Science	542.50*
Faculty of Dentistry	727.50
Faculty of Medicine	727.50
Medical Rehabilitation	517.50
Faculty of Nursing	517.50
Faculty of Music	552.50
Faculty of Law	552.50

*Second, third and fourth years $602.50

NOTE: The above fees include a $54.00 non-academic charge for the University Community Centre, University Students' Council, Athletics and Health Services. This sum may not, by law, be included in the student income tax certificate. The certificate will be available by the last day of February each year.

A $50.00 non-refundable tuition deposit is required of all freshman students and of first year students in the Faculties of Dentistry, Law and Medicine.

Part-time Students (three courses or fewer)

Tuition, each course	$105.00
Audit (non-credit), each course	50.00
Laboratory fee (where applicable), credit or audit	10.00

PAYMENT OF FEES

Fees for full-time undergraduates are due and payable at the time of registration. A student may pay a minimum of $300.00 ($400.00 for students in the Faculty of Medicine or the Faculty of Dentistry; $325.00 for an upperclassman in the Faculty of Engineering Science) at the time of registration and the balance on or before the first day of the second term. There is a charge of $5.00 for payment of fees in two parts; this amount is added to the second installment. If a $50.00 tuition deposit has been paid prior to registration, this amount is considered as part of the first term's tuition installment.

Students are advised to establish chequing accounts in London banks well in advance of registration to ensure banking privileges for the payment of fees. Cheques drawn on out-of-town banks must include exchange (approximately 15¢ per $100.00).

OTHER CHARGES

Application from outside Canada	$ 25.00
Late registration fee	$10.00 or 25.00
Change in course enrollment	10.00
Transfer from Constituent University to Affiliated College	50.00
Withdrawal during registration week (minimum penalty)	50.00
Supplemental examination	10.00
Supplemental examination at outside centre	15.00
Special examination	15.00
Aptitude Test (Mature Applicants)	5.00
Aptitude Test at outside centre or on unscheduled date	10.00
Transcript of academic record	1.00

The Board of Governors reserves the right to amend fees after the printing of this list.

Except by permission of the Dean of their Faculty and the Comptroller of the University, students may not attend lectures or examinations, nor may they be recommended for any degree or diploma until tuition fees, fines and other accounts owed to the University are paid.

WITHDRAWAL

A student who wishes to withdraw from the University should consult the Dean of his Faculty or School. After consultation, withdrawal forms must be completed for the Office of the Registrar. A student who withdraws without providing official notice to the Registrar will not be eligible for any refund of fees nor for exemption from unpaid fees.

Fee adjustments will be made on a pro rata basis. Refunds will be authorized if cancellation of registration is approved by March 15th for full-time students in the Winter Session.

ACADEMIC CALENDAR

1970

July 1	Last day for receiving admission applications for Winter Session 1970-71
July 1	Summer Session begins
July 7 – August 1	Supplemental Examinations
August 11	Summer School lectures end
August 12 – 15	Summer School Examinations
September 8 – 11	Registration
September 14	Classes begin, 8:30 a.m.
September 17	Last day for receiving admission application for Extension and Correspondence Courses 1970-71 Winter Session
September 19	Extension Classes begin in Out-of-town Centres
September 21	Extension Classes begin on London Campus Late registration date
September 28	Late registration date
September 29	Last day for course enrollment without penalty
October 7	Last day for enrollment for full-time students Last day for adding any subject
October 12	Thanksgiving Day Holiday
October 30	Autumn Convocation
November 11	Remembrance Day Ceremony
December 12	Classes end – 5:30 p.m. First Term ends

1971

January 5	Classes resume – 8:30 a.m. Second term begins
January 8, 9	Summer School Supplemental Examinations
January 15	Last day for dropping a course without penalty
February 15	Last day for receiving applications for Graduation
February 22 – 27	Conference Week
March 6	Founder's Day
April 5	Last day for receiving admission applications for Evening Summer Session from students registering for the first time
April 9	Good Friday Holiday
April 10	Second Term ends
April 11 – May 1	Examinations
May 24 – 28	Spring Convocation
June 1	Last day for receiving admission applications for Summer Day Session for students registering for first time
June 14	Last day for Receiving registration forms for Summer Session from students previously registered

*See individual faculty submission for variations

Faculty of Arts

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FACULTY OF ARTS

Dean

John Gordon Rowe, SB *Harvard;* BD *Episcopal Theological School, Cambridge, Mass.,* PhD *Toronto;* DD *Huron College*

Assistant Dean

Graham Stewart Rose, BSc, PhD *Birmingham* (on leave 1970-71)

Acting Assistant Dean 1970-71

A. Ernest Raymond, BA, MA *Toronto;* PhD *Chicago;* W. Sherwood Fox. Professor of Classics

PROGRAMS

The Faculty of Arts offers:

Three year General Programs leading to a BA degree with concentration in a major subject: English, Fine Art, French, German, Latin, Philosophy, Russian, Spanish.

Four year Honors Programs leading to a BA degree: Classics, English and Drama, English and French, English and German, English and History, English Language and Literature, English and Latin, English and Philosophy, English and Russian, English and Spanish, Fine Art, French and German, French Language and Literature, French and Latin, French and Russian, French and Spanish, German Language and Literature, German and History, German and Russian, German and Spanish, Latin, Latin and Greek, Latin and Spanish, Philosophy, Philosophy and German, Philosophy and History, Philosophy and Mathematics, Philosophy and Psychology, Honors Philosophy with minor, Russian Studies, Russian and History, Russian and Spanish, Spanish Language and Literature.

Availability of Options: The student's choice of options within any academic program is subject to the constraints both of the lecture and the final examination timetables.

CLASSICAL STUDIES

Chairman

Douglas E. Gerber, BA, MA, PhD *Toronto*

Honors Programs

CLASSICS

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Greek 20 and Latin 20 as principal courses. English and another modern language as recommended options.

SECOND YEAR

Principal Courses

Greek 230, 251
Latin 230, 251, 257

Subsidiary Course

One option

THIRD YEAR

Principal Courses

Greek 340, 351, 352
Latin 340, 351, 352
Greek 357 or Latin 457 (whichever is currently offered)

FOURTH YEAR

Principal Courses

Greek 450, 451, 452, 495*
Latin 450, 451, 452, 495*
Latin 457 or Greek 357 (the one not taken in the Third Year)

LATIN AND GREEK

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Latin 20 and Greek 2 or 10 as principal courses, English and another modern language as recommended options. The requirements for Greek 20 must be completed by the beginning of the second year. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

Greek 20
Latin 230, 251, 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Greek 230, 251
Latin 340, 351, 352
Greek 357 or Latin 457 (whichever is currently offered)

Subsidiary Course

One option

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*Comprehensive Examination in the Spring.

FOURTH YEAR

Principal Courses

Greek 340, 351, 352, 495*
Latin 450, 451, 452, 495*
Latin 457 or Greek 357 (the one not taken in Third Year)

LATIN

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Latin 20 (and Greek 2, if taken) as principal course(s), English and another modern language as recommended options. If Greek 2 is not taken until the Second Year, the requirements for Greek 20 must be completed by the beginning of the Third Year. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

Greek 2 or 10
Latin 230, 251, 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Greek 20
Latin 340, 351, 352
Greek 357 or Latin 457 (whichever is currently offered)

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Greek 230, 251
Latin 450, 451, 452, 495*
Latin 457 or Greek 357 (the one not taken in Third Year)

Subsidiary Course

One option

*Comprehensive Examination in the Spring

ENGLISH AND LATIN

Requirements for Admission. First Year General Program with English 20 and Latin 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the first year, the program consists of a total of a least eighteen courses: a minimum of six honors English courses, nine honors Latin courses, and three options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

The Latin courses must be taken as follows:

Second Year: Latin 230, 251, 257;
Third Year: Latin 340, 351, 352;
Fourth Year: Latin 450, 451, 452, 495*

Six courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors or general Classics courses may be as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

FRENCH AND LATIN

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with French 20 and Latin 20, as principal courses. For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental adviser.

*Comprehensive Examination

SECOND YEAR

Principal Courses

French 270, 271
Latin 230, 251, 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

French 350, 380, 381
Latin 340, 351, 352

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

French 490, 491, 495* 499
Latin 450, 451, 452, 495*

LATIN AND SPANISH

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Latin 20 and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in the First Year are urged to take Spanish 20 or 21 in Summer School. If this is impossible they should consult with the Chairman of the Department concerning an alternative arrangement.

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in their first year courses in Latin and Spanish SHOULD APPLY to the Departments for consideration.

After the first year, the program consists of a total of at least nineteen courses: a minimum of nine honors Latin courses, eight honors Spanish courses, and two options.

The Latin courses must be taken as follows:

Second Year: Latin 230, 251, 257
Third Year: Latin 340, 351, 352
Fourth Year: Latin 450, 451, 452, 495*

*Comprehensive Examination in the Spring

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required seminars.

General Courses

CLASSICS

(ability to read Greek and Latin not required)

27. Classical Literature in Translation. A study of the development of literary genres in the Greek and Roman world, including prescribed reading of specimens of each type in translation, plus lectures and discussions on general background.
3 hours – 8

33. Classics and the Contemporary Scene. A study of those elements of 20th century thought in the fields of natural science, social science, and arts which owe their ultimate existence to the ancient Greek and Roman civilizations.
2 hours – 33

37. Classical Mythology. A study of Greek and Roman mythology, with some reference to its influence in modern European literature.
2 hours – 18

47. Classical Civilization. Greece and Rome, with emphasis on cultural and social life rather than political history.
2 hours – 21

GREEK

2. Elementary Greek. An accelerated preparatory course for those who wish to begin the study of Greek at the University, and to have the possibility of proceeding directly to Greek 20.
4 hours – 28

10. Intermediate Greek. Selections from Freeman and Lowe, Greek Reader; Plato, "Crito"; composition, sight translation.
Prerequisite: Grade 12 Greek or Greek 2
3 hours – 28

20. Advanced Greek. Plato, "Apology"; a play of Euripides; composition, sight translation.
Prerequisite: Grade 13 Greek, or Greek 10, or Greek 2 with permission of the department.
3 hours – 5

30. The Attic Orators. Selections from Lysias and Demosthenes; composition, sight translation.
(Offered by arrangement with the Department)
Prerequisite: Greek 20
3 hours – 12

40. Greek Tragedy. One play each of Aeschylus, Sophocles, Euripides; composition, sight translation. (Offered by arrangement with the Department)
Prerequisite: Greek 30
3 hours – 12

LATIN

2. Elementary Latin. An accelerated preparatory course for those who wish to begin the study of Latin at the university, and to have the possibility of proceeding directly to Latin 20.
4 hours – 26

10. Intermediate Latin. Selections from prose and poetry; composition and sight translation (Normally offered only at Brescia College, in Summer School, or by Correspondence)
Prerequisite: Grade 12 Latin or Latin 2
3 hours – 26

20. Advanced Latin. Vergil, "Aeneid" IV; Pliny, Selected Letters; composition and sight translation.
Prerequisite: Grade 13 Latin or Latin 10, or Latin 2 with permission of the department.
3 hours – 26

30. Selections from Catullus and Horace.
Prerequisite: Latin 20
2 hours – 25

34. Cicero, "Pro Caelio"; composition, sight translation.
Prerequisite: Latin 20
2 hours – 4

40. Selections from: Vergil, "Aeneid" I-VI; Horace, "Satires"; and Juvenal, "Satires".
Prerequisite: Latin 30
2 hours – 14

44. Selections from: Livy, "History of Rome"; composition, sight translation.
Prerequisite: Latin 34
2 hours – 34

Honors Courses

GREEK

230. The Greek Epic. Selections from Homer and Hesiod.
Prerequisite: Greek 20
2 hours – 12

251. The Attic Orators. Selections from Lysias and Demosthenes; composition, sight translation.
Prerequisite: Greek 20
3 hours – 21

257. Ancient Civilizations. The Near East, Greece and Rome. Identical with Latin 257.
3 hours – 24

340. Greek Tragedy. One play each of Aeschylus, Sophocles, Euripides; lectures on the theatre and the drama.
Prerequisite: Greek 230 or 251
2 hours – 12

351. (i) Introduction to the Greek Historians: Herodotus.
(ii) Greek Comedy: A play of Aristophanes.
(iii) Composition and sight translation.
Prerequisite: Greek 251
3 hours – 18

352. Introduction to Greek Philosophy. Plato, "Republic".
Prerequisite: Greek 230 or 251
2 hours – 34

357. Study of a selected period in Greek History. Prescribed for students in Honors Classics, Latin and Greek, or Latin; optional with the consent of the instructor for other qualified students. Will be offered in 1971-72 and alternate years thereafter.
2 hours first term, half course

450. Greek Lyric Poetry. Selections from the early elegiac, iambic, and lyric poets (Not offered 1970-71).
Prerequisites: Greek 340, 351 or 352
2 hours – 24

451. (i) The Greek Historians. Thucydides
(ii) Composition and sight translation. (Not offered 1970-71)
Prerequisite: Greek 351
2 hours – 25

452. Greek Philosophy. The Pre-Socratics and Aristotle. (Not offered 1970-71)
Prerequisite: Greek 352
2 hours – 35

495. Comprehensive Examination. A three-hour paper in sight translation of Greek authors, to be written in the final year by students in Honors Classics or Latin and Greek. This is the equivalent of a full course.

LATIN

230. Selections from Catullus and Horace.
Prerequisite: Latin 20
2 hours – 25

251. Roman Oratory. Cicero, "Pro Caelio"; composition and sight translation.
Prerequisite: Latin 20
3 hours – 34

257. Ancient Civilizations. The Near East, Greece, and Rome. Identical with Greek 257.
3 hours – 24

340. Roman Epic. Vergil ("Eclogues"; selected books of the "Georgics" and "Aeneid"); Lucan (one book of the 'Bellum Civile").
Prerequisite: Latin 230 or 251
2 hours – 13

351. Roman philosophical prose. Cicero, "De Amicitia"; selections from Seneca, "Epistulae Morales"; composition, sight translation.
Prerequisite: Latin 251
2 hours – 25

352. Roman Drama. One play each of Plautus, Terence, Seneca
Prerequisite: Latin 230 or 251
2 hours – 3

450. Roman Historians. With special reference to Livy and Tacitus.
Prerequisite: Latin 340, 351, or 352
2 hours – 19

451. (i) Propertius, Tibullus, Ovid (ii) Composition and sight translation.
Prerequisite: Latin 351
2 hours – 29

452. Lucretius, "De Rerum Nature" (Books I and V); Roman Satire (Selected works of Horace, Persius, Juvenal, and Seneca).
Prerequisites: Latin 340, 351 or 352
2 hours – 5

457. Study of a selected period in Roman History. Prescribed for students in Honors Classics, Latin and Greek, or Latin; optional with the consent of the instructor for other qualified students. Will be offered in 1970-71 and alternate years.
2 hours first term, half course

495. Comprehensive Examination. A three-hour paper in sight translation of Latin authors, to be written in the final year by students taking programs including Honors Latin. This is the equivalent of a full course.

ENGLISH

Chairman

Paul Duncan Fleck, BA, MA, PhD *Belfast* (on leave, 1970-71)

Acting Chairman, 1970-71

Donald S. Hair, BA, MA, PhD *Toronto*

Acting Associate Chairman, 1970-71

Donald F. Chapin, BA, MA, PhD *Toronto*

ENGLISH AND DRAMA

Requirements for Admission. First year General Program with English 20, and French 20 or a foreign language 20, and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Department for consideration.

Five courses constitute a normal load in each of Second, Third, and Fourth Years. Students who wish to take extra courses may do so, after consultation with the Department. In each of Second, Third, and Fourth Years, a student must take at least two honors English courses.

After First Year, the program consists of a minimum of twelve honors English courses and three options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of: 263 or 373; 280 or 380; 480 or 481
at least one of: 270, 360, 459
at least one of: 338, 438, 458
Dramatics 346
at least two of: 256, 291, 296
at least two of: 396, 406, 436
any three honors English courses not previously chosen
Additional honors or general English courses may be chosen as options.

English 229 (a six-week course in Bibliography) is required in Second Year in addition to the normal five-course load.

English 495 (Comprehensive Examination) is required in Fourth Year in addition to the normal five-course load. Students must obtain a grade of at least 60% in this Examination before they may be admitted to an honors degree in English. A student who fails the Examination may repeat it once only.

The Examination is held on the first Saturday in April and the fourth Saturday in October. Students in the Fourth Year of the Honors English and Drama program must write the Examination in April, and may write it in October only if they fail the April Examination. The reading list and any other material on which the Examination is based may be obtained from the Department of English.

ENGLISH AND FRENCH

Requirements for Admission. First Year General Program with English 20 and French 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least sixteen courses: a minimum of six honors English courses, eight honors French courses, and two options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

The French courses must be taken as follows:

Second Year: French 271, 290;
Third Year: French 380, 381, one of 338, 350;
Fourth Year: 490, 491, 499, 495*

Five or Six courses constitute a normal load in each of Second, Third, and Fourth years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors French courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 229 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

ENGLISH AND GERMAN

Requirements for Admission. First Year General Program with English 20 and German 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

*Comprehensive Examination

After the First Year, the program consists of a total of at least seventeen courses: a minimum of six honors English courses, eight honors German courses, and three options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

The German courses must be taken as follows:

Second Year: German 290, 291;
Third Year: German 391, two of 333, 390, 420, 430, 444, 480, 482;
Fourth Year: German 481, 495*; two of 333, 390, 420, 430, 444, 480, 482.

Five or six courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional Honors German courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 229 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

ENGLISH AND HISTORY

Requirements for Admission. First Year General Program with English 20 and History 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least sixteen courses a minimum of six honors English courses, six or seven honors History, courses, and three or four options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

*Comprehensive Examination

Second Year: The Department of History recommends the following courses. Students are free to choose others from the 200 or 300 series.
History 236; 231 or 234.
Third Year: Recommended: History 335; one other course in the Honors History 300 series or, with the permission of the instructor, from the Honors History 300 or 400 series.
Fourth Year: two or three courses chosen from the honors History 300 or 400 series.

Five or Six Courses constituted a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses and two honors History courses. Additional honors or general English courses and additional honors History courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

ENGLISH LANGUAGE AND LITERATURE

Requirements for Admission. First Year General Program with English 20, and French 20 or a foreign language 20, and one other course as the principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Department for consideration.

Five courses constitute a normal load in each of Second, Third, and Fourth Years. Students who wish to take extra courses may do so, after consultation with the Department. In each of Second, Third, and Fourth Years, a student must take at least two honors English courses.

After First Year, the program consists of a minimum of nine honors English courses and six options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least one of: 263, 373
at least one of: 280. 380
at least one of: 480, 481
at least one of: 270, 360
at least two of: 338, 438, 458, 459
at least one of: 256, 291, 296, 396, 436
any two honors English courses not already chosen.
Additional honors or general English courses may be chosen as options.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal five-course load.

English 495 (Comprehensive Examination) is required in Fourth Year in addition to the normal five-course load. Students must obtain a grade of at least 60% in this Examination before they may be admitted to an honors degree in English. A student who fails the examination may repeat it once only.

The Examination is held on the first Saturday in April and the fourth Saturday in October. Students in the Fourth Year of the Honors English Language and Literature program must write the Examination in April, and may write it in October only if they fail the April Examination. The reading list and any other material on which the examination is based may be obtained from the Department of English.

ENGLISH AND LATIN

Requirements for Admission. First Year General Program with English 20 and Latin 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the first year, the program consists of a total of at least eighteen courses: a minimum of six honors English courses, nine honors Latin courses, and three options. The honors English courses may be taken in any sequence, but mst be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

The Latin courses must be taken as follows:

Second Year: Latin 230, 251, 257;
Third Year: Latin 340, 351, 352;
Fourth Year: Latin 450, 451, 452, 495*

Six courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors Classics courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in Addition to the normal course load.

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*Comprehensive Examination

ENGLISH AND PHILOSOPHY

Requirements for Admission. First Year General Program with English 20 and French 20 or German 20 or Latin 20 or one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least sixteen courses: a minimum of six honors English courses, six or seven honors Philosophy courses, and four or five options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396,436;
any honors English course not previously chosen.

The Philosophy courses must be taken as follows:

Second Year; Philosophy 254, 256 or 257;
Third Year: Philosophy 256 or 257; one 300 level course
Fourth Year: Two of: Philosophy 351 or any 400 level Philosophy coruses.

Five or six courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

A student who wishes to qualify for a Type A certificate in English must choose additional Honors or General English courses as options after consultation with the Registrar of Althouse College of Education.

ENGLISH AND RUSSIAN

Requirements for Admission. First Year General Program with English 20 and Russian 2, 10, or 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each o his first-year courses. Studentswho fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least seventeen courses: a minimum of six honors English courses, eight honors Russian courses, and three options. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

The Russian courses must be taken as follows:

Second Year: Russian 280, 281;
Third Year: Russian 390, 391, 393;
Fourth Year: Russian 420, 490, 491;

Students who begin Russian at the University will take Russian 20 in the Second Year as an additional principal course.

Five or six courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors Russian courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

ENGLISH AND SPANISH

Requirements for Admission. First Year General Program with English and Spanish 20 and one other course as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to equalify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least fifteen courses: a minimum of six honors English courses, eight honors Spanish courses, and one option. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen.

Students must select at least eight of the following honors Spanish courses: Spanish 231, 240, 248, 260, 34, 348, 365, 460, 461, 465. Spanish 231 and 341 are obligatory.

Five courses constitute a normal load in each of Second, Third, and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors Spanish courses may be chosen as options. Options are to be chosen in consultation with the Department concerned.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal *course load.*

Courses

Detailed description of the following courses may be obtained from the Department of English, University College, Room 173.

All courses in English scheduled for two hours may meet for additional hours at the discretion of the instructor.

20. General Literature and Composition. An introduction to the romance, ironic (or satiric), tragic and comic modes of literature.
3 hours – 11

24. Forms of Fiction. An introduction to the study of a) a selection of fiction ranging from the Greek epic to the modern novel, including both short and longer forms; b) a variety of fictional modes and *narrative techniques.*
3 hours – 16

26. Forms of Drama. An introduction to the study of (a) the main principles of dramatic art; (b) selected aspects of dramatic and theatrical history; (c) the major dramatic genres.
3 hours – 16

[English 20 is the prerequisite for all Honors courses, and must be taken by all English majors and all English Honors students.]

General Courses

These courses are for upperclassmen who wish to take English courses as options, but do not have English 20; for students in the General Program in English who want a wider variety of senior courses (such students will also have taken English 20, and can therefore also choose to take Honors courses, or a combination of General and Honors courses); and for students in the Honors English programs who want a greater selection of subsidiary courses.

35. The Literature of the Bible. A *study of extensive* readings in the prose and poetry of the Bible, including the Apocrypha, with supplementary readings in later literature. Attention will be given to genres, styles, structural patterns, and the use of Biblical material in later literature.
3 hours – 20

37. The English Language. A study of the history of the language, dealing with changes in sounds, spelling, and grammar, leading to a detailed study of modern English.
3 hours – 16

38. Canadian Literature and Culture.
3 hours – 17

Speech 39. The Major Forms of Oral Discourse.
2 hours – 30

43. Introduction to Linguistics.
3 hours – 35

45. Comparative Literature. A *course of reading in* English or in English translations of some of the great books of Western civilization from Homer to Joyce with particular emphasis on the growth of epic, drama and fiction.
3 hours – 10

47. Contemporary Literature.
3 hours – 13

Film 30. Film Theory and History. An examination of the phenomenon of film in general, with reference to its power to shape mass attitudes, its special demands on ways of perceiving, its influence on the conventions of narrative and drams, and its meanings to theories of cognition. In addition to the lectures there will be one viewing of a film classic a week.
3 hours – 28

Honors Courses

The following courses are available to any student regardless of program who has at least a C standing in English 20, or the permission of the Department.

256. Shakespeare.
3 hours – 11

263. Old English Language and Literature. With special emphasis on Beowulf.
3 hours – 2

270. Literature of the Romantic Revival (1798-1832).
3 hours – 8

280. Literature of the Sixteenth Century excluding drama.
3 hours – 24

291. Greek and Roman Theatre and Drama.
3 hours – 28

296. Medieval to Jacobean Drama (1300-1642) excluding Shakespeare.
3 hours – 33

299. Bibliography and Methods. An introduction to scholarly practice in research and in the preparation of manuscripts; the use of reference and bibliography collections; the principles of textual criticism.
(1 hour a week for 6 weeks)

338. Literature of the United States to 1885.
3 hours – 17

346. Dramatics. Studies in the principles and theories of directing, acting and design.
2 hours lectures, 2 hours laboratory – 13

354. Criticism. A survey of the major critics, and problems in terminology and practical criticism. (Not offered in 1970-71)
3 hours – 22

360. Literature of the Victorian Period (1832-1900).
3 hours – 7

373. Chaucer and His Age.
3 hours – 36

380. Literature of the Seventeenth Century excluding drama.
3 hours – 12

396. The Drama: Restoration to Romantic
3 hours – 26

400. Thesis. Individual instruction in the selection of a topic, the preparation of materials, and the writing of a thesis. Students who wish to take this course must apply to Professor G. D. Parker, Chairman, Committee on Undergraduate Studies, Department of English. This course is for third or fourth year students only.

401. Problems Course. This course is for third or fourth year students only. (Not offered in 1970-71)
3 hours – 4

406. Problems Course: Drama. This course is for third or fourth year students only. (Not offered in 1970-71)
3 hours – 1

436. Modern Drama
3 hours – 23

438. Literature of the United States from 1885.
3 hours – 27

444. The Novel.
3 hours – 33

458. Canadian Literature.
3 hours – 10

459. Modern Literature (1890-1945).
3 hours – 9

480. Literature of the Restoration and Early Eighteenth Century (1660-1727).
3 hours – 31

481. Literature of the Eighteenth Century (1727-1790).
3 hours – 20

FINE ART

Chairman: William Scott Abell Dale, BA, MA *Toronto;* PhD *Harvard,* FRSA

Honors Program

Requirements for Admission. First Year General Program (Arts or Social Sciences) with Fine Art 20 and two other courses as principal courses.

SECOND YEAR

Principal Courses

Four courses from the Fine Art 200 series with at least one from art history and one from studio practice.*

Subsidiary Courses

One (or two) options selected in consultation with the Fine Art Department.

THIRD YEAR

Principal Courses

Four courses from the Fine Art 300 series, with at least one from art history and one from studio practice.*

Subsidiary Courses

One (or two) options selected in consultation with the Fine Art Department.

FOURTH YEAR

Principal Courses

Four full courses from the Fine Art 400 series, with at least one from studio practice and the equivalent of one course from art history.*

*To meet the requirements of the Department of Education for the High School Assistant's Certificate, Type A, in Art, students are expected to take a roughly equal number of Principal Courses in art history and studio practice and at least one Subsidiary Course should be in Fine Art.

Subsidiary Courses

One (or two) options selected in consultation with the Fine Art Department.

General Courses

20. Introduction to the Study of Art. An introduction to the formal and historical analysis of the visual arts, with particular reference to contemporary forms; studio exercises in the basic elements of design and the visual analysis of works of art.
2 lecture hours, 3 studio hours – 21

Note: Registration will be limited to 50 students, and priority will be given to students who intend to enter The Honors Program in Fine Art or to major in Fine Art. Fine Art 20 is the normal prerequisite for all studio courses.

21. Art History Survey. A chronological survey of Western Art, including architecture, painting and sculpture. For students who do not intend to enroll in the Honors Program or to major in Fine Art in the General Program.
3 hours – 21

N.B. General Students. Students in the General Program may enroll in senior Honors courses with the permission of the Department, provided that they have already taken Fine Art 20 or Fine Art 21.

Honors Students. Students in other Honors programs may take Senior courses in art history with the permission of the Department.

Honors Courses

220. Contemporary Expression I. The exploration of basic modes of visual expression in two and three dimensions, and the acquisition of skills in various media.
4 studio hours – 5

221. Basic Drawing. Drawing from the live model as an exercise in the perception and control of contour, volume and mass.
4 studio hours – 17

230. Ancient Art. Architecture, sculpture, painting and minor arts of the ancient Near East, Egypt, Greece and Rome.
3 hours – 14

231. Mediaeval Art. European architecture, sculpture and paintings from the 4th century to the 15th. (Not offered 1970-71)

232. Renaissance to Rococo Art. European painting, architecture, and sculpture from the Age of Humanism to the French Revolution.
3 hours – 4

236. 19th and 20th Century Art. Architecture, painting, sculpture and graphic arts in Europe and North America from Neoclassicism to the present.
3 hours – 25

237. Art in North America. Painting, architecture and sculpture in the United States and Canada from the 17th century to the present. (Not offered 1970-71)
3 hours – 1

320. *Contemporary Expression II.* A continuation of Fine Art 220, with greater emphasis on originality and quality.
4 studio hours – 2

321. Advanced Drawing. A continuation and refinement of Fine Art 221.
4 studio hours – 33

323. Basic Print-making. Traditional techniques of intaglio print-making from linoleum, woodblocks, etc.
4 studio hours – 7

330. Greek Art and Archaeology. Architecture, sculpture, painting and the minor arts of Greece from the Archaic to the Hellenistic period.
3 hours – 10

332. Italian Renaissance Art. Architecture, painting and sculpture in Italy from the late 14th to the early 16th centuries. (Not offered in 1970-71).
3 hours – 28

333. Baroque Art. Painting, architecture, and sculpture in southern and northern Europe in the 17th century.
3 hours – 22

336. Twentieth Century Painting. Painting in Europe and North America since Impressionism. (Not offered in 1970-71)
3 hours – 16

337. The Group of Seven. The rise of the national school of painting in Canada. (Not offered 1970-71)
3 hours – 19

410. Museology. Seminar on the history and function of Art Museums with practical exercises in curatorial duties.
3 hours – 2

420. Studio Thesis. Individual studio project under staff supervision.
6 studio hours – 5

423. Advanced Print-making. A studio course in contemporary techniques.
4 studio hours – 9

431a. and b. Seminars in Mediaeval Art. Seminars on selected topics. Half courses, spring and fall terms. (Not offered 1970-71)
3 hours – 13

432a. Masters of the Renaissance. Seminar on a single artist of the 15 and 16th century, to be announced in advance. Fall term, half course.
3 hours – 17

433a. Masters Of the Baroque. Seminar on a single artist of the 17th century, to be announced in advance. (Not offered 1970-71) Fall term, half course
3 hours – 17

436b. Masters of the 20th century. Seminar on a single artist, to be announced in advance. Spring term, half course.
3 hours – 26

452a. and b. Master Drawings and Prints. Seminar on selected topics. Half courses, spring and fall terms. (Not offered 1970-71)
3 hours – 33

FRENCH

Chairman

Carl Paul Barbier, BA, MA*Leeds*

FRENCH AND ENGLISH **(see page 8).**

FRENCH AND GERMAN

Requirements for Admission. First Year General Program (Arts, Social Science, or Science) with German 20 as principal course. See the statement regarding admission to honors programs in German on page 20. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

French 271, 290
German 290, 291

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

French 380, 381 and One of: French 338, 350 (Students intending to undertake graduate studies in French should elect French 350)

German 391 and Two of: German 333, 390, 420, 430, 444, 480, 482

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

French 490, 491, 495* 499
German 481, 495*
Two of: German 333, 390, 420, 430, 444, 480, 482

FRENCH LANGUAGE AND LITERATURE

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with French 20 as a principal course. For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental adviser. Students in this program may specialize in either of the two divisions below:

A. (Predominantly Literature)

SECOND YEAR

Principal Courses

French 232, 271, 290

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

French 338, 350, 380, 381

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

French 490, 491, 495* 499

Subsidiary Courses

Two options

*Comprehensive Examination in the Spring.

B. (Predominantly language)

SECOND YEAR

Principal Courses

French 232, 271, 290
English 43

Subsidiary Courses

One option

THIRD YEAR

Principal Courses

French 380, 381, 396
One of 338, 350

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

French 490, 491, 495* 497, 499

Subsidiary Courses

One option

FRENCH AND LATIN

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with French 20 and Latin 20, as principal courses. For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental adviser.

SECOND YEAR

Principal Courses

French 271, 290
Latin 230, 251, 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

French 350, 380, 381
Latin 340, 351, 352

Subsidiary Courses

One option

*Comprehensive Examination in the Spring

FOURTH YEAR

Principal Courses

French 490, 491, 495* 499
Latin 450, 451, 452, 495*

FRENCH AND RUSSIAN

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with French 20 20 and Russian 20 (or 2, or 10) as principal courses.

Students who begin Russian in the University will take Russian 2 in the First Yean and Russian 20 in the Second Year.

For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental adviser.

SECOND YEAR

Principal Courses

French 271, 290
Russian 280, 281

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

French 380, 381 and One of: French 338, 350 (Students intending to undertake graduate studies in French should elect French 350)
Russian 390, 391, 393

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

French 490, 491, 495*, 499
Russian 420, 490, 491, 495*

FRENCH AND SPANISH HONORS PROGRAM

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with French 20 and Spanish 20 and 21 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in First Year are urged to take Spanish 20 or 21 in Summer School in order to be qualified for Second Year Spanish courses. If this is impossible, students should consult with the Chairman of the Spanish Department regarding an alternative.

*Comprehensive Examination in the Spring.

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in French 20 and in their first year Spanish course SHOULD APPLY to the Departments for consideration.

After First Year, the program consists of a total of at least eighteen courses: a minimum of eight honors French courses, eight honors Spanish courses, and two options, one to be taken in the second and one in the third year. Options are to be chosen in consultation with a Departmental advisor.

The French courses must be taken as follows:

Second Year: French 271, 290
Third Year: French 380, 381 one of 338, 350
(Students intending to undertake graduate studies in French should elect French 350)
Fourth Year: French 490, 491, 499, 495*

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required seminars.

Courses

The requirements for a major in French in the general program consist of 4 senior courses in French, one of which must be a language course and one a literature course. These courses must be chosen in consultation with a Departmental advisor. A student will normally proceed to a French major with French 20 as the prerequisite, in the absence of which he may register in a French major only with the approval of the Department.

10. Intermediate French. Grammar review, composition, translation, oral practice. (One hour per week in the Language Laboratory may be required)
Prerequisite: Grade 12 French
3 or 4 hours – 23

20. French Language and Literature. This is the basic Freshman course in French, providing training in language and literary studies and an introduction to French institutions. In the initial stages, English will be used; thereafter the course will be given in French. Lectures, tutorials and language laboratory.
Prerequisite: French 10 or Grade 13 French
4 hours per week – 23

(Note: This is the only Freshman French course to be offered in 1970-71)

*Comprehensive Examination

21. A Practical Language Course, conducted in French, designed to give training in oral and written French, to develop reading comprehension, and to increase the ability to communicate easily and fluently. On completing this course, the sutdent will not normally qualify to become a French major nor be admitted to a French Honors Program. However, he will be eligible to take further courses in French language (French 31, followed by French 41) and in French Civilization (French 32 followed by French 42).
Prerequisite: French 10 or Grade 13 French
4 hours per week – 23

(Note: Not offered in 1970-71)

24. French Literature. A detailed study of texts selected from the major literary genres, to provide the student with a knowledge of the more important authors and movements of the literature of France. The texts are read in French and the classes are conducted in English. Upon completion of this course the student will not normally be entitled to become a French major nor to enter a French Honors Program. However, he will be eligible to take further French literature courses (french 30, French 34, French 36 and French 38.)
Prerequisite: French 10 or Grade 13 French
3 hours per week – 23

(Note: Not offered in 1970-71)

30. The French Novel. A study of typical examples of the novel taken from French literature of the seventeenth through the twentieth centuries.
Prerequisite: French 20 or 24
3 hours – 21

31. Grammar, Composition, Phonetics, Oral Practice. (One hour per week in the language laboratory may be required.) Note: See French 271
Prerequisite: French 20 or 21
3 or 4 hours – 23

32. French Civilization and Conversation. A formal presentation of the development of French political, economic, social and cultural institutions, with discussions in French based on the material presented.
Prerequisite: French 20 or 21
4 hours per week – 27

34. French Drama. A study of typical examples of French dramatic literature of the seventeenth through the twentieth centuries.
Prerequisite: French 20 or 24
3 hours – 31

36. French Poetry. A study of representative French poems from the Mediaeval period to the present.
Prerequisite: French 20 or 24
3 hours per week – 36

38. French-Canadian Literature. A study of typical examples of French-Canadian Literature from its beginnings to the present day.
Prerequisite: French 20 or 24
3 hours per week – 9

41. Advanced Grammar and Composition. (one hour per week in the language laboratory may be required.)
Prerequisite: French 31 or by permission of Department Head.
3 or 4 hours – 23

42. French-Canadian Civilization and French Conversation. A series of readings drawn from material concerned with French-Canadian civilization, and discussion based on them
Prerequisite: French 32, Not offered in 1970-71
3 hours per week

43. Commercial French. Translation of commercial correspondence, reading. (For students in Secretarial Science).
Prerequisite: French 31
3 hours per week – 22

45. Scientific French. Reading of scientific French from textbooks and journals, supplemented by individual reading in the special field of study of each student.
Prerequisite: French 10 or Grade 13 French.
1 hour; half course – 27

Honors Courses

All students in Honors Courses will take a comprehensive examination (French 495) at the end of their final year.

232. French Civilization. A study of modern France, her historical background and political, economic, social and cultural development.
Prerequisite: French 20
2 hours – 32

270. The French Classical Period. A study of representative literature of the seventeenth century; reading, lectures, discussion and reports.
Prerequisite: French 20
3 hours – 21

271. Phonetics, Grammar, Composition and Oral Practice. (One hour per week in the language laboratory may be required.) This course is recommended for French Majors.
Prerequisite: French 20
3 or 4 hours – 17

290. Introduction to French Literature. A study in depth of texts from the 19th and 20th centuries, designed to provide intensive training in the skills of literary analysis. This course is recommended for French Majors.
Prerequisite: French 20
3 hours – 14

338. French-Canadian Literature. Survey of the literature of French Canada covering characteristic material from 1845 to the present; intensive study of selected modern novels and poems; representative writings from the "ancien régime" may be included.
Prerequisite: French 270
2 hours – 9

350. French Literature of the Mediaeval and Renaissance Periods. Reading lectures, discussion, reports.
Prerequisite: French 270
3 hours – 27

380. French Literature of the Eighteenth Century. Lectures, reading, discussion, reports.
Prerequisite: French 270
2 hours – 24

381. Grammar, Composition and Oral Practice. (one hour per week in the language laboratory may be required.)
Prerequisite: French 271
3 or 4 hours – 15

396. Structure of the French Language. Phonology, morphology, syntax.
Prerequisite: English 327 and French 271, (Not offered in 1970-71)
3 hours

490. The Literature of the Nineteenth Century. Discussion, lectures, readings and reports.
Prerequisite: French 380.
3 hours – 24

491. Advanced Composition and Oral Practice. (one hour per week in the language laboratory may be required.)
Prerequisite: French 381
3 or 4 hours – 12

495. Comprehensive Examination. A written examination, which will test the students' general knowledge of French literature, plus a brief oral examination to test the students' fluency in French.

497. History of the French Language. Evolution of the French language from earliest days to present.
Prerequisite: French 396, (Not given in 1970-71)
3 hours

499. Contemporary French Literature. Study of some typical examples of the novel, drama, and poetry of the twentieth century; reading, discussion, reports.
Prerequisite: French 380
3 hours – 1

GERMAN

Chairman

R.M. Immerwahr, AB *Swarthmore College;* MA *Northwestern;* PhD *California (Berkeley)*

Admission to Honors Programs in German (Single or Combined). Students may enter such honors programs only if they have completed:

German 20 (or German 22 and have received the approval of the Department)
German and English (see page 8)
German and French (see page 14)

GERMAN LANGUAGE AND LITERATURE

Requirements for Admission. First Year General Program (Arts, Social Science, or Science) with German 20 as principal course. See the statement regarding admission to honors programs in German on page 20. For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental advisor.

SECOND YEAR

Principal Courses

German 290, 291
One of English 237, 256, 270

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

German 391
Two or three of: German 333, 390, 420, 430, 444, 480, 482

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

German 481, 495*
Two or three of: **German 333, 390, 420, 430, 444, 480, 482

Subsidiary Courses

Two options

*Comprehensive Examination in the Spring

**Students are required to take, in third and fourth year, a total of Five of German 333, 390, 420, 430, 444, 480, 482.

GERMAN AND RUSSIAN

Requirements for Admission. First Year General Program (Arts or Social Science) with German 20 (or 2 or 10) and Russian 20 (or 2 or 10) as principal courses.

Students who begin either German or Russian at the University will take the intensive course (numbered 2) in the First Year and the Advanced course (numbered 20) in the Second Year. For grades required for admission and progression see General Information section.

Options are to be chosen in consultation with a Departmental adviser.

SECOND YEAR

Principal Courses

German 290, 291
Russian 280, 281

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

German 391
Two of: German 333, 390, 420, 430, 444,480, 482
Russian 390, 391, 393

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

German 481, 495*
Two of: German 333, 390, 420, 430, 444, 480, 482
Russian 420, 490, 491, 495*

GERMAN AND SPANISH

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with German 20 (or 2 or 10) and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take German 2 in the First Year will take German 20 in the Second Year and will elect German 291 as as one of their options. Those who take Spanish 2 or 10 in the First Year should take Spanish 20 or 21 in Summer School. If this is impossible they should consult with the Chairman of the Department concerning an alternative.

*Comprehensive Examination in the Spring

A student will be automatically accepted if he has an average of at least 70% with no grade of less than60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in their first-year courses in German and Spanish SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least nineteen courses: a minimum of eight honors German courses, eight honors Spanish courses, and three options.

The German courses must be taken as follows:

Second Year: German 290, 291
Third Year: German 391; two of 333, 390, 420, 430, 444, 480, 482.
Fourth Year: German 481, 495*; two of 333, 390, 420, 430, 444, 480, 482

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required seminars.

GERMAN AND HISTORY

Requirements for Admission. First Year General Program (Arts or Social Science) with History 20 and German 20 as principal courses. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

History 231, 236
German 290, 291

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Two of: History 330, 335, 346, 356
German 391
Two of: German 333, 390, 420, 430, 444, 480, 482

Subsidiary Courses

Two options

*Comprehensive Examination

FOURTH YEAR

Principal Courses

Two of: History 330, 356, 436, 456, 460
German 481, 495*
Two of: German 333, 390, 420, 430, 444, 480, 482

GERMAN AND PHILOSOPHY

Requirements for Admission. First Year General Program (Arts or Social Science), English 20 and German 20 as principal courses and History 20. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

German 290, 291
Philosophy 254, 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

German 391
Two of: German 333, 390, 420, 430, 444, 480,482
Philosophy 256, 357

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

German 481, 495*
Two of: German 333, 390, 420, 430, 444, 480, 482
Two of: Philosophy 456, 458, 466, 467, 477
One of: Philosophy 450, 454, 464, 474

Courses

1. Introductory German. Study of the sounds and structure of the language. Intensive oral and written practice. Readings in prose and poetry.
3 hours – 36

*Comprehensive Examination in the Spring

2. Intensive German for Beginners. A more intensive course than German I. Designed for students who begin German at the University and who contemplate making German their subject of concentration or desire to enter the German honors courses.
3 lecture hours, 2 laboratory hours – 36

5. Elementary Scientific German. The elements of German grammar and readings in scientific German.
3 hours – 23

10. Intermediate German. Further study of the structure and idiom of the language. Reading in modern prose and poetry. Oral and written practice.
Prerequisite: German 1 or permission of the Department.
3 hours – 36

20. German Language and Literature. Survey of German literature, composition, grammar, conversation.
Prerequisite: Grade 13 German or German I (with A standing) or 2 or 10 or permission of the Department.
3 hours – 36

22. German Conversation and Contemporary Readings. A course designed to increase proficiency in the use and comprehension of spoken and written German. Systematic oral practice and discussion of contemporary texts. Conducted in German. This course is a first year alternative to German 20.
Prerequisite: as for German 20
3 hours (plus optional lab hours)

30. The German Novelle from Goethe to the Present.
Prerequisite: German 20 or permission of the Department.
3 hours – 5

35. Intermediate Scientific German. The reading of scientific works in German and a review of basic grammar as an aid to reading.
Prerequisite: German 1 or German 5 or permission of the Department.
2 hours – 23

40. German Drama from the Classical Period to the Present.
Prerequisite: German 20 or permission of the Department.
3 hours – 24

42. German Lyric Poetry.
Prerequisite' German 20 or permission of the Department.
3 hours – 15

44. A study of some major German novels of the nineteenth and twentieth centuries.
3 hours – 20

45g. Scientific German for Graduate Students. The reading of scientific works in German from textbooks and journals, supplemented by individual reading in a chosen special field of study. This course may be elected by students without a previous knowledge of German.
2 hours – 23

Honors Courses

Students may enter such honors programs only if they have completed German 20 (or German 22 and have received the approval of the Department).

All students in Honors Courses will tak a comprehensive examination at the end of the final year.

290. German Prose and Poetry of the Nineteenth Century.
Prerequisite: German 20
3 hours – 35

291. Conversation, Composition, Linguistic problems.
Prerequisite: German 20
2 hours – 24

333. History of the German Languages. Readings in Middle High German Literature.
2 hours – 4

390. German Drama of the nineteenth Century.
2 hours – 26

391. Conversation, Composition. (Much of the discussion will deal with the contemporary society, political and public affairs of the German-speaking countries.)
Prerequisite: German 291
2 hours – 34

420. German literature of the Twentieth Century.
2 hours – 16

430. German literature of the Sixteenth and Seventeenth Centuries.
2 hours – 34

444. The German Novel from the Seventeenth Century to the Present.
3 hours – 25

480. German Classicism. Goethe and Schiller.
2 hours – 6

482. Lessing and the German Enlightenment.
2 hours – 10

481. Conversation, Composition. (Aspects of the intellectual and cultural history of the German-speaking countries will be the basis of much of the discussion and writing.)
2 hours – 19

495. Comprehensive Examination. A written examination which will test the student's general knowledge of German literature as well as his critical and evaluative ability.

Hebrew

For course description see Huron College.

Linguistics

Linguistics at the University of Western Ontario is a cooperative program within the Faculty of Arts. It is administered by a Linguistics Group drawn from departments of the faculty and is being developed in consultation with interested groups throughout the university. The following courses are offered at the undergraduate level by participating departments:

English 43 Introduction to Linguistics
English 37 History of the English Language
French 396 Structure of the French Language
French 497 History of the French Language
German 333 History of the German Language
Russian 393 History of the Russian Language
Spanish 461 Spanish Language and Civilization

PHILOSOPHY

Chairman

Robert Earl Butts, BA, MA *Syracuse;* PhD *Pennsylvania*

Requirements for Admission. First Year General Program (Arts, Social Sciences or Natural Science). Students planning to enter the program are advised to take Philosophy 20.

SECOND YEAR

Principal Courses

Philosophy 254, 256, 257

Subsidiary Courses

A senior course from Division A or Division B
Two options, one of which must be a senior course

THIRD YEAR

Principal Courses

Philosophy 357, 362
Two 300 level Philosophy courses (351 must be taken if not elected in second year)

Subsidiary Courses

A senior course (which must be a Division B course, if not previously taken).
One senior option

FOURTH YEAR

Principal Courses

Two of: Philosophy 456, 458, 466, 467, 477
Two of: Philosophy 450, 451, 454, 464, 474

Subsidiary Courses

One senior option

PHILOSOPHY, with MINOR

Requirements for Admission. First Year General Program with, at minimum, three principal courses which should include Philosophy 20 and whatever principal courses are required by the Minor Department. With departmental approval, a student who did not take Philosophy 20 may enter this program. Any student selecting this program must consult with the Philosophy Department Chairman and with the Minor Department Chairman concerning his minor courses.

SECOND YEAR

Principal Courses

Philosophy 254; 256 or 257
Two courses from the Minor

Subsidiary Courses

Two senior options, one from Division A and one frm either Division B or C

THIRD YEAR

Principal Courses

Philosophy 351
One of: Philosophy 337, 344, 353, 355, 362, 350*
One of: Philosophy 256 or 257, 338, 357, 350*
Two courses from the Minor

Subsidiary Courses

One senior option

FOURTH YEAR

Principal Courses

One of: 456, 458, 466, 467, 477
One of: 450, 451, 454, 464, 474
One further 300 or 400 level Philosophy course
One course from the Minor

Subsidiary Courses

One senior option

PHILOSOPHY AND ENGLISH **(see page 10)**

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*can be taken in either sequence

PHILOSOPHY AND GERMAN

Requirements for Admission. First Year General Program (Arts or Social Science), English 20 and German 20 as principal courses and History 20. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

German 290, 291
Philosophy 254; either 256 and 257

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

German 391
Two of: German 333, 390, 420, 430, 444, 480, 482
Either Philosophy 256 or 257; and one 300 level Philosophy course

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

German 481, 495*
Two of: German 333, 390, 420, 430, 444, 480,482
Two of: Philosophy 351 or any 400 level Philosophy courses

PHILOSOPHY AND MATHEMATICS

Requirements for Admission. First Year General Program (Arts, Social Sciences or Natural Sciences) with Mathematics 24 or Mathematics 27 as principal courses.

SECOND YEAR

Principal Courses

Philosophy 254; either 256 or 257
Mathematics 250, 256, 278

Subsidiary Courses

One course from Division A, B, or C

*Comprehensive Examination in the Spring

THIRD YEAR

Principal Courses

Philosophy 351; either 256 or 257, or one 300 level Philosophy course
Mathematics 350, 356
One of: Mathematics 340, 351

Subsidiary Courses

One senior course from Division A or B

FOURTH YEAR

Principal Courses

Two of: 400 level Philosophy courses
Mathematics 470
One of Mathematics 450, 456, 460
One additional Mathematics or Philosophy course at 300 or 400 level, subject to approval of the Departments

PHILOSOPHY AND HISTORY

Requirements for Admission. First Year General Program (Arts or Social Science) with History 20 and Philosophy 20 as principal courses. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

The History department **recommends** the following courses, History 231, 236. Students are free to choose others from the 300 series
Philosophy 254; either 256 or 257

Subsidiary Courses

One course in English
One option (History 20 if not taken previously)

THIRD YEAR

Principal Courses

Two History courses to be chosen from the 300 series or, with the permission of the instructor, from the 400 series
Either Philosophy 256 or 257; one 300 level Philosophy course

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Two or three courses chosen from the History 300 or 400 series
Two or three of: Philosophy 351 or any 400 level Philosophy courses

PHILOSOPHY AND PSYCHOLOGY

Requirements for Admission. First Year General Program (Arts or Social Science) with Psychology 20 and Philosophy 20 as principal courses. If Psychology 20 was not taken in the First Year, it must be selected as an option in the Second Year. For grades required for admission and progression see General Information section.

SECOND YEAR

Principal Courses

Philosophy 254; either 256 or 257
Psychology 235, 236, 255

Subsidiary Courses

One option

THIRD YEAR

Principal Courses

Either Philosophy 256 or 257; and one 300 level Philosophy course
Psychology 338, 349
One of: Psychology 337, 343

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

Two of: Philosophy 351 or any 400 level Philosophy courses
Psychology 445, 459
One of: Psychology 446, 450

Courses

20. Introduction to Philosophy. A survey of selected Philosophical problems, in the context of classical and contemporary papers. Specimen topics include: the mind-body problem, the existence of God, perception and matter, freedom and determinism. Primarily for Freshmen.
3 hours – 1

30. Philosophical Classics. An introduction to philosophy through a historical survey of classic writings. Readings will be chosen from Plato, Aristotle, Descartes, Hume, Kant, and one recent or contemporary philosopher.
3 hours – 1

31. Introduction to Logic. An introduction to Aristotelian logic, propositional logic, and general quantification. Related problems in the philosophy of logic, semantics, and inductive logic will also be examined.
2 hours – 20

34. Introduction to Philosophy of Science. A critical examination of philosophical issues involved in scientific method, confirmation of scientific hypotheses, scientific explanation, concept formation and theory construction. Normally philosophical problems arising in formal and natural sciences will be examined.
2 hours – 9

35. Aesthetics. Conceptual problems relating to the production and appreciation of the fine arts. Specimen topics include the nature of the work of art and of artistic expression, artistic criticism, fiction, metaphor, appreciation, and the logic of value judgments.
2 hours – 3

36. Ancient Philosophy. A survey of the principal developments from the Presocratics (600 B.C.) to Plotinus (250 A.D.). Primary emphasis will be placed on the critical reading of selected original sources.
2 hours – 28

37. Social, Political and Legal Philosophy. The first term of this course will be devoted to a critical study of contemporary social and political thought. The second half of the year will be given to a critical analysis of current and classical legal philosophy.
2 hours – 8

38. Existentialism. A course designed to acquaint the student with the fundamentals of the existentialist movement. Among philosophers considered will be: Heidegger, Sartre, Merleau-Ponty, Jaspers, Marcel and Berdyaev.
2 hours – 17

42. Ethics. Critical discussion of moral issues and theories.
2 hours – 31

43. Philosophy of Religion. Conceptual problems relating to personal and institutionalized religion. Specimen topics include: the nature of religious experience and knowledge, analysis of the concept of God, analysis and comparison of important types of religious philosophy.
2 hours – 12

44. Philosophy of the Social Sciences and the Philosophy of History. The first term of this course will be devoted to a philosophical examination of the structure and methodology of the social sciences, e.g. psychology and sociology. Special attention will be given to problems of functionalism, teleological explanation, and verification of social theories. The second term will be devoted to a critical examination of various theories of history and historical understanding. Emphasis will be given to problems of explanation, objectivity, chronicling, describing, predicting, etc.
2 hours – 22

47. Early Modern Philosophy. A critical examination of basic philosophical literature from Continental Rationalism and British Empiricism, with special emphasis on such figures as Descartes, Spinoza, Leibniz, Locke, Berkeley, and Hume.
2 hours – 35

48. Contemporary Philosophy. A critical study of selected 20th Century philosophers. Movements and figures discussed vary from year to year. Specimen topics include: pragmatism, positivism, existentialism, linguistic analysis: Russell, Moore, Whitehead, Dewey, Wittgenstein.
2 hours – 14

49. Special Topics in Philosophy. Special topics accommodating the interests of the instructor and students, selected from various areas in Philosophy, e.g. value theory, philosophy of mind, philosophy of mathematics, philosophical ideas in literature. (Offered on demand.)
Prerequisite: one course in Philosophy
2 hours – 33

Honors Courses

All Honors Courses are scheduled for three hours each week; however one of those hours, at the discretion of the instructor, need not be used for a meeting of the class.

254. Introduction to Problems in Theory of Knowledge. Intensive seminar and tutorial study of major problems in epistemology. For Honors students in any department.
3 hours – 3

256. Ancient Philosophy. A critical examination of the major philosophers and philosophical schools from the Presocratics to Plotinus.
3 hours – 15

257. Early Modern Philosophy. A critical examination of the philosophical literature of the 17th and 18th centuries, with particular emphasis on such figures as Descartes, Leibniz, Locke, Berkeley, Hume.
3 hours – 31

337. Social, Political, and Legal Philosophy. A critical study of contemporary and traditional social and political thought as well as a critical analysis of current and classical legal philosophy.
3 hours – 8

338. Phenomenology and Existential Philosophy. A critical examination of representative literature in the fields of phenomenological research and existential philosophy from Husserl to the present day.
3 hours – 22

344. Philosophy of the Social Sciences and the Philosophy of History. A philosophical examination of the structure and methodology of the social sciences, e.g. psychology and sociology. Functionalism, teleological explanation, and verification of theories will be discussed. The latter half of the year will be given to a critical examination of various theories of history and historical understanding.
3 hours – 22

350. Philosophical Texts. An examination of specified source materials in Greek and Modern Philosophy; critical works will also be studied.
3 hours – 13

351. Logic and Problems of Philosophical Analysis. First term: formal logic-propositional calculus; quantification theory. Second term: modal logic, problems of meaning and ontology.
3 hours – 20

353. Philosophy of Religion. Conceptual problems relating to personal and institutionalized religion. Specimen topics include: the nature of religious experience and knowledge, analysis of the concept of God, analysis and comparison of important types of religious philosophy.
3 hours – 12

355. Aesthetics and Value Theory. Conceptual problems relating to the production and appreciation of the fine arts. Speciman topics include: the analysis of "work of art", "artistic expression", the logic of value judgments, the nature of artistic criticism, fiction, metaphor, appreciation.
3 hours – 34

357. Modern Philosophy. Later modern philosophy with particular emphasis on the philosophy of the 19th century.
Prerequisite: Philosophy 257
3 hours – 5

362. Ethics. A critical study of moral problems and theories. The course will be based on readings selected from ethical literature from Aristotle to the present.
3 hours – 29

450. Epistemology / Metaphysics. Full year courses in basic problems of epistemology and of metaphysics offered in alternate years. Readings from contemporary writings will be stressed.
2 hours – 29

451. Formal Logic. Various systems of deductive logic will be reviewed and theoretical properties of these systems will be established. Specimen topics: systems of natural deduction, axiom systems and their properties, naive set theory and problems in the philosophy of logic.
Prerequisite: Philosophy 351 or permission of the Chairman.
3 hours – 32

454. Philosophy of Science. Contemporary problems of scientific methodology and of sciences as systems of knowledge. Can be taken by students in natural and social science programs with consent of instructor.
3 hours – 4

456. Plato / Aristotle. Full year courses in Plato and Aristotle offered in alternate years. The later dialogues of Plato and selected works of Aristotle will receive special attention.
3 hours – 36

458. Dewey, Bergson and Whitehead. A critical study of these 20th century philosophers.
3 hours – 14

464. Contemporary Analytic Philosophy. A seminar devoted to the investigation of selected philosophical problems as they arise in the writings of such philosophers as Moore, Russell, Ayer, Carnap, Quine, Wittgenstein, Ryle, Wisdom, Austin, and others.
3 hours – 25

466. Mediaeval Philosophy. A survey of the principal currents in philosophy from the breakdown of classical culture to the Renaissance (350 A.D. to 1500). Primary emphasis will be placed on the critical examination of representative works. (Offered alternate years.)
Prerequisite: Philosophy 256
3 hours – 18

467. Rationalism / Empiricism. Full year courses in rationalism and empiricism are offered in alternate years. In the course on rationalism emphasis is placed on the philosophies of Descartes, Leibniz and Spinoza, and in the course on empiricism emphasis is placed on Locke, Berkeley and Hume. In both courses, however, attention is given to the minor figures of the period.
3 hours – 22

474. Problems of Philosophy.

477. Hume / Kant. Full year courses in selected writings of Hume and of Kant are offered in alternate years. In each case an intensive study of several major works of the philosopher will be undertaken.
3 hours – 24

RUSSIAN STUDIES

Chairman

Rudolph Neuhauser, MA *Toronto;* DPhil *Vienna*

Honors Programs

Requirements for Admission. First Year General Program (Arts or Social Science) with one of Russian 2, 10, or 20 as a principal course. Students seeking admission to a combined Honors Program must have taken in their first year a course numbered 20 (alternatives in German and Spanish: 2, or 10) in the second Honors subject. Students who begin a foreign language at the university are allowed to defer the 20 course in that language to their second year.

All options are to be chosen in consultation with a department adviser. For grades required and progression see General Information section.

Students with grade 13 Russian will take Russian 20 in the First Year; such students are permitted to take Russian 390 in the Second Year, if required to complete the minimum course load.

SECOND YEAR

Principal Courses

Russian 280, 281, 290 (if offered), 20 (unless taken in First Year)

Subsidiary Courses

History 37
One option

THIRD YEAR

Principal Courses

Russian 290 (unless taken in Second Year, in this case 440 must be taken in the Third Year)

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Russian 420, 440 (unless taken in the Third Year) 490, 491, 495*

Subsidiary Courses

Two options

Russian 290 and 440 will be offered in alternate years (check under COURSES).

Students are advised to spend one summer at a recognized intensive Russian Language Summer School during their senior years.

RUSSIAN AND ENGLISH (see page 10)
RUSSIAN AND FRENCH (see page 15)
RUSSIAN AND GERMAN (see page 18)

RUSSIAN AND HISTORY

Students who did not take Russian 20 during their First Year will take it in the Second Year as an additional principal course. Their subsidiary courses in the Second Year will be reduced to one option and History 37.

SECOND YEAR

Principal Courses

History 236
Russian 280, 281

Subsidiary Courses

History 37
Two options, or one option and Russian 20 (a principal course)

THIRD YEAR

Principal Courses

History 335, 337
Russian 390, 391

Subsidiary Courses

Two of: Politics 349, 434
Economics 32
Geography 464

FOURTH YEAR

Principal Courses

2 History courses at the discretion of the Chairman of the Department
Russian 420, 491, 495*

Subsidiary Courses

One of Politics 348, 434; Economics 32; Goegraphy 464

RUSSIAN AND SPANISH

Students who did not take Russian 20 during their First Year will take it in the Second Year as an additional principal course. Their subsidiary courses in the Second Year will be reduced to one option.

SECOND YEAR

Principal Courses

Russian 280, 281
Spanish 231, 240, 260

Subsidiary Courses

Two options, or One option and Russian 20 (a principal course)

*Comprehensive Examination in the Spring

THIRD YEAR

Principal Courses

Russian 390, 391, 393
Spanish 341, 348, 365

Subsidiary Courses

One option

FOURTH YEAR

Principal Courses

Russian 420, 490, 491, 495*
Spanish 460, 461, 465, 495*

Courses

Students in the Russian Major or Honors Programs are advised to take History 37 as an option.

Russian majors enrolled in Russian 30 and 40 may be required to meet for additional hours (tutorials) at the discretion of the instructor. They will also do part of their reading in Russian.

The Russian courses required for a Russian Studies **Major** are:

First Year: Russian 2 or 20
Second Year: Russian 20 (unless taken in First Year), 30, 281
Third Year: Russian 40, 391

2. Intensive Russian for Beginners. This course is intended for students who wish to proceed directly to Russian 20. Prespective Major and Honors students in Russian who have not taken Russian at High School will take this course.
4 lectures, 1 laboratory hour – 10

2. Introductory Polish. A beginning course with concentration on conversational skill and reading of literary material.
No prerequisites
4 lectures, 1 laboratory hour – 7

10. Intermediate Russian. Review and further study of basic grammar. Composition, oral practice and reading of selected texts.
Prerequisite: Russian 1 or permission of the Department
3 lectures, 1 laboratory hour – 10

20. Advanced Russian. Review of grammar, special problems of morphology, elements of syntax. Readings of selected literary texts. Oral practice and composition.
Prerequisite: Russian 2, 10 or permission of the Department
3 lectures, 1 laboratory hour – 10

*Comprehensive Examination in the Spring

20. Advanced Polish. Review of grammar, reading of selected contemporary literary texts, oral practice and composition.
Prerequisite: Polish 2 or permission of the Department.
3 lectures, 1 laboratory hour – 34

25. Advanced Scientific Russian.
Prerequisite: Russian 2 or Grade 13 Russian
3 lectures, 1 laboratory hour – 17

30. Russian Literature of the 19th Century up to 1917. With emphasis on the great Russian novelists and their contribution to world literature.
No prerequisites
3 hours – 22

40. Russian Literature of the 20th Century. With emphasis on the Soviet Period. The interaction of politics with literature and literary theory.
No prerequisites
3 hours – 23

Honors Courses

All students in an Honors Program will write a comprehensive examination at the end of the final year.

Russian 20 is a prerequisite for all Honors courses except Russian 280.

Russian 281 and 391 will also be taken by students in the General Program (Russian Major).

280. Introduction to Russian Literature and Culture. A study of the historical and intellectual background of Russian literature.
No prerequisites
3 hours – 25

281. Composition and Oral Practice. Further study of syntax.
Prerequisite: Russian 20 or permission of the Department
3 hours and 1 hour for oral practice – 31

290. Literary Movements in Russia and the European Influence. A study of basic concepts in Russian literature from Classicism to Futurism in the context of the European literary scene.
Not offered in 1970-71
3 hours – 13

390. Prose of the 19th Century. The Great Masters of the 19th Century from Pushkin to Chekhov.
3 hours – 14

391. Composition and Oral Practice. Phonetics and advanced syntax.
Prerequisite: Russian 281
3 hours and 1 hour for oral practice – 29

393. History of the Russian Language. The development of the Russian language to the present.
2 hours – 5

420. Prose of the 20th Century. A study of Russian Literature from Gorky to the Present.
2 hours – 18

440. Seminar in Russian Drama. Authors and plays will be selected by the instructor.
2 hours

490. Poetry of the 19th and early 20th Centuries. From Pushkin to Symbolism.
2 hours – 4

491. Advanced Composition and Oral Practice. Stylistics.
Prerequisite: Russian 391
3 hours – 25

495. Comprehensive Examination. This examination covers the contents of the literature courses taken by the student in the second, third and fourth years and will be administered in March of the final year of the Honors Program. Students who receive a mark below 50% will repeat the examination in the fourth week of August. A minimum mark of 50% is required for graduation with an Honors degree.

SPANISH AND ITALIAN

Chairman

Weston Flint, BA *Harvard;* MA, PhD *North Carolina*

Honors Programs

SPANISH AND ENGLISH (see page 10)

SPANISH AND FRENCH (see page 15)

SPANISH AND GERMAN (see page 18)

SPANISH LANGUAGE AND LITERATURE

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with one of Spanish 2, 10, 20 or 21, plus two others as principal courses. English 20 is highly recommended. Students who begin Spanish at the University and who desire to enter any Honors Program involving Spanish are urged to take Spanish 20 or 21 in Summer School. If this is impossible they should consult the Chairman of the Department. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, SHOULD APPLY to the Department for consideration.

After the First Year, the program consists of a total of at least fifteen courses: a minimum of nine honors Spanish courses and six options. There is also a system of required Seminars.

The nine Spanish courses are to be chosen from the following: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231, 341 and 461 are obligatory.

SPANISH AND LATIN (see page 5)

SPANISH AND RUSSIAN (see page 26)

General Courses

SPANISH COURSES

Students in the General Program who choose Spanish as their subject of concentration must elect Spanish 31.

It is recommended that students who major in this department elect at least four senior courses in the major subject.

Students who begin Spanish at the University and who desire to qualify for senior courses are urged to take Spanish 20 or 21 in Summer School. Those unable to do so should consult the Chairman of the Department concerning an alternative.

1. Elementary Spanish. Introduction to understanding, speaking, reading and writing Spanish. Audio-lingual techniques are combined with required practice in the language laboratory. Spanish 1 is offered in Summer School only.

2. Intensive Spanish for Beginners. Introduction to understanding, speaking, reading and writing Spanish. Audio-lingual techniques are combined with practice in the language laboratory. Prepares student directly for Spanish 20 or 21.
5 hours – 29

10. Intermediate Spanish. Readings in Spanish literature with grammar review and oral practice. Spanish 10 is offered in Summer School only.
Prerequisite: Spanish 1 or Grade 12 Spanish.

20. Advanced Spanish. Introduction to Spanish literature with grammar review and oral practice. (One hour per week in the language laboratory may be required.) Students who intend to major or do honors work in Spanish and students who have done "A" work in Grade 13 or in Spanish 2 or 10 are strongly advised to elect this course.
Prerequisite: Spanish 2, Spanish 10, Grade 13 Spanish, or permission of the Department
3 or 4 hours – 28

21. Advanced Spanish. A course with practical emphasis designed to give training in oral and reading comprehension and to increase ability to communicate easily and fluently in Spanish. (One hour per week in the language laboratory is required.)
Prerequisite: Spanish 2, Spanish 10, Grade 13 Spanish, or permission of the Department
4 hours – 29

31. Spanish Language and Civilization. For students who have completed Spanish 20 or 21. Concentration is on grammar review, oral practice and a study of Spanish civilization.
Prerequisite: Spanish 20, 21, or permission of the Department
3 hours – 28

34. Modern Peninsular Literature. Selected works of the nineteenth and twentieth centuries. (Not offered in 1970-71)
Prerequisite: Spanish 20, 21, or permission of the Department
3 hours – 2

36. Hispanic Literature in Translation. This course is designed to introduce the student to selected highlights of Hispanic literature (e.g. Cervantes, Lope de Vega, Calderón, Fray Luis de León, Unamuno, Garcia Lorca, Ortega y Gasset, Jorge Luis Borges, Miguel Angel Asturias, etc.). The course will be given in English and will not count towards a Spanish Major.
3 hours – 8

44. Literature of the Golden Age. Selected works of the sixteenth and seventeenth centuries.
Prerequisite: Spanish 20 or 21 or permission of the Department
3 hours – 22

45. Scientific Spanish. A course designed to guide students in the techniques of translation from Spanish to English. The course is particularly recommended for the advanced student in other disciplines who needs a reading proficiency in Spanish for his higher degree. The materials for translation will be decided according to the field of interest of the student. Before enrolling in this course a student should have some previous knowledge of Spanish.
Prerequisite: Permission of the Department
1 hour – 19

48. Latin-American Literature. A study of selected works of prose and poetry after 1880. (Not offered in 1970-71.)
Prerequisite: Spanish 20 or 21 or permission of the Department
3 hours – 12

Note: Students in the General Program may elect an Honors Course if necessary to complete their requirements.

SPANISH HONORS COURSES

231. Spanish Language and Civilization. A course in guided free composition, translation and practical phonetics, supplemented by 15 seminars in Spanish Civilization from 1700 to the present day.
Prerequisite: Spanish 20, 21 or permission of the Department
2 or 3 hours – 29

240. Spanish Prose of the Nineteenth and Twentieth Centuries. A study of selected prose works from Larra to the present with special attention paid to methods of literary criticism. Emphasis will be placed on Galdós, Unamuno, Azorín, Baroja, Valle-Inclán and Cela.
Prerequisite: Spanish 20, 21 or permission of the Department.
2 hours – 14

248. Latin American Poetry of the Nineteenth and Twentieth Centuries. A critical study of the works of selected poets from the Independence to the present day.
Prerequisite: Spanish 20, 21 or permission of the Department
2 hours – 4

260. Spanish Poetry of the Nineteenth and Twentieth Centuries. A critical study of the works of selected poets from Espronceda to the present.
Prerequisite: Spanish 20, 21 or permission of the Department
2 hours – 5

341. Spanish Language. A course in guided free composition, translation, syntax and oral practice.
Prerequisite: Spanish 231 or permission of the Department
3 hours – 35

348. Latin-American Literature and Civilization. A study of representative prose fiction of the past 150 years with special reference to the "social" novel of this century. The main part of the course will consider the works of Azuela, Guiraldes, Asturias, Rivera, Carpentier, and Borges. During the year there will be 15 seminars on Latin-American Civilization from 1700 to the present.
2 or 3 hours – 12

365. Hispanic Poetry from its origins to 1700. A critical analysis of poetic texts from the early "jarchas" to Sor Juana Inés de la Cruz.
2 hours – 19

460. Spanish Drama From the "Celestina" to the Present. A study of Spanish drama from its origins to the present day.
3 hours – 31

461. Spanish Language and Civilization. History of the Spanish Language with special emphasis on stylistic evolution through the ages and dialectic variations. Two hours of language study will be amplified by a series of fifteen seminar periods which will examine Spanish civilization prior to 1700.
2 or 3 hours – 21

465. Spanish Prose of the Golden Age. A study of major prose works of this period including the picaresque novel and the **Quijote.**
3 hours – 8

ITALIAN COURSES

2. Intensive Italian. Introduction to understanding, speaking, reading and writing Italian. Audio-lingual techniques are combined with required practice in the language laboratory. Prepares student directly for Italian 20.
5 hours – 9

20. Advanced Italian. Introduction to Italian literature with grammar review and practice in composition. Reading and discussion of short stories by Alberto Moravia are used to improve facility in spoken Italian.
Prerequisite: Italian 2, Grade 13 or permission of the Department.
3 hours – 9

30. Literature of the 'Rinascimento'. Study of representative writers of the 15th and 16th centuries.
Prerequisite: Italian 20 or permission of the Department
3 hours – 26

32. Italian Civilization. A course designed to develop an understanding of the Italian cultural heritage through the study of selected historical, literary and artistic materials.
Prerequisite: Italian 20 or permission of the Department
3 hours – 19

36. Italian Literature in Translation. A course designed to introduce the student to selected highlights of Italian literature (e.g. Dante, Petrarch, Boccaccio, Ariosto, Machiavelli, Manzoni, Leopardi, etc.) This course will be given in English and will not count towards an Italian Major.
3 hours – 34

40. Dante, Petrarca, Boccaccio and Their Period. (Not offered in 1970-71)
Prerequisite: Italian 20 or permission of the Department.
3 hours – 16

PORTUGUESE COURSES

2. Intensive Portuguese for Beginners. Introduction to understanding, speaking, reading and writing Portuguese. A course designed for language students and for those in other disciplines wishing to acquire a working knowledge of Portuguese for the purpose of field research. Three hours of language, plus one hour of linguistic or cultural emphasis.
Prerequisite: Permission of the Department
4 hours – 19

20. Advanced Portuguese. Introduction to the literature of Portugal and Brazil with some grammar review and oral practice. One laboratory hour per week may be required. (Not offered in 1970-71) Prerequisite: Portuguese 2 or permission of the Department.
3 or 4 hours – 1

Combined Honors Programs

ENGLISH AND SPANISH

Requirements for Admission. First Year General Program with English and Spanish 20 as principal courses. A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in English 20 SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least fifteen courses: a minimum of six honors English courses, eight honors Spanish courses, and one option. The honors English courses may be taken in any sequence, but must be distributed as follows:

at least two of English 263 or 373; 280 or 380; 480 or 481;
at least one of English 270, 360, 459;
at least one of English 338, 438, 458;
at least one of English 256, 296, 396, 436;
any honors English course not previously chosen

Students must select at least eight of the following honors courses in Spanish: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465 (Spanish 231 and 341 are obligatory).

Five courses constitute a normal load in each of Second, Third and Fourth Years. In each of these years, a student must take at least two honors English courses. Additional honors or general English courses and additional honors Spanish courses may be chosen as options.

English 299 (a six-week course in Bibliography) is required in Second Year in addition to the normal course load.

FRENCH AND SPANISH HONORS PROGRAM

Requirements for Admission. First Year General Program (Arts, Science, or Social Science) with French 20 and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in First Year are urged to take Spanish 20 or 21 in Summer School in order to be qualified for Second Year Spanish courses. If this is impossible, students should consult with the Chairman of the Spanish Department regarding an alternative.

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in French 20 and in their first year Spanish course SHOULD APPLY to the Departments for consideration.

After the First Year, the program consists of a total of at least eighteen courses: a minimum of eight honors French courses, eight honors Spanish courses and two options.

The French courses must be taken as follows:

Second Year: French 271, 290;
Third Year: French 380, 381 one of 338, 350;
Fourth Year: French 490, 491, 499, 495*

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required Seminars.

GERMAN AND SPANISH

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with German 20 (or 2 or 10) and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take German 2 in the First Year will take German 20 in the Second Year and will elect German 291 as one of their options. Those who take Spanish 2 or 10 in the First Year should take Spanish 20 or 21 in Summer School. If this is impossible they should consult with the Chairman of the Department concerning an alternative.

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in their first-year courses in German and Spanish SHOULD APPLYto the Departments for consideration.

After the first year, the program consists of a total of at least nineteen courses: a minimum of eight honors German courses, eight honors Spanish courses, and three options.

The German courses must be taken as follows:

Second Year: German 290, 291
Third Year: German 391; two of 333, 390, 420, 430, 444, 480, 482
Fourth Year: German 481, 495*; two of 333, 390, 420, 430, 444, 480, 482

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*Comprehensive Examination

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required seminars.

LATIN AND SPANISH

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Latin 20 and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in the First Year are urged to take Spanish 20 or 21 in Summer School. If this is impossible they should consult with the Chairman of the Department concerning an alternative arrangement.

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in their first year courses in Latin and Spanish SHOULD APPLY to the Departments for consideration.

After the first year, the program consists of a total of at least nineteen courses: a minimum of nine honors Latin courses, eight honors Spanish courses, and two options.

The Latin courses must be taken as follows:

Second Year: Latin 230, 251, 257;
Third Year: Latin 340, 351, 352;
Fourth Year: Latin 450, 451, 452, 495*

*Comprehensive Examination

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are compulsory. There is also a system of required seminars.

RUSSIAN AND SPANISH

Requirements for Admission. First Year General Program (Arts, Science or Social Science) with Russian 20 (or 2 or 10) and Spanish 20 or 21 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in the First Year are urged to take Spanish 20 or 21 in Summer School. If this is impossible they should consult with the Chairman of the Spanish Department concerning an alternative arrangement.

A student will automatically accepted if he has an average of at least 70% with no grade of less than 60% in his principal courses. He must also have a passing grade in each of his first-year courses. Students who fail to qualify for automatic admission but who complete the first year with an average of at least 60% in their principal courses, and at least 60% in their first year courses in Russian and Spanish SHOULD APPLY to the Departments for consideration.

After the first year the program consists of a total of at least nineteen courses: a minimum of eight honors Russian courses, eight honors Spanish courses, and three options. Students who begin Russian at the University will take Russian 20 in Second Year, thus reducing the required options from three to two.
The Russian courses must be taken as follows:

Second Year: Russian 280, 281;
Third Year: Russian 390, 391, 393;
Fourth Year: Russian 420, 490, 491

Students must select eight of the following Spanish courses: Spanish 231, 240, 248, 260, 341, 348, 365, 460, 461, 465. Spanish 231 and 341 are obligatory. There is also a system of required Seminars.

MEMBERS OF THE FACULTY OF ARTS

CLASSICAL STUDIES

Professors

Gerber, D. E., BA, MA; PhD *Toronto.* Chairman of the Department

Raymond, A. E., BA; MA *Toronto;* PhD *Chicago*

Associate Professors

Avotins, I., BA *Toronto;* AM, PhD *Harvard*

Murison, C., MA *Edinburgh;* MA *Cantab*

Timothy, H. B., MA, BD *Glasgow;* BA *London;* PhD *Edinburgh*

Assistant Professors

Broege, Valerie A., AB *Vassar;* MA; PhD *Bryn Mawr*

Crowther, N. B., BA *Leeds;* MA *McMaster;* PhD *Sheffield*

Hill, D. E., MA *Cantab;* MA *Washington (St. Louis)*

Littlewood, A. R., BA *Leeds;* BLitt *Oxon.*

Stanley-Porter, D. P., BA *Toronto;* PhD *London*

Lecturer

Carbone, M. E., BA, MA

ENGLISH

Professors

Atkinson, W. E. D., BA *Cantab;* PhD *Chicago*

Barker, A. E., BA, MA *Toronto;* PhD *London* (Renaissance Literature)

Bates, R. G. N., BA, MA, PhD *Toronto*

Conron, A. B., DSO, BA, MA; AM, PhD *Harvard*

Fleck, P. D., BA, MA, PhD *Belfast* (On leave 1970-71). Chairman of the Department

Graham, J. W., BA *Manitoba;* MA, PhD *Toronto*

Hieatt, A. K., AB *Louisville;* PhD *Columbia*

Hieatt, Constance B., (Mrs.), BA, MA *Hunter College;* PhD *Yale*

Klinck, C. G., BA, MA, PhD *Columbia;* FRSC. Senior Professor

Rajan, B., BA, MA, PhD *Cantab.* Senior Professor

Reaney, J., BA, MA, PhD *Toronto*

Woodman, R. G., BA *British Columbia;* MA *Manitoba;* PhD *Toronto*

Visiting Professor

Priestley, F. E. L., BA, MA *Alberta;* PhD *Toronto;* DLitt *Mount Allison;* FRSC, FRSL

Associate Professor

Bandeen, Betty, BA, AM, PhD *Radcliffe*

Bolgan, Anne C., BA *D'Youville;* MA, PhD *Toronto*

Buckley, G. E., BA *Mount Allison;* MA *Columbia*

Chapin, D. F., BA, MA, PhD *Toronto.* Acting Associate Chairman 1970-71

Collins, T. J., BA, MA; PhD *Indiana*

Devereux, E. J., BA, MA *Newfoundland;* DPhil *Oxon*

Hair, D. S., BA, MA; PhD *Toronto.* Acting Chairman 1970-71

Kaula, D., BA *Cornell;* PhD *Indiana*

Rans, G., MA *Cantab;* PhD *Leeds*

Sanborn, C. E., BA, MA, PhD *Toronto*

Stingle, R. M., BA, MA *Toronto*

Wilson, H. R., BA, MA *Toronto;* PhD *Michigan*

Assistant Professors

Arnold, L. E., BA *Leeds;* MA *Simon Fraser*

Brown, Mary M. (Mrs.), BA, MA

Dragland, S. L., BA, MA *Alberta*

Garber, L., BA, MA *Toronto*

Gaudet, P. M., BA *Toronto;* MA *Princeton*

George, D., BA, MA *Manchester;* PhD *London*

Gibson, K., BA *McMaster;* MA *Queen's*

Good, J. M., BA, MA

Gordon, I. R. F., BA *Cantab;* MA *California (Los Angeles)*

Hensley, D. H., BA, MA *Oregon;* PhD *Wisconsin*

House, G. S., AB, MA *California (Berkeley)*

Lundgren, B. R., BA *Manitoba;* MA

Medjuck, J., BA *McGill;* MA *Toronto* (Part-time)

Mellamphy, E. N., BA *Dublin;* MA *Manitoba*

Meriwether, W. L., BA *California (Riverside);* MFA *Tulane*

Pagnucco, D. G., BA, MA *Toronto*

Parker, G. D., BA *Acadia;* MA *Dalhousie;* PhD *Toronto*

Redekop, E. H., BA *Manitoba;* MA *Toronto*

Shroyer, R. J., BA *Yale College;* MA *Toronto*

Smith, M. E., BA *Texas;* MA *Columbia;* MA *Yale*

Somerset, J. A. B., BA *Toronto;* MA, PhD *Birmingham*

Straulman, Ann Therese, BA *Wellesley;* MA *Kansas City;* PhD *Wisconsin*

Tausky, T. E., BA *McGill;* BA *Cantab;* MA *Yale*

Young, A. M., BA *Toronto*

Lecturers

Bieman, Elizabeth (Mrs.), BA, MA

Ondaatje, P. M., BA *Toronto;* MA *Queen's*

Instructors

Bell, Bonnie Jean, BA *Alberta*

Collier, Susan B., BA

Cranston, Phillippa Mary, BA *Queen's*

Doré, A. J., BA

Farbman, E. M. (Mrs.), BA *Cornell*

Hassan, R. F., BA, MA *Punjab*

Livingstone, K. D., BA *Bishop's;* MA *British Columbia*

Ross, Catherine L. (Mrs.), BA; MA *Toronto*

Watkins, R., BA *Hull,* MFA *Columbia*

Wayman, T. E., BA *British Columbia;* MFA *California (Irvine)*

FINE ART

Professor

Dale, W. S. A., BA, MA *Toronto;* PhD *Harvard;* FRSA. Head of the Department

Associate Professor

Hart, W. S., BA, MA *California (Berkeley)*

Urquhart, A. M., BFA *Buffalo*

Assistant Professor

Bonario, B., BS *Texas;* MA *Michigan*

Lecturers

Bonham, D. E.

de Kergommeaux, D.

Fenwick, W. R.

Hughes, T. W., NDD *Middlesbrough College of Art;* Post NDD *Leeds College of Art*

Stubbs, M. C., AOCA (Part-time)

FRENCH

Professors

Barbier, C. P., BA, MA *Leeds.* Chairman of the Department

Bush, W. S., BA *John B. Stetson University;* MA *South Dakota; DUParis*

Metford, L. J. S., BA, MA *British Columbia; DUParis*

Sanders, J. B., BA, MA *Manitoba; DUParis*

Tuchmaîer, H., PhD *Laval*

Venesoen, C., DèsL Laval

Visiting Professor

Smith, M. C., BA, PhD *London*

Associate Professor

Balsé, M. L., BA, MA, PhD *Bombay; DUParis*

Creighton, D. G., BA, MA *Toronto;* PhD *Columbia*

Harper, F, K., BA, MA *Manitoba*

Heller, L. M., BA, MA, PhD *Wisconsin*

Jones, Dorothy F., BA *Smith;* MA *Columbia;* PhD *Brown,* Acting Chairman 1969-70

Walters, R. L., BA *Oberlin;* MA, PhD *Princeton*

Assistant Professors

Arnold, I., BA *London;* MA *British Columbia;* PhD *Toronto*

Atance, F. R., BA *Toronto;* MA *Nebraska;* PhD

Baguley, D., BA *Nottingham;* MA *Leicester;* DU *Nancy*

Brunet, J. P., L ès L, DES *Sorbonne;* CAPES

Cameron, J. L., BA *New Zealand;* MA *Canterbury;* MA, PhD *Princeton*

Davies, B., BA *McMaster;* MA *Harvard*

Forsyth, Louise H., BA *Sask.;* MA, PhD

Ly, Thi N., *DU Paris*

Saraydar, Alma C., BA *California (Los Angeles);* MA *Chicago;* PhD *California (Berkeley)*

Tatilon, C. D., LèsL *Aix-en-Provence*

Westgate, D. E., BA *Nottingham;* MA *McMaster;* PhD

Vilquin, J. C., LèsL *Paris;* CAPES

Lecturers

Bossé, Jacqueline, LèsL, DES *Aix-en-Province;* CAPES

Dupraz, J. Y., LèsL *Grenoble*

Evans, Carolyn, BA, MA *Toronto*

Gounelle, Paule C., LèsL, DES *Montpellier*

Guestault, Danielle, LèsL, DES *Montpellier*

Hall, Nora C. K., BA, MA

Holmes, G., BA *Leeds*

Jones, R. F., BA *Dublin;* MA *Queen's*

Keske, W. G., BA *Buffalo;* LèsL *Aix-en-Provence*

Ross, Margaret H., BSc, CAPES; LèsL *Orleans-Tours;* MA *Dalhousie;* DIIIeC *Orleans-Tours*

GERMAN

Professors

Immerwahr, R. M., AB *Swarthmore,* MA *Northwestern,* PhD *California (Berkeley),* Chairman of the Department

Tracy, G. L., BA *Queen's;* MA, PhD *Wisconsin* (On leave of absence)

Associate Professors

Anderson, A. R., BA *Toronto;* PhD *Brown*

Schluetter, H. J., PhD *Kiel*

Assistant Professors

Seufert, G. H., Staatsexamen *Tübingen*

Spencer, Hanna (Mrs.), PhD *Prague*

Lecturer

Purekevich, Renata, BA, MA

Instructors

Beutler, B., PhilPaed *Munich;* Staatsexamen *Hamburg*

Warder, H. R., BA *McMaster;* MA *Toronto;* PhD *Queen's*

LINGUISTICS

Associate Professors

Asensio, J., LicdeFilyLetras, *Madrid* (Spanish)

Bandeen, Betty, BA; AM, PhD *Radcliffe* (English)

Wilson, H. R., BA, MA *Toronto;* PhD *Michigan* (English)

Assistant Professors

Salter. F. R., BA, MA *Wisconsin* (Russian)

Tatilon, C. D., LèsL, MèsL *Aix-en-Provende* (French)

Lecturers

Eramian, G. M., AB *Brown;* MA *Columbia* (Russian)

Gounelle, P. C., LèsL, DES *Montpellier* (French)

Instructor

Warder, H. R., BA *McMaster;* MA *Toronto;* PhD *Queens* (German)

Johnson, A. H., BA *Mount Allison;* MA, PhD *Toronto;* FRSC Senior Professor

PHILOSOPHY

Professors

Binkley, R. W., BA *Colorado;* PhD *Minnesota*

Butts, R. E., BA, MA *Syracuse;* PhD *Pennsylvania.* Chairman of the Department

Davis, J. W., BA, MA, PhD *Boston*

Johnson, A. H., BA *Mt. Allison;* MA, PhD *Toronto;* FRSC Senior Professor

Leach, J. J., BA *Heidelberg;* MA *Trinity;* PhD *Michigan*

Visiting Professors

Bub, J., BSc, BSc (Hons), *Cape Town;* PhD *London* (spring term 1971)

Hackstaff, L. H., BA *Williams;* PhD *Yale* (fall term 1970)

Rescher, N., BS *Queen's;* MA, PhD *Princton* (fall term 1970) (part time)

Associate Professors

Block, I., BA *Vanderbilt;* MA, PhD *Harvard*

Bronaugh, R. N., BA *Oregon;* MS, PhD *Wisconsin*

Freed, B., BA *Kenyon College,* PhD *California (Berkeley)*

Henry, W. C., BA; MA, PhD *Toronto*

Hockney, D. J., BA *McMaster;* PhD *Cornell*

Hooker, C. A., BSc, BA, PhD (Physics) *Sydney*

Johnson, H. J., BA *Alfred;* PhD *Chicago*

Assistant Professors

Beaman, E., BA *Cincinnati*

Harper, W. L., BS *Rensselaer*

Marras, A., BA *Colgate;* PhD *Duke*

Maynard, P., BA *Chicago*

Muehlmann, R. G., BA *Indiana;* PhD *Iowa*

Pearce, G., BA *Willian and Mary*

Schrecker, Anne, BA *Kalamazoo;* MA *Wellesley;* PhD *BrynMawr*

Shorten, Sarah J., MA *St. Andrews;* MA *Washington*

Williams, Martha E., BS *William and Mary;* MA, PhD *Bryn Mawr*

RUSSIAN STUDIES

Associate Professor

Neuhauser, R., MA *Toronto;* DPhil *Vienna.* Head of the Department

Assistant Professors

Bernotas, Nina S. (Mrs.), BA, MA *Toronto*

Froese, Erna V. (Mrs.), BA *Simferopol*

Salter, F. R., BA, MA *Wisconsin*

Wilson, R. K., BA *Harvard;* MA *Berkeley*

Lecturers

Eramian, G. M., BA *Brown;* MA *Columbia*

Piontkovsky, R. V., BA *George Williams;* BEd *Toronto;* MA *Middlebury*

SPANISH AND ITALIAN

Professors

Flint, W., BA *Harvard;* MA, PhD *North Carolina.* Chairman of the Department

Shervill, R. N., BA; MA, PhD *North Carolina*

Smieja, F. L., BA *University College, Cork, Ireland;* MA, PhD *London*

Associate Professors

Asensio, J., Lic, Dr, Fil&Let *Madrid*

Marti, A. M., Lic, Dr, Fil&Let *Barcelona*

Assistant Professors

Brizio, Maria Valeria, DottFA *Bologna*

Burghardt, W., BA, MA *Toronto*

Pacheco, J. L., Lic, Fil&Let *Madrid*

Munn, B. W., MA *Cantab*

Newmann, Jean C., BA *McGill;* AM *Radcliffe;* Dra, Fil&Let *Madrid*

Faculty of Science

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GENERAL

Dean

A. E. Scott, BSc, PhD *St. Andrews,* Professor of Chemistry

Assistant Dean

W. C. Howell, BSc, MSc, PhD, Associate Professor of Chemistry

Administrative Offices: Room 108, Natural Sciences Centre

A description of the programs and courses offered in the Faculty of Science and a listing of its members of Faculty will be found on the following pages, organized under Departments and arranged alphabetically. Reference should be made to the first section of this Calendar and to the booklet "General Information" for further information.

A student in the Faculty of Science is governed by the academic regulations contained in this section and also in the general section of the Calendar. Regulations applicable to particular programs of study are published under the Departments offering the programs. In addition, certain courses are subject to individual prerequisites.

The student is advised to read and consider carefully all regulations, and in cases of doubt as to the precise meaning of any statement or regulation, to consult the Office of the Dean or the Department concerned.

Programs of Study

The Faculty of Science offers:

Three-Year Programs leading to the degree, BA, General Program, with or without a Major Subject or approved Area of Concentration, in accordance with the revised regulations set forth below (see page 4).

Approved areas of concentration are available in:

Botany	Mathematics
Computer Science	Zoology
Geology	

Three-Year Programs leading to the BSc degree, and which require concentration in a Major subject, in accordance with the regulations described on page 4. Approved programs are now available in the following subject areas:

Applied Mathematics	Geophysics
Chemistry	Mathematics
Computer Science	Physics

Four-Year Honors Programs leading to an Honors BSc degree (with the exception of Mathematics).

These are available in the following disciplines:

Anatomy	Computer Science
Applied Mathematics	Geology
Astronomy	Geophysics
Bacteriology and Immunology	Mathematics (Hons. BA)
Biochemistry	Physics
Biophysics	Physics Major-Minor
Biology (Botany option)	Physiology
Biology (Zoology option)	Physiology and Pharmacology
Chemistry	Zoology

Further details of the availability and nature of programs in specific subjects or disciplines will be found in the sections devoted to individual Departments which follow this one.

A student intending to enter Dentistry, Medicine or Medical Rehabilitation is advised to register initially in the Faculty of Science (Natural Sciences) and to consult the Calendar entries of the Faculty of Medicine and the Faculty of Dentistry for further guidance. Similarly a student in a Science program may be eligible for admission to programs in Business and Law.

Availability of Options. The student's choice of course options within any academic program is subject to the constraints both of the lecture and final examination time-tables.

Accuracy of Registration. It is the responsibility of the student to ensure the completeness and accuracy of his registration.

First Year

The purpose of the First Year General Program is to offer one year of basic general education and to postpone the selection of a specific program until the second year. Thus the student can make a final decision as to his future program on the basis of university work which will include subjects not available in the secondary school. On the successful completion of the First Year General Program, the student is eligible to register in the second year of one of the Three Year Programs or the second year of one of the Honors Programs.

The First Year General Program in the Natural Sciences is intended to lead primarily to senior Programs offered by the Departments within the Faculty of Science but does not preclude admission to programs in other Faculties (Arts, Engineering Science, Social Science) provided that the course prerequisites are fulfilled. Similarly, admission to senior programs in the Faculty of Science from First Year Programs in other Faculties is subject only to the fulfilment of specific requirements.

Admission Requirements. The academic requirement for admission in 1970-71 to the First Year General Program, Natural Sciences, is standing in at least four Ontario Grade XIII subjects and seven credits subject to the following conditions:

(a) inclusion of Mathematics A and at least one of Biology, Chemistry, Mathematics B, and Physics

(b) a minimum overall average of 60%

(c) a minimum average of 60% in the Mathematics and Science subjects

Election of First Year Courses. The courses open to a student in the First Year General Program is grouped into four divisions: Faculty of Arts, Faculty of Science, Faculty of Social Science and Electives. The student registering in the First Year General Program must elect 5 courses, with inclusion of at least one from each of two of the Faculties of Arts, Science and Social Science. To be eligible for registration in the Faculty of Science the student must elect a number of Science courses greater or equal to the number of courses elected in either of the Faculties of Arts or Social Science. One additional course may be elected with the permission of the Dean. More complete details and a listing of the courses open to Freshmen are given in the General Information Book
It is the student's responsibility
to include among the courses elected, those required to proceed to the second year of the programs and subjects in which he may wish to continue his studies. Specific prerequisites are stated in the listings of the individual Departments of the Faculty. If in doubt, students should seek appropriate counselling and consult directly with the Department concerned.

THREE YEAR PROGRAMS

Following successful completion of the First Year General Program, a student may elect to continue his studies for a further two years in one of two programs leading to either a BA degree or a BSc degree respectively.

The General BA Program is relatively unstructured and is designed to permit a student wide latitude in determining a program of study to satisfy his personal interests. At the same time, the opportunity exists to select an area of concentration within the program. For many purposes a major subject or area of concentration is desirable and the student is urged to consider this possibility and to seek counselling in establishing a suitable program.

The Three Year BSc Program is a more structured program requiring the student to establish a major subject or area of concentration in his studies and is intended for those students who have a committed interest in Science and a firm idea of the particular discipline in which they wish to proceed. It is designed to permit a modest degree of specialization in one or two subjects to meet the requirements for further study or employment in certain fields, while allowing considerable freedom of choice in selecting ancillary areas of interest.

Significant revisions in the structure and content of the Three Year Programs and certain academic regulations in the Faculties of Arts, Science and Social Science were effected by the Senate of The University of Western Ontario in January, 1970. Below are given the requirements for graduation which are applicable to all students registering in the University for the first time, beginning with the commencement of Summer School 1970. Students currently registered in the University may in some instances elect to graduate in accordance with **either** the new requirements **or** the old requirements. Full details of the rules pertaining, including a statement of the old graduation requirements, will be found in the General section of this Calendar.

General Regulations for the BA Degree (New)

The requirement for graduation in the General BA Program is completion of a program of fifteen courses subject to the following conditions:

(a) inclusion of at least one course each from any two of the Faculties of Arts, Science and Social Science;

(b) inclusion of at least seven senior courses (courses numbered 30 or higher);*

(c) inclusion of not more than eight courses in any one subject;

(d) achievement of a D grade or higher in each course counted for graduation;

(e) achievement of an overall numerical average of 60% or higher, in the courses counted for graduation.

General Regulations for the BSc Degree (New)

The student shall select on entering the Second Year a major subject or approved area of concentration in the Faculty of Science and include in this program at least FOUR senior courses in this particular subject or approved area of concentration. The major Department or the advisor for the approved area of concentration should be consulted in the choice of the Faculty of Science courses. The student's choice of program and any changes in that program must be approved by the Dean of the Faculty of Science.

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*Optional areas of concentration are offered, at the discretion of each of the Departments of the Faculties concerned, subject to the following provisions:

(i) an area of concentration is defined as four senior courses specified by the Department concerned as meeting its requirements; additional courses offered by the Department may be taken subject to the General BA program regulations [see section (c) above];

(ii) declaration of an area of concentration in the General Program should be made by the student at the beginning of Year II;

(iii) the area of concentration will be designated on the official transcript upon graduation.

The requirement for graduation in a Three Year BSc Program is completion of a program of fifteen courses subject to the following conditions:

(a) inclusion of at least ten courses from the offerings of the Faculty of Science;

(b) inclusion of at least two courses offered outside the Faculty of Science;

(c) inclusion of at least eight senior courses;

(d) achievement of a D grade or higher in each course counted for graduation;

(e) achievement of a minimum average of 60% in the courses counted for graduation and a minimum average of 60% in four senior courses of the major subject or approved area of concentration.

Maintenance of Academic Status

The minimum level of academic achievement acceptable for graduation from a Three Year Program is 60% over the fifteen courses counted for graduation. While a student is not required to pass all courses taken in any given academic session, he is expected to make reasonable progress in the accumulation of course credits toward eventual achievement of the graduation requirements. The following Grade Point Scale is employed to determine the minimum level of satisfactory performance for progression in the program:

Letter Grade	Percentage Range	Grade Point
A+	90 - 100	5
A	80 - 89	4
B	70 - 79	3
C	60 - 69	2
D	50 - 59	1
F	0 - 49	0

Following admission to the University and initial registration, continued acceptance of registration for further work is subject to the following limitations:

(a) a student must accumulate a Grade Point Total of at least six in the first five full courses attempted*.

(b) a student must accumulate a Grade Point Total of at least fourteen in the first ten full courses attempted*.

(c) in any event, a student must complete the requirements for graduation in the Three Year Programs within the first twenty full courses (including repeated courses) attempted*.

When any one of the above requirements is not, or cannot, be fulfilled, the student shall be required to withdraw from the University for one year or longer at the discretion of the Senate Admissions Committee.

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*An "attempt" is defined as a course registration recorded with the Registrar which has not been formally cancelled with the Registrar by January 15th of the current academic session.

HONORS PROGRAMS

Subsequent to the First Year General Program, a student may elect to continue his studies for a further three years in one of the Honors Programs offered by the Departments of the Faculty. These programs, which lead to the Honors BSc Degree (or Honors BA, Mathematics), are intended for those students who wish to concentrate in depth in one or two subjects for the longer period. They are designed primarily as preparation for direct entry to graduate studies or meeting the requirements for certification or employment as specialists in these disciplines. As a consequence, the Honors Programs are usually more highly structured and heavier in load than the corresponding Three Year BSc Program.

While students are not registered in specific Honors Programs during their first year at this University, there are specific requirements for admission to the Second Year of all Honors Programs which are based upon the courses selected and the standing obtained in First Year. In each of the four years of study, those courses considered to be core subjects and essential to the development of the specialization are designated as **Principal** Courses; peripheral or optional subjects are designated as **Subsidiary Courses.**

A student expecting to enter an Honors Program should review the requirements of the particular program(s) before selecting his options in First Year.

Admission to Second and Subsequent Years. A student qualifies for admission automatically if, for the previous year, he has obtained a grade average of at least 70%, with no grade less than 60%, in the courses listed as principal courses by the Department(s) of the discipline in which he is specializing and a passing grade in every subsidiary course.

A student who fails to qualify for automatic admission but has a grade average of at least 60% in the principal courses and a passing grade in every course, may be admitted at the discretion of the Department(s) concerned; students in this position are urged to consult with the Department(s) for consideration.

If, at the end of the Second or Third Years, a student fails to meet the requirements for continuance in the Honors Program, or decides not to continue in Honors, he may revert to one of the Three Year Programs but he must meet all the requirements of that program prior to graduation.

Honors Graduation Requirements. A student who has a grade average of at least 60% in the principal courses of the Fourth Year and a passing grade in every course will automatically graduate with an Honors degree.

A student who has a grade average below 60% in the principal courses of the Fourth Year but has a grade average of at least 60% in all the principal courses of the Third and Fourth Years, and a passing grade in every course, may graduate with an Honors degree only on the recommendation of the Department(s) concerned.

A student who passes all courses in the Fourth Year of an Honors Program for the degree of Bachelor of Arts or Bachelor of Science and satisfies all other requirements for graduation, but fails to qualify for an Honors degree, shall be awarded a BA or BSc degree without designation. Such a student may write a subsequent examination to qualify for an Honors degree. When these qualifications have been met he must return his original diploma to the Registrar in order that it may be replaced.

Academic Counselling

The Faculty of Science is establishing a full-time Academic Counselling Office for all students registered (or intending to register) in the Faculty. This service will be provided independently of the special Summer Academic Counselling Program for First Year students; nevertheless, incoming Freshmen making use of the Summer Program are invited to supplement that program by consulting directly with individual Departments through the Faculty Counselling Office. More complete details may be obtained by application to the Office of the Dean in person or in writing.

While counselling will be available on a year-round basis, it is important that students seeking either general guidance or solutions to particular problems do so **prior to Registration** in September. Only in this way can maximum benefit be achieved for all concerned and the confusion and frustration frequently encountered at Registration be held to a minimum. To this end, students are urged to communicate with the Office of the Dean immediately after the issuing of the Spring Examination Reports. Although ultimately personal interviews are most desirable, in many instances minor problems may be solved satisfactorily, or adequate information supplied, by correspondence.

FACULTY OF SCIENCE COURSES

The Faculty of Science offers three courses of a general nature which are not associated with any individual Department of the Faculty.

Contemporary Science A. This is a course in the general physical sciences for non-science students. It has no prerequisites and will not be accepted as a prerequisite for other science courses. Much of today's most productive research is interdisciplinary in nature and the treatment will reflect this approach by using guest lecturers to treat certain contemporary issues in science. Enrolment may be limited.
3 lecture/demonstration/laboratory hours — 4

Contemporary Science B. This course, offered by the Faculty of Science for the first time during 1969-70, will be continued for 1970-71. The description and applications of the course will be similar to those of Contemporary Science A, except that it will be in the Life Sciences area. Enrolment may be limited.
3 lecture/demonstration/laboratory hours — 4

Science 200. History of Scientific Thought. An introductory course in the development and evolution of scientific ideas from early antiquity to the late nineteenth century, this course is intended primarily as an open option for senior students in Science Programs. This course is presented by the Department of History of Medicine and Science (Faculty of Medicine) in cooperation with the Faculty of Science. Enrolment may be limited.
3 lecture/discussion hours —18

ANATOMY

Department Chairman

R. C. Buck, MD, MSc; PhD *London*

Departmental Office: MS 472

PROGRAMS

The Department of Anatomy provides an Honors Program, leading to an Honors BSc degree after four years of study.

Requirements for Admission: The admission requirements are determined by the prerequisites of the program selected for the Second Year.

Second Year

One of:

(a) Second Year of Program in Honors Biology
For prerequisite and courses see pages 15 and 37.

(b) Second Year of Program in Honors Chemistry
For prerequisite and courses see page 17.

(c) Second Year of other Honors Programs
With permission of the Department of Anatomy, a student may petition the Vice President (Academic) for recognition of the Second Year of such other Honors Programs as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses

Anatomy 300

Two of: Bacteriology 300; Biochemistry 300; Biophysics 300; Physiology 300

One of: Botany 255; Physiology and Pharmacology 301; Zoology 255, 270, 353

Subsidiary Courses

Two options
Mathematics 20, 24 or 27 or Applied Mathematics 20 is required as a subsidiary course of students who have not previously taken a university course in Mathematics.

Fourth Year

Principal Courses

Anatomy 440, 441, 460, 461, 462, 463, 464, 480

Subsidiary Courses

Two Options selected with the advice of the Department of Anatomy. One of Mathematics 255, Botany 300, Psychology 255 or Zoology 465 is required if a course in statistics has not previously been taken.

COURSES

254. Functional Human Anatomy. For students in the Physical and Health Education Program.
1 lecture, 2 laboratory hours – 29

300. Histology. Survey of mammalian cytology, microscopic anatomy and neuroanatomy for Honors students.
2 lecturers, 3 laboratory hours – 1

400. History of Scientific Ideas.
2 hours, one term (half course) - 3

441. Seminar. Presentation of assigned topics and discussion of current literature.
1 hour all year (half course)

460. Gross Anatomy. A survey of human anatomy, given only to Honors Anatomy students.
2 lectures – 7

461. Cell Structure. Cytology and histology with emphasis on techniques and recent developments, especially in electron microscopy. Prerequisite: Anatomy 300 or equivalent
2 lectures, one term (half course) – 13

462. Cytogenetics. An examination of chromosome morphology and behavior, including chromosomal abnormalities in man as causes of diseases.
2 lectures, one term (half course)

463. Embryology. The principles of mammalian development.
2 lectures, one term (half course)

464. Neuroanatomy. A course in the anatomy of the mammalian central nervous system, especially the brain of man.
2 lectures, one term (half course)

480. Laboratory. The major laboratory course in various aspects of anatomy for students in the fourth year of the program.
A minimum of 10 hours

APPLIED MATHEMATICS

Department Head

J. H. Blackwell, BSc *Melbourne;* MSc, PhD

Departmental Office: PB 302

PROGRAMS

The Department of Applied Mathematics offers both an Honors Program leading to an Honors BSc degree after four years of study, and a three year program leading to a BSc degree.

BSc Honors Program

Requirements for Admission. A First Year General Program with Applied Mathematics 20 (or Mathematics 24 or Mathematics 27) and Physics 20 as principal courses. For grades required for admission and progression see page 5.

Second Year*

Principal Courses

Applied Mathematics 200, 202

Mathematics 256

Physics 250, 254, 255, 259

Subsidiary Course

One option

Third Year*

Principal Courses

Applied Mathematics 300, 350, 351b, 360a

Two of: Mathematics 350, 356, Physics 353, 357

Subsidiary Course

One option

Note: Students entering third year Applied Mathematics from second year Physics must take Mathematics 256 instead of one of their principal course options in third year. It may be possible for students to enter third year Applied Mathematics from second year Computer Science if they have the required prerequisites. They can obtain these requirements from the Department.

*Students should consult the Department before choosing their principal course or subsidiary course options

Fourth Year*

(1) Continuum Mechanics Option

Principal Courses

Applied Mathematics 400, 403b, 420, 452

Two of: Applied Mathematics 453, 454, 460, Physics 353**

(2) Theoretical Physics Option

Principal Courses

Applied Mathematics 400, 403b, 420, 454

Two of: Applied Mathematics 452, 460, Physics 353 or Physics 461 and 462**

Three Year BSc Program — Applied Mathematics Major

Requirements for Admission. A First Year General Program with Applied Mathematics 20 (or Mathematics 24 or Mathematics 27) and Physics 20 as principal courses. For general regulations for the three year BSc degree see page 4.

Second Year

Applied Mathematics 200, 202

Physics 250, 256

One option

Third Year

Applied Mathematics 300, 340

Three options.

Note: (1) It is strongly recommended that Computer Science 34 or 200 and Physics 357 be included among the options selected.

(2) In consultation with the Department of Applied Mathematics, some substitutions may be made in this program.

COURSES

Note: (1) More detailed outlines of these courses can be found in the Department of Applied Mathematics Course Book, a copy of which may be consulted in the Departmental Office.

(2) In certain cases, the prerequisites and corequisites stated below may be modified but only with the approval of the Department.

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*Students should consult the Department before choosing their principal course or subsidiary course options.

**With the approval of the Department other principal course options may be substituted.

20. Introduction to Calculus and its Applications. An extensive treatment of the calculus of functions of one variable is given with emphasis on applications in the Sciences and in Engineering. Two of the four hours are devoted to a problems period during which time students receive individual attention.
Prerequisite: Grade 13 Mathematics A
4 hours — 29

200. Advanced Calculus and Vector Analysis. Three dimensional analytic geometry, functions of several variables, partial derivatives, extrema including the use of Lagrange multipliers, Taylor's formula, Jacobians, multiple integrals, integral theorems, vector fields, sequences and series.
Prerequisite: A minimum grade of C in Applied Mathematics 20 or Mathematics 24 or Mathematics 27.
Corequisite: Applied Mathematics 202
3 hours — 30

202. Matrix Algebra and Linear Systems. This course is to develop both technical proficiency in handling matrices and determinants, and an understanding of the relations of matrices to linear vector spaces. Applications to linear equations, geometry, eigenvalue problems and vibrations of mechanical and electrical systems is emphasized. An introduction to ordinary differential equations is included.
Prerequisite: A minimum grade of C in Applied Mathematics 20 or Mathematics 24 or Mathematics 27
3 hours — 4

270. Engineering Mathematics II. For Second Year Engineering Science students and for certain other Science students. Elementary differential equations and complex numbers, an introduction to determinants, matrices and the solution of simultaneous linear equations, vectors and an introduction to vector calculus, partial differentiation, multiple integrals, Taylor's theorem and an introduction to infinite series and power series.
Prerequisite: Applied Mathematics 20 or Mathematics 24 or Mathematics 27.
3 hours — 20

300. Methods of Applied Mathematics I. Introduction to the theory of ordinary and partial differential equations, solutions of ordinary differential equations with variable coefficients and the special functions of mathematical physics, orthogonal function expansions, eigenvalue or boundary value problems, solutions of partial differential equations of mathematical physics, functions of a complex variable, stressing their applications to the physical sciences.
Prerequisites: Applied Mathematics 200 and 202
4 hours — 1

340. Numerical Analysis and Statistics. An introduction to numerical analysis and applied statistics. The first term is the same as Applied Mathematics 360a and the second term is the second term of Applied Mathematics 470.
Prerequisites: Applied Mathematics 200 or Mathematics 278 and Applied Mathematics 202 or Mathematics 250
3 hours – 14

350. Advanced Classical Dynamics. A logically connected development of classical mechanics including a thorough treatment of Lagrangian and Hamiltonian methods.
Prerequisites: Physics 250, Applied Mathematics 200 and 202
3 hours – 12

351b. Introductory Fluid Dynamics. An introduction to Fluid Dynamics, with principal emphasis on ideal fluid theory.
Corequisite: Applied Mathematics 300
3 hours for one term – 7

360. Numerical Analysis. Accuracy of approximate calculations, interpolation, summation of series, numerical differentiation and integration, solution of numerical algebraic and transcendental equations, numerical solution of ordinary differential equations, least squares and harmonic analysis, numerical solution of simultaneous linear equations. Students are encouraged to use the digital computer.
Prerequisites: Applied Mathematics 200 or Mathematics 278 and Applied Mathematics 202 or Mathematics 250
3 hours – 14

360a. Numerical Analysis. An introduction of Numerical Analysis and its applications, being the first term of Applied Mathematics 360.
Prerequisites: Same as for Applied Mathematics 360
3 hours for one term – 14

370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering Science students covering the following topics. First term: finite differences, difference tables, interpolation, numerical differentiation and integration, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second term: a continuation of the topics of linear algebra and infinite series from Applied Mathematics 270, Fourier Series, elementary probability theory.
Prerequisite: Applied Mathematics 200 or 270
3 hours – 26

380. Applied Mathematics for Chemists: Vector calculus, infinite series and power series, solutions of ordinary differential equations including Bessel and Legendre functions, Fourier series and orthogonal function expansions, partial differential equations, linear algebra, and elementary probability theory.
Prerequisite: Applied Mathematics 200 or 270
3 hours – 1

For each course numbered from 400 to 453, except for 403b, the consent of the instructor is required.

400. Methods of Applied Mathematics II. This course is concerned with techniques of problem solution in Applied Mathematics, especially with boundary value problems of partial differential equations. Topics discussed vary from year to year but usually include the following: Green's functions, integral transforms, special topics in complex variable theory, an introduction to asymptotic expansions, tensor analysis.
3 hours – 19

403b. Applied Statistics. A course in statistics for application similar to the second term of Applied Mathematics 470.
Prerequisite: A course in calculus
3 hours for one term – 6

420. Electrodynamics. Electrostatics from a Green's function point of view, magnetostatics, derivation of macroscopic electromagnetic fields from microscopic ones, time varying fields, Maxwell's equations, conservation laws, simple radiating systems, diffraction, special theory of relativity, relativistic particle kinematics, radiation by accelerating charges, multipole fields.
3 hours – 24

452. Fluid Dynamics. An advanced course in Fluid Dynamics divided approximately equally between viscous fluid flow and gas dynamics.
3 hours – 28

453. Solid Mechanics. A first course in the theory of the mechanics of the solid continuum, including elasticity and plasticity.
3 hours – 22

454. Quantum Mechanics. Wave mechanics, axioms of quantum mechanics, harmonic oscillator, angular momentum, hydrogen atom, perturbation theory, elementary atomic and molecular structure, elementary scattering theory.
3 hours – 3

460. Advanced Numerical Analysis. A sequel to Applied Mathematics 360a, with particular attention given to the techniques required for numerical solution of ordinary and partial differential equations.
Prerequisite: Applied Mathematics 360a
3 hours – 9

470. Engineering Mathematics IV. A sequel to Applied Mathematics 370. It includes the following topics. First term: Vector calculus including the integral theorems, ordinary differential equations with variable coefficients, orthogonal function expansions, an introduction to partial differential equations. Second term: elementary probability theory, random variables and probability distributions, sampling theory and decision making, curve fitting and experimental design.
Prerequisite: Applied Mathematics 370
3 hours – 24

ASTRONOMY

Department Head

W. H. Wehlau, AB, PhD *California;* Director of the Observatories

Departmental Office: 1383-89 Western Road, G-15

PROGRAMS

The Department of Astronomy offers an Honors Program leading to the Honors BSc degree. This program in astronomy prepares the student for work in astronomy and related physical sciences; it provides a suitable background for the teaching of the physical sciences at the high school level. *Requirements for Admission: First Year General* Program (Natural Sciences) with Astronomy 20, Applied Mathematics 20 or Mathematics 24 or 27 and Physics 20, as principal courses. For grades required for admission and progression see page 5.

Students entering or continuing in the Honors Astronomy Program are required to consult with the Department for approval of their programs.

Second Year

Principal Courses

Astronomy 220

Applied Mathematics 202 or Mathematics 250

Applied Mathematics 200 or Mathematics 278

Physics 250, 254, 255, 259

Subsidiary Course

German 5 or Russian 1*

Third Year

Principal Courses

Astronomy 320

Applied Mathematics 350 or Physics 350

Physics 353, 357

One additional Applied Mathematics or Physical Science Course at the 300 or 400 level

Subsidiary Course

German 35 or Russian 35*

Fourth Year

Principal Courses

Astronomy 420

Applied Mathematics 420 or Physics 455 and another half course

Applied Mathematics 454 or Physics 451

Two additional courses at the 300 or 400 level, from Applied Mathematics, Geophysics, Mathematics or Physics

Subsidiary Course

One course from Arts or Social Sciences

COURSES

20. Astronomy I. An introduction to astronomy for students who are taking Applied Mathematics 20 or Mathematics 24 or 27 and Physics 20 or 22 concurrently, or who have completed these courses previously. The various fields of astronomy will be covered with an emphasis on the quantitative aspects. Selected topics of current interest will be treated in some detail.
3 hours – 13

21. General Astronomy. Astronomy as a science including its historical development. Topics to be covered include Newton's laws of inertia, force and gravitation and Kepler's laws of motion; the solar system: planets, earth, sun, moon, comets, meteors; light, spectra, and astronomical equipment including radio and optical telescopes; stars: their nature, distances, motions, size, composition and evolution; star systems– open and globular star clusters, the milky way, stellar populations, and galaxies; the interstellar material: its density, composition and structure including types of nebulae; the universe, cosmology; selected topics of current interest. Quantitative development of the topics required will be given occasional evening observations with the 6-inch refractor.
3 hours – 13

HONORS COURSES

220. Astronomy II. Fundamental astronomy; computing; elementary orbit theory; binary stars.
Prerequisite: Astronomy 20 or permission of the instructor
2 hours – 1

*In special circumstances alternative courses may be chosen with permission of the Department.

*In special circumstances alternative courses may be chosen with permission of the Department.

320. Astrophysics I. Radio Astronomy and Interstellar Material– Maxwell's equations, wave motion, emission and absorption of radiation; Fourier transforms, antennas, interferometers and radiation coherence; gas and dust in interstellar space studied by optical and radio methods, diffuse and reflection nebulae,interstellar clouds and magnetic fields.
3 hours – 6

420. Astrophysics II. Atomic and stellar spectra, gaseous state of matter and radiation; introduction to the internal structure of stars, to stellar evolution and to stellar atmospheres; stellar motions, galactic structure and stellar populations.
3 hours – 11

BACTERIOLOGY AND IMMUNOLOGY

Department Head

R. G. E. Murray, BA, MA *Cantab;* MD, CM *McGill;* FRSC

Departmental Office: MS 352

PROGRAM

A program is offered by the Department leading to an Honors BSc (Bacteriology and Immunology). The Honors work in the Department begins in the third year.

Requirements for Admission. The admission requirements are determined by the prerequisites of the program selected for the Second Year.

Second Year

Either

(a) Second Year of Program in Honors Biology
For prerequisites and courses see pages 15 and 37.

or

(b) Second Year of other Honors Programs
With permission of the Department of Bacteriology and Immunology, a student who has completed First Year General Programs (Arts or Social Sciences), may petition the Dean of Science for recognition of the Second Year of such other Honors Programs as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses

Bacteriology 300

Biochemistry 300

One course from each of the following groups

(a) Anatomy 300, Biophysics 300 or Physiology 300

(b) Botany 342, 353, Physiology and Pharmacology 301, Chemistry 353, 354 or Zoology 370

Subsidiary Courses

Two options
Mathematics 20, 24, or 27 or Applied Mathematics 20 is required for students who have not previously taken a university course in Mathematics.

Fourth Year

Principal Courses

Bacteriology 440, 441, 460, 461a, 462b, 467a, 470a, and 480

One of: 465, 472b, or an additional course at the Honors level approved by the Department.

Subsidiary Courses

One of Botany 300, Psychology 255, Zoology 465 or Mathematics 255 if a suitable course in Statistics has not been taken previously.

SPECIAL DEPARTMENT REQUIREMENTS AND ADVICE

(a) Mathematics 20, 24 or 27 or Applied Mathematics 20 is required for students who have not previously taken a university course in Mathematics.

(b) Students should note the specific prerequisites for Biochemistry 300.

(c) Students who plan to continue into graduate studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

COURSES

Prerequisites for the Fourth Year course: Successful completion of previous year's program or permission of the Head of the Department.

300. Microbiology. A comparative study of the morphology, biology and relationships of algae, bacteria, fungi, protozoa and viruses. Given in collaboration with the Department of Botany (Botany 351).
2 lectures, 3 laboratory hours – 16

440. History of Scientific Ideas. A history of scientific ideas given in collaboration with other Health Science Departments.
2 lectures (half course) – 1

441. Seminar. The presentation of scientific reports and the writing of an essay on an assigned topic.
2 lectures (half course)

460. Advanced Microbiology. An advanced treatment of the biology and physiology of microbes with particular emphasis on the bacteria and their viruses.
2 lectures – 22

461a. Microbial Anatomy. A survey of cytological methods and applications to the understanding of the structure of procaryotic organisms and fungi.
2 lectures (half course) – 9

462b. Virology. A survey of the structure and function of microbial, animal and plant viruses.
2 lectures (half course) – 13

465. Microbial Biochemistry. Topics involving the biochemical activites and process of microbes.
Prerequisites: Biochemistry 300, 406 or 456
1 lecture (half course) – 5

467a. Microbial Genetics. Aspects of genetics applying the microorganisms. Given in collaboration with the Department of Botany (Botany 455).
2 lectures, 2 laboratory hours – 26

470a. Immunology. A course concerned with immunological theory and interpretation of basic and medically applied immune phenomena. (Given in collaboration with the Department of Medicine)
2 lectures (half course) – 17

472b. Immunochemistry. An advanced course dealing with the chemical structure of antigens and antibodies. Given in conjunction with a laboratory where students will become familiar with immunochemical techniques.
Prerequisite: Bacteriology and Immunology 470a or its equivalent.
2 lectures, 2 laboratory hours (half course) – 32

480. Laboratory and Tutorial. To give training in the techniques employed in modern microbiology with emphasis upon individual effort and resourcefulness. The tutorial will provide an opportunity for staff-student discussion and supplementation of both laboratory and lecture topics. Designed to accompany the lectures of Bacteriology 460, 461a, 462b and 465.
Minimum of 10 hours.

BIOCHEMISTRY

Department Chairman

H. B. Stewart, MD, PhD *Toronto;* PhD *Cantab*

Departmental Office: MS 316

The Department of Biochemistry offers undergraduate programs in the Faculties of Medicine, Dentistry and Nursing as well as those outlined below.

PROGRAMS

An Honors Program leading to the BSc degree is offered.

REQUIREMENTS FOR ADMISSION

The admission requirements are determined by the prerequisites of the program selected for the Second Year.

Students who plan to continue into graduate studies are advised to select options which will satisfy the foreign language credit required by many graduate schools.

Second Year

One of:

(a) Second Year of Program in Honors Biology. For prerequisites and courses see pages 15 and 37*. Note that one of Applied Mathematics 20, Mathematics 20, 24 or 27 will be required.

(b) Second Year of Program in Honors Chemistry For prerequisites and courses see page 17*.

(c) Second Year of other Honors Programs
With permission of the Department of Biochemistry, a student may petition the Dean of Science for recognition of the Second Year of such other Honors Programs as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses

Biochemistry 300

Two of:

Anatomy 300

Bacteriology 300 (Botany 351)

Biophysics 300

Physiology 300

One of:

Botany 255 (Zoology 255)

Chemistry 351*

Chemistry 353*

Chemistry 354*

Physiology 301

Pharmacology 301

Subsidiary Courses

Two options

Mathematics 20, 24 or 27 or Applied Mathematics 20, as well as Chemistry 204 or 254 are required for students who have not had University courses in Mathematics or Physical Chemistry.

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*Accompanied by the appropriate laboratory course.

Fourth Year

Principal Courses

Biochemistry 440

Biochemistry 460

Biochemistry 461

Biochemistry 464

Biochemistry 468

Biochemistry 480

Any two half courses or one full course from Biochemistry, Biology, Chemistry and the Health Sciences at the 300 or 400 level with the approval of the Department of Biochemistry.

Subsidiary Courses

Mathematics 255 or equivalent (if not already taken).

One additional option may be elected with the permission of the Department of Biochemistry.

COURSES

46. General Biochemistry. A survey course for General Program students.
Prerequisites: Chemistry 33 or 203
2 lectures, 3 laboratory hours – 9

Honors Courses

300. General Biochemistry. A survey for Honors students.
Prerequisites: Chemistry 203, 253 or 313; Chemistry 204, 254 or 214
3 lectures, 2 laboratory hours – 28

400b. Biochemistry. A survey of primarily metabolic aspects of biochemistry for students in Honors Chemistry (Given in conjunction with the Department of Chemistry).
Prerequisite: Chemistry 456
3 lectures (half course) – 1

406. General Biochemistry. A survey for students in Honors Biology.
Prerequisites: Chemistry 33 or 203
2 lectures, 3 laboratory hours – 9

440. History of Scientific Ideas. 26 lectures on the History and Development of Scientific Methods.
2 lectures (half course)

460. Metabolism. An advanced treatment of intermediary metabolism.
Prerequisites: Biochemistry 300, 406 or 400
2 lectures – 14

461. Structure and Metabolism of Nucleic Acids. A discussion of the role of the nucleic acids in protein synthesis.
Prerequisites: Biochemistry 300, 406 or 400
2 lectures – 9

463b. Current Topics. A discussion of contemporary topics in the field of biochemistry.
Prerequisites: Biochemistry 300, 406 or 400
2 lectures (half course) – 20

464b. Enzymology. A survey of the principles of mechanism and function of enzymes.
Prerequisites: Biochemistry 300, 406 or 400
2 lectures (half course) – 17

467. Plant Biochemistry. (Given in collaboration with the Department of Botany.) A discussion of the chemical composition and metabolism of plant tissues.
Prerequisites: Biochemistry 300, 406 or 400
1 lecture (half course) – 9

468a. Biophysical Chemistry of Proteins. A discussion of the physicochemical properties of macromolecules of biological interest.
Prerequisites: Biochemistry 300 or 400
2 lectures (half course) – 36

480. Research and Seminar. Designed to give training in techniques and methods at the advanced level; emphasis is laid upon individuality of work and resourcefulness. Included in the sessions is a review and evaluation of current literature in a series of seminars involving student participation.
10 hours

BIOPHYSICS

Department Chairman

A. C. Burton, MBE, BSc *London;* MA, PhD *Toronto;* LLD *Alberta,* FRSC, FRSA

Departmental Office: MS 122

PROGRAMS

The Department of Biophysics offers an Honors Program leading to an Honors BSc degree after four years of study.

Requirements for Admission. The admission requirements are determined by the prerequisites of the program selected for the Second Year, except that Mathematics 24 or 27 or Applied Mathematics 20 and Physics 20 should have been included in the First Year.

All course selections must be made with the approval of the Chairman of the Department of Biophysics. During undergraduate training, the students should take at least one Physical Chemistry course, as much Mathematics or Applied Mathematics and as much Physics as possible.

Concerning the selection of an option in the Second and Third Year, students who plan to continue into graduate studies are advised to select courses which will satisfy the credit in a language other than English required by many graduate schools.

Second Year

One of:

(a) Second Year of Program in Honors Physics
For prerequisites and courses see page 32.

(b) Second Year of Program in Honors Biology
For prerequisites and courses see pages 15 and 37.

(c) Second Year of Program in Honors Chemistry
For prerequisites and courses see page 17.

(d) Second Year of other Honors Program. With permission of the Department of Biophysics, a student may petition the Vice President, Academic for recognition of the Second Year of other Honors Programs as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses

Biophysics 300

Biophysics 301*

One course from List A and two from the combined Lists A and B

List A: Anatomy 300
Bacteriology 300/Botany 351
Biochemistry 300
Physiology 300
Zoology 352

List B: Applied Mathematics 270
Physics 256
Chemistry 254 or 204
or other Honors Science courses at the 200 or higher level approved by the Department.

Subsidiary Course

One option

Fourth Year

Principal Courses

Biophysics 440, 441, 460, 461a, 462b, 463a, 464b, 480

Subsidiary Courses

Mathematics 255 (unless approved course in statistics already taken). One Natural Science, Mathematics, Applied Mathematics or Health Science course at the 200 or higher level.

HONORS COURSES

300. General Biophysics. A survey of the Physics of living things.
2 lectures, 3 laboratory hours – 8

*Students may be permitted, in special cases, to defer this course until 4th year and to substitute another course from Lists A and B.

301. Biophysical Analysis: The application of mathematics to the functional behavior of living things. Emphasis is on the application of mathematics and not mathematics as a subject. A knowledge of first year calculus is assumed.
2 lectures – 20

440. History. History of scientific ideas – given in collaboration with other departments.
2 lectures (half course) – 2

441. Research Topics and Seminar. The presentation by students of scientific reports on laboratory projects and selected topics from the scientific literature.
1 lecture (half course)

460. Cellular Biophysics. The Physics of cell shape, size, surface properties membrane diffusion and transport. Elasticity and viscosity of cells and body fluids: contraction of the muscle cell.
2 lectures – 10

461a. Bioelectrical Phenomena. Bioelectric potentials, excitability and conduction, mechanism of biological transducers, and cybernetics.
2 lecturers (half course) – 15

462b. Radiobiology and Molecular Biophysics. [Given in collaboration with the Department of Botany (Botany 459b)] : Nature and effects of electromagnetic radiations on biomolecular structure and on living cells. Applied radiobiology and radioecology.
2 lectures, 1 laboratory hour – 6

463a. Environmental Biophysics. The physical environment of life: the effects, on living things, of environmental factors such as temperature, solar radiation, pressure, gaseous atmosphere, water and solutes, gravity, sound and vibration, electric and magnetic fields.
2 lectures (half course) – 30

464b. Biothermodynamics. Study of the transformations of energy in living things, applications of the laws of thermodynamics, energy exchanges with the environment, irreversible thermodynamics and the steady state.
2 lectures (half course) – 20

480. Laboratory. This is the major laboratory course in experimental Biophysics for the 4th year students. Students are expected to spend as much time as possible in laboratory work.
Minimum 10 hours weekly

BOTANY

Department Head

C. J. Hickman, BSc, MSc, PhD *Birmingham*

Departmental Office: B-G 232

The Department provides for study in many areas of the plant sciences including: ecology, genetics, morphogenesis, mycology and plant pathology, phycology, plant biochemistry and physiology, radiobiology, systematics. The programs lead to a General BA degree with a Botany Major or to an Honors BSc degree in Biology (Botany option). The latter provides a basis for professional work in academic, government and industrial fields.

PROGRAMS

General BA Degree (Botany Major)

The Department provides a program leading to a General Program BA in accordance with the regulations as set forth on page 4.

Normally a student will take Biology 21 or 22 in the First Year and two courses in Botany in each of the Second and Third years.

Students are encouraged to include courses in Chemistry, Biochemistry and Mathematics in their options.

BSc Honors Biology (Botany Option)

Requirements for Admission. First Year General Program (Natural Sciences) including the following as principal courses: either Biology 22 or both Botany 20 and Zoology 20, (Only Biology 22 will be offered in 1970-71): Chemistry 20; Physics 20 or 22. It is also recommended that a course in mathematics be included.

For grades required for admission and progression see page 5. Admission to subsequent years is granted automatically to those completing the previous year with a grade average in the principal courses of 70% with no principal course grade below 60% and a passing grade in each of the subsidiary courses. Students who fail to qualify for automatic admission but who complete the first year with a grade average of 60% or greater in the principal courses **should apply to the Department for consideration.**

Second Year

Principal Courses

Botany 250

Botany or Zoology 255

Zoology 270

Subsidiary Courses

Chemistry 203

Two of: Chemistry 204, Mathematics 20, 24, 27 or Applied Mathematics 20; Geology 20; Physics 204; a Division A or B course

CAUTION: All students entering Second Year should examine the prerequisites for courses which they expect to take in subsequent years.

All students entering Third and Fourth Years are required to participate in the Field Courses conducted by the Department.

All Third and Fourth Year students must consult the Head of the Department of Botany before registering in any of the courses prescribed for Third and Fourth Years.

Third Year

Principal Courses

Botany 300, 342, 351, 353, 357

Subsidiary Courses

Biochemistry 406, or an Honors Course other than Botany from Division C

One option*

Fourth Year

Principal Courses

Botany 499

Four of: Botany 442, 443, 452, 453, 454, 455, 457, 459, 460, 461, 471

Subsidiary Courses

One course other than Botany from Division C

One option*

COURSES

20. Introductory Botany. For students of First Year General Program (Natural Sciences); the general principles of Botany. (Not offered in 1970-71).
2 lectures, 3 laboratory hours – 16

21. Biology. The fundamental principles of biology with stress on the cell as a unit, the origin and preservation of the individual and the race, the mode of inheritance, and the application of biology to social and economic problems. This course is given both in the Department of Botany and in the Department of Zoology.
2 lectures, 2 demonstration/laboratory hours – 7

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*Students who plan to continue into Graduate Studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

22. Biology. For students of First Year General Program (Natural Sciences) the fundamental principles of biology stressing the features common to all living organisms. This course is given jointly by the Department of Botany and the Department of Zoology.
2 lecture, 3 laboratory hours – 8

GENERAL COURSES

Students in the General BA Program with a Botany Major are encouraged to participate in the field courses (363 and 463). First and Second Year students are advised to consult the Head of the Department in the spring since the Field Courses are conducted prior to fall registration.

Students not registered in Honors Biology but who wish to take Honors level Botany courses must first obtain permission from the Head of the Department.

33. Plant Ecology. Methods of studying vegetation; environmental factors (physical and biological) that influence plant growth and distribution; development and distribution of plant communities.
Prerequisite: Botany 20, Biology 21, or Biology 22
1 lecture, 3 laboratory hours – 6

35. Genetics. Principles of heredity discussed at various levels of cellular organization, from the chromosome within the cell nucleus to populations of multicellular organisms, using plants and animals as illustrative material.
Prerequisite: Botany 20, Biology 21, or Biology 22
2 lectures – 17

36. Microbiology. Morphology, biology, classification and economic importance of micro-organisms.
Prerequisite: Botany 20, Biology 21, or Biology 22
1 lecture, 3 laboratory hours – 3

37. Taxonomy and Phylogeny. Taxonomy and evolution with special references to flowering plants.
Prerequisite: Botany 20, Biology 21, or Biology 22
1 lecture, 3 laboratory hours – 28

42. Plant Physiology. Aspects of the physiology of growth and development including growth regulation, reproduction and dormancy.
Prerequisite: Botany 20, Biology 21, or Biology 22
1 lecture, 3 laboratory hours – 19

HONORS COURSES

Prerequisites for Second (250, 255), Third (300-363) and Fourth (442-449) Year Programs: successful completion of previous year's Biology program or permission of the Head of the Department.

Students not registered in Honors Biology but who wish to take Honors level courses must first obtain permission from the Head of the Department.

All students in Second Year who intend to enter the Third Year of the botany option must consult the Head of the Department before the end of the Second Year in order to arrange for participation in the Field Course (363) which is conducted prior to registration in the fall.

250. Vascular Plants. Comparative morphology and anatomy of vascular plants with emphasis on the experimental approach to the study of growth and morphogenesis.
2 lectures, 3 laboratory hours – 10

255. Genetics. Principles of heredity discussed at various levels of cellular organization, from the chromosome within the cell nucleus to populations of multicellular organisms, using plants and animals as illustrative material.
2 lectures, 3 laboratory hours – 17

300. Biometrics. Study of statistical methods and their application to biological data.
1 lecture, 1 laboratory hour – 31

342. Cell Biology. Structure and function of cells, with emphasis on cell types, organelles, and the biochemical and physiological process occurring within them.
2 lectures, 3 laboratory hours – 11

351. Microbiology. A comparative study of the morphology, biology and relationships of algae, bacteria, fungi and viruses. Given in collaboration with the Department of Bacteriology and Immunology.
2 lectures, 3 laboratory hours – 16

353. Ecology and Developmental Physiology. Ecological and physiological considerations of plant survival, growth and development.
2 lectures, 3 laboratory hours – 20

357. Plant Taxonomy. Theory of taxonomy. Numerical taxonomy with emphasis on Q-techniques. Study of selected genus. History of taxonomic practice and theory.
1 lecture, 3 laboratory hours – 28

363. Field Course. A course of study of plants in their natural environment for students entering Third Year. Students should be prepared to meet part of the expenses of travel and subsistence.

442a. Plant Biochemistry. Selected topics in plant biochemistry, including photosynthesis and nitrogen metabolism. Given in collaboration with the Department of Biochemistry.
2 lectures, 2 laboratory hours for 1 term – 9

443a. Quantitative Plant Ecology. Sampling and description of natural communities. Analysis of distribution patterns. Ordination and classification procedures.
2 lectures, 2 laboratory hours for 1 term – 16

452b. Plant Physiology. Selected topics of current interest in plant physiology.
2 lectures, 2 laboratory hours for 1 term – 30

453b. Experimental Plant Ecology. Plant responses to environment under experimental conditions, plant competition, evolution and plant ecology.
2 lectures, 2 laboratory hours for 1 term – 6

454b. Cytogenetics. The study of chromosomes and the genetic consequences of meiosis.
2 lectures, 2 laboratory hours for 1 term – 1

455a. Microbial Genetics. Aspects of genetics applying to micro-organisms. Given in collaboration with the Department of Bacteriology and Immunology.
2 lectures, 2 laboratory hours for 1 term - 26

457a. Evolution of Plants. Micro-evolution—gene flow, differentiation of populations; isolation of populations—with particular reference to cultivated plants. Micro-evolution—problems of homology, reliability of the fossil record; semilogical techniques of deriving phylogenies. Geographical-chronological evidences. Biochemical and physiological evolution.
2 lectures, 2 laboratory hours for 1 term – 36

459b. Radiobiology and Molecular Biophysics. Nature and effects of electromagnetic radiations on biomolecular structure and on living cells. Applied radiobiology and radioecology. Given in collaboration with the Department of Biophysics (Biophysics 462b).
2 lectures, 2 laboratory hours for 1 term – 34

460a. Algae and Limnology. Morphology and biology of fresh-water algae with particular reference to their significance in natural waters.
2 lectures, 2 laboratory hours for 1 term – 21

461b. Principles of Plant Pathology. Nature of plant diseases and of plant pathogens; relationships between host and pathogen; epidemiology of plant diseases; plant disease control.
2 lectures, 2 laboratory hours for 1 term – 10

463. Field Course. A course of study of plants in their natural environment for students entering Fourth Year. Students should be prepared to meet part of the expenses for travel and subsistence.

466b. Bacteriology and Virology. Selected topics in bacteriology and virology with emphasis on current developments.
2 lectures, 2 laboratory hours for 1 term – 19

471a. Mycology. Selected topics in mycology with emphasis on current developments.
2 lectures, 2 laboratory hours for 1 term – 14

499. Laboratory. A laboratory investigation in a selected field with presentation of a seminar and thesis.
9 laboratory hours

CHEMISTRY

Department Head

H. C. Clark, BSc, MSc, PhD *Auckland;* PhD *Cantab*

Departmental Office: CB 119

PROGRAMS

The Department of Chemistry provides both an Honors Program, leading to an Honors BSc degree after four years of study, and a Program leading to a BSc degree after three years of study. In either case the concentration in chemistry begins in the Second Year on successful completion of a First Year in a General Program.

The student should consult the general section of this Calendar for details of academic regulations, grades required for admission and progression, and the requirements for graduation which pertain to these programs of study in the Faculty of Science.

The Departmental requirements are outlined below.

BSc Honors

Requirements for Admission. A First Year General Program including Chemistry 20, Physics 20, and one of Applied Mathematics 20, Mathematics 24 or Mathematics 27, with all courses of the program as principal courses. Engineering Science I will be accepted as an equivalent First Year Program.

For grades required for admission and progression see page 5. Admission is granted automatically to those completing first year with a grade average of 70% with no course grade below 60%. Students who fail to qualify for automatic admission but who complete the first year with a grade average of 60% or greater **should apply** to the Department for consideration.

Students who fail to obtain the standing necessary for continuance in Honors, or decide not to continue in Honors, may transfer to the Three Year Program, but must meet all requirements of that program.

Students who plan to continue into graduate studies are advised to select options which will satisfy the foreign language credit required by many graduate schools.

Second Year

Principal Courses

Chemistry 250, 252, 254

Applied Mathematics 270

Physics 253

Subsidiary Course

One option

(Physics 250 and 256 may be elected instead of Physics 253 and an option)

Third Year

Principal Courses

Chemistry 351, 352, 353, 354, 374

Two of: Chemistry 361, 363, 364

Subsidiary Courses

Two options

(These are free options but may include any of Chemistry 355, 358 and 384. For those electing Chemistry 454 or Chemistry 474 in the Fourth Year, Applied Mathematics 380 **must** be taken in the Third Year, in which case the Fourth Year Program (after 1970-71) will consist of Chemistry 459, **three** full courses from the Fourth Year, plus **two** options.)

Fourth Year (for 1970-71 only)

Principal Courses

Chemistry 409, 459, 474

Three of: Chemistry 451, 453, 454, 456
Physics 350, 356; Biochemistry 400b

Subsidiary Course

One option

Fourth Year (From 1971-72)

Principal Courses

Chemistry 459

The equivalent of FOUR FULL courses from:

Chemistry 355, 358, 384, 451, 453, 454, 456, 474

Biochemistry 400b

Applied Mathematics 380

Physics 356

Physics 455 (if Applied Mathematics 380 has been taken)

Physics 350 (if Physics 250 has been taken)

A full Biochemistry course (if Biochemistry 300 was taken in Third Year)

Subsidiary Course

One option

BSc Degree (Three Year Program)

Requirements for Admission. A First Year General Program which includes Chemistry 20, Physics 20, and one of Applied Mathematics 20, Mathematics 24 or Mathematics 27. In some instances admission may be granted to a student lacking either Physics or Mathematics; however, in such instances the missing prerequisite must be included in the Second Year of study.

Admission to this program will be granted **only after consultation** with the Department **prior** to registration.

Courses offered by the Department usually follow a sequential form and often require some background in Mathematics and Physics. For these reasons, many senior courses have definite prerequisites and corequisites. Students are advised to study these carefully. To fulfill, in part, the requirements for a BSc in this Program, a student must complete a minimum of **four** senior courses in Chemistry but may include additional ones. In any event, the Program must include Chemistry 250, 252, and 254, all to be taken in the Second Year, and Physics 253. In addition the inclusion of Applied Mathematics 270, or its equivalent is strongly recommended.

A typical selection of courses is outlined below:

Second Year

Chemistry 250, 252, and 254

Applied Mathematics 270 or Mathematics 34

Option

Third Year

At least one full lecture and laboratory course at the Third Year Level, i.e. at least **one** of

Chemistry 351 with Chemistry 361

Chemistry 353 with Chemistry 363

Chemistry 354

Physics 253 (if not previously elected)

Options: a number elected to attain a total of five full courses. Other Third Year Chemistry courses may be included if desired.

COURSES

20. General Chemistry. Primarily for students in First Year General Program (Natural Sciences) or First Year Engineering Science.
2 lectures, 3 laboratory hours – 25

21. General Chemistry. A terminal course for students not intending to specialize in Science.
2 lectures, 1½ tutorial and laboratory demonstration hours – 25

25. General Chemistry. For students in Home Economics and Nursing Programs only.
Prerequisite: Grade 13 Chemistry
2 lectures, 3 laboratory hours – 27

33. Organic Chemistry. For students in Home Economics and Nursing Programs only.
Prerequisite: Chemistry 25
Half course – 2 lectures, 3 laboratory hours–
1st term only – 25

203. Organic Chemistry. Intended primarily for students in Honors Biology and students interested in programs in the Health Sciences.
Prerequisite: Chemistry 20
2 lectures, 1½ laboratory hours – 23

204. Physical Chemistry. For students in Honors Biology. (Familiarity with calculus is desirable for this course.)
Prerequisite: Chemistry 20
2 lectures, 1½ laboratory hours – 2

211. Principles of Inorganic Chemistry. The application of current structural ideas and valence theory to inorganic systems. The laboratory work will involve the preparation and characterization of inorganic compounds. For students in Chemical Engineering Science.
Prerequisite: Chemistry 20
2 lectures, 3 laboratory hours – 6

214. Elementary Physical Chemistry. An introduction to the laws of thermodynamics and their applications to chemical systems. For students in Engineering Science, Geology and Geophysics.
Prerequisite: Chemistry 20 and a full course in calculus
3 lecture hours – 12

250. Structure and Mechanism. For students primarily in Chemistry Programs. A study of atomic and molecular properties in terms of the principles of bonding. Reactions and an introduction to mechanisms of the compounds of the main group elements with emphasis on carbon.
Corequisite: Chemistry 252
4 lecture hours, 1 tutorial hour – 13

252. Experimental Chemistry. For students primarily in Chemistry Programs.
Corequisite: Chemistry 250
8 laboratory hours

254. Elementary Physical Chemistry. An introduction to kinetic theory and thermodynamics. For students in Chemistry Programs.
Prerequisite: Chemistry 20 and a full course in calculus
3 lecture hours – 8

314. Intermediate Physical Chemistry. For Chemical Engineering students. Content similar to Chemistry 354.
3 lectures, 1½ laboratory hours – 7

351. Intermediate Inorganic Chemistry. Chemistry of the transition metals and their complexes; elementary ligand field and molecular orbital theory. For students in Chemistry Programs.
Prerequisites: Chemistry 250 and 252
1 lecture first term, 2 lectures second term – 4

352. Chemical Spectroscopy. Fundamental features of molecular spectroscopic methods including ultraviolet, visible and infrared spectroscopy, magnetic resonance and mass spectroscopy.
Half course – 2 lecture hours – first term only – 26

353. Intermediate Organic Chemistry. For students in Chemistry Programs.
Prerequisites: Chemistry 250 and 252, or Chemistry 203.
2 lectures

354. Intermediate Physical Chemistry. Chemical thermodynamics, phase equilibria and electrochemistry. For students in Chemistry Programs.
Prerequisite: Chemistry 254 and Applied Mathematics 270 or equivalent
Prerequisite or corequisite: Physics 253
2 lectures first term, 3 lectures second term
1½ laboratory hours – 7

355. Isotope Chemistry. Radioactivity, stable and radioactive isotopes. Nuclear reactions. Separation and preparation of isotopes. Uses of isotopes as tracers. Unstable elements.
Prerequisites: Chemistry 250, 211 or 203
1 lecture, half-course – 10

358. Industrial Chemistry. Industrial applications of chemistry with emphasis on heat and mass transfer aspects. For students in Chemistry Programs.
Prerequisites: Chemistry 250, 211 or 203
1 lecture, half-course – 22

361. Inorganic Chemistry Laboratory. For students in Chemistry Programs.
Corequisite: Chemistry 351
4 laboratory hours

363. Organic Chemistry Laboratory. For students in Chemistry Programs.
Corequisite: Chemistry 353
4 laboratory hours

364. Physical Chemistry Laboratory. For students in Chemistry Programs.
4 laboratory hours

374. Quantum Chemistry I. An introduction to the theory of atomic and molecular structure.
Prerequisite: Applied Mathematics 270, or equivalent
2 lecture hours – 20

384. Chemical Kinetics. Modern theories and techniques; elementary processes; fast reactions; reactions in solution and at electrodes.
Prerequisite: Chemistry 254
1 lecture, half-course – 14
(Not offered in 1970-71)

The following course descriptions apply for 1970-71 only

409. Laboratory. Designed to accompany the lecture work of the Fourth Year Honors Chemistry.
6 laboratory hours

451. Advanced Inorganic Chemistry. Selected topics.
2 lecture hours – 3

453. Advanced Organic Chemistry. Selected topics.
2 lecture hours – 16

454. Advanced Physical Chemistry. Statistical thermodynamics.
2 lecture hours – 19

459. Research and Seminar.
6 laboratory hours

474. Quantum Chemistry II. A continuation of Chemistry 374.
2 lecture hours – 31

The following course descriptions apply for 1971-72 onwards

451. Advanced Inorganic Chemistry. Selected topics.
3 lecture hours – 3

453. Advanced Organic Chemistry. Selected topics.
Prerequisite or corequisite: Chemistry 353 and 363
3 lecture hours – 16

454. Advanced Physical Chemistry. Statistical thermodynamics.
2 lecture hours – 19

456. Bio-organic Chemistry. Organic Chemistry of biological molecules; mechanisms of enzyme catalyzed reactions; chemical basis of enzyme action.
1 lecture, half-course – 25

459. Experimental Chemistry and Seminar.
12 laboratory hours

474, Quantum Chemistry II. A continuation of Chemistry 374.
2 lecture hours – 31

COMPUTER SCIENCE

Department Head

J. F. Hart, BA, MA, PhD *Toronto*

Departmental Office: Staging Building 200

Computer Science is the study of the structure, operation and use of the modern digital computer. It is also concerned with the paradigmatic relationship of machine function to biological and social behavior. Programming experience is expected prior to admission to Second Year. Mathematics courses including Matrix Algebra, Calculus and Statistics are recommended to be taken in parallel with or prior to a program of studies in Computer Science.

PROGRAMS

General BA

There are no restrictions otherthan those imposed by the requirements for the BA Degree. Note however, that there are prerequisites for most senior Computer Science Courses.

Three Year BSc

(a) **Requirements for Admission.** Computer Science 20, and one of Mathematics 20, 24, 27, Applied Mathematics 20.

(b) **Program Structure**

Second Year

Two of Computer Science 30, 31, 34, Mathematics 35 (Economics 35 may be substituted for Mathematics 35) or one other Senior Mathematics Course
Two other courses

Third Year

Two of Computer Science 41, 42, 43 (304 or 313 may be taken by consent of Department).
A senior Mathematics Course or Mathematics 35 if not already taken.

Two other courses

(c) Computer Science students in the General BA or Three Year BSc are advised to follow one of the thematic directions: Systems Analysis, Computer Systems and Education. Lists of courses considered suitable for these themes may be obtained from the Department. Students proceeding with a major in Computer Science are required to consult the Department in their choice of courses.

Honors BSc

(a) **Requirements for Admission.** A First Year General Program with Mathematics 20, 24, 27 or Applied Mathematics 20 and any two other courses as principal courses. Inclusion of Computer Science 20 is recommended but is not mandatory; however, students seeking admission without Computer Science 20 will be required to complete a one week course in Programming prior to registration.

(b) **Program Structure**

Second Year

Principal Courses

Computer Science 200, 206

Applied Mathematics 202 or Mathematics 250

One of:

Mathematics 256, 278, Applied Mathematics 200

Subsidiary Courses

One option from the Natural Sciences

One option

Third Year

Principal Courses

Computer Science 304, 313

Two Mathematics or Applied Mathematics courses at the 300 level

Subsidiary Courses

One option

Fourth Year

Principal Courses

Two of:

Computer Science 403, 404, 405

One 400 level course in Applied Mathematics, Mathematics, or Mathematics 350 (if not previously credited)

One 300 or 400 level course from Natural Science or Social Sciences or one 400 level course in Computer Science

Subsidiary Courses

One option

(c) The Honors Course is for students who wish to concentrate on Computer Science and Mathematics and who may wish to continue in graduate studies and research, advanced computer systems analysis, scientific programming, or toward the specialist Certificate in Education.

COURSES

20. Computer Science. *This course provides an* over-all view of the entire field of Computer Science. Students will have an opportunity to learn to program and to solve problems on the computer. In addition, they will study the more theoretical aspects of the subject relating to the nature of machines and information, general systems, cybernetics and automata.
3 lectures, 1 laboratory hour – 6

30. Computer Science. A second course in Computer Science for students in the General Program. This course is suitable as a terminal course or as part of the reauirements for the three year BSc program. Emphasis is on a compiler language and its application, programming languages, information systems, computer systems, and selected theoretical topics in formal languages and automata theory.
Prerequisite: Computer Science 20 or equivalent and any first year course in Mathematics.
2 lectures, 2 laboratory hours – 18

31. Elements of Information Processing. An introductory course on the use of a digital computer in data processing applications; emphasis on programming fundamentals, information retrieval, general systems theory, and computer hardware, including the evaluation of computer systems.
Prerequisite: Computer Science 20
2 lectures, 2 laboratory hours – 6

34. Digital Computer Programming. An intensive course in computer programming for students in the General Programs or for Honors students in the Social Sciences or Humanities. Emphasis on a compiler language and its applications to computer-oriented statistics, numerical analysis, simulation, and nonmathematical problems.
Prerequisite: A First Year course in Mathematics
2 lectures, 2 laboratory hours – 26

34A. Designed for other Majors who want a terminal course.

34B. Computer Science Majors. Computer Science 20 is required.

41. Advanced Information Processing. Students are required to complete one major Electronic Data Processing project during the year. Lecture topics include: the study of the COBOL language, sorting, file maintenance and information retrieval, simulation, real time systems, time sharing.
Prerequisite: CS 31 or COBOL language
2 lectures, 2 laboratory hours – 34

42. Scientific Applications of Digital Computers. The structure and basis of algorithms for solving scientific problems on the computer. Topics in *numerical methods, applied statistics and operations research, e.g.,* solution of sets of linear equations and differential equations, regression analysis and test of hypotheses, simulation, linear and dynamic programming.

Prerequisite: A Computer Science course and one of Mathematics 30, 34, 35
2 lectures, 2 laboratory hours – 10

43. Computer Logic and Programming. Theory of Boolean Algebra and switching circuits, basic logical elements of digital computer, logical design of computer components, software systems – compilers, interpreters, monitor systems, design of languages.
Prerequisite: A course in Computer Science or Mathematics
2 lectures, 2 laboratory hours – 20

200. Digital Computer Programming. A thorough introduction to computer programming techniques, with emphasis on FORTRAN, machine language, numerical methods and statistics.
Prerequisite: A course in Mathematics
3 lectures, 2 laboratory hours – 26

206. Computational Mathematics. A study of the mathematics and mathematical systems relevant to machine theory. Includes Number Systems, Coding Theory, Macro 10 and DDT Programming as well as Boolean Algebra, Graph Theory and List Processing
Prerequisite: Computer Science 200 (Taken previously or concurrently)
2 hours, 1 hour tutorial – 20

304. Advanced Operating Systems. This is a system programming course providing background and experience in connection with large scale computer utilities. A detailed exposition of modern computer hardware and software is accompanied by laboratory exercises in the design of a specific system function.
Prerequisite: An introductory course in Computer Science covering basic machine language programming tools
2 lectures, 2 laboratory hours – 19

313. Computer Logic and Design. Theory of Boolean Algebra, and switching circuits, basic logical elements of the digital computer, logical design of computer components, theory of automata.
Prerequisite: A senior course in Mathematics
2 lectures, 2 laboratory hours – 7

403. Introduction to Computing Algorithms. Algorithmic aspects of traditional problems in numerical analysis.
2 lectures, 2 laboratory hours – 5

404. Theory of General Systems. A study of the mathematical theories related to General Systems and their applications in Computer Science.
3 hours – 23

405. Simulation Laboratory. Construction of mathematical models of various natural and social systems and their computer solutions. Monte Carlo methods, simulation languages. A knowledge of computer programming and statistics is required.
2 lectures, 2 laboratory hours – 2

413. Non-Numeric Computing. One semester of programming techniques for non-numeric computation, including translation of algebraic languages, and artificial intelligence programs; one semester on Theory of Computability, i.e., Turing machine and recursive function theory, mathematical machine theory and formal language theory.
Prerequisite: Mathematics 350 (Taken previously or concurrently), and Computer Science 200 or equivalent.
2 lectures, 2 laboratory hours – 17

GEOLOGY

Department Head

C. G. Winder, BSc; PhD *Cornell*

Departmental Office B&G 128

PROGRAMS

General BA Program

Students may complete a Three Year General Program for a BA degree with a Geology major by completing four or more Honors courses. Normally Geology 20 or Geology 21 with a B minimum are prerequisite for second year courses. The 400 category courses are primarily for Honors students. Before starting the program, the student should discuss his objectives with the Head of the Department.

Honors BSc Program

Requirements for admission: First Year General Program (Natural Sciences). The Honors Geology student should select Geology 20, Chemistry 20, Applied Mathematics 20 or Mathematics 24 or 27, and either Physics 20 or Biology 22. The following are considered alternates to corresponding courses listed above: Mathematics 20, Physics 22, Botany 20 or Zoology 20. Any three Natural Sciences courses will be considered the principal courses. The Honors Geology student should have completed at least one elementary university course in each of Chemistry, Physics, Mathematics and Biology before entering the Third Year.

Before registering in the Second, Third and Fourth Year, the Honors student should consult with the Head of the Department or his deputy. Generally the courses of one year are requisite for courses in the next year. Students should have completed at least one summer of field experience before entering the Fourth Year. For grades required for admission and progression see page 5.

Second Year

Principal Courses

Geology, 200, 210, 219, 275

Subsidiary Courses

Two of: Chemistry 214; Applied Mathematics 270; Zoology 265

One of: Physics 20; Biology 22 or Physics 256*

*Students who are still contemplating Geophysics (II) should elect Physics 256, Chemistry 214, and Applied Mathematics 270.

Immediately after final examinations, the Department conducts a field camp (Geology 200, 300) up to ten day's duration in which Second and Third Year students are required to attend. The cost of each session will not exceed $60.

Third Year

Principal Courses

Geology 300, 320, 340, 350, 360, 367

Subsidiary Courses

One of: Option of the Second Year, Chemistry 354, Computer Science 34, Geography 431, Zoology 270

OR

An elementary or intermediate course in Scientific German, Russian or French

OR

An Arts or Social Sciences course

Fourth Year

Principal Courses

Geology 400

Three of: Geology 415, 420, 425, 430, 450, 463, 475; Geophysics 365; Engineering Science 426

Subsidiary Courses

One of: an advanced science course, including Geology

OR

Intermediate course in scientific language

OR

An Arts or Social Science course

A student may substitute a science course in a closely related field for one selected Geology course provided permission is given by the Department.

COURSES

20. Introductory Geology. Minerals and rocks; geological processes and their results; structure of the earth; fossils; interpreting the earth's history; economic mineral deposits.
2 lectures, 3 laboratory hours – 34

21. Geological Science. A survey of the Earth Sciences; the relation of Geology to the other sciences.
2 lectures, 2 laboratory hours – 34

60. Earth History. Principles of rock nomenclature and correlation, Geologic time, Mountain building. Principle of uniformitarianism, The Evolution of life, History of the earth's surface from Precambrian to the present with emphasis on the Paleozoic and Mesozoic. Recent theories of continent and ocean basin development.
Prerequisite: Geology 20 or 21
Extension only – 34

200. Mapping Procedures. Involving aerial photo interpretation, pace and compass techniques. Emphasis on lithological examinations.
Prerequisite: Two Honors courses including Geology 219
Offered at field camp: (Half course)

210. Introductory Mineralogy and Crystallography. Symmetry, Stereographic projection, Derivation of the crystal classes, Systematic morphological crystallography, Practical determination of point group symmetry, Chemical Bonding and packing models, Structural chemistry and paragenesis of the rock forming minerals and their identification in hand specimen and thin section.
2 lectures, 3 laboratory hours – 5

211. Materials of the Earth. An introduction to Mineralogy and Petrography including the use of the petrographic microscope. A discussion of the more important aspects of Petrology, Stratigraphy and the concept of geologic time. Primarily for Geophysics 1 (Physical) students.
2 lectures + 1 hour per week extra for those who have not had Geology 20 – 16

219. Optical Mineralogy and Petrography. Light transmission in minerals, Mineral identification using the polarizing microscope, Lithology and spatial distribution of rock bodies, Map interpretation.
2 lectures, 3 laboratory hours – 13

275. Invertebrate Paleontology. Classification, Morphology and Ecology; Evolution, Index Fossils and their geologic and geographic ranges, some Plants and Vertebrates.
2 lectures, 3 laboratory hours – 27

300. Field Investigation. The chief emphasis will be on structural geology and igneous, metamorphic and sedimentary geology. Geology of the Huronian and rocks of the Sudbury basin. Geophysical, economic and Pleistocene field studies are included.
Prerequisite: Geology 20 and at least 4 Honors courses
Offered at field camp (half course)

311. Resources of the Earth. Concepts of Geology emphasizing sedimentary and tectonic structures favorable for the localization of petroleum and mineral deposits, Geochemistry and the study of mineral deposits emphasizing their physical characteristics as targets for the exploration geophysicist. Primarily for Geophysics I (Physical) students
2 lectures per week – 5

320. Petrography. Megascopic and microscopic description and classification of igneous, sedimentary and metamorphic rocks.
Prerequisite: Geology 210 and 219
2 lectures, 3 laboratory hours – 15

340. Structural Geology. Primary and induced structures in igneous, sedimentary and metamorphic rocks, The physical properties of rocks and the effects of stress application, The interpretative topography, Earth's structure and mountain building. Laboratory work will include the interpretation of geologic structures from maps.
Prerequisite: Geology 210 and 219
2 lectures, 3 laboratory hours – 31

350. Mineral Deposits. The origin and descriptive geology of the principal types of metallic and nonmetallic ore deposits with emphasis on their time-tectonic-stratigraphic relationships in the metallogenic sequence. Laboratory study of the ores and related rocks using the ore microscope.
Prerequisites: 210, 219
2 lectures, 3 laboratory hours – 4

360. Stratigraphy and Historical Geology. Principles of correlation, classification, paleogeography and geologic time, History of the Canadian Shield.
Prerequisite: Geology 210 and 275
5 hours per week – 11

367. Glacial and Pleistocene Geology. Glaciers and their work, Glacial and extraglacial deposits, their structure and landscape forms, Pleistocene stratigraphy, especially of eastern North America, Economic aspect of Pleistocene deposits. Laboratory exercises and field trips.
Prerequisite: Geology 20 or 21 and permission
5 hours – 20

391. Geology for Engineers. Introduction to minerals, rock, weathering, transportation, deposition and glacial geology. Engineering properties of geologic minerals, Application of principles of weathering to the deterioration of construction materials, Ground water seepage conditions and their influence on slope stability, Glacial soils and their importance in engineering practice. Case histories of engineering projects markedly influenced by site geology.
5 hours, one term: (Half course)

400. Senior Thesis. An original study including field observations, laboratory investigations and literature survey.
One and one-half courses

415. Advanced Mineralogy and Introductory X-ray Crystallography. Universal Stage, its mineralogy and petrographic uses, Advanced mineralogical concepts illustrated by reference to the crystal chemistry and structural crystallography of selected mineral groups, introductory X-ray crystallography, powder methods.
2 lectures, 3 laboratory hours – 16

420. Igneous Petrogenesis: Principles of silicate phase equilibria, theories of igneous differentiation with examples from selected localities. Laboratory study of petrographic methods and problems, seminars.
2 lectures, 3 laboratory hours – 3

425. Metamorphic Petrogenesis. Principles, classification and the facies concept. Physical-chemical principles involved in their genesis. Laboratory study of petrographic methods and calculations, seminars.
2 lectures, 3 laboratory hours – 35

430. Geochemistry. Element abundancies, Meteorites, Trace element geochemistry, Application of thermodynamics to geological problems, Sedimentary geochemistry, Isotope geochemistry, Polymorphism.
3 lectures – 24

450. Economic Metal Deposits. The occurrence, production and mineral economics of metals, considering outstanding examples in Canada primarily and possible metallogenic relationships between different types. Laboratory work includes report preparation from geologic literature, seminar presentation, microscope examination of specific ores.
Prerequisite: Geology 350, Concurrent Geology 420 or 430
1 lecture hour, 3 laboratory hours – 7

463. Sedimentation and Stratigraphy. Types of sediments and their habitat, conditions within the environment. Stratigraphic concepts of unit nomenclature, correlation and facies. Laboratory exercises in sediment analysis and map interpretation.
2 lectures, 3 laboratory hours – 11

475. Invertebrate Macropaleontology. Advanced study of rugose corals, graptolites and Paleozoic brachipods, with emphasis on stratigraphic occurrence, morphology and classification. Study of principles of taxonomy, evolutionary concepts, use of fossils in zonation and environmental influence.
2 lectures, 3 laboratory hours – 32

GEOPHYSICS

Department Head

A. E. Beck, BSc; PhD *Australian National U*

Departmental Office: B & G 62

Geophysics is the study of problems associated with the earth using the methods of Mathematics, Physics and Geology. The physical properties of the earth's interior, the earth's magnetic field, the rotation of the earth and the history of the earth are some of the topics covered in pure geophysics. Topics in applied geophysics deal with methods of locating oil deposits, ground water, and mineral deposits using various instruments and techniques of interpretation.

The opportunities for geophysicists are so broad that many areas of emphasis are available. Students should consult with the Department Head when choosing a program and specific course options. However, in general, for students with an interest in earth sciences and a talent, or additional interest, in Physics and Mathematics the Honors Geophysics I program is recommended; for students with an interest in earth sciences and a talent, or an additional interest in Geology the Honors Geophysics II program would be recommended. For a student who becomes interested in Geophysics at a relatively late stage in his advance through the university, the Honors Geophysics III program would be recommended but for the student who intends to go on to graduate work there may be a small penalty at this and most other universities in the form of extra course work at the graduate level to make up for what he has missed at the undergraduate level. For the student who wishes to obtain a deeper knowledge of the earth sciences than can be obtained by one or two survey courses and yet does not want to commit himself to an Honors Program, the three year BSc with a major or a minor in Geophysics would be recommended. Occasionally, substitution of one course by another may be allowed but such requests will be treated individually and a decision made on the basis of merit and ability to schedule the work.

PROGRAMS

Degree programs offered within the Department of Geophysics:

3 year BSc

Honors BSc (Geophysics I, II, III)

Three Year BSc

Requirements for admission

Candidates must satisfy the general regulations for the BSc degree (page 4) and include in their program the following courses:

Physics 20

Applied Math 20, or Math 24, or Math 27

Applied Math 270

Geophysics 202, 302, 304

Physics 256

Geology 211*

Geology 20 and Geophysics 21 are recommended but are not obligatory.

A candidate should consult the Head of the Department to arrange his program which may begin either at the end of the First Year or the Second Year.

Honors BSc

Requirements for admission

Geophysics I (Physical). First Year General Program with Physics 20 and Mathematics 24 or (Applied Mathematics 20) as principal courses. Geology 20 is recommended as a subsidiary course. Students planning to enter a graduate school are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Second Year

Principal Courses

Geology 211

Geophysics 202

Physics 250, 254, 255, 259

Subsidiary Courses

Applied Mathematics 200, 202

OR

Applied Mathematics 270 and one option

OR

One of:

(a) Second year of Program in Honors Physics

(b) Second year of Program in Honors Mathematics

(c) Second year of Program in Honors Applied Mathematics

(d) Second year of Program in Honors Engineering

(e) Second year of Program in Honors Astronomy

Students who wish to enter the third year Honors Geophysics program after taking one of these programs must first consult the Head of the Geophysics Department who will give him advice on options and subsidiary courses.

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*This is regarded as a Geophysics course for the purposes of subject area concentration.

Third Year

Principal Courses

Geophysics 302, 303, 304

Geology 311

Subsidiary Courses

Applied Mathematics 370 or 300

Physics 356

One option

Fourth Year

Principal Courses

Geophysics 400, 401, 470

One of Applied Mathematics 470, 400, 360, 340, 453, 420

Subsidiary Courses

Geophysics 458

One option from Physics or Astronomy or Geology

One option

Geophysics II (Geological)

Requirements for admission. First year General Program with Physics 20 and Geology 20 as principal courses, Math 24 or Applied Mathematics 20 and Chemistry 20.

Students planning to enter a graduate school are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Second Year

Satisfies requirements of Second Year Honors Geology with permission of Head of Geology Department.

Principal Courses

Geology 200, 210, 219, 275

Physics 256

Chemistry 214 or Geophysics 202

Subsidiary Courses

Applied Mathematics 270

Third Year

Principal Courses

Geophysics 302, 304

Geology 320, 340

Subsidiary Courses

Geophysics 303 or Applied Mathematics 370

One option (Geophysics 202 if not taken in 2nd yr.)

Fourth Year

Principal Courses

Geophysics 400, 401, 470

Geology 350

Subsidiary Courses

Geophysics 458

One option from Physics or Astronomy, Mathematics or Applied Mathematics, or Geology

One option

Geophysics III (after 3 years BSc)

Prerequisites: 3 year BSc with Geophysics major plus departmental permission; permission to enter this program will not be granted to students graduating with an average of less than 75% (or equivalent grade point average) in their Three Year BSc program.

Fourth Year

Principal Courses

Geophysics 303, 400, 401, 470

Geology 311

Subsidiary Courses

Applied Mathematics 370

Physics 356

Geophysics 458

COURSES

Geophysics 21. Physics of the Earth. A survey of: origin and development of the earth and solar system, constitution of the earth, tectonophysics, oceanography, meteorology, application of physical and chemical methods to oil and mineral exploration.
Intended for students who do not intend to enter an Honors Science program.
No Prerequisites
2 lectures, 2 laboratory hours — 18

Geophysics 202. Seismology. Fundamentals of seismology and wave propagation with applications to seismic exploration methods, studies of the earth's interior and earthquakes.
For Honors Geophysics students and Three Year BSc.
Prerequisites: Applied Mathematics 20 (or equivalent), Physics 20
2 lectures, 2 laboratory hours — 1

Geophysics 302. Exploration Geophysics. An introduction to gravitational, magnetic, electromagnetic, electrical and radioactive exploration methods.
For Honors Geophysics students and Three Year BSc.
Prerequisites: Physics 254, 255, (or 256), Applied Mathematics 270 or equivalent
2 lectures – 20

Geophysics 303. Potential Theory. Application of potential theory to problems concerning the earth's gravitational and magnetic field.
For Honors Geophysics students.
Prerequisites: Physics 254, 255, (or Physics 256), Applied Mathematics 270 (or equivalent).
2 lectures – 10

Geophysics 304. Laboratory. Covers various problems in exploration geophysics, earthquake seismology and computer programming and instrumentation.
For Honors Geophysics students and for Three Year BSc. To accompany Third Year Honors *Geophysics.*
Prerequisites: Physics 254, 255, (or Physics 256), Applied Mathematics 270 (or equivalent)
4 laboratory hours

Geophysics 400. Communication theory. Introduction to time-series analysis, and digital filtering with applications to geophysical problems.
For Honors Geophysics students.
Prerequisites Applied Mathematics 270 (or equivalent), Geophysics 202 (or equivalent).
2 lectures, 2 laboratory hours – 29

Geophysics* 401. *Physics of the earth's interior.
Application of mechanics, thermodynamics and atomic physics to problems of the earth.
For Honors Geophysics students.
Prerequisites: Geophysics 202, 302, 303, 304
2 lectures – 16

Geophysics 458. Geophysics Seminars. This is a course in which the students are required to prepare and present orally, papers on specified topics; the papers are also written in a style normally used for published papers.
For Honors Geophysics students (4th year)

Geophysics 470. Thesis. A report on a field or laboratory study conducted by the student.
One full course.
For Honors Geophysics students (4th year)

Note. Geology 211 and 311 are regarded as Geophysics courses for the purposes of subject area concentration.

MATHEMATICS

Department Head

D. Borwein, BSc *Witwatersrand;* PhD, DSc *London;* FRSE

Departmental Office: NSC 230

PROGRAMS

Mathematics may be elected as the subject of concentration within the following degree programs: **Three Year BSc, General BA, Honors BA.**

Departmental requirements pertaining to these programs are specified below.

Three Year BSc Programs

Two basic programs are offered:

(a) Mathematics 30, 32, 34 and at least one of Mathematics 31, 35, 40, 44

(b) Mathematics 250, 256, 278, and at least one of Mathematics 340, 350, 351, 355, 363, 453.

Other programs may be set up in consultation with the Department.

A prerequisite for Program (a) is Mathematics 20 or 24 or 27 or Applied Mathematics 20. For any other program a prerequisite is Mathematics 24 or 27 or Applied Mathematics 20.

General BA Program

A prerequisite for this program is Mathematics 20 or 24 or 27 or Applied Mathematics 20.

Honors BA Programs

Requirements for Admission: First Year General Program with Mathematics 24 or 27 or Applied Mathematics 20 and any two other courses as principal courses. For grades required for admission and progression see page 5. For requirements concerning the joint Honors Program in Philosophy and Mathematics see Arts. For the Honors Program in Economics, Mathematics Option, see Social Science. Students who plan to continue into graduate studies are advised to take French or a foreign language if they have not already done so in their first year.

Second Year

Principal Courses

Mathematics 250, 256, 278

Subsidiary Courses

Two options. A student intending to proceed in the Actuarial Mathematics Program should choose Mathematics 253 as one of these options.

Third and Fourth Years

In the Third and Fourth Years, a student may elect one of four programs.

A student who has completed the Second Year in the Computer Science Honors Program may be permitted to enter one of Programs 1, 2 or 3 provided he has taken Mathematics 256. Such a student must take Mathematics 278 before the end of Third Year.

MATHEMATICS (Program 1)

Third Year

Principal Courses

Mathematics 350, 356

One other Mathematics course numbered 300 or above

Subsidiary Course

Two options

Fourth Year

Principal Courses

Two of Mathematics 450, 456, 460

Two Mathematics courses numbered 300 or above

Subsidiary Course

One option

ACTUARIAL MATHEMATICS (Program 2)

Program 2 will prepare students to write the preliminary Actuarial Examinations, Parts 1 and 2, prepared by the Educational Testing Service, and also to write Parts 3 and 4 of the Actuarial Examinations. Each year these examinations, which may be written in London, will be held in May and November. Applications to write the examinations must be received by the Society of Actuaries not later than April 1 and October 1 respectively.

Third Year

Principal Courses

Mathematics 353, 355, 356

Subsidiary Courses

Two options

One of these options must be Mathematics 253 if it has not been taken previously

Fourth Year

Principal Courses

Mathematics 463

Three Mathematics courses numbered 300 or above

Subsidiary Course

One option

MATHEMATICAL STATISTICS (Program 3)

Third Year

Principal Courses

Mathematics 355, 356

One Mathematics course numbered 300 or above

Subsidiary Course

Two options

Fourth Year

Principal Courses

Two of Mathematics 445, 453, 455, 465

Two Mathematics courses numbered 300 or above, one of which must be Mathematics 350 if not taken previously

Subsidiary Course

One option

MATHEMATICS, ECONOMICS OPTION (Program 4)

Requirements for Admission: First Year General Program with Mathematics 24 or 27 or Applied Mathematics 20, and Economics 20 as principal courses

Second Year

Principal Courses

Economics 230, 255

Mathematics 250, 256, 278

Third Year

Principal Courses

Economics 340

Mathematics 355, 356, 378

One of Economics 237, 351

Fourth Year

Principal Courses

Economics 360

Mathematics 350, and 445 or 455

One Mathematics or Economics course numbered 300 or above

Subsidiary Course

One option

COURSES

10. Calculus with Analytic Geometry. Topics in algebra, trigonometry and analytic geometry followed by an introduction to differential and integral calculus.
May not be taken for credit by students with Grade 13 Mathematics A.
Prerequisite: Grade 12 Mathematics
3 lectures and 1 tutorial hour – 30

20. Introductory Calculus and Algebra. An introduction to calculus; a study of logic, set theory, probability theory, and the algebra of vectors and matrices.
Prerequisite: Grade 13 Mathematics A or Mathematics 10
3 lectures – 30

24. Calculus. Differential and integral calculus with applications.
Prerequisite: Grade 13 Mathematics A and Mathematics B
3 lectures and 1 tutorial hour – 30

27. Calculus. Differential and integral calculus with applications.
Prerequisite: Grade 13 Mathematics A or Mathematics 10. Students with Grade 13 Mathematics A and B should take Mathematics 24
3 lectures and 1 tutorial hour – 30

30. Algebra. An introduction to abstract algebra, with principal emphasis on the structure of groups, rings, integral domains and fields.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 19

31. Synthetic Geometry. Groups of transformations of the Euclidean plane, inversion, and coaxal systems; the projective plane.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 35

32. Analytic Geometry. Euclidean geometry of two and three dimensional spaces studied with extensive use of vector and matrix methods.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 5

34. Calculus. Review of anti-differentiation; uniform continuity, Riemann integral, indeterminate forms, improper integrals, Taylor's formula; functions of several variables, partial differentiation, multiple integration; line and surface integrals; infinite sequences and series; ordinary differential equations.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 9

35. Statistics. Standard probability distributions; sampling distributions; estimation; test of hypothesis, analysis of variance; regression and correlation.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 30

40. Elementary Theory of Numbers. Euclidean algorithm, congruences, indices, continued fractions, Gaussian integers, partitions and Diophantine equations.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 22

44. Complex Variable. Complex numbers, elementary point set topology, sequences and series, Cauchy- Riemann conditions, integration, Cauchy's theorem, Taylor and Laurent expansions, residue calculus and applications.
Prerequisite: Mathematics 34
3 hours – 9

HONORS COURSES

250. Linear Algebra. Vector and matrix algebra, determinants, linear transformations, linear equations, canonical forms. Applications to bilinear forms, quadratic forms, geometry.
Prerequisite: Mathematics 24 or 27 or Applied Mathematics 20
3 hours – 14

253. Mathematics of Finance. Compound interest, annuities certain, amortization, sinking-fund, bonds; the mortality table; life annuities, standard forms of life insurance; commutation functions.
Prerequisite: Mathematics 24 or 27 or Applied Mathematics 20
3 hours – 17

254. Mathematics for the Social Sciences. Advanced calculus and linear algebra. Topics include maximizing functions, differential and difference equations, and the algebra of vector spaces as far as eigenvectors and quadratic forms.
Cannot be taken for credit by students in Mathematics programs.
Prerequisite: Mathematics 20 or 24 or 27 or Applied Mathematics 20
3 hours – 1

255. Statistical Methods. An introductory, practical course intended primarily for Honors students in departments other than Mathematics. Topics include sampling, confidence intervals, analysis of variance, regression and correlation. Cannot be taken for credit by students in Mathematics programs.
2 hours for one term – 12

256. Analysis I. Elementary point set topology, sequences, limits, continuity - these topics to be discussed with reference to Euclidean n-space. Differentiation, mean value theorems. Basic properties of the Riemann integral. Series: tests for convergence, uniform convergence, multiplication of series, power series.
Prerequisite: Mathematics 24 or 27 or Applied Mathematics 20
3 hours – 2

278. Advanced Calculus. Functions of several variables, partial differentiation, co-ordinate transformations, Taylor's theorem, extrema, vectors, integral as a function of a parameter, multiple integration, line and surface integrals, integral theorems, ordinary differential equations
Prerequisite: Mathematics 24 or 27 or Applied Mathematics 20
3 hours – 30

Prerequisites for courses with numbers between 300 and 400 are Mathematics 250 and 256 or 278; or the permission of the Department. For courses numbered 400 or above the permission of the Department is required.

340. Number Theory. Divisibility, congruences, quadratic reciprocity, some functions of number theory, Diophantine equations, continued fractions, the distribution of primes, algebraic numbers, partitions.
3 hours – 22

350. Algebra I. Introduction to abstract algebraic systems; elementary theory of groups, rings, fields.
3 hours – 25

351. Geometry I. Synthetic Euclidean geometry; synthetic and analytic methods in projective geometry.
3 hours – 9

353. Finite Differences. Advancing differences, interpolation, divided differences, central differences, inverse interpolation, summation, approximate integration; applications to life contingencies; theory of graduation.
3 hours – 5

355. Statistics I. Standard distributions; sampling distributions; sampling from finite population; estimation; test of hypothesis; design of experiments; analysis of variance and regression analysis; nonparametric methods; sequential analysis.
3 hours – 23

356. Analysis II. Discussion of the real number system. Metric space topology and selected topics in real variable, including the Riemann-Stieltjes integral. Complex variable: differentiation and integration, Cauchy's theorem, Taylor and Laurent expansions, residue calculus and applications. Fourier and Laplace transforms.
4 hours – 31

363. Numerical Methods. Accuracy of approximate calculations, interpolation, summation of series, numerical differentiation and integration, solution of numerical algebraic and transcendental equations, numerical solution of difference equations and differential equations, least squares and harmonic analysis, numerical solution of simultaneous linear equations, use of digital computers in problem solving.
3 hours – 14

378. Differential equations. Ordinary differential equations, solution in series, matrix systems, Green's functions, eigenvalue problems, simple eigenvalue expansions. Non-linear systems, stability, phase plane, Liapounov functions.
3 hours – 1

445. Theory of Probability. Probability measure, Lebesgue-Stieltjes and Riemann-Stieltjes integrals for n variables; Fourier integrals, matrices and quadratic forms ; Beta and Gamma functions; orthogonal polynomials; mathematical expectation; correlation and regression, distribution theory; limit theorems, asymptotic distributions; significance tests.
3 hours – 31

450. Algebra II. Elementary factorization theorems; field theory; Galois theory; groups with operators, semi-simple rings, general factorization theorem.
3 hours – 8

452. Geometry II. Algebraic geometry. Affine and projective varieties; divisors; Riemann-Roch Theorem; additional topics to be selected.
3 hours – 35

453. Methods of Operations Research. Optimization (linear, quadratic, and dynamic programming, Lagrange multiplier, etc.). Applied probability (queuing theory, Markov chains, etc.). Miscellaneous topics (theory of games, graphs, etc.).
Prerequisite: Mathematics 250, and 256 or 278
3 hours – 17

455. Statistics II. Distribution in R^n; sampling theory and distributions; theory of estimation; fiducial inference; testing of hypothesis; analysis of variance; design of experiments and balanced designs; multiple correlation and regression; multivariate analysis; time series.
3 hours – 21

456. Analysis III. Topics in point set theory. Introduction to measure and integration theory with applications.
3 hours – 11

460. Introductory Topology. Metric spaces, topological spaces, connectedness, compactness, separation axioms, product spaces, function spaces, nets and convergence; simplicial complexes, elementary simplicial homology, classifications of compact 2-manifolds.
3 hours – 18

463. Life Contingencies. General Life annuities and insurances, net and gross premiums, reserves, non-forfeiture values, combination benefits, joint annuities, last survivor annuities, generalized multiple life annuities, contingent assurances, reversionary annuities, population tables, multiple decrement tables.
3 hours – 25

464. Ordinary Differential Equations. Existence theorems; general linear equation, matrix systems, adjoint systems, Green's function, expansion problems; stability theory.
3 hours – 33

465. Multivariate Statistical Analysis. Matrix theory; normal distributions; correlations.
3 hours – 13

468. Differential Geometry and Tensor Calculus. Theory of curves, Serret-Frenet formulae; curvilinear coordinates, first and second fundamental forms, geodesics, Codazzi equations, Gauss-Bonnet theorem. Introduction to differential geometry in the large. Introduction to n-dimensional Riemann geometry, tensor analysis and general relativity.
3 hours – 27

470. Foundations of Mathematics. Formal systems; first-order theories, the completeness theorem, one of the standard axiomatic set theories. Development of mathematics from set theory emphasizing the number systems of mathematics. Discussion of various philosophies of mathematics.
3 hours – 24

478. Linear Operations. Continuous operators in normed spaces, linear functionals, contraction mappings, Hilbert space, odjoint operators, completely continuous operators, fixed point theorems, applications to integral equations and boundary value problems.
3 hours – 19

488. Complex Analysis. Harmonic, entire and meromorphic functions, infinite products, the Gamma function, normal families, conformal mapping and Riemann mapping theorem. Elliptic functions, Picard Theorem, analytic continuation and The Riemann surface of a function.
3 hours – 24

PHARMACOLOGY

Department Head

C. W. Gowdey, BA, MSc; DPhil *Oxon*

Departmental Office MS 275

PROGRAMS

The Department of Pharmacology does not offer, at this time, any individual undergraduate degree programs. In collaboration with the Department of Physiology, however, it does provide a Pharmacology option in the Fourth Year of the Honors Physiology Program; for further details, consult the listings of the Department of Physiology.

HONORS COURSES

Prerequisites for Fourth Year courses: Successful completion of previous year's program or permission of the Head of the Department.

301. General Physiology and Pharmacology. (Given in collaboration with the Department of Physiology.) A survey of the principles of general physiology and pharmacology.
2 lectures – 31

440. History of Scientific Ideas.
2 hours (half course) - 3

441. Seminar. The preparation of essays and the presentation of scientific reports or papers on assigned topics in pharmacology.
2 hours (half course)

460. Advanced General Physiology and Pharmacology. (Given in collaboration with the Department of Physiology.) The physiology and pharmacology of the cell, excitable tissue, transport of water and solutes, energy exchange.
2 lectures – 8

461. Chemical Pharmacology. Pharmacological screening, pharmacodynamics, structure-activity relationships, metabolism and toxicology of selected drug classes.
2 lectures – 13

480. Laboratory and Tutorial. A course of training in the techniques employed in modern pharmacological investigations. Opportunity for original projects will be provided. The tutorial will supplement both lecture and laboratory work.
Minimum of 10 hours

PHYSICS

Department Chairman

J.W. McGowan, BSc *St.F.X.;* MSc *Carnegie Mellon;* DSC *Laval*

Departmental Office PB 125

PROGRAMS

The Department of Physics offers two Honors Programs, both leading to an Honors BSc degree after four years of study. The Physics program is designed to lead to graduate research, Secondary School teaching, or employment in many areas in government and industrial research, development or production. The Physics Major-Minor program is designed especially (though not exclusively) to adapt the graduate to Secondary School teaching through a training in two disciplines, of which Physics is the Major.

There is also a program leading to a BSc degree after three years of study.

Three Year BSc Program

Subject Requirements

Physics 250 and 256 and Applied Mathematics 270 in the Second Year

Physics 356 and 367 in the Third Year

Other programs may be set up in consultation with the Physics Department

HONORS PROGRAMS

It should be noted that changes in these programs are being contemplated. These will be announced when completed.

Honors BSc (Physics)

Requirements for Admission. First Year General Program with Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27 as principal courses. For grades required for admission and progression see page 5.

Concerning the selection of subsidiary course options in the Second, Third and Fourth Years, only one may be chosen from Division C. Students who plan to continue into graduate studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Students who are primarily interested in the application of Mathematics to the Physical Sciences are referred to the Honors Applied Mathematics (Program 4) with Physics options. Admission to the Third Year of this Program is open to students who have completed the Second Year of Physics.

Second Year

Principal Courses

Applied Mathematics 200

Mathematics 250 or Applied Mathematics 202

Physics 250, 254, 255, 259, 269

Subsidiary Course

One option

Third Year

Principal Courses

Applied Mathematics 300

Physics 350, 353, 356, 357, 359

Subsidiary Course

One option

Fourth Year

Principal Courses

Physics 451, 455, 458, 459

Five half-course senior options or 2½ full course senior options, as approved by the Physics Department; at least 1½ of these shall be Physics courses.

Subsidiary Course

One option

Honors BSc (Physics: Major-Minor)

Requirements for Admission. First Year General Program with Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27 as principal courses.

The Department will accept students for Major-Minor Honors Programs who elect their Minors in Biology, Chemistry, Geography, Applied Mathematics, Mathematics and some other subjects. All such programs require the approval of the Chairman of the Department.

The number of Honors courses in the Minor will normally be five. Students electing a Minor other than Mathematics will be required to include Applied Mathematics 270 or equivalent in the Second Year.

Normally the Program will be as follows:

Second Year

Principal Courses

Physics 250, 256

Two courses from the Minor

Subsidiary Courses

Two options

Third Year

Principal Courses

Physics 350, 356, 357

Two courses from the Minor

Subsidiary Course

One option

Fourth Year

Principal Courses

Physics 353, 359

Two half courses or one full course Physics option

One course from the Minor

Subsidiary Courses

Two options

COURSES

20, 22. Introductory Physics. A discussion of the basic concepts of classical mechanics, kinetic theory of matter, thermodynamics, electricity and magnetism and modern physics at the elementary level. For students who are intending to specialize in the natural sciences. Those students who have taken or are taking Mathematics 24 or 27 or Applied Mathematics 20 will take Physics 20.
2 lectures, 3 laboratory hours – 22

21. Introductory Modern Physics. A treatment at the elementary level of the experimental facts of modern physics and the interpretation of these facts in terms of atoms and molecules, electrons and other particles, and quantized energy. The necessary concepts from classical physics are reviewed and conservation laws are stressed. For students who do not intend to proceed to any Honors course in Physics.
3 lecture-laboratory hours – 31

33. The Physics of Music and Sound. An introduction to acoustics with applications to the production and transmission of musical sounds; including wave motion; sound waves and their characteristics; vibratory sources of sound; harmony and scales; hearing; electronic recording, reproduction and synthesis of sound; acoustics of buildings and building materials. Open to students in the Faculty of Music and those students with some formal musical training who are not pursuing a major in physics.
3 lecture-laboratory hours – 7

38. Selected Readings in Physics. A discussion course in which detailed study is made of writings selected from among the original works describing major achievements in physics and from among those commenting on the achievements. Enrolment may be limited.
Prerequisite: Physics 20, 21 or 22
2 discussion hours per week

HONORS COURSES

203. Fundamentals of Meteorology. Meteorological elements and instruments for their measurement, including temperature, pressure, wind, relative humidity, cloud forms and precipitation. A physically oriented treatment of air masses and fronts, cyclones and anticyclones, with applications of thermodynamics to adiabatic changes in dry and moist air; stability, instability, convection and turbulence. Special topics such as luminous atmospheric phenomena and severe types of storms.
Prerequisite: Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27
2 lectures – 18

204. Intermediate Physics for Biologists. Material on the mechanics of solids and fluids, sound, optics, DC and AC circuits atomic and nuclear physics with emphasis on biological and medical examples and applications.
Prerequisite: Physics 20 or 22
2 lectures, 3 laboratory hours alternate weeks – 27

250. Classical Mechanics. Vector algebra including triple products, a kinematic description of motion and the logical development of classical mechanics of single particles and systems starting with a critical analysis of Newton's Laws.
Prerequisite: Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27.
2 lectures –12

253. Intermediate Physics for Chemists. Essential topics in electricity and magnetism, classical mechanics and physical optics with emphasis where possible upon instrumentation.
Prerequisite: Physics 20 or 22
3 lectures, 3 laboratory hours – 31

254. Optics. A detailed discussion at the intermediate level of geometrical optics, physical optics and quantum optics. Laboratory experience with the phenomena discussed is provided by Physics 259, which, if not taken previously, must be taken concurrently.
Prerequisite: Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27
2 lectures – 36

255. Electricity and Magnetism. A detailed discussion at the intermediate level of the laws and principles of electricity and magnetism. Laboratory experience with the phenomena discussed is provided by Physics 259, which, if not taken previously, must be taken concurrently.
Prerequisite: Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27.
2 lectures – 8

256. Light; Electricity and Magnetism. An intermediate course in geometrical and physical optics; electrostatics, magnetism; and electromagnetism.
Prerequisite: Physics 20 and Applied Mathematics 20 or Mathematics 24 or 27.
3 lectures, 3 laboratory hours – 31

259. Laboratory. To accompany second year Honors Physics courses.
Prerequisite: Physics 20
3 laboratory hours

259E. Laboratory. Selected experiments from Physics 259 for engineering students.
Prerequisite: Physics 20
3 laboratory hours

269. Laboratory and Tutorial. Designed to augment the experiments of Physics 259, with particular emphasis upon experimental design, treatment of data and analysis of experimental results.
Co-requisite: Physics 259
3 laboratory-tutorial hours

350. Classical Mechanics. The Lagrangian formulation of classical mechanics is developed and applied to various problems including relativistic motion and normal mode analysis. Hamilton's equations are derived and applied to phase space analysis. The course lays the classical groundwork for quantum mechanics and statistical mechanics.
Prerequisite: Physics 250 and Applied Mathematics 200 or 270
2 lectures – 12

353. Statistical and Thermal Physics. Introduction to the basic concepts of statistical mechanics, the interpretation of temperature and entropy in equilibrium systems and derivation of the laws of thermodynamics.
Prerequisite or corequisite: Physics 350 and Physics 357
2 lectures – 36

356. Applied Electronics. A study of the operation and applications of electronic and solid state device and circuits.
Prerequisite: Physics 253, 255 or 256
2 lectures, 2 laboratory hours –13

357. Atomic Physics. The physics of atoms, molecules, electrons and energy quanta, with emphasis on the experimental facts that led to the quantum theories.
Prerequisite: Physics 250, 254 and 255 or equivalent
2 lectures – 19

359. Laboratory and Tutorial. Designed to familiarize the student with the more detailed phenomena and effects of classical physics together with some of the basic concepts of modern physics.
Prerequisite: Physics 259 or 256
6 laboratory-tutorial hours

367. Advanced General Physics. Topics in (a) electromagnetic theory, (b) atomic and molecular physics, (c) the physics of solids and (d) nuclear and particle physics. Quantum mechanical ideas are introduced in (b), (c) and (d).
Prerequisite: Applied Mathematics 270, Physics 250 and 256 (or equivalent), or permission of Chairman of Department.
3 lectures and 3 laboratory hours – 33

417. Communication Circuits. A study of high-frequency transmission line theory; Maxwell's equations and their application to antenna and wave-guide systems; radio systems modulation and detection and introduction to radio noise theory. For engineering students.
3 lectures – 25

451. Quantum Mechanics. A first course in quantum mechanics.
Prerequisite: Physics 350, 357 and Applied Mathematics 300.
2 lectures – 35

455. Electromagnetic Theory. The theory of static and dynamic electric and magnetic fields leading to Maxwell's equations and the solutions describing propagation of plane electromagnetic waves.
Prerequisites: Physics 253, 255 or 256 and Applied Mathematics 300.
3 lectures first-term only (half course) – 25

458. Seminar. The presentation of a scientific paper before students and members of the faculty, and the writing of an essay upon an assigned topic.
1 hour (half course)

459. Laboratory and Tutorial. Designed to give training in the techniques and methods of measurement in modern physics: emphasis is laid upon individuality of work and resourcefulness. The tutorial supplements the fourth year lecture work.
Prerequisite: Physics 359
9 laboratory/tutorial hours

461. Solid State Physics. An introductory course covering the thermal, electric and magnetic properties of crystalline matter.
Prerequisite: Physics 350 and 357
2 lectures for 1 term (half course) – 7

462. Nuclear Physics. An introduction to nuclear and particle physics.
Prerequisite: Physics 350 and 357
2 lectures for 1 term (half course) – 7

463. Atmospheric Physics. Basic concepts of physics applied to atmospheric phenomena.
Prerequisite or corequisite: Physics 353
2 lectures for 1 term (half course) – 3

464. Atomic and Molecular Physics. Interactions of atoms and molecules with photons, charged particles and each other.
Prerequisite: Physics 254 and 357
2 lectures for 1 term (half course) – 3

465. Plasma Physics. An introduction to the properties of highly-ionized gases and a discussion of the diagnostic techniques used to investigate them.
Prerequisite: Physics 455 or 355
2 lectures for 1 term (half course) – 24

466. Radio Physics. A discussion of selected topics in circuit analysis, transmission line theory and the propagation of radio waves.
Prerequisite: Physics 455 or 355
2 lectures for 1 term (half course) – 24

PHYSIOLOGY

Department Head

J. A. F. Stevenson, BA, MD, CM *McGill;* FRSC

Departmental Office: MS 222

PROGRAMS

The Department of Physiology offers an Honors Program in Physiology leading to the BSc degree. In the Fourth Year of this program students may choose either the Physiology option or the Physiology and Pharmacology option.

In conjunction with the Department of Psychology the Department of Physiology offers an Honors Program leading to the BSc degree in Psychology and Physiology.

Honors BSc Program: Physiology

Requirements for Admission. The admission requirements for these programs are determined by the prerequisites of the program selected for the Second Year (see page 5). In choosing options in these programs, a university course in Mathematics, required for the Honors Program in Physiology and a university course in Physical Chemistry, required for Biochemistry 300, should be considered.

Students who plan to continue into graduate studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Second Year

One of:

(a) Second Year of Program in Honors Biology
For prerequisites and courses see pages 15 and 37

(b) Second Year of Program in Honors Chemistry
For prerequisites and courses see page 17

(c) Second Year of Program in Honors Physics
For prerequisites and courses see page 32.

(d) Second Year of other Honors Programs
With permission of the Department of Physiology, a student who has completed the First Year of General Program (Natural Sciences) may petition the Dean, Faculty of Science, for recognition of the Second Year of other Honors Programs. If these do not include Organic Chemistry, the student must take Organic Chemistry in the Third Year.

Third Year

Principal Courses

Physiology 300

Physiology and Pharmacology 301

Two of: Anatomy 300, Bacteriology 300, Biochemistry 300 or 406, Biophysics 300, Botany 255, Zoology 352.
Chemistry 203, 313, or 33 may be required for students who have not previously taken Organic Chemistry.
Applied Mathematics 20 or Mathematics 20, 24 or 27 is required of students who have not previously taken a university course in Mathematics.

Subsidiary Courses

Two options

Fourth Year

Students may choose either the Physiology option, or the Physiology and Pharmacology option in this last year of the program.

Physiology option

Principal Courses

History of Scientific Ideas 440

Physiology and Pharmacology 460

Physiology 441, 461, 462, 463, 464, 480

Subsidiary Courses

One option from:

Botany 300; Psychology 255; Mathematics 255; Zoology 465 (only if Statistics not previously taken)

One additional option with permission of the Departments of Physiology and Pharmacology.

Physiology and Pharmacology option

Principal Courses

History of Scientific Ideas 440

Physiology and Pharmacology 460

Pharmacology 441, 461, 480

Two of Physiology 461, 462, 463, 464

Subsidiary Courses

One option from:

Botany 300; Psychology 255; Mathematics 255; Zoology 465 (only if Statistics not previously taken)

One additional option.

Honors BSc Program: Psychology and Physiology

Requirements for Admission: First Year General Program (Natural Sciences) with Psychology 20, Biology 22, or Zoology 20, Chemistry 20, Physics 20 as principal courses. Applied Mathematics 20, or Mathematics 24 or 27 is recommended as one option. For grades required for admission and progression, see page 5.

Second Year

Principal Courses

Psychology 235, 255
Chemistry 203
Zoology 255 or 270

One of: Physics 204, 256, Applied Mathematics 20 or Mathematics 20, 24 or 27 (if not taken previously), Mathematics 250, Applied Mathematics 200.

Subsidiary Course

One option

Third Year

Principal Courses

Psychology 338, 343
Physiology 300, 301

One of: Anatomy 300, Biochemistry 300

Subsidiary Course

One option

Fourth Year

Principal Courses

Physiology 463, 464, 480
Physiology 460, or 461 and 462

Two of: Psychology 234, 236, 337, 349, 445, 446.

Subsidiary Course

One option

Students in this program will undertake a major project in behavioral physiology or sensory processes as part of their experimental work in Physiology 480.

COURSES

30. Human Physiology. A survey course of lectures, demonstrations and laboratory exercises outlining the principles of mammalian physiology with emphasis on human physiology: general properties of the living cell and internal environment, nerve and muscle, cardiovascular, respiratory and gastrointestinal systems; metabolism and nutrition; body fluids and the kidney; the nervous system; endocrine glands; reproduction; controls, regulations and homeostasis. Enrolment limited.
2 lectures; 3 laboratory hours – 4

Prerequisites for Fourth Year Courses: Successful completion of previous year's program or permission of the Head of the Department.

300. Mammalian Physiology. A survey for Honors students.
2 lectures, 3 laboratory hours – 36

301. General Physiology and Pharmacology. (Given in collaboration with the Department of Pharmacology).
A survey of general physiology with special emphasis on cellular physiology as well as general principles of pharmacology.
2 lectures – 31

342. Human Physiology. A survey for students in Honors Physical and Health Education.
2 lectures; 3 laboratory hours – 4

440. History of Scientific Ideas. A survey of the history of science. Given in collaboration with other Departments.
2 hours (half course) – 3

441. Seminar. The presentation of scientific papers and reports and the writing of essays on assigned topics.
2 hours (half course)

442. Physiology of Exercise. A study of the response and regulation of the human cardiovascular, respiratory and neuromuscular systems to acute and chronic exercise. For students in Honors Physical and Health Education and others with adequate preparation.
Prerequisite course in Physiology 342 or equivalent
1 lecture; 3 laboratory hours – 1-5

460. Advanced General Physiology and Pharmacology: The physiology and pharmacology of the cell, excitable tissue, transport of water and solutes, energy exchange. Given in collaboration with the Department of Pharmacology.
2 lectures – 8

461. Systematic Mammalian Physiology: Special physiology of the blood and other fluids, the cardiovascular, respiratory and gastrointestinal systems.
2 lectures (half course) – 13

462. Metabolic Physiology. Selected topics in metabolic and endocrine physiology designed to enable the students to become acquainted with techniques in endocrine and metabolic physiological research and with current areas of interest.
2 lectures (half course) – 17

463. Neurophysiology. The central and peripheral nervous systems and the special senses.
2 lectures (half course) – 21

464. Physiological Controls and Regulations. The role of various systems and control mechanisms in the maintenance of homeostasis and the regulation of behavior.
2 lectures (half course) – 35

465. Behavioral Physiology. Observation and measurement of external behavior and the role of the integrative systems in the control of external behavior.
2 lectures (half course) – 28

480. Laboratory and Tutorial. Designed to provide training in the techniques and methods in modern physiology; emphasis is laid upon individuality of work and resourcefulness. The tutorial supplements the lectures and laboratories of the Fourth Year.
Minimum of 10 hours

ZOOLOGY

Department Chairman (Acting)

J. E. Steele, BSc *Dalhousie;* MSc; PhD *Saskatchewan*

Departmental Office: B-G 344

PROGRAMS

The Department of Zoology offers two programs of study which lead to an Honors BSc degree after four years of study: Honors Biology (Zoology option) and Honors Zoology. Also offered is a program with Zoology as the approved area of concentration which leads to the General BA degree after three years of study.

The student should consult the General section of this Calendar for details of academic regulations, grades required for admission and progression, and the requirements for graduation which pertain to these programs of study in the Faculty of Science.

The Departmental requirements are outlined below:

General BA Program: (Zoology Major)

Students wishing to follow an approved area of concentration in Zoology must include Zoology 43 and Zoology 45 among the four senior courses elected in that subject; Biology 21 or 22 is the normal prerequisite for most senior courses in Zoology and should be included in the First Year General Program. Students electing to follow an area of concentration in Zoology must consult with the Department of Zoology Advisory Committee during the two weeks prior to registration in both their Second and Third Years.

BSc Honors Biology (Zoology option) Program

Requirements for Admission: First Year General Program (Natural Sciences) including the following as principal courses: Biology 22, Chemistry 20, Physics 20 or 22. A course in mathematics is recommended. For grades required for admission and progression see page 5.

Second Year

Principal Courses

Botany 250

Botany or Zoology 255

Zoology 270

Subsidiary Courses

Chemistry 203

Two of: Chemistry 204, Mathematics 24, 27 or Applied Mathematics 20; Geology 20; Physics 204; One Division A or B Course

Caution: All students entering Second Year should examine the prerequisites for courses which they expect to take in subsequent years. All students entering Third and Fourth years are required to participate in the field courses: 363 and 463.

All Third and Fourth Year students must consult the Department of Zoology Advisory Committee during the two weeks prior to registration.

Third Year

Principal Courses

Zoology 265, 352, 354, 363*, 454

Biochemistry 406 or Biochemistry 300

Any course from Division C approved by the Department Advisory Committee

Subsidiary Course

One option **

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*Students should inquire about these field courses at the end of their Second and Third Years since these may be offered before registration time in their Third and Fourth Years.

**Students who plan to continue into Graduate Studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Fourth Year

Principal Courses

Zoology 463*

Four of Zoology 410, 453, 456, 460, 465, 470, 471, 473, 480

Any course from Division C approved by the Department Advisory Committee

Subsidiary Course

One option **

BSc Honors Zoology Program

Requirements for Admission. First Year General Program (Natural Sciences) including Biology 22 and Chemistry 20. For grades required for admission and progression see page 5. All the Natural Science courses that the student has taken will be counted as principal courses. A course in Mathematics is recommended.

Second, Third and Fourth Years

A minimum of 6 courses must be taken in the Second Year and 5 in each of the Third and Fourth Years. Of these, at least 8 must be Zoology courses which must include Zoology 265 and 270 to be taken in the Second Year: of the remainder, 2 courses must be selected from each of Sections II and III listed below, and the other 2 being optional Zoology courses. The student must obtain the approval of the Department Advisory Committee for his program for each year.

Section I Zoology 265, 270, 410, 460, 471

Section II Zoology 255, 354; Zoology 352, 454; although for both of these courses Biochemistry 300 or 406 is prerequisite it may be taken concurrently. (Note that Chemistry 203 is prerequisite to either Biochemistry course).

Section III Zoology 470, 473; Zoology 453 (prerequisite Zoology 354)

The only optional Zoology courses that may be taken in the Second Year are Zoology 255 and 465; Zoology 480 may be taken only in the Fourth Year. A student who lacks the necessary prerequisites for a particular Honors course may with the approval of the Advisory Committee substitute the corresponding general course in the same subject.

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*Students should inquire about these field courses at the end of their Second and Third Years since these may be offered before registration time in their Third and Fourth Years.

**Students who plan to continue into Graduate Studies are advised to select courses which will satisfy the foreign language credit required by many graduate schools.

Zoology 363 and 463 (Field Courses) are required and may be offered prior to registration at the beginning of the Third and Fourth years respectively. Students are advised to register for these courses in the spring of their Second and Third Years.

The remaining 8 courses additional to the 8 required Zoology courses are entirely optional but subject to the approval of the Advisory Committee. Students are reminded that for the "Type A" High School Certificate in Biology, the following are required:

24 credits in Biology with a B average

3 credits in Calculus with a C average

15 credits in Chemistry, Mathematics, Physics (any combination) with a C average

Each of the Zoology courses offered is a full course, counting for 3 credits. For the computation of grades, the principal courses are those courses which are in Natural Science.

COURSES

20. Introductory Zoology. The principles of animal biology as illustrated by a study of the structure and physiology of particular forms. Not offered in 1970-71.
2 lectures, 3 laboratory hours – 7

21. Biology. The fundamental principles of biology with stress on the cell as a unit, the origin and preservation of the individual and the race, the mode of inheritance and the applications of biology to social and economic problems. This course is given by the Departments of Botany and Zoology.
2 lectures, 2 demonstration/laboratory hours – 7

22. Biology. For students in the Faculty of Science. The fundamental principles of biology stressing the features common to all living organisms. This course is given by the Departments of Botany and Zoology.
2 lectures, 3 laboratory hours – 8

30. Mammalian Zoology. The biology of mammals with emphasis upon structure and function, and their adaptive significance.
Prerequisite: Zoology 20 or Biology 21 or Biology 22
2 lectures, 3 laboratory hours – 7

34. Comparative Vertebrate Histology. An introduction to the microscopic structure and development of tissues and organs.
Prerequisite: Zoology 30 or 270
2 lectures, 3 laboratory hours – 21

37. History of Biology. The history of discoveries and the development of biological thought. Not offered in 1970-71.
Prerequisite: one Zoology or Biology course
2 lectures – 3

41. Entomology. The biology and economic importance of insects and related arthropods.
Prerequisite: One Zoology or Biology course
2 lectures, 3 laboratory hours – 8

43. Animal Ecology. Modern ecological theories and their application to current problems concerning human populations and their environment. Reading in classical and modern ecology is required. Students should obtain the reading list in the spring preceding their registration in the course. Lists are available from the Department of Zoology Office.
2 lectures, 3 laboratory hours – 29

44. Embryology. A study of fundamental embryological processes as illustrated by selected invertebrate and vertebrate types.
Prerequisite: Zoology 30 or equivalent.
2 lectures, 3 laboratory hours – 15

45. Principles of Genetics. The principles of Mendelian genetics and the chromosome theory.
Prerequisite: One Zoology or Biology Course
2 lectures – 17

47. Parasitology. A study of parasitism as a way of life, representative animal parasites, host-parasite relationships and parasitological techniques.
Prerequisite: One Zoology or Biology Course
2 lectures, 3 laboratory hours – 36

HONORS COURSES

Students who are not registered in the Honors Program may be admitted to Honors courses if they had a B average in the science courses and in all courses of the previous year together with permission of the instructors.

255. Principles of Genetics. The principles of Mendelian genetics and the chromosome theory, illustrated by lectures and the practical performance of simple breeding experiments.
2 lectures, 3 laboratory hours – 17

265. Invertebrate Zoology. The anatomy and biology of representative invertebrates.
2 lectures, 3 laboratory hours – 14

270. Comparative Vertebrate Zoology. The biology, origin and evolution of the classes of vertebrates; an introduction to some principles of evolution. Restricted to students in Honors Biology and Honors Zoology.
2 lectures, 3 laboratory hours – 33

352. Comparative Physiology. A study of chemical and physical principles of cell function, homeostatic mechanisms and the integration of organ systems in selected invertebrate and vertebrate types.
2 lectures, 3 laboratory hours – 12

354. Comparative Vertebrate Histology. An introduction to the microscopic structure and development of vertebrate tissues and organs.
2 lectures, 3 laboratory hours – 21

363. Biological Field Studies. Study of living organisms in their field environment. The student should be prepared to meet part of his expenses for travel and subsistence.
Prescribed but non-credit

410. Entomology. The biology of insects. Classification, physiology, ecology, insect-control, collecting techniques will be among the topics studied.
2 lectures, 3 laboratory hours – 8

437. History of Biology. The history of discoveries in biology and the development of biological thought. Not offered in 1970-71.
2 lectures – 3

453. Animal Ecology. A rigorous course in population biology. Dynamics of single and multiple species systems. Population structure. Strategies of reproduction and interaction. Diversity and stability in real ecosystems. Emphasis will be placed on the evolution of regulating mechanisms at the population level.
Prerequisite: Zoology 465
2 lectures, 3 laboratory hours – 31

454. Embryology. Principles of development as illustrated by selected invertebrate and vertebrate types.
Prerequisite: Biochemistry 300 or 406
2 lectures, 3 laboratory hours – 15

456. Histological Techniques. A practical course in the techniques of microscopy including sectioning and staining, photomicrography, preparation of illustrations and introductory electron microscopy.
Prerequisite: Zoology 354
3 laboratory hours

460. Insect Taxonomy. The principles and historical development of insect taxonomy and the classification of specimens by means of keys and monographs.
3 laboratory hours – 7

463. Biological Field Studies. Study of living organisms in their field environment. The student should be prepared to meet part of his expenses for travel and subsistence.
Prescribed but non credit

465. Biometry. Methods of measurement and sampling and the application of statistical methods to zoological data.
2 lectures, 3 laboratory hours – 11

470. Evolution. Concepts of species, intra and interspecific variations including polymorphism; selection and gene flow; significance of central changes. A lecture and seminar course available only to students in Honors Zoology.
Not offered in 1971-72
3 lectures – 24

471. Parasitology. A study of parasitism as a way of life, representative animal parasites, host-parasite relationships and parasitological techniques.
2 lectures, 3 laboratory hours – 36

473. Comparative Ethology. An introduction to the study of animal behavior. Not offered in 1970-71.
2 lectures, 3 laboratory hours – 25

480. Tutorial. A course in reading and practical work within a particular field of Zoology under the direction of a staff member.
Prerequisite: average of 70% in Third Year. A student will be admitted only with permission of an instructor.
Full course

NOTE: Certain graduate courses are available to undergraduates with the permission of the instuctor concerned and the Department Advisory Committee.

MEMBERS OF THE FACULTY OF SCIENCE

ANATOMY

Professors

Barr, M. L., SM, BA, MSc, MD; LLD *Queen's, Toronto, and Dalhousie;* Drmedhc *Basel;* FRSC

Buck, R. C., MD, MSc; PhD *London.* (Department Chairman)

Associate Professors

Gwinnett, A. J., BDS *Birmingham;* PhD *Bristol*

Hollenberg, M. J., BSc (Med), MD *Manitoba;* MSc, PhD *Wayne State*

Hoshino, K., MD, DMedSc *Tokyo*

Montemurro, D. G., BA, MSc, PhD

Wilson, A. S., MB, ChB, MD *Glasgow*

Associate Professor of Human Genetics

Soltan, H. C., BA, PhD *Toronto*

Assistant Professors

Altmann, G. G., BSc *Dalhousie;* MSc, PhD *McGill*

Donisch, E. W. K. F., MD *Bonn;* MSc

Gammal, E. B., MB, BCh *Cairo;* PhD

Gwyn, D. G., MB, BS *London;* PhD *Birmingham*

Sergovich, F. R., BA *McMaster;* PhD

Shaver, Evelyn L., BSc, MSc, PhD

Singh, R. P., BA, MSc, PhD

Honorary Lecturers

Robinow, C. F., MD *Hamburg;* FRSC

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

APPLIED MATHEMATICS

Professors

Blackwell, J. H., ED; BSc *Melbourne;* MSc, PhD (Department Head)

Dennis, S. C. R., BSc, ARCS, DIC, PhD *London*

Ehrman, J. B., BA *Pennsylvania;* MA, PhD *Princeton*

Talman, J. D., BA, MSc; PhD *Princeton*

Associate Professors

Luke, T. M., BSc *Queen's;* MSc, PhD *McGill*

Nerenberg, M. A. H., BSc, PhD *McGill* (on leave 1970-71)

Sakmar, I. A., MSc *Istanbul;* PhD *California, Berkeley*

Assistant Professors

Deakin, A. S., BSc *Carleton;* MA, PhD *Toronto*

Manuel, P. W., BSc, MSc, PhD *(Administrative Assistant)*

Norey, P. W., BSc, PhD *London*

Sullivan, P. J., BASc, MASc *Waterloo;* PhD *Cantab* (joint appointment with the Faculty of Engineering Science)

Lecturer

Barton, Elizabeth, BSc, ARCS *London;* MA *Cantab* (joint appointment with the Faculty of Engineering Science)

Visiting Lecturer

Digby, P. J., BSc, PhD *London*

Jackson, F., BSc, MSc *London*

ASTRONOMY

Professor

Wehlau, W. H., AB, PhD *California* (Department Head, Director of the Observatories)

Associate Professor

Gray, D. F., BSc *Wisconsin;* MSc, PhD *Michigan*

Assistant Professors

Marlborough, J. M., BSc, MA *Toronto;* PhD *Chicago*

Mitalas, R., BA, MA *Toronto;* PhD *Cornell*

Moorhead, J. M., BSc *California Institute of Technology;* MA *UCLA*

Lecturer

Wehlau, Amelia, AB, PhD *California* (part-time)

BACTERIOLOGY AND IMMUNOLOGY

Professors

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

Murray, R. G. E., BA, MA *Cantab;* MD, CM *McGill;* FRSC (Department Head)

Robinow, C. G., MD *Hamburg;* FRSC

Clinical Professor

Hatch, L. A., MBBS, DipBact, MCPath *London*

Associate Professors

Ebisuzaki, K., BSc, PhD *Wisconsin*

Medzon, E. L., BSc, MSc *Manitoba;* PhD *McGill*

Robinson, J., BSA *British Columbia;* MSc, PhD *McGill*

Zajic, J. E., MS *Wisconsin;* PhD, JD *Oklahoma*

Clinical Associate Professor

Bakerspigel, A., BA, MA *McMaster;* PhD

Assistant Professors

Rozanis, J., MSc *Hebrew University, Israel;* PhD *McGill*

Sinclair, N. R., BSc, MD, PhD *Dalhousie*

Strejan, G. H., MSc *Romania;* PhD *Hebrew University, Israel*

Wilkins, P. O. B., BM *New York;* MS *Hawaii;* PhD *Pennsylvania*

Clinical Assistant Professor

Campsall, E. W. R., BA *Queen's;* MD, CM *McGill*

Honorary Lecturer

Chodirker, W. B., MSc(Med), MD *Manitoba*

Hannay, C. L., BSA *Toronto;* DIC, PhD *London*

Paterson, J. C., OBE, MD, BSc(Med) *Toronto*

Roslycky, E. B., BSc, MSc *Manitoba;* PhD *Wisconsin*

Toogood, J. H., MD *Toronto;* DipIntMed *McGill;* FRCP(C)

BIOCHEMISTRY

Professors

Bigelow, C. C., BASc *Toronto;* MSc, PhD *McMaster*

Carroll, K. K., BSc, MSc *New Brunswick;* MA *Toronto;* PhD

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

McCarter, J. A., BA, MA *British Columbia;* PhD *Toronto;* FRSC

McMurray, W. C., BSc, PhD

Rossiter, R. J., BSc *U of WA;* BA, MA, DPhil, BM, BCh, DM *Oxon;* FRIC (Eng.); FRSC; Vice President (Academic) and Provost. Professor of Biochemistry

Smith, D. B., BA, MA *British Columbia;* PhD *Toronto*

Stewart, H. B., MD, PhD *Toronto;* PhD *Cantab* (Department Head)

Strickland, K. P., BSc, MSc, PhD

Associate Professors

Ball, Judith K., BSc *Mount Allison;* MSc, PhD *Dalhousie*

Heagy, F. C., MD, MSc, PhD

Magee, W. L., BSc, MSc, PhD

Walker, I. G., BA *Saskatchewan;* MA, PhD *Toronto*

Webling, D.D'A., BSc, MB, BS, PhD *Adelaide*

Assistant Professors

Cook, R. A., BSc, MSc, PhD *Manitoba*

Donisch, Valentine, MD *Bonn;* PhD

Galsworthy, P. R., BSc *Queen's;* PhD *Wisconsin*

Gatfield, P. D., MD *Queen's*

Gordon, B. A., MDCM, MSc, PhD *Queen's*

Guthrie, J. P., BSc; PhD *Harvard*

Haines, D. S. M., BA, MD; PhD *Toronto*

Trevithick, J. R., BSc *Queen's;* PhD *Wisconsin*

Honorary Lecturers

Chefurka, W., BSc *Manitoba;* MSc *Montana State;* PhD *Harvard*

Hudson, A. J., MD, BSc *Toronto;* FRCP(C)

Krupka, R. M., MA *Saskatchewan;* PhD *McGill*

Spencer, E. Y., BSc, MSc *Alberta;* PhD *Toronto;* FRIC

BIOPHYSICS

Professor

Burton, A. C., MBE, BSc *London;* MA, PhD *Toronto;* LLD *Alberta;* FRSC, FRSA; (Department Chairman)

Associate Professors

Groom, A. C., BSc, PhD *London;* FInstP

Inch, W. R., BSc *Queen's;* PhD

Roach, Margot R., BSc *New Brunswick;* MD, CM *McGill;* PhD, FRCP(C)

Taylor, C. P. S., BA *British Columbia;* BA, MA *Oxon;* PhD *Pennsylvania*

Assistant Professors

Canham, P. B., BASc *Toronto;* MSc *Waterloo;* PhD

Duncan, R. I., BS, MS, PhD *Oklahoma*

Sherebrin, M. H., BSc *Manitoba;* MSc, PhD, PEng

Sutherland, R. M., BSc *Acadia;* PhD *Rochester*

Honorary Lecturer

Miller, D. M., BSc *Alberta;* PhD *McGill*

BOTANY

Professors

Cook, F. S., BA, PhD *Toronto*

Cumming, B. G., BSc *Reading;* PhD *McGill*

Hickman, C. J., BSc, MSc, PhD *Birmingham* (Department Head)

McKeen, W. E., BSc, MSc; PhD *Toronto*

McLarty, D. A., BA; PhD *Columbia*

Wilson, D. G., BA, MA *Queen's;* PhD *Wisconsin*

Associate Professors

Cavers, P. B., BSA *Toronto;* PhD *Wales*

Greyson, R. I., BA *British Columbia;* MSc, PhD *Oregon*

Orloci, L., BSF *Sopron;* MSc, PhD *British Columbia*

van Huystee, R. B., BA, MA *Saskatchewan;* PhD *Minnesota*

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

Wellman, Angela M., BSc, PhD *Bristol*

Assistant Professors

Day, A. W., BSc, PhD *Reading*

Fahselt, M. Dianne, BA *Saskatchewan;* PhD *Washington*

Hopkins, W. G., BA *Wesleyan;* PhD *Indiana*

Jancey, R. C., BSc, MSc *Southampton;* PhD *Sydney*

Phipps, J. B., BSc *Birmingham;* PhD

Instructors

Day, Lynne L., BSc *Reading* (part time, joint appointment with Zoology)

Scott, Rosemary E., BSc *Durham* (part time, joint appointment with Zoology)

Weese, Patricia F., BSc *Acadia;* BEd *Alberta*

Wilton, Marilyn, Hons BSc(Biol) *McMaster*

Instructor (Curator)

Johannesen, John K., Diploma, Royal Agriculture College, *Copenhagen*

Honorary Lecturers (part-time):

Minshall, W. H., BSA *Toronto;* MSc, PhD *McGill*

Richardson, L. T., BA *McMaster;* MA, PhD *Toronto*

Venis, M. A., BSc *Reading;* DPhil *Oxon*

Ward, E. W. B., BSc *Wales;* MSc, PhD *Alberta*

CHEMISTRY

Professors

Allnatt, A. R., BSc, PhD *London*

Bolton, J. R., BA, MA *Saskatchewan;* PhD *Cantab*

Brand, J. C. D., BSc, MSc, PhD, DSc *London*

Clark, H. C., BSc, MSc, PhD *Auckland;* PhD *Cantab* (Department Head)

Jacobs, P. W. M., BSc, MSc *Natal;* PhD, DSc *London*

King, J. F., BSc, PhD *New Brunswick*

de Mayo, P., BSc, MSc, PhD *London*

Scott, A. E., BSc, PhD *St. Andrews;* (Dean, Faculty of Science)

Stothers, J. B., BSc, MSc; PhD *McMaster*

Warnhoff, E. W., AB *Washington U;* PhD *Wisconsin*

Associate Professors

Arnold, D. R., BS *Bethany;* PhD *Rochester*

Baldwin, H. W., BA, MA *Saskatchewan;* PhD *Chicago;* (Assistant Dean, Faculty of Graduate Studies)

Bidinosti, D. R., BSc, MSc *Manitoba;* PhD *McMaster*

Graham, D. M., BSc, MSc *Manitoba;* PhD *Brooklyn Poly. Inst.*

Howell, W. C., BSc, MSc, PhD; (Assistant Dean, Faculty of Science)

Kidd, R. G., BSc, MSc *Manitoba;* PhD *London*

Lorimer, J. W., BA, MA, PhD *Toronto* (on leave 1970-71)

Meath, W. J., BSc *Carleton;* PhD *Wisconsin*

Sukava, A. J., BSc, MSc *Manitoba;* PhD *McGill*

Willis, C. J., MA, PhD *Cantab*

Assistant Professors

Bancroft, G. M., BSc, MSc *Manitoba;* PhD *Cambridge*

Baird, N. C., BSc, PhD *McGill*

Chan, R. K., BA, PhD *Toronto*

Demas, Calliope Prevedorou-, BSc *Alexandria;* PhD *London*

Guthrie, P., BSc; PhD *Harvard*

Haines, R. A., BSc, MSc *Dalhousie;* PhD *Pittsburgh*

Hunter, D. H., BSc *Alberta;* PhD *UCLA*

Payne, N. C., BSc *London;* PhD *Sheffield*

Reynolds-Warnhoff, Patricia, AB *Trinity College, Washington, DC;* MSc, MIT; PhD *Southern California*

COMPUTER SCIENCE

Professor

Hart, J.F., BA, MA, PhD *Toronto.* (Department Head)

Associate Professors

Beckhoff, G., BSc *Aachen;* MSc Southern Methodist, *Dallas;* PhD *Laval*

Carroll, J. M., BS *Lehigh;* MA *Hofstra;* PHD *New York*

Assistant Professors

Dunham, C., BA, MA *British Columbia;* PhD

Gargantini, Irene, BA, PhD *Milan*

Pylyshyn, Z. W., BEng *McGill;* MSc, PhD *Saskatchewan* (joint appointment with Psychology)

Visiting Assistant Professors

Steinby, M., BSc, MSc, PhD *Turku*

Lecturers

Bennett, M., BSc *Queen's;* MA (part time)

Dewdney, K., BSc, MA *Waterloo*

Newkirk, R., BSc, MSc

Suttie, P., BASc *Toronto;* MSc

Szilard, A., BA, MA

Honorary Lecturers

Lake, G., BSc *Queen's* (Director of the Computing Center)

Slemon, A. G., BA *Manitoba;* MA; PhD *Toronto;* (Professor of Psychology and Sociology, Althouse College)

Instructors

Colpitts, Beverley (Mrs.), BSc *New Brunswick*

Langland, K., BA *Saskatchewan*

Mayne, Guylaine (Mrs.), BA *Université de Montréal*

GEOLOGY

Professors

Dreimanis, A., Magrernat *Riga;* DSc *Waterloo*

Hutchinson, R. W., BSc; MSc, PhD *Wisconsin*

Reavely, G. H., BA, MA; DIC *Imperial College, Emeritus*

Suffel, G. G., BSc, MSc *Queen's;* PhD *Stanford,*

Winder, C. G., BSc, MSc, PhD *Cornell* (Department Head)

Associate Professors

Church, W. R., BSc, PhD *Wales*

Edgar, A. D., BA, MSc *McMaster;* PhD *Manchester*

Lenz, A. C., BSc, MSc *Alberta;* PhD *Princeton*

Starkey, J., BSc, PhD *Liverpool*

Sutterlin, P. G., BSc *McMaster;* PhD *Northwestern*

Young, G. M., BSc, PhD *Glasgow*

Assistant Professors

Fleet, M. E., BSc, PhD *Manchester*

Hodder, R. W., BA(Geol) *Queen's;* PhD *UCLA, Berkeley*

MacRae, N. D., BSc *Queen's;* MSc, PhD *McMaster*

Honorary Lecturers

Farvolden, R. N., BSc, MSc *Alberta;* PhD *Illinois*

Palmer, H. C., BSc *St.F.X.;* PhD *Princeton* (Associate Professor of Geophysics)

Quigley, R. M., BASc, MASc *Toronto;* PhD *MIT* (Associate Professor of Engineering Science)

GEOPHYSICS

Professors

Beck, A. E., BSc *London;* PhD *Australian National U* (Department Head)

Carmichael, C. M., BSc, MSc, PhD

Visiting Professor

Green, R.

Honorary Professor

Uffen, R. J., BASc, MSc *Toronto;* PhD

Associate Professors

Mansinha, L., BSc, MTech, IIT *Kharagpur;* PhD *British Columbia*

Mereu, R. F., BSc, MA *Toronto;* PhD

Palmer, H. C., BSc *St.F.X.;* PhD *Princeton*

Assistant Professor

Schloessin, H. H., BSc *Zurich;* PhD *Cologne*

MATHEMATICS

Professor

Ali, M. M., BSc, MSc *Dacca;* MS *Michigan;* PhD *Toronto*

Borwein, D., BSc *Witwatersrand;* PhD, DSc *London;* FRSE (Department Head)

Cole, R. H., BA; MA, PhD *Wisconsin* (Senior Professor)

Magee, G. R., BA; MS, PhD *Chicago* (part time)

Moore, J. T., BA; MA *Wisconsin;* PhD *Chicago*

Naylor, D., BSc; PhD *London*

Ritcey, L. F. S., BA *Mount Allison;* MA *Harvard;* PhD *Chicago*

Associate Professors

Bode, Anne E. M., BA, MA *Saskatchewan*

Chan, L. K., BSc *Hong Kong Baptist;* MA, PhD

McKay, D. O., BA, MA, PhD *Buffalo*

Shawyer, B. L. R., BSc, PhD *St. Andrews*

Wonnacott, T. H., BA; PhD *Princeton*

Assistant Professors

Biggs, R. G., BSc *Stanford;* PhD *British Columbia*

Bryan, R. N., BA, MA, PhD *Utah*

Cass, F. P. A., BSc, MSc *Victoria, NZ;* PhD

Delkin, J. L., BA *Reid;* MA *British Columbia*

Florence, J. B., MA *St. Andrews;* MSc *Newcastle-Upon-Tyne;* PhD *Simon Fraser*

Haq, M. S., MA, PhD *Toronto*

Heinicke, A. G., BSc, MSc *Manitoba;* PhD *British Columbia*

Reis, C. M., MA *Oxford;* PhD *Michigan State*

Robinson, I. J. W., BA, MA *Queen's;* PhD

Lecturers

Horrocks, G., MA *Oxon;* FSA; FCIA; AIA (part time)

Mereu, J. A., BA; FSA; FCIA (part time)

Miller, C. B., BA *Saskatchewan;* MA *Illinois*

Milnes, P., BA, MSc *Toronto*

State, E. Y., BSc *Toronto;* MA *Illinois*

PHARMACOLOGY

Professors

Gowdey, C. W., BA, MSc, DPhil (Department Head)

Parker, J. M., MD, DPH, PhD

Associate Professors

Hamilton, J. T., BSc, PhD

Colhoun, E. H., BSA, PhD

Philp, R. B., DVM, PhD

Assistant Professors

Hersey, M. L. W., BSc, MD, PhD, CRCP(C), FACA

Hirst, M., BSc, PhD

Honorary Lecturers

Borda, I. T., MD, FRCP(C)

Lovegrove, T. D., BA, MD, MSc

Meltzer, D. B., BSc, MD, FRCP(C)

Spoerel, W. E. G. A., MD, FRCP(C)

Instructors

Dinel, B., BScPhm

Hansford, D. F., PhmB

Demonstrators

Dubas, T. (Mrs.), BSc

Geddes, B. (Mrs.), BSc

Jackson, D. H., BSc

Mills, D. G., BScPhm

Wildeman, R. A., BScP

PHYSICS

Professors

Brannen, E., BA, MA *Toronto;* PhD *McGill,* (Senior Professor)

Durnford, A. M. I. A. W., BA, MA; PhD *Toronto*

Ferguson, H. I. S., BSc, MSc, PhD

Forsyth, P. A., BA, MA *Saskatchewan;* PhD *McGill;* FRSC (Director, Centre for Radio Science)

Fraser, P. A., BSc; MS *Wisconsin;* PhD

Hay, D. R., BSc, MSc; PhD *McGill;* (Senior Professor)

Lyon, G. F., BA, MA, PhD *Saskatchewan*

McGowan, J. W., BSc *St.F.X.;* MSc *Carnegie Mellon;* DSc *Laval* (Department Chairman)

Vogan, E. L., BSc, MSc; PhD *McGill*

Associate Professors

Bow, Y. F., BS *National Chakiang;* MS, PhD *Michigan State*

Froelich, H. R., BSc *Berlin;* MSc, PhD

Fulford, J. A., BSc, PhD

Moorcroft, D. R., BASc, MSc *Toronto;* PhD *Saskatchewan*

Murty, R. C., BSc *Andhra;* MSc, Dip Lib *Bombay;* PhD *A Inst P*

Rose, G. S., BSc, PhD *Birmingham* (on leave 1970-71)

Stewart, T. W. W., BSc, MSc; PhD *London*

Tong, B. Y., BSc *Hong Kong;* MLS, MA *California, Berkeley;* PhD *California, San Diego*

Assistant Professors

Gallaher, D. F., BASc, MSc, *British Columbia;* MA *Toronto;* PhD *Washington*

Jarmain, W. R., BA; MA *Wisconsin*

John, P. K., BSc *Kerala;* MSc *Madras;* PhD *Ohio State*

Jones, J., BSc, PhD *Sheffield*

Lane-Smith, D. R., BSc, MSc *Manchester;* PhD *Durham*

Lowe, R. P., BSc, PhD

Whippey, P. W., BSc, PhD *Reading*

Senior Demonstrator and Tutor

Chefurka, Patricia M., BSc *Manitoba;* MSc *Montana State*

PHYSIOLOGY

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Stevenson, J. A. F., BS, MS, MD, CM *McGill;* FRSC (Department Head)

Associate Professors

Bondy, D. C., MD; FRCP(C)

Calaresu, F. R., BA *Pavia;* MD *Milan;* PhD *Alberta*

Critz, J. B., BS(Ed), MA, PhD *Missouri*

Dellow, P. G., BDS, MBBS *Adelaide*; FACDS

Seguin, J. J., BSc, MSc, PhD

Vanderwolf, C. H., BSc *Alberta;* MSc, PhD *McGill*

Assistant Professors

Girvin, J. P., MD, PhD *McGill;* FRCS(C)

Harding, P. G. R., MD, MSc; FRCS(C)

Hinton, G. G., BSc, MD, CM; DCH *McGill;* FRCP(C)

Mercer, P. F., DVM *Toronto;* PhD *Cornell*

O'Hea, E. K., BSc(Agr), MSc(Agr), PhD *Illinois*

Squires, B. P., BA, MD, PhD

Stewart, D. J., BSc *British Columbia;* PhD *California*

Honorary Lecturers

Chess, G. F., BASc *Toronto;* MEng *McGill*

Hart, J. S., BA, MA, PhD *Toronto;* FRSC

Manning, G. W., MA, MD, PhD *Toronto;* FRCP(C)

Rounthwaite, F. J., BSc, MD, CM *McGill;* FRCS(C)

Steele, J. E., BSc *Dalhousie;* MSc, PhD *Saskatchewan*

ZOOLOGY

Professors

Battle, Helen I., BA, MA; PhD *Toronto* (part-time)

Judd, W. W., BA, *McMaster;* MA; PhD *Toronto*

Scott, D. M., BSc, PhD *McGill*

Associate Professors

Bourns, T. K. R., BA, MA *British Columbia;* PhD *Rutgers*

Dunbar, R. W., BA, MA, PhD *Toronto*

George, J. A., BSA *Saskatchewan;* MSA *Toronto;* PhD

Keenleyside, M. H. A., BA, MA *British Columbia;* PhD *Groningen*

MacInnes, C. D., BSc *Bishop's;* MS, PhD *Cornell*

McMillan, D. B., BSc, MSc; PhD *Toronto*

Misra, R. K., MSc, PhD *Nagpur;* PhD *Edinburgh*

Purko, J., BA, MSc, PhD

Steele, J. E., BSc *Dalhousie;* MSc, PhD *Saskatchewan* (Acting Chairman)

Assistant Professors

Holsworth, W. N., BSc, MSc, PhD *Western Australia*

Ogilvie, D. M., MSc *New Brunswick;* PhD

Planck, R. J., BS, PhD *California*

Roth, R. R., MSc *Cluj;* PhD *Alberta*

Shivers, R. R., AB, MA, PhD *Kansas*

Instructors

Day, Lynne Lesley, BSc *Reading* (part time, joint appointment with Botany)

Moulton, Marjorie Eleanor, BSc, MSc

Scott, Rosemary Eileen, BSc *Durham* (part time, joint appointment with Botany)

Honorary Lecturers (part-time)

Bond, E. J., BSA *Toronto;* MSc; PhD *London*

Brown, B. E., BSc, MSc, PhD *Illinois*

Chefurka, W., BSc *Manitoba;* MA *Montana State;* PhD *Harvard*

Colhoun, E. H., BSA *Toronto;* PhD *Cantab;* FRES

Monro, H. A. U., BSc(Agr.),MSc, PhD *McGill*

Harris, C. R., BA, MA *British Columbia;* PhD *Wisconsin*

Faculty of Social Science

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FACULTY OF SOCIAL SCIENCE

Dean

Grant L. Reuber, BA; AM, PhD *Harvard,* Professor of Economics

Assistant Dean

David A. Chambers, BA *British Columbia;* MSc, PhD *McGill,* Associate Professor Psychology

The Faculty of Social Science's faculty, courses and programs will be found on the following pages, organized under departments arranged alphabetically. For further information, reference should be made to the first section of this Calendar and to the University's General Information "booklet".

The Faculty of Social Science offers the following programs leading to a Bachelor of Arts (BA) degree:-

Three-year (General) Programs with concentration in a major subject from the following fields: - Economics, Geography, History, Political Science, Psychology, Sociology.

Three-year (General) Program in Secretarial Science.

Four-year (Honors) Programs in Economics, Economics with History options, Economics with Mathematics options, Geography, History, History and English, History and German, History and Philosophy, History and Russian, Journalism, Physical and Health Education, Political Science, Psychology, Psychology and Physiology, Philosophy and Psychology.

One-year, Post BA, Program leading to a Diploma in Journalism.

Social Science 31

Man in Contemporary Society. A course designed to provide students with an interdisciplinary way of exploring and understanding the relationships between themselves and society as well as the values and attitudes of society. Registration will be limited to the first 100 students who choose to register in the course and who have successfully completed at least one year in the faculty of Social Science.
3 lecture/discussion hours

ANTHROPOLOGY AND ARCHAEOLOGY

Anthropology 20. Introduction to Anthropology. A survey of the basic concepts and teachings of Anthropology. Discussion topics include: the origin of man; origin and development of culture and social structure; nature of race; comparative study of such cultural institutions as language, art and religion; ethnology of a selected area.
3 hours

ECONOMICS

Chairman and Professor

R. J. Wonnacott, BA; AM, PhD *Harvard*

Requirements for Admission. First Year General Program (Arts, Social Science or Natural Science) with Economics 20 as a principal course. Students may be allowed to enter the Honors Program without Economics 20 if they have an average of 75% in all courses taken in First Year. Mathematics 20, 24 or 27 will normally be required, and should be taken as early as possible: however, students may not obtain credit for more than one of these courses. Students who wish to take only one Mathematics course should select Mathematics 20; those who wish more than one should initially select Mathematics 24 or 27 and follow it with Mathematics 254.

Honors students will not receive credit for Mathematics 35. All options must be approved by the Department.

SECOND YEAR

Principal Courses

Economics 200, 230, 237, 255

A Mathematics Course or Business 250

Subsidiary Course

One option other than Economics

THIRD YEAR

Principal Courses

Economics 340, 351, 360

Subsidiary Courses

Three options, including at least two honors courses in Economics or other subjects.

FOURTH YEAR

Principal Courses

Economics 400

Two Honors Economics Courses

Subsidiary Courses

Two options, including at least one honors course in Economics or other subjects.

ECONOMICS WITH HISTORY OPTIONS

Requirements for Admission. First Year General Program (Arts or Social Science) with Economics 20 and History 20 as principal courses. It is recommended that Mathematics 20, 24 or 27 be taken as early as possible.

SECOND YEAR

Principal Courses

Economics 230, 237, 255

Two options in Honors History

Subsidiary Course

One option

THIRD YEAR

Principal Courses

Economics 340, 351, 437

Two options in Honors History

Subsidiary Course

One option

FOURTH YEAR

Principal Courses

Economics 447

Two Honors Economics courses

One Honors History course

Subsidiary Course

One option

ECONOMICS WITH MATHEMATICS OPTIONS

Requirements for Admission. First Year General Program (Arts, Social Science or Science) with Economics 20 and Mathematics 24 or 27 as principal courses.

SECOND YEAR

Principal Courses

Economics 230, 237, 255

Mathematics 250 and 256 or 278

Subsidiary Course

One option

THIRD YEAR

Principal Courses

Economics 340, 351

Mathematics 355, 363

One Honors Economics Course

Subsidiary Course

One option

FOURTH YEAR

Principal Courses

Economics 360, 400

Mathematics 453

One Honors Economics course

Subsidiary Course

One option

GENERAL COURSES

All students who wish to make Economics their area of concentration will be required to take any four senior Economics courses. Students who may later plan to enroll for a two-year M.A. program are strongly advised to take Economics 30 and 33.

20. Introduction to Economics. The nature of economics, economic organization, national income, money and banking, economic fluctuations, public finance and fiscal policy, price determination, international trade, and Canadian economic problems. One section of this course is taught in French.
3 lectures and 1 option tutorial hour – 15

30. Price and Income Analysis. A study of the allocation of resources under various market conditions; the measurement and determination of national income, employment and prices.
Prerequisite: Economics 20
3 hours – 34

31. International Trade and Finance. A discussion of the principles of international economics and their application to contemporary problems in the international economy.
Prerequisite: Economics 20
3 hours – 6

32. Soviet Economics. Historical and doctrinal background; the structure and operation of the Soviet economy including central planning techniques; contemporary problems. Attention will concentrate on the USSR.
Prerequisite: Economics 20
3 hours – 20

33. Money and Banking. Monetary theory, banking theory and practice, monetary policy and domestic stabilization, international monetary problems.
Prerequisite: Economics 20
3 hours – 15

35. Descriptive Statistics. Classification of statistical units; collection, processing, derivation, presentation, evaluation and analysis of statistical data; national accounting and forecasting.
Prerequisite: Economics 20
3 hours – 10

36. Labour Economics. A study of the labour market, wage determination and the relationship between wages, employment and prices.
Prerequisite: Economics 20
3 hours – 4

37. Economic History of North America. An examination of the sources of North American economic development.
Prerequisite: Economics 20
3 hours – 9

38. Economic Development. A review of the principles of economic development and their application to contemporary problems.
Prerequisite: Economics 20
3 Hours – 28

39. Resource Allocation and Growth Policies in Canada. The principles of resource allocation and economic growth applied to the problem of devising public policies to stimulate the growth of the Canadian economy.
Prerequisite: Economics 20
3 hours – 24

43. Public Finance. A survey of the role of government, the economic effects of taxes and public expenditures, fiscal policy for stability and growth and intergovernmental relationships.
Prerequisite: Economics 20
3 hours – 31

47. The International Economy in Historical Perspective. A study of the emergence of the international economy in the later nineteenth century, its contraction during the inter-war years, and the attempts at revival since 1945.
Prerequisite: Economics 20
3 hours – 5

HONORS COURSES

Honors Courses are restricted to students who have the prescribed prerequisite and are enrolled in Honors Economics, Mathematics, History, or any other Honors Course and to students enrolled in Pre-business and Engineering Science.

200. Introductory Seminar in Economic Policy.
Prerequisite: Economics 20
2 hours

230. Economic Theory.
Prerequisite: Economics 20 with at least 70% or permission of the instructor
3 hours – 17

237. The Economic Development of the Modern World in Recent Times.
Prerequisite: Economics 20
3 hours – 5

255. Statistics.
Prerequisite: Economics 20 or permission of the instructor
3 hours – 25

300. Intermediate Seminar in Economic Policy.
Prerequisite: Economics 230
2 hours

340. National Income and Business Cycles.
Prerequisite: Economics 230
3 hours – 9

351. International Economics.
Prerequisite: Economics 230
3 hours – 36

360. Resource Allocation and Economic Welfare.
Prerequisite: Economics 230
3 hours – 3

400. Advanced Seminar in Economic Policy.
Prerequisites: Economics 340, 360
2 hours

410. Mathematical Economics.
Prerequisites: Economics 230 and Mathematics 20, 24 or 27 or permission of the instructor
3 hours – 1

433. Monetary Theory and Policy.
Prerequisite: Economics 340
2 hours – 36

434. Industrial Organization.
Prerequisite: Economics 230
2 hours – 24

437. North American Economic History.
Prerequisite: Permission of the instructor.
2 hours – 16

447. The Economic Development of Modern Europe since 1850.
Prerequisite: Permission of the instructor
2 hours – 27

450. History of Economic Thought.
Prerequisite: Economics 230 or permission of the instructor
2 hours – 20

455. Econometrics.
Prerequisite: Economics 255 or permission of the instructor
3 lectures and 1 tutorial hour – 5

463. Public Finance.
Prerequisite: Economics 230
2 hours – 8

470. Contemporary Economic Problems and Policy.
Prerequisite: Economics 230
2 hours – 30

GEOGRAPHY

Chairman and Associate Professor

V. W. Sim, BA *McMaster;* MA *Clark;* PhD *McGill*

Requirements for Admission. First Year General Program (Arts, Social Science or Natural Science) with Geography 20 as a Principal course. A student who wishes to enter Second Year and has not taken Geography 20 will cover a prescribed reading program during the summer before Second Year, pass a written and/or oral examination during the first week of lectures in September, complete the laboratory exercises for Geography 20 during the academic year and write the Geography 20 Spring examination.

SECOND YEAR

Principal Courses

Geography 200, 230, 232, 241

During the first two years the following courses must be completed. Economics 20, Geology 20 or 21.

Students who intend to continue into Graduate studies are advised to take French 20 or foreign language 20 not later than Second Year.

Options must be selected in consultation with a Departmental Adviser.

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Geography 339, 343

Two of: Geography 345, 346, a 400-level Geography course

Subsidiary Courses

Three options. One of these options may be any Geography course, including a 400-level course

FOURTH YEAR

Principal Courses

Geography 443 (half course), 448 (half course), 450 (one and a half courses)

One of: Geography 430, 431, 432, 433, 434, 435, 437, 439, 440, 447.

One of: Geography 460, 461, 462, 463, 464, 465, 466, 467, 468

Subsidiary Courses

One option

General BA students wishing to elect an area of concentration in Geography must consult with the Department.

GENERAL COURSES

20. Introduction to Geography. A systems introduction to geography; investigation of the spatially interacting systems within the limits of human habitability.
2 lectures and 2 hours practical work – 3

30. Processes of Landscape Development. Examination of the landscape of selected Canadian regions with particular emphasis on the relationship between climate and the geomorphic processes which are presently active. Some attention will be given to the role of man in altering the natural landscape.
Prerequisite: Geography 20 or permission
2 lectures and 2 hours practical work – 10

32. Cultural Geography. Concepts, systematic distribution, regional constructs, world perspective, and problems of cultural geography.
2 lectures and 2 hours practical work – 35

33. Introduction to Urban and Regional Development. Spatial aspects of physical, economic and social systems in urban areas and urban-centred regions; principles of land use planning and development; current planning problems and selected case studies.
2 lectures and 1 hour tutorial – 6

39. Elements of Economic Geography. A conceptual interpretation of the factors influencing the spatial distribution of economic activities.
2 lectures and 2 hours practical work – 12

40. Political Geography. The human geography basis of the world's territorial divisions: concepts, selected regional examples, and some applications.
Prerequisite: 1 course in geography.
2 lectures and 1 hour tutorial – 18

45. Geography of North America. The geographic basis of human occupance in North America with particular attention to regional analysis and practical case studies. The natural wealth of North America and its conservation through wise development and use.
Prerequisite: 1 course in Geography or permission
2 lectures and 2 hours practical work – 31

46. World Regional Geography. A comprehensive systematic survey in world regional geography.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 3

47. Geographical Aspects of North American History. An introduction to the main themes of the historical geography of North America.
Prerequisite: 1 course in Geography or permission
2 lectures and 2 hours practical work – 24

HONORS COURSES

200. Quantitative Methods in Geography. Methods of analyzing geographical data; an introduction to statistical methods. Mathematics 20 or 24 is strongly recommended (may be taken concurrently).
2 lectures and 2 hours practical work – 25

230. Physical Geography. Studies of the environmental factors, meteorology, climatology, geomorphology, hydrology, vegetation, and soils, their interrelationships, techniques of measurement and classification.
Prerequisite: Geography 20 or equivalent
2 lectures and 2 hours practical work – 8

232. Cultural Geography. Concepts, systematic distribution, regional constructs, world perspective, and problems of cultural geography.
2 lectures and 2 hours practical work – 35

241. Cartographic Representation and Photo Interpretation. Scales and projections, map making, surveying on the ground and from the air, official and professional maps, cartographic specialties. Techniques in the use of air photos in geographic analysis.
Prerequisite: Geography 20 or permission
1 hour lecture and 4 hours practical work – 21

339. Economic Geography. A systems analysis of the spatial organization of natural resources, agriculture, manufacturing, transportation and communication and tertiary activity.
Prerequisites: Geography 200 or permission. Computer Science 20 or 34 strongly recommended
2 lectures and 2 hours practical work – 12

343. Field Methods and Practices. Departmental field camps and field trips as arranged; attendance at geographical meetings as required; special studies and practical problems in field techniques. Sessions and hours by arrangement. (half course)

345. Geography of North America. A detailed analysis of the regional geography of North America, case studies and type areas; special attention to major geographical regions shared by Canada and the United States.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 31

346. World Regional Geography. A systematic analysis of the major environments with emphasis on problems of resource use. Regional samples are analysed in detail emphasizing culture and cultural progression. Practical work includes map analysis and seminars on selected problems.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 3

430. Meteorology and Climatology. The basic meteorological processes; readings in climate classification, regional climate, microclimatology, climatic change, and applied climatology.
2 lectures and 2 hours practical work – 4

431. Geomorphology. Examination of recent periodical literature with particular emphasis on geomorphic process, current research techniques, and the physiographic development of selected Canadian regions.
Prerequisite: Geography 230 or permission
2 lectures and 2 hours practical work – 5

432. Advanced Cultural Geography. Seminar lectures and discussions towards the development of a quantitative theoretical world cultural geography.
Prerequisite: 3 courses in Geography, including Geography 232
2 lectures and 2 hours practical work – 7

433. Urban Geography. Systems of cities; urban land use; social, cultural, and political patterns within the city; urban problems.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 11

434. Agricultural Geography. A general study of the factors involved in agricultural production and the classification of agricultural systems. Topical and regional studies with particular attention to tropical and underdeveloped areas.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 9

435. Introduction to Resources Management. Aspects and problems of the use, misuse, and deterioration of mineral, soil, biotic, water, and landscape resources.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 13

437. Recreation Geography. Examination of leisure resources, comparison of urban and rural recreational land use patterns; the areal and seasonal variations in intensity of use of land; case studies of the impact of recreation upon various areas.
Prerequisite: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 16

439. Advanced Economic Geography. The techniques of Regional Science, including the application of input-output analysis, linear programming, the gravity model and graph theory to the analysis of spatial systems.
Prerequisite: Geography 339, or permission
2 lectures and 2 hours practical work – 5

440. Advanced Politicial Geography. Examination in depth of selected aspects of political geography with special reference to applications of current theories and models.
Prerequisite: 3 courses in geography
2 lectures and 2 hours practical work – 25

443. Field Methods and Practices. Departmental field camps and field trips as arranged; attendance at geographical meetings as required, special studies and practical problems in field techniques.
Mandatory for Fourth Year Honors
Sessions and hours by arrangement. (half course)

447. Historical Geography. Studies and methodological approaches to historical geography with special reference to Ontario.
Prerequisites: 2 courses in Geography or permission
2 lectures and 2 hours practical work – 10

448. Senior Seminar in Geography. Presentation and discussion of papers on various geographical subjects; informal discussion of topics of current geographical interest; occasional lectures and symposia by staff and visiting professors.
Mandatory for Fourth Year Honors
Hours by arrangement. (half course)

450. Senior Research and Report in Geography. A report on a geographical problem including the results of field work, cartographic representation, and a study of the relevant literature.
Restricted to and mandatory for Fourth Year Honors
Hours by arrangement. (One and one-half courses)

SENIOR STUDIES IN THE REGIONAL GEOGRAPHY OF SIGNIFICANT WORLD AREAS

460. Canada. Regional aspects of the natural resources of Canada and their use; the basis of human occupance in Canada; geographical problems in national development.
Prerequisite: 3 courses in Geography or permission
2 lectures and 2 hours practical work – 22

461. United States. A study of the geographic factors in the regional development of the United States; a systematic analysis of the overall occupance and economy with ten detailed type studies of selected areas to illustrate problem solving techniques.
Prerequisite: 3 courses in Geography or permission
2 lectures and 2 hours practical work – 30

462. Latin America. Regional study of economic and cultural geography; analysis of economic, cultural, and political development in the Latin American context.
Prerequisite: 3 courses in Geography or permission
2 lectures and 2 hours practical work – 32

463. Western Europe. A systematic analysis of the regional geography of Western Europe; type studies.
Prerequisite: 3 courses in Geography or permission
2 lectures and 2 hours practical work – 34

464. U.S.S.R. and Eastern Europe. (Not given 1970-71)
– 36

465. Middle East (Southwest Asia and North Africa). (Not given 1970-71)
– 22

466. Africa. (Not given 1970-71)
– 30

467. Malaysia, Australasia, and the Pacific. (Not given 1970-71)
– 34

468. South, East, and Southern Asia. (Particularly India, China, Japan). (Not given 1970-71)

HISTORY

Chairman and Associate Professor

C. A. Ruud, BA *Willamette;* AM *Harvard;* PhD *Berkeley*

Requirements for Admission. First Year General Program (Arts or Social Science) with History 20 and two other courses as principal courses and one language other than English.

SECOND YEAR

Principal Courses

Three courses from the History 200 and 300 Series. 231, 234, and 236 must be completed before entering Fourth Year.

Subsidiary Courses

Two options selected with the approval of the History Department, one of which should be an Honors course.

Before entering the third year a student must have completed a language other than English at the 20 level.

Students intending to pursue graduate studies are advised that a language other than English is generally required for the MA and that two languages other than English are generally required for the PhD.

THIRD YEAR

Principal Courses

Three courses chosen form the 300 and 400 series, at least one of which must be History 330, 335, 337, 346, 356. Permission of the instructor must be obtained for entry into a 400 course.

Subsidiary Courses

Two options selected with the approval of the History Department, one of which must be an Honors course.

FOURTH YEAR

Principal Courses

Three courses from the History 300 and 400 series.

Subsidiary Courses

Two options selected with the approval of the History Department, one of which must be an Honors course.

HISTORY AND GERMAN

Requirements for Admission. First Year General Program (Arts or Social Sciences) with History 20, German 20, and one other course as principal courses.

SECOND YEAR

Principal Courses

History 231, 236
German 290, 291

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Two of: History 330, 335, 346, 356
German 333, 390, 391

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Two of: History 330, 356, 436, 456, 460
German 420, 480, 481, 495*

Subsidiary Courses

One option

HISTORY AND PHILOSOPHY

Requirements for Admission. First Year General Program (Arts or Social Science) with History 20, Philosophy 20, and one other course as principal courses.

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*Comprehensive Examination in the Spring

SECOND YEAR

Principal Courses

The History department **recommends** the following courses: History 231 and 236. Students are free to choose others from the History 200 and 300 series.
Philosophy 254; either 256 or 257

Subsidiary Courses

One course in English
One option (History 20 if not taken previously)

THIRD YEAR

Principal Courses

Two History courses to be chosen from the 300 series or, with the permission of the instructor, from the 400 series
Either Philosophy 256 or 257; one 300 level Philosophy course.

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Five Principal Courses are to be chosen.
Two or three courses chosen from the History 300 or 400 series.
Two or three of: Philosophy 351 or any 400 level Philosophy course.

HISTORY AND RUSSIAN

Requirements for Admission. First Year General Program (Arts or Social Science) with History 20. Russian 20 (or either 2 or 10) and one other course. (Students who begin Russian in the University will take Russian 2 in the First Year and Russian 20 in the Second Year).

SECOND YEAR

Principal Courses

History 236
Russian 280, 281

Subsidiary Courses

History 37
Two options, or one option and Russian 20

THIRD YEAR

Principal Courses

History 335, 337
Russian 390, 391

Subsidiary Courses

Two of: Politics 349, 434; Economics 32; Geography 464

FOURTH YEAR

Principal Courses

2 History courses at the discretion of the Chairman of the Department
Russian 420, 491, 495*

Subsidiary Courses

One of: Politics 348, 434; Economics 32; Geography 464

GENERAL COURSES

History 20 is a prerequisite for all courses in History, unless permission of the Department is obtained, except for those students already admitted to an Honors Program in a related Department.

General BA students wishing to elect an area of concentration in History must earn credit in four senior History courses and must have his program approved by the Department of History.

The Department is prepared to consider admitting General BA students to honors courses (numbered from 200 up) on an individual basis, subject to the availability of places and the qualifications of the individual student. Enquiries as to current conditions should be directed to the Chairman of the Department who will consult with the instructor(s) involved.

20. Modern Europe. 1715 to the Present. (Staff)
3 hours – 14

30. Mediaeval Europe. From the 4th to the 15th Centuries. (Rowe, Lander)
3 hours – 34

31. Canada. From the beginnings of the French Régime to 1957. (Armstrong, Rider)
3 hours – 29

32. England to 1688. A survey of English History from the Anglo-Saxons. (Balderston)
3 hours – 10

33. British Empires. A comparative study of the theory, practice, and legacy of British Imperialism in America, India, and Africa. (Osuntokun)
3 hours – 32

34. The United States, Colonial Period to the Present. Emphasis first term upon the emergence of the American nation, the equalitarian impulse, national expansion and sectional conflict; second term, upon the great transformations of the modern era: the growth of industrialism, big government, a pluralistic society, and international predominance. (Simpson)
3 hours – 36

35. England since 1688. English political, social, economic, and diplomatic development. (Stockdale)
3 hours – 18

36. Modern Europe. From the beginning of the 16th century to 1715. (Metzger)
3 hours – 13

37. Russia. A general survey of Russian history. (Ruud)
3 hours – 6

38. Latin America. An introduction to Latin America. The First term emphasizes the colonial foundations of Spanish and Portuguese civilization in the New World; the second term emphasizes the growth of the individual republics, personalist rule, federalism vs. centralism, revolution, and 'the static society.' (Ogelsby)
3 hours – 30

39. Modern China and Japan. A survey of the cultural and political condition of China and Japan at the time of the arrival of the Europeans; the impact of the west on the government, economy, society, and thought of these nations, particularly since 1800. (Cornwall)
3 hours – 1

40. Selected Topics in the History of Mediaeval Europe. (Not offered 1970-71).
3 hours – 12

41a. Selected Topics in the History of Canada. Problems in Canadian Social History. (Emery)
Prerequisite: History 31 or permission of the instructor.
3 hours – 28

41b. Selected Topics in the History of Canada. Party Politics, 1867-1957. (Neary)
Prerequisite: History 31 or permission of the instructor.
3 hours – 15

42. Selected Topics in the History of 20th Century International Relations. Particular emphasis is placed on the impact of Nazi and Communist ideologies, the effects of changing technology, and the rise of independent states in Africa and Asia. (Hilborn)
Prerequisite: Students must have completed their second year or have the permission of the instructor.
3 hours – 20

*Comprehensive Examination in the Spring

44a. Selected Topics in American History. The United States, 1841-1901: The Prelude to Modern America. (Not offered 1970-71)
Prerequisite: History 34 or permission of the instructor.
3 hours – 9

44b. Selected Topics in American History. The United States in the 20th Century. Attention is focused on domestic developments. Emphasis first term is upon Progressivism, with particular attention to Jane Addams, Theodore Roosevelt, and Woodrow Wilson. The second term is devoted to the Great Depression, the New Deal, and the Civil Rights Movement. (Hohner)
Prerequisite: History 34 or its equivalent
3 hours – 26

46a. Selected Topics in European History. Modern Germany, 1848-1945. (Hoffman)
3 hours – 19

46b. Selected Topics in European History. Modern France since 1815. (Gwynne-Timothy)
3 hours – 8

46c. *Selected Topics in European History.* The Habsburg Monarchy and the Balkan Peninsula. (Pavloff)
3 hours – 2

46d. Selected Topics in European History. English Thought and Society, 1870-1914. (Stockdale)
3 hours – 14

48. Selected Topics in Latin American History. Race and Revolution in Latin America. Emphasis on the Conquest, the Wars of Independence, and the Haitian, Mexican, and Cuban revolutions. (Ogelsby)
Prerequisite: History 38 or its equivalent
3 hours – 22

HONORS COURSES

231. Canada. From the beginning of the French Régime to 1957. (Emery, Neary)
3 hours – 29

234. The United States, Colonial Period to the Present. Emphasis first term upon the emergence of the American nation, the equalitarian impulse, national expansion and sectional conflict; second term, upon the great transformations of the modern era: the growth of industrialism, big government, a pluralistic society, and international predominance. (Guinsburg)
3 hours – 36

236. Europe and England in the 16th and 17th centuries. (Metzger)
3 hours – 13

330. The High Middle Ages. Charlemagne to the end of the 13th century. (Rowe)
3 hours – 21

331. Selected Topics in the History of Canada. The Development of Western Canada and Northern Canada. (Zaslow)
Prerequisite: History 231 or permission of the Instructor
3 hours – 25

333. The First British Empire. Seminar on selected areas; Elizabethan expansion to the American Revolution. (Not offered 1970-71)
3 hours – 32

334. *Foreign Policy of the United States since 1775.* A study of the interaction between domestic forces—ideological, political, and economic—and external forces in the development of United States foreign policy. (Guinsburg)
Prerequisite: History 234 or its equivalent
3 hours – 14

335. England, 1715-1914. A study of English history in the 18th and 19th centuries, stressing as a central theme the development of the modern state. The course will be based mainly on the writings of the following contemporary authors: Locke, Bolingbroke, Burke, Adam Smith, Paine, Bentham, James Mill, Engels, Robert Owen, Newman, and the Fabian Essayists. (Dreyer)
3 hours – 18

337. Russian–U.S.S.R. The 19th and 20th centuries, with special emphasis on intellectual history. (Pavloff)
3 hours – 6

338. Latin America. An introduction to Latin America. The first term emphasizes the colonial foundations of Spanish and Portuguese civilization in the New World; the second term emphasizes the growth of the individual republics, personalist rule, federalism vs. centralism, revolution, and 'the static society.' (Ogelsby)
3 hours – 30

339. Modern East Asia. The social, economic, and political history of Modern East Asia, with emphasis on the problems of modernization in China and Japan. (Cornwall)
3 hours – 1

344. The United States, 1783-1877. The Development of the American Nation. Emphasis upon the framing of the Constitution, the emergence of political parties, the growth of nationalism and sectionalism, the impact of equalitarianism, and the disintegration and restoration of the Union. (Simpson)
Prerequisite: History 234 or its equivalent
3 hours – 34

346. Modern France. From 1715 to the Present. (McLaughlin)
3 hours – 24

356. Modern Germany. 1701 to the Present. (Hoffman)
3 hours – 9

400. Senior Thesis. With permission of the Department.

410. Urban. A study of the city in History, its evolution, problems, and influence on civilization. (Armstrong)
3 hours – 27

431. Canada since 1867. Emphasis on selected topics and seminar discussion. (Kerr)
3 hours – 7

432. England, 1399-1642. A political, social and constitutional study of England from the 15th century to the mid-17th century.
(Not offered 1970-71)
3 hours – 10

433. The Second British Empire and Commonwealth. (Gwynne-Timothy)
3 hours – 19

434. The United States, 1841-1901. The Prelude to Modern America. Emphasis on economic, social, and constitutional developments against the general background of the period.(Overton)
Prerequisite: History 234 or its equivalent
3 hours – 17

436. Selected Topics in European Intellectual History. The Rationalist Tradition and its Critics, 1660-1900. (Emerson)
Prerequisite: History 236 or permission of the instructor
3 hours – 22

441. French-Canadian Nationalism. (Not offered 1970-71)
3 hours – 2

444. The United States in the 20th Century. Attention is focused on domestic developments. Emphasis first term is upon Progressivism, with particular attention to Jane Addams, Theodore Roosevelt, and Woodrow Wilson. The second term is devoted to the Great Depression, the New Deal, and the Civil Rights Movement. (Hohner)
Prerequisite: History 234 or its equivalent
3 hours – 16

448. Selected Topics in Latin American History. Race and Revolution in Latin America. Emphasis on the Conquest, the Wars of Independence, and the Haitian, Mexican, and Cuban revolutions. (Ogelsby)
Prerequisite: History 338 or its equivalent
3 hours – 5

451. British North America. A study of the comparative development of the colonies, with particular reference to Ontario, and an examination of their relations with Great Britain, 1759-1864. (Armstrong)
3 hours – 23

452. English Constitutional. A study of the development of the English constitution from the Anglo-Saxon monarchy to 1688. (Balderston)
3 hours – 35

456. European International Relations since 1871. The course includes the foreign policies of Great Britain and Continental Powers with respect to non-European nations. Lectures and seminars. (Hilborn) (Not to be offered 1971-72)
3 hours – 11

457. Warfare. With emphasis on the relations between warfare and modern political, economic, and social conditions. (Hyatt)
3 hours – 31

460. The Transition from Mediaeval to Modern Civilization. The economic, social, political, religious, and cultural developments of the period from 1300 to 1600. (Ferguson)
3 hours – 26

461. Canadian-American Relations since 1760. (Wade)
3 hours – 34

JOURNALISM

Chairman and Professor

J. L. Wild, BA; MA *Michigan*

Requirements for Admission. First Year General Program (Arts or Social Science) with Journalism 20 as a principal course and English 20. Transfer students from other Colleges or Programs must include Journalism 20 in Second Year if it has not been completed and delay 250 until Third Year.

SECOND YEAR

Principal Courses

Journalism 250, 255, 260
History 31

Subsidiary Courses

Senior course in English, or French or a foreign language
Social Science course (Politics 20 if not completed previously)
One option

THIRD YEAR

Principal Courses

Journalism 350, 351, 356, 375
Politics 362

Subsidiary Courses

Senior course in English, or French or a foreign language
One option

FOURTH YEAR

Principal Courses

Journalism 451, 455
Two Senior Social Science courses

Subsidiary Courses

Senior course in English, or French or a foreign language
One option

DIPLOMA IN JOURNALISM

Requirements for Admission. A degree in a field other than journalism from a recognized university.

Candidates for the Diploma in Journalism will take the prescribed courses and complete special assignments in reporting, writing and editing.

An average of 60% is required for the Diploma.

Principal Courses

Journalism 255, 260, 351, 356, 375, 400, 455

GENERAL COURSES

Students should be proficient in typewriting by the beginning of the second year.

20. Introduction to Journalism. A survey of news media with emphasis on the daily newspaper; newswriting, reporting; lectures, workshops, field trips, seminars on current events. Students who hold credit for Journalism 21 may not elect Journalism 20 unless they are registered in an Honors Journalism Program.
3 hours – 33

21. Survey of Mass Communication. The structure of the media of mass communication; relationship of the media to the social, economic, political and cultural environment; elements of mass communication theory; critical analyses of the media with reference to the main issues in the news. Students who hold credit for Journalism 20 may not elect Journalism 21, nor may Journalism 20 and Journalism 21 be taken concurrently.
3 hours – 33

HONORS COURSES

250. News Writing and Reporting. Reporting specialized fields; techniques and problems in reporting public affairs, social, economic, and political news; ethics of reporting; feature writing; pictorial journalism.
Prerequisite: Journalism 20
4 hours – 24

255. History of Journalism. A survey of the development of journalism in the British Isles, the United States and Canada.
2 hours; half-course – 25

260. Law for Journalists. Basic principles of the common law with special emphasis on access to news, legal guarantee, and limits of freedom of the press; defamation; contempt of court and copyright.
1 hour: half-course – 13

350. Interpretative News Writing and Reporting. Depth reporting; interpreting the news; reporting social developments; news analysis; reviewing the arts and critical writing; editorial and column writing.
Prerequisite: Journalism 250
4 hours – 12

351. Newspaper Production. Newsroom organization; copy editing; page makeup; survey of the mechanical phases of newspaper production.
Prerequisite: Journalism 250
3 hours: half course – 5

356. Radio News Writing and Reporting. Comparative study of newspaper and radio writing and news treatment; writing and editing of newscasts; radio interviewing.
Prerequisite: Journalism 250
2 hours: half-course – 32

375. Feature and Magazine Article Writing, Magazine Editing. Feature writing for newspapers, article writing for industrial, trade and general circulation magazines, including assignments and a study of freelancing, readership, research, interviewing, organization, rewriting, style. Elements of magazine editing and production.
Prerequisite: Journalism 250
2 hours: half-course – 35

400. Newswriting and Reporting. For students registered in the Diploma Program in Journalism. Writing for mass communication; the forms and style of journalistic prose; reporting methods; news evaluation; interpretative reporting; world news editing and reporting. This course is the equivalent of Journalism 250, 350, 451.
12 hours – 5

451. Communication Problems. Nature, function, process and effects of communication, aspects of the mass media (newspaper, magazine, radio, film and TV), historic development, general semantics, public opinion, propaganda. Papers and projects on mass communication. Lectures, seminars.
Prerequisite: Journalism 350
4 hours – 5

455. Radio Documentaries, Television News and Documentaries. Research, interviewing, tape-recording, writing, TV-scripting; editing and producing programs with use of University closed circuit television facilities; commentary, history of Canadian broadcasting; lectures; workshops. Use of TV film camera.
Prerequisite: Journalism 356
3 hours – 19

PHYSICAL AND HEALTH EDUCATION

Chairman and Professor

W. J. L'Heureux, BA; MA *Michigan;* LLD *New Brunswick*

Requirements for Admission. First Year General Program (Arts, Natural Science, or Social Science) with Physical Education 20 and any three others as principal courses. Biology is required if Grade 13 Biology has not been successfully completed.

SECOND YEAR

Principal Courses

P.H.E. 251 and 3 courses from the 200 and 300 P.H.E. series, including Anatomy 254 and Physiology 342.

Subsidiary Courses

2 options approved by the Department.

THIRD YEAR

Principal Courses

PHE 351 and 3 courses from the 200, 300, and 400 PHE series, including Anatomy 254, Psysiology 342 and 442. Permission of the instructor is required for entry into a 400 course.

Subsidiary Courses

2 options approved by the Department.

FOURTH YEAR

Principal Courses

P.H.E. 451 and 3 courses from the 200, 300 and 400 P.H.E. series, including Anatomy 254, Psysiology 342 and 442.

Subsidiary Courses

2 options approved by the Department.

GENERAL COURSES

20. Survey of Physical Education. Historical and scientific foundations; motor performance; selected health problems; physical fitness and recreation skills.
2 lectures and 2 laboratory hours – 2

31. Advanced Theory and Practice of Activities.
Prerequisite: PHE 20
1 lecture and 3 laboratory hours – 4

HONORS COURSES

241. Biomechanics. An analysis of the mechanical principles underlying efficient movement and the application of the principles to motor skills.
One term - 3 lectures

251. Team Games and Individual Activities. The theory and mechanics of activities; the development of personal performance skills.
2 lectures and 4 laboratory hours

253. Scientific Foundations of Health Education. An approach to intelligent planning for healthful living. The study of personal and community health to equip students with a scientific background in health in order to understand and deal with current health areas.
1 lecture and 2 seminars – 21

255. Statistics. The methods of statistical analysis from the application of measures of central tendency to simple models of analysis of variance.
One term – 3 lectures

258. Historical - Cultural Foundations of Physical Education. An examination of philosophical, theological, and scientific anthropologies with emphasis on their doctrines of the body and their respective influences on education and physical education: concepts of play in historical perspective; culture and the body.
3 lectures – 34

340. Physical Growth and Development. A study of physical growth and maturation processes with particular emphasis on the effects of exercise and sport.
3 lecture hours – 17

351. Team Games and Individual Activities. The theory and mechanics of activities in addition to those studied in PHE 251.
1 lecture and 4 laboratory hours

352. Organization and Administration of Physical and Health Education. The function of administration with respect to curriculum planning, budget, finance, staff, public relations; principles and organization of intramural and inter-school programs; scheduling and management of athletic contests.
1 lecture and 2 seminars – 8

358. Sociology of Leisure. The determinants of social attitudes and behavior toward leisure. The study of the variability in leisure patterns associated with members of particular age groups, social class groups, ethnic and racial groups, resident groups and sub-cultures.
3 hours

402. Theory, Prescription and Application of Exercise. An examination of the historical and scientific bases of various exercise forms; an appraisal of exercise as a preventative and therapeutic instrument; a theoretical and practical approach to exercise prescription.
One term – 3 hours

443. Scientific Training Techniques. The investigation of modern athletic training methods with emphasis on interval training, weight training, isometric exercises and nutrition.
One term – 2 lectures, 2 laboratories – 5

451. Team Games and Individual Activities. The study of team games with particular reference to coaching responsibilities in planning, methodology, skill analysis, personnel management, etc.; care of athletic injuries.
Prerequisite: PHE 252, 351
6 hours (lecture or laboratory as required)

453. Motor Learning. First term - Descriptive systems of motor learning and skilled performance; principles of motivation and performance; component processes and performance capacities; information processes in motor learning; human capacities in perceptual - motor skills; measurement and prediction of learning and performance (2 lectures, 2 laboratory hours). Second term - choice of; Applications and implications of the principles of motor learning or advanced topics in motor skill learning.
3 lectures (seminars).

456. Seminar. The interpretation of physical education in its relationship to education; principles underlying programs; presentation of senior thesis.
3 hours – 14

457. Physical Fitness Appraisal and Guidance. *The scientific basic of physical fitness appraisal;* the construction and administration of fitness and sports skill tests; descriptive statistics in the handling of data for evaluation, grading, and classification.
2 lectures, 2 laboratory hours – 21

458. Sport and Culture. An analysis of the social and cultural nature of sport in contemporary society.
3 lecture hours – 27

POLITICAL SCIENCE

Chairman and Associate Professor

J. R. Noel, BA *Memorial;* MA, DPhil *Oxon*

Requirements for Admission. First Year General Program (Arts, Natural Science, or Social Science) *including Politics* 20.

Students will normally be advised to take a diversified selection of options from the Social Science Program to be selected with the approval of the Department.

SECOND YEAR

Principal Courses

Two of: Politics 231, 240, 242, 244
Three options

THIRD YEAR

Principal Courses

Two senior Honors Politics courses, including 347 if not already taken
Three options

FOURTH YEAR

Principal Courses

Politics 480
Two of: Other senior Honors Politics courses
Two options

GENERAL COURSES

Except as otherwise noted, Politics 20 is prerequisite for all courses in Politics unless permission of the Department is obtained.

General BA students wishing to elect an area of concentration in Political Science must consult with the Department before enrolling.

20. Introduction to Political Science. A study of the principal concepts, ideas and analytical methods of modern political science, with emphasis on the political systems of Canada, the United States and Britain.
3 hours – 32

30. Canadian Government and Politics. A survey of the governmental institutions and political processes of Canada. (no prerequisite)
3 hours – 24

31. International Politics. A study of the factors governing international relations: the United Nations; the foreign policies of such countries as the USA, USSR, UK, France, China and Canada. (no prerequisite)
3 hours – 7

36. Provincial and Local Government. The structure and processes of provincial and local government, including such subjects as provincial-municipal relations, finance, administration and principles of urban and regional planning.
3 hours – 13

38. Political Parties and Pressure Groups. An analytical and comparative study of political parties and pressure groups.
3 hours – 29

40. The Politics of Developing Areas. A comparative analysis of social change and political process in developing areas, including Commonwealth countries.
3 hours – 17

42. The British Political System. A study of the nature and operation of the British political system, with particular attention to the social context within which the institutions of parliamenary government function.
3 hours – 22

44. American Government and Politics. A study of the American Constitution; institutions of government and political processes.
3 hours – 26

46. Public Administration. The basic principles of public administration in the modern state, including organization, procedures and the relation of administration to policy making.
3 hours – 15

47. History of Western Political Thought. A study of the major political thinkers from Plato to Mill and Marx.
3 hours – 4

48. Western European Political Systems. A comparative study of political institutions and processes in Western European democratic states.
3 hours – 1

49. European Communist Systems. An analysis of political governmental processes in the Soviet Union and East European People's Republics.
3 hours – 6

HONORS COURSES

231. International Politics. A study of the factors governing international relations; the United Nations; the foreign policies of such countries as the USA, USSR, UK, France, China and Canada.
3 hours – 7

240. The Politics of Developing Areas. A comparative analysis of social change and political process in developing areas, including Commonwealth countries.
3 hours – 17

242. The British Political System. A study of the nature and operation of the British political system, with particular attention to the social context within which the institutions of parliamentary government function.
3 hours – 22

244. American Government and Politics. A study of the American Constitution, institutions of government and political processes.
3 hours – 26

338. Political Parties and Pressure Groups. An analytical and comparative study of political parties and pressure groups.
3 hours – 29

346. Public Administration. The basic principles of public administration in the modern state, including organization, procedures and the relation of administration to policy making.
3 hours – 15

347. History of Western Political Thought. A study of the major political thinkers from Plato to Mill and Marx.
3 hours – 4

348. West European Political Systems. A comparative study of political institutions and processes in West European democratic states.
3 hours – 1

349. European Communist Systems. An analysis of political and governmental processes in the Soviet Union and East European People's Republics.
3 hours – 6

350. Advanced Canadian Government. An examination of selected problems in Canadian government and politics, such as federalism, political parties and pressure groups.
3 hours – 11

362. Provincial and Local Government. The structure and political processes of provincial and local government, including such subjects as provincial-municipal relations, finance, administration, and principles of urban and regional planning.
3 hours – 13

434. Contemporary Political Theory. A study of the chief political doctrines of the present day, such as communism, socialism, facism, and the theories associated with democracy; an analysis of concepts such as the state, liberty, authority, and theories of political behavior.
Prerequisite: 347 or permission of the instructor
3 hours – 33

435. Sociological Political Theory. A critical examination of the theoretical categories employed in sociological approaches to politics and the relevance of such approaches to political theorizing. Prerequisite: One course in political theory or sociological theory.
3 hours – 31

451. International Law and Organization. A study of the principles and operations of international and regional associations such as the United Nations and NATO. An introduction to international law, emphasizing its relevance to the resolution of conflicts between nations. (Prerequisite 231 or the permission of the instructor)
3 hours – 21

462. Metropolitan and Regional Government. An advanced study of the governmental structure, administration, politics, planning and financing of metropolitan and regional communities.
3 hours – 18

480. Methodology. A seminar on problems in the methodology of political science; the scope and nature of the discipline and its relationship to developments in other fields, particularly psychology and sociology.
2 hours

485. Selected Topic(s) or Author(s). A Seminar.

488. The Electoral Process. An advanced study of quantitative methods employed in political analysis; an analytical and comparative study of voting behavior.
3 hours – 3

490. Thesis. With permission of the Department. Thesis to be submitted by March 15 of the fourth year.

PSYCHOLOGY

Chairman and Professor

W. J. McClelland, BA, MA *Toronto;* PhD *London*

Requirements for Admission. First Year General Program with Psychology 20 and any three others as principal courses. Mathematics 20 or 24 or Applied Mathematics 20, French 20 or a foreign language 20 are recommended. If Psychology 20 is not taken in the First Year it must be selected as an option in the Second Year.

Students already in the program who will be in 1970-71 entering either the third or fourth years will be permitted to reduce the number of required courses to five in the manner prescribed, but not be allowed to offer any course completed in the second year for credit in the third or fourth year.

Honors courses not taken as principal courses may be selected as options.

All honors courses taken in any year will be considered as Principal courses for the purpose of calculating the average grade. All subsidiary courses must be approved by the Department.

SECOND YEAR

Principal Courses

Psychology 235, 255
One of: Psychology 234, 236

Subsidiary Courses

Two options

THIRD YEAR

Principal Courses

Three of: Psychology 337, 338, 343, 349

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Psychology 459
Two of: Psychology 445, 446, 450

Subsidiary Courses

Two options

PSYCHOLOGY AND PHYSIOLOGY

Requirements for Admission. First Year General Program (Natural Science) with Psychology 20, Biology 22 or Zoology 20, Chemistry 20, Physics 20, as principal courses. Applied Mathematics 20 or Mathematics 24 or 27 is recommended as one option.

SECOND YEAR

Principal Courses

Psychology 235, 255
One of: Chemistry 203, 313
Zoology 255 or 270
One of: Physics 204, 256; Applied Mathematics 20, 200; Mathematics 20, 24, 27, 250

Subsidiary Course

One option

THIRD YEAR

Principal Courses

Psychology 338, 343
Physiology 300, 301
One of: Anatomy 300; Biochemistry 300

Subsidiary Course

One option

FOURTH YEAR

Principal Courses

Physiology 463, 464, 480
Physiology 460 or 461 and 462
Two of: Psychology 234, 236, 337, 349, 445, 446

Subsidiary Course

One option

Students in this program will undertake a major project in behavioral physiology or sensory processes as part of their experimental work in Physiology 480.

PSYCHOLOGY AND PHILOSOPHY

Requirements for Admission. First Year General Program (Arts or Social Science) with Psychology 20 and Philosophy 20 as principal courses. If Psychology 20 was not taken in the First Year, it must be selected as an option in the Second Year.

SECOND YEAR

Principal Courses

Psychology 235, 236, 255
Philosophy 254, either 256 or 257

THIRD YEAR

Principal Courses

Psychology 338, 349
One of: Psychology 337, 343
Philosophy 256 or 257, and one 300 level Philosophy course

FOURTH YEAR

Principal Courses

Psychology 445, 459
One of: Psychology 446, 450
Two of: Philosophy 351, or any 400 level Philosophy course

GENERAL COURSES

Psychology 20 is prerequisite to all other courses in Psychology.

General BA students wishing to elect an area of concentration in Psychology must earn credit in four senior Psychology courses and must have his program approved by the Department of Psychology.

20. Introduction to Psychology. Problems and methods; individual differences and their assessment; learning; memory; thinking; sensation and perception; motivation; emotion; personality.
3 hours – 19

31. Theories of Personality. Representative theoretical interpretations of personality development and dynamics.
3 hours – 6

35. Learning and Motivation. The modification of behavior through experience, with primary emphasis on laboratory studies of simple learning processes in animals. Human learning and motivation are also discussed. Lectures are taken with Psychology 235.
2 lectures, 1 tutorial hour – 29

36. Child Psychology. An introduction to theory and research in selected areas of child behavior, with particular emphasis on learning, motivation, perception and personality. Lectures are taken with Psychology 236.
2 lectures, 1 tutorial hour – 16

37. Individual Differences. Quantitative methods in the study of human differences. Elementary statistics, the development and use of psychological tests, and the nature and assessment of human abilities.
3 hours – 5

38. Perceptual Processes. Theories of perception and psychophysical methods. The sensory and perceptual processes, their stimulus correlates and physiological bases.
3 hours – 25

39. Exceptional Children. Problems and methods in work with the gifted, mentally deficient, physically handicapped, brain damaged, and emotionally disturbed child.
2 hours – 22

43a. Biological Basis of Behavior. Structure and function of the nervous system in relation to behavior; an introduction to physiological psychology.
3 hours, 1st term (half course) – 2

43b. Neural Basis of Perception and Cognition. One of the following two courses offered in alternate years (1) neural basis of cognitive processes; neural mechanisms in perception, spatial orientation, memory and language (2) sensory systems; psychological and physiological studies of vision, audition and other afferent systems.
Prerequisite: Psychology 343 or 43a
3 hours, 2nd term (half course) – 13

44a. Animal Behavior. Neural, hormonal and experiential factors in the development of complex behavior patterns of mammals and other vertebrates.
Prerequisite: Psychology 43a, can be taken concurrently
3 hours, 1st term (half course) – 13

44b. Neural Basis of Motivation and Learning. One of the following two courses offered in alternate years (1) neural basis of emotion and motivation; brain mechanisms in hunger, thirst, fear, etc. (2) physiology of learning; the learning process in the light of experiments involving the *central nervous system.*
Prerequisite: Psychology 343 or 43a
3 hours, 2nd term (half course) – 13

46. Applied Psychology. The relevance of psychology to practical problems, personal, interpersonal and organizational, in education, industry and the wider community. While exposed to the approach of representative humanistic psychologists, particularly Maslow and Rogers, students have much freedom of choice in their work and the opportunity to participate in decisions affecting course direction and management.
2 hours – 27

48. Abnormal Psychology. A consideration of abnormal activities in sensation, perception, memory, emotion, thought and behavior; mental deficiency; the causes and symptoms of psychoneuroses; some reference to major mental disorder; psychotherapeutic techniques.
Prerequisite: Psychology 31, or any two Senior Psychology courses
3 hours – 6

49. Social Psychology. An introduction to the theories, methods, findings and problems encountered in the study of man as a social being. Emphasis will be placed on laboratory research and on field research. Substantive areas to be covered include the following: socialization; social factors in perceptual-cognitive processes; attitudes, prejudice and propaganda; social influence; group dynamics; leadership; intergroup relations.
2 hours – 33

HONORS COURSES

234. Historical Systems. A study of persistent problems in the history of psychology and an introduction to the traditional systems of Psychology: Structuralism, Functionalism, Behaviorism, Gestalt Psychology, and Psychoanalysis.
2 hours – 24

235. Learning and Motivation. The modification of behavior through experience, with primary emphasis on laboratory studies of simple learning processes in animals. Human learning and motivation are also discussed.
2 lectures, 2 laboratory hours – 12

236. Child Psychology. An introduction to theory and research in selected areas of child behavior, with particular emphasis on learning, motivation, perception, and personality.
2 lectures and 2 seminar hours – 16

255. Statistical Methods. Statistical techniques applicable to the treatment of psychological data; elementary research design.
2 lectures, 1 laboratory hour – 25

337. Tests and Measurement. Discussion of basic considerations in measurement; description and evaluation of typical measuring instruments and their uses; consideration of persistent problems in the field of measurement.
2 lectures, 1 laboratory hour – 23

338. Experimental Psychology II. Sensation and Perception; Critical examination of methods, findings, and theory.
2 lectures, 2 laboratory hours – 11

343. Physiological and Comparative Psychology. *Neural and endocrine foundations of behavior;* learned and unlearned behavior in selected invertebrate and vertebrate organisms.
2 lectures, 2 laboratory hours – 17

349. Social Psychology. Theory and measurement of human social behavior with emphasis on empirical studies of individuals in response to their environment. Topics include: culture and personality; ethnic prejudice; psycholinguistics; propaganda; group structure; mass behavior.
2 hours – 33

445. Cognitive Processes. Theory and empirical findings concerning thinking processes such as concept formation, problem solving, and creativity.
2 hours – 5

446. Applied Psychology. Emphasis will be given to the humanistic psychologies and their relevance to the understanding of personal growth, interpersonal relations and organizational behavior in education, industry and the community at large. Students normally participate in decisions affecting course direction and management. Sensitivity training and other forms of practical experience are available.
2 seminars, 2 laboratory hours – 27

450. Personality Theory. Representative theoretical interpretations of personality development and dynamics.
2 hours – 16

459. Research Problems. A *seminar* course in which students will select topics for special investigation.
3 hours

460. Experimental Psychology. Laboratory and seminars dealing with methods, findings, and theory in sensation, perception, and learning as well as the development of research problems for individual investigation. Qualifying students only.
2 lectures, 2 laboratory hours

461. Contemporary Theory. A critical examination of the theories of representative contemporary psychologists. Qualifying students only.
2 hours – 1

SECRETARIAL SCIENCE

Chairman and Professor

Mary H. Gillespie, BA; MA *Columbia*

Requirements for Admission. Grade 13 standing (with a minimum average of 60%) in English and five other credits.

The Department of Education of Ontario accepts a degree in this program as the academic qualification for High School Assistant's Certificate, Type B, for teaching in the Elementary or Secondary schools of Ontario.

Enrollment is limited and students are admitted on the quality of their Secondary School certificate.

FIRST YEAR

Secretarial Science 28, 29
Business 20
English 20
Two Options (Computer Science 20 recommended)
For those students able to pass a test in Secretarial Science 28, 29, a third option.
All options to be approved by the Department.

SECOND YEAR

For 1970-71
Secretarial Science 30, 37, 38, 39
Economics 20
A Senior English
One of: French 31; German 30; Spanish 31
One option

THIRD YEAR

For 1970-71, 1971-72
Secretarial Science 47, 48, 49
A Senior English
One of: French 41, 43; German 40; A Senior Spanish
A Senior Option

COURSES

28-29. Shorthand. A thorough training in the principles of Pitman Shorthand: dictation at a speed of 60 words a minute with typed transcription of notes.

Typewriting. Mastery of the keyboard; training in speed and accuracy; letter styles, 'isplay; simple tabulation; manuscripts.
11 hours

30. Accounting and Bookkeeping. Prescribed for Secretarial Science students. Provides practical and basic applications of accounting relating to the sole proprietorship form of business organization, as well as to the partnership and corporate types of organization.
3 hours

37. Office Practice. Lectures in routine office procedures including letter composition, filing, postal and telephone services, methods of duplicating, etc.
Prerequisite: Secretarial Science 28-29
1 lecture and 2 hours practical work – 3 hours

38-39. Shorthand. Emphasis on speed building and vocabulary development with typed transcription of notes; office style dictation and transcription given weekly.

Typewriting. Further emphasis on speed and accuracy; letter composition; advanced tabulation; financial statements; organization charts; graphs.
Prerequisite: Secretarial Science 28-29
11 hours

47. Office Practice. Lectures are given on secretarial duties, office organization, the administration of services, the problems of office personnel.
Students apply their skills and knowledge to realistic office situations both in University Offices and in their own student office.
Prerequisite: Secretarial Science 37, 38, 39
1 lecture and 8½ hours practical work – 9½ hours

48-49. Shorthand. Further speed development to 130 words a minute on 3-5 minute "takes"; typed transcription of notes.

Typewriting. Sustained speed up to 60 words a minute on 10-minute timings; advanced typing assignments covering tabulation, minutes, business forms, legal documents, graphs, etc.
Prerequisite: Secretarial Science 38, 39
10 hours

SOCIOLOGY

Chairman and Associate Professor

E.T. Pryor, BA *Saint Thomas Aquinas;* MA *Michigan State;* PhD *Brown*

General BA students wishing to elect an area of concentration in Sociology must earn credit in Sociology 30 and Sociology 31 plus any two senior Sociology courses numbered 32 or above and must have his program approved by the Department.

COURSES

20. Introduction to Sociology. An examination of the major theoretical perspectives in the field of Sociology, methods of empirical investigation of social phenomena, socialization, group structure, principles of social organization, community *structure, population and social change.*
3 hours – 35

30. Sociological Theory. A study of the history of sociological thought leading to an appraisal of contemporary theoretical perspectives in relation to their logical adequacy and heuristic value.
Prerequisite: Sociology 20
3 hours – 14

31. Research Methods and Statistics. An introduction to empirical methods in Sociology, including elementary statistical methods, experimental design, and basic techniques for the measurement of sociological variables.
Prerequisite: Sociology 20
3 hours – 12

32. Demography and Population Studies. An introduction to the dynamics of population through the study of change in patterns of fertility, mortality and migration. Emphasis is given to the determ*inants and consequences of current population* growth in both developed and underdeveloped areas of the world, and to efforts being made to control this growth.
3 hours – 1

34. Community Structure. An introduction to human community study from the ecological viewpoint, with a review of the history of human communities emphasizing the emergence and features of the urban type. The second term focuses on the study of urban growth, urbanization and city systems particularly in Canada.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 23

35. Social Stratification. An analysis of social ranking systems of class, status and power. Topics will include: theoretical and methodological problems in ranking, political and sociological perspectives on community and national power structures, and social mobility in industrialized societies. Emphasis will be placed on the comparison of alternative stratification systems.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 9

36. Social Organization. A comparative analysis of forms of association and group structure from primary groups to complex bureaucratic structures.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 9

38. Social Change. A study of the sources, pattern and consequences of social change. The views of classical and modern theorists will be evaluated in relation to patterns of change exhibited at group, community and cultural levels. Problems encountered in attempts to induce change with respect to economic development, urban planning, population policy, etc. will be surveyed.
Prerequisite: Sociology 20 or permission of the Department.
3 hours – 5

39. The Family. Sociological, psychological, and other research perspectives on family structure and functioning.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 8

40. Social Problems. Study of theories of deviant behavior and of social disorganizations, with particular attention to certain specific problems of the contemporary period.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 21

41. Communication and Social Character. Analysis of attitude formation and the role of symbolic systems on social character and collective behavior. Utilizes sociological, communication and general social psychological theory dealing with the function of communications media in society and the effects of patterns of communication upon members of different social groups. Considers research findings on media content, opinion formation and change, propaganda and advertising.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 31

42. Sociology of Work. The study of the sociological aspects of economic organization. The sociology of industry, business enterprise, occupations and professions, and the relationship of the economy to other social institutions will be emphasized.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 28

43. Minority Groups. The analysis of racial, ethnic, political and religious minority groups in terms of their relationship to each other and to society at large. Stability and change, discrimination, prejudice, and inter-group conflict will be considered within the context of a pluralistic society.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 36

44. Collective Behavior. Basic forms of collective behavior including social crowds, publics, and the mass society will be examined in terms of their structural and social psychological consequences. The focus of the course will be the analysis of the relationship between human problems and collective attempts to resolve them.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 4

45. Applied Sociology. The application of sociological theory and method to selected problems in urban society.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 20

46. Medical Sociology and Public Health. The study of the sociological nature of health and illness, medical establishments and professional roles. The definition and measurement of health and community and national solutions to health problems will be considered.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 17

47. Group Behavior. Psychoanalytic, cognitive and behavioral theories are evaluated in relation to selected topics including motivation, traits, attitudes, conformity, prejudice, and group behavior.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 13

48. Social Institutions. An analysis of the structure and interrelationships of economic, political and other social institutions.
Prerequisite: Sociology 20 or permission of the Department
3 hours – 34

MEMBERS OF THE FACULTY OF SOCIAL SCIENCE

ANTHROPOLOGY

Associate Professor

Guemple, D. L., BA, MA, PhD *Chicago*

ECONOMICS

Chairman and Professor

Wonnacott, R. J., BA; AM, PhD *Harvard*

Professors

Bodkin, R. G., BA *Swarthmore;* MA, PhD *Pennsylvania*

Brown, T. M., BA; MA *Toronto;* PhD *Australian National*

Burley, K. H., BA, PhD *London*

Reuber, G. L., BA; AM, PhD *Harvard*

Associate Professors

Courchene, T. J., BA *Saskatchewan;* PhD *Princeton*

Kadiyala, K. R., BSc *Andhra;* MStat *ISI;* PhD *Minnesota*

Melvin, J. R., BSc *Manitoba;* MA *Alberta;* PhD *Minnesota*

Assistant Professors

Baguley, R. W., BA; AM, PhD *Harvard*

Batra, R. N., BA *Punjab;* MA *DSE;* PhD *Southern Illinois*

Bhatia, K. B., BCom, MCom *Delhi;* PhD *Chicago*

Conklin, D. W., BA *Toronto;* PhD *MIT*

Fried, J. S., BA *Stanford;* PhD *Northwestern*

Johnson, H. T., AB *Harvard;* MBA *Rutgers;* MA, PhD *Wisconsin*

Leith, J. C., BA *Toronto;* MSc, PhD *Wisconsin*

Parai, L., BA *Alberta;* MA *Toronto;* PhD *Yale*

Plourde, C. G., BA, MA *Queen's;* PhD *Minnesota*

Saraydar, E., AB *Syracuse;* AM, PhD *Rochester*

Tanner, J. E., AB *California;* PhD *Brown*

Toda, Y., BA, MA *Tokyo;* PhD *Harvard*

Vickery, W. E., BE *Vanderbilt;* MBA *Harvard;* PhD *Chicago*

Lecturers

Andrieu, R. Y. M., MA *Washington*

Avio, K. L., BS *Oregon* (Visiting)

Blomqvist, A. G., Civ-ekonom *Stockholm*

Boyer, R. S., BA *Columbia;* MA *Wisconsin* (Visiting)

Burgess, D. F., BA *Queen's;* MA

Clark, C. S., BA *Queen's*

Friedberg, S. J., BA *City College of New York;* MA *Chicago* (Visiting)

Gately, F. D., BS(Math) *Holy Cross College;* MA *Princeton* (Visiting)

Haessel, W. W., BSc, MSc *Alberta*

Jondrow, J. M., BA *Wisconsin*

Ketchum, E. J. D., BA *Toronto;* MSc *LSE;* MA *Princeton*

Kirkham, P. G., BASc *British Columbia;* MBA, MA

Kochin, L. A., BA *Temple* (Visiting)

May, J. D., BCom *Queen's*

Rao, V. S., BA *Andhra*

Roy, P. N., BA *McGill*

Schmundt, Maria, Diplom-Volkswirt *Frankfurt*

Tomlinson, P. G., BA *Carleton*

Valentine, T. J., BEc *Sydney*

GEOGRAPHY

Chairman and Associate Professor

Sim, V. W., BA *McMaster;* MA *Clark;* PhD *McGill*

Senior Professor

Nicholson, N. L., BA, MSc; PhD *Ottawa;* FRGS

Professors

Hossé, H. A., BA, MA *Manitoba;* PhD *Ottawa*

Packer, R. W., BA, MA *Cantab;* FRGS

Philbrick, A. K., BA, MS, PhD *Chicago*

Pleva, E. G., BA, MA, PhD *Minnesota*

Associate Professors

Bjorklund, Elaine M., BSc *Utah;* MA *Washington;* PhD *Chicago*

Langtvet, O. P., CMag, CPhil *Oslo*

McDaniel, R., BA, MA

Taylor, H. W., BA *Westchester State;* MA *Indiana;* PhD *Maryland*

Whebell, C. F. J., BA, MSc; PhD *London*

Wightman, W. R., BA, MA; PhD *Durham*

Assistant Professors

Butler, R. W., BA *Nottingham*

Day, J. C., BSc, MSc; PhD *Chicago*

Goodchild, M. F., BA *Cantab;* PhD *McMaster*

Janelle, D. G., BA *Southwestern Louisiana;* MA, PhD *Michigan State*

King, R. H., BSc *Swansea;* MSc *Aberdeen;* PhD *Saskatchewan*

Troughton, M. J., BA, MA; BLitt *Oxon*

Lecturers

Cecil, R. G., BSc, MA *McGill*

Johnson, L. N., BSA *Toronto; MA*

Map Curator

Sauer, S., BA

HISTORY

Chairman and Professor

Ruud, C. A., BA *Willamette;* AM *Harvard;* PhD *Berkeley*

Senior Professors

Ferguson, W. K., BA, MA, PhD *Cornell;* LittD; FRSC; *J.B. Smallman,* Professor of History

Kerr, D. G. G., BA *McGill;* PhD *London*

Overton, R. C., AB, AM *Williams;* AM, PhD *Harvard*

Wade, H. M., MA *McGill;* LLD *New Brunswick;* DèsL *Ottawa*

Professors

Balderston, W., BA, PhD *Cornell*

Graham, S., MA *Queen's;* AM *Harvard;* PhD *Cantab;* FRHistS; Rhodes Professor of Imperial History, *King's College, University of London* (Visiting)

Lander, J. R., BA, MA, MLitt *Cantab;* FRHistS

Rowe, J. G., AB *Harvard;* BD *Episcopal Theological School, Cambridge, Mass.;* MA, PhD *Toronto* (Dean of Arts)

Talman, J. J., BA, MA, PhD *Toronto;* DLitt *Waterloo;* FRSC

Zaslow, M., BA, BEd *Alberta;* MA, PhD *Toronto*

Associate Professors

Armstrong, F. H., BA, MA, PhD *Toronto*

Dreyer, F. A., BA *Toronto;* BA *Oxon;* PhD *St. Andrews*

Emerson, R. L., BA *Dartmouth;* MA *Brown;* PhD *Brandeis*

Gwynne-Timothy, J. R., BA, MA *Toronto;* DPhil *Oxon*

Hilborn, K. H. W., BA, MA *Queen's;* DPhil *Oxon*

Hohner, R. A., BA, MA, PhD *Duke*

Hyatt, A. M. J., BA *RMC;* BA *Toronto;* MA *Carleton;* PhD *Duke*

McLaughlin, J. P., BA *Queen's;* PhD *London*

Ogelsby, J. C. M., AB *Stanford;* MA, PhD *Washington*

Steele, I. K., BA *Alberta;* PhD *London*

Stockdale, W. H., BA, MA *Alabama;* PhD *New York*

Assistant Professors

Cornwall, P. G., BA *Toronto;* AM *Michigan*

Guinsburg, T. N., AB, MA, PhD *Columbia*

Hoffman, D. S., BA *Syracuse;* PhD *Delaware*

Metzger, F. K., BA *Bowdoin;* MA *Pennsylvania;* PhD *Rutgers*

Neary, P. F., BSc, MA *Memorial;* PhD *London*

Lecturers

Avery, D. H., BA, MA *Manitoba*

Emery, G., BA *Queen's*

Osuntokun, J., BA *Ibadan*

Pavloff, V. N., BASc *British Columbia;* BA *Carleton;* MA *Berkeley*

Rider, P. E., BA *Carleton;* MA *Toronto*

Simpson, C. M., BA *Notre Dame;* MA *Stanford*

JOURNALISM

Chairman and Professor

Wild, J. L., BA; MA *Michigan*

Professor

Beattie, E., BA *Manitoba;* BEd *Toronto;* MA *State U of Iowa*

Associate Professor

Key, W. B., BA *Mexico City College;* MA *California* (Visiting)

Assistant Professors

Bambrick, F. K., BA

Laing, M. M., BA; MS *Wisconsin*

Wilson, C. E., BA; MSc Northwestern

Lecturers (Part time)

Bremmer, T. H.

Ferquhar, K. B., LLB *Victoria,* NZ; LLB *Michigan;* LLM *Victoria,* NZ

Heine, W. C., BA

O'Neail, J., BA

Tennant, H., BA *British Columbia*

PHYSICAL AND HEALTH EDUCATION

Chairman and Professor

L'Heureux, W. J., BA; MA *Michigan;* LLD *New Brunswick*

Professors

Fairs, J. R., BSc; MA *Columbia*

Yuhasz, M., BA; MS, PhD *Illinois*

Associate Professors

Berzins, Elfrida (Mrs.), MM *Riga*

Eynon, R. B., BA; MS *Illinois*

Wearring, G., BA; MS *Southern California*

Assistant Professor

Cosentino, F., BA; BPE *McMaster,* MA *Alberta*

Cunningham, D., BA; MSc *Alberta,* PhD *Michigan*

Gonser, G. I., BA, MA *Michigan*

Leyshon, G., BA; MS *Illinois*

Paton, G., BA; MA *Michigan*

Petrie, B. M., DipPE *Sydney;* BPE; MA *Alberta;* MA *Michigan State*

Richardson, J. R., BPHE, MSc *Alberta*

Taylor, Margaret J., BA; BPHE *Toronto*

Watson, R. C., BA, BPE *McMaster;* MSc *Alberta*

Lecturers

Hayes, D. L., BPE *Alberta;* MSc *Oregon*

Hill, J. S., DPE *Jorden Hill College;* MA

Kunkel, Helen V. (Mrs.), BA

Reid, Elizabeth (Mrs.), BA; MSc *Illinois*

Smith, G. J., BPE *Alberta;* MA

Vigars, R. J., BSc; MA *California*

POLITICAL SCIENCE

Chairman and Associate Professor

Noel, S. J. R., BA *Memorial;* MA, DPhil *Oxon*

Professors

Barnard, F. M., BA, MA *Oxon;* PhD *Leicester*

Beecroft, E., BA, MA *Toronto;* PhD *Yale*

Dawson, W. F., BA *Toronto;* MA *Queen's;* DPhil *Oxon*

Hossé, H. A., BA, MA *Manitoba;* PhD *Ottawa*

Associate Professors

Cartwright, J. R., BA *Queen's;* MA, PhD *Toronto*

Dobell, W. M., BA *McGill;* MA, BLitt *Oxon*

Dunlop, C. C., BA, MA *Queen's*

Kymlicka, B. B., BA *British Columbia;* MA, PhD *Columbia*

Melvin, R. A., BA *Brandon College;* PhD *University of Alberta*

Sansom, T. R., BA *New Brunswick;* PhD *London*

Assistant Professor

Harvey, T. G., BA *Florida State;* MA, PhD *Hawaii*

Khanh, H, K., BA *Johns Hopkins;* MA *Lehigh*

Vernon, R. A., BA *Trinity;* PhD *London*

Lecturers

Hrabik, Mary J., BA *Notre Dame;* MA *Fordham*

Leishman, R. J. W., BA; MA *Queens*

McDougall, A. K., BA *McGill;* MA *Carleton*

Murray, G. P., BSc *London;* MA *Lehigh*

Westmacott, M. W., BA *University of Calgary;* MA *Carleton*

Wright, B. H., BA; MA *Toronto*

Instructors (Part time)

Chambers, Elizabeth J., BA *British Columbia;* MA *Saskatchewan*

Leach, Phyllis G., BA *Heidelberg;* MA *Chicago*

Macdonald, I. T. M., BA *Alberta*

PSYCHOLOGY

Chairman and Professor

McClelland, W. J., BA, MA *Toronto;* PhD *London*

Senior Professor

Jackson, D. N., BSc *Cornell;* MS, PhD *Purdue*

Professors

Bartoshuk, A. K., BSc *Sir George Williams;* MSc, PhD *McGill*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Neal, Leola E., BA, MA; PhD *Toronto* (DipLClin), Dean of Women

Paivio, A. U., BSc, MSc, PhD *McGill*

Rokeach, M., BA *Brooklyn;* MA, PhD *California* (Visiting)

Turner, G. H., BA, MA, PhD *Toronto*

Williams, D. C., BA *Manitoba;* MA, PhD *Toronto,* (President and Vice Chancellor)

Wright, Mary J., BA; MA, PhD *Toronto*

Associate Professors

Bucher, B., AB *Knox;* PhD *Princeton;* PhD *Pennsylvania*

Chambers, D. A., BA *British Columbia;* MSc, PhD *McGill* (Assistant Dean)

Denny, J. P., BA *Toronto;* PhD *Duke*

Gardner, R. C., BSc *Alberta;* MSc, PhD *McGill*

Irvine, S. H., MA, MEd *Aberdeen;* PhD *Birkbeck* (Part time)

Kendall, S. B., BA *Indiana;* PhD *Emory*

Kimura, Doreen, BA, MA, PhD *McGill*

Lobb, H. O., BA, BEd, MEd *Saskatchewan;* PhD *Toronto*

Pylyshyn, Z. W., BEng *McGill;* MSc, PhD *Saskatchewan*

Reitz, W. E., BS *Pennsylvania State;* MA *Illinois;* PhD *Pennsylvania State*

Schnore, M. M., BA, MA; PhD *McGill*

Stennett, R. G., BA, MA; PhD *McGill* (Part time)

Taylor, F. W. R., BA, MA, PhD *Toronto*

Vanderwolf, C. H., BSc *Alberta;* MSc, PhD *McGill*

Wilkinson, F. R., BA *Utah;* MA *Hawaii;* PhD *Michigan State*

Assistant Professors

Baran, D., BA *McGill;* MA *Columbia;* PhD *Michigan*

Chamberlain, L. W., BSc; PhD *Keele*

Goodstadt, M. S., BA *Manchester;* PhD *Stanford*

Murray, H. G., BA, MA; PhD *Illinois*

Pederson, D. R., BA *Minnesota;* MA, PhD *Iowa*

Prytulak, Luby S., BA *Toronto;* PhD *Stanford*

Rollman, G. B., BA *Rochester;* MA, PhD *Pennsylvania*

Siess, T. F., BA *Valparaiso;* PhD *Minnesota*

Simner, M. L., BA *Syracuse;* MSc *North Carolina State;* PhD *Cincinnati*

Van Fleet, F. M., BA, MA *McMaster;* PhD *Colorado*

Vidmar, N. J., AB *MacMurray;* AM, PhD *Illinois*

Honorary Lecturer

Stevenson, J. A. F., BA, MA, MD, Cm *McGill,* Dean of Graduate Studies

Lecturers

Fay, T. L., BA *Michigan;* MS *Northwestern*

Prytulak, Dorothy S., BA *Toronto;* PhD *Stanford*

Sorrentino, R. M., BA *New York State;* MA *American*

SECRETARIAL SCIENCE

Chairman and Professor

Gillespie, Mary H., BA; MA *Columbia*

Associate Professors

Chapman, Elaine W. (Mrs.), BA

Waller, Roma L. (Mrs.), BA; MA *Columbia*

Assistant Professors

Davis, Patricia F., BA

Seldon, Betty D. (Mrs.), BA

Lecturer

Hartry, Marilyn J. (Mrs.), BA

SOCIOLOGY

Chairman and Associate Professor

Pryor, E. T., BA *St. Thomas Aquinas;* MA *Michigan;* PhD *Brown*

Professor

Skipper, J. C., BS *Northern Illinois;* MA, PhD *Northwestern* (Visiting)

Associate Professors

Balakrishnan, T. R., BA, MA *Madras;* PhD *Michigan*

George, P. M., BA *Earlham;* MA *Boston;* PhD *North Carolina*

Rinehart, J. W., BA, MA *Michigan State;* PhD *Ohio State* (Visiting)

Singer, B. D., BA *Wayne State;* MA, PhD *Pennsylvania*

Assistant Professors

Ball-Rokeach, Sandra J. (Mrs.), BA, MD, PhD *Washington* (Visiting)

Boydell, C. L., BA *Rutgers;* MA, PhD *Massachusetts* (Visiting)

Ebanks, G. E., BA *West Indies;* MA, PhD *Cornell*

Grindstaff, C. F., BA *Wayne State;* MA, PhD *Massachusetts*

Jackson, J. E. W., BA, MA *Manitoba;* PhD *Washington University*

Jarvis, G. K., BA *Brigham Young*

Nobbe, C. E., BA, MA, PhD *Washington*

Okraku, I. O., BA *Ghana;* MA, PhD *Cornell*

Osborn, R. W., AB *Michigan;* PhD *Brown*

Skidmore, W. L., BsEd, MA *Kent State;* PhD *Alberta*

Whitehead, P. C., AB *Providence College;* MA, PhD *Massachusetts*

Williams, J. I., BA *Nebraska Wesleyan;* MA *New Hampshire;* PhD *Florida State* (Visiting)

Lecturer

Veevers, Jean (Mrs.), BA, MA *Alberta*

School of Business Administration

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ADMINISTRATION OF THE SCHOOL OF BUSINESS ADMINISTRATION

D. Carlton Williams, BA, MA, PhD. President and Vice-Chancellor of The University of Western Ontario

R.J. Rossiter, BSc, BA, DPhil, BMBCh, MA, DM, FRIC, FCIC, FRSC. Vice-President (Academic)

J.J. Wettlaufer, BA, MBA, LLD. Dean

Walter A. Thompson, AB, MBA, LLD. Associate Dean; Chairman, Continuing Education Program

Neil M. Armstrong, BA. Director of Administrative Services

R.C. Hodgson, BSc, MSc, DBA. Chairman, MBA Program

C.B. Johnston, BA, MBA. Chairman, Undergraduate Program

M.R. Leenders, BScEng, MBA, DBA. Director, PhD Program

D.S.R. Leighton, BA, MBA, DBA. Chairman, Research and Publications Program

Undergraduate Program

The purpose of the University of Western Ontario School of Business Administration is to provide an opportunity for young men and women to prepare themselves for administrative responsibilities. In general the administrator makes and executes policies, both of which functions consist of making decisions. Therefore, the ability to define problems, to see all the implications, to weigh the merits of alternate courses of action, and to provide wise and understanding leadership, must be combined with specialized knowledge necessary to the functioning of an organization.

In 1959, two large American educational organizations, the Ford and Carnegie Foundations, commissioned studies to assess the type of program that would best enable young Canadians and Americans to take their places in the dynamic and complex business world of the 20th century. Both reports recommended that University business students should have an adequate grounding in the basic subjects such as English, Economics, Mathematics and Social Sciences. These, the reports recommended, should represent at least 50% of the course studies. The other half of the program, the Business Administration courses, should be centralized around such fundamental activities as Marketing, Finance, Production, Mathematical Analysis, Management Control, and Human Relations, with the content of these courses concentrating on problem solving and decision-making.

The recommendations of these two eminent educational foundations have long been in practice at The University of Western Ontario School of Business Administration. The broad base of training given to the student at the Business School enables him to adapt his knowledge to the variety of conditions and problems present in the business world. This liberal education, focusing on management and administration, will enable a graduate to meet the demands placed on him both in his career and as a valuable member of the community.

The School and its Facilities

INAUGURATION OF THE SCHOOL OF BUSINESS

The teaching of Business Administration, which has always received strong support from the University Board of Governors, was begun at the University in 1923 through a Department of the Faculty of Arts and Science. The first graduate courses were offered in 1932. On July 1, 1949, an important milestone in the history of Western was reached when a separate School of Business Administration was founded on the campus.

The decision to establish the School was made only after careful consideration of all its implications by University authorities and by leading Canadian businessmen. Both groups, meeting together, agreed (1) that Canada needed, and would continue to need, capable administrators; (2) that this need could in large part be met by assuring an adequate supply of young men college-trained for management and administration; (3) that this training should rest on a broad background in the arts and sciences, coupled with a thinking attitude toward administrative problems and a sure knowledge of the basic skills; and (4) that the elements of business administration could best be learned in a School whose place in educational circles was well-defined and whose professional status was unmistakably clear.

SCOPE OF THE SCHOOL

The School offers a variety of programs for training in business. The undergraduate course, built on a broad foundation of the liberal arts, makes special provision for depth in English, and recognizes the importance of mathematics and psychology to the future business executive.

At the end of the first two years, which are normally in the Faculty of Arts and Sciences, a student shifts to the basic fundamentals of Marketing, Finance, Production, Control, Management Science, and Administrative Practices. In the final year he has a choice of concentrating in one of these fields or, if he wishes an even broader program, he may take advanced courses in several areas. A course in Executive Problems represent an important part of the final year. Full details of the course are contained in other sections of this bulletin.

ENVIRONMENT

In 1957 the School of Business Administration was housed in a new building designed to facilitate the teaching of Business Administration. The School has fourteen large U-shaped amphitheatre classrooms and eight seminar rooms especially designed for case discussions; extra-wide corridors in the classroom area, for afterclass discussion; forty other student areas, including a library, reading room and student lounges. A special feature is the 475-seat theatre, which is equipped with a sophisticated television system, along with a full range of other audio-visual educational media. A recent addition to the School, more than doubling the 1957 structure, has created one of the best-equipped business schools in North America, yet the primary emphasis remains on working in small groups and high faculty-student interaction. The building is air conditioned.

Placement of graduates, an important function of the School, has been adequately provided for in comfortable interviewing rooms where prospective employers may talk to students. The students in the School have access, either directly or through time-sharing terminals, not only to the School's own computing facility, but also to the more extensive equipment to be found in both the University Computing Center and in external computing centers which provide time-sharing services on a rental basis.

REPORT WRITING PROGRAM

The requirement of written reports has been a prominent feature of the School's instruction for many years. The purpose of the Report Writing Program is to develop the student's skill in written communication and analytical and decision-making ability in business situations. The presentation of the report (organization, style, grammar, syntax, etc.) is graded as intensively as is the content (analysis, insight, calculations etc.) so that the student receives an evaluation of his ability to combine keen analysis and sound judgment with a clear, concise, and convincing method of expression. The School reserves the right to refuse to grant a degree to any student who has not attained a satisfactory level of achievement in the Report Writing Program.

ORIENTATION PROGRAM

The first few weeks after registration are planned in detail to give a student entering the School an opportunity to acclimate himself fully to the case method of study. While this will not be wholly new for students who have taken introductory business courses; nevertheless, for the first time they will learn to organize small groups for case discussion and become generally oriented to working in this way. During the introductory weeks, professors seek to give the students an outline of the subject matter to be covered during the year. Just as important is the opportunity to meet members of the faculty informally during the discussion groups and formally in the classroom. The orientation period enables the student to make an early adjustment to a new method of teaching. The staff, in co-operation with the Student Council, will assist students in registration, housing, books and course materials.

RESEARCH WORK

The School is very active in both Case and Project Research. The Case Writing Program develops material for classroom use, emphasizing those aspects of business administration which are peculiar to the Canadian situation. In Project Research, one or more faculty members are freed from teaching assignments for a year to concentrate on some area of business.

THE UNDERGRADUATE PROGRAM

The program leading to the degree of Bachelor of Arts in Honors Business Administration has three objectives: to contribute to the liberal education of the student, to help the student acquire an administrative point of view, to acquaint the student with the modern body of knowledge and techniques for management.

The successful administrator must know people, must see events in perspective, must develop flexibility in thinking; in short, he needs a general education. Accordingly, the first two years of the four year program, in which the student is enrolled in a general program, are designed to give a broad education in the humanities as well as the social and natural sciences. Because of this general foundation, if the student later finds that he has mistaken his aptitudes or tastes he may transfer with little loss of time to another course. The last two years, in the School of Business Administration, are a rigorous period in which the student becomes acquainted with each of the major fields of business and is prepared for positions of eventual responsibility in management. Because the demand for specific skills has a tendency to shift, it has been found most valuable to concentrate training on general administrative and executive skills applicable to all business. At the same time training is given in such specific subjects as accounting, marketing, production management and financial management.

Enrolment in the last two years at the School of Business Administration is intended to be limited, in order to give the maximum individual attention to each student.

Credit is given by the Institute of Chartered Accountants and other accounting bodies for work done on this course.

Students who complete the required courses with the grades demanded will receive an Honors B.A.

THE SCHOOL AND CANADIAN BUSINESS

A great asset has been the keen interest which business corporations, private foundations and government institutions from coast to coast have shown in the School's work. Since the inception of the School, their handsome contributions have made it possible to have a modern building, especially designed for the case method of teaching, to build a diversified and highly competent faculty, to engage in business research and to keep the library abreast of development in the academic world and in industry. The interest of Canadian business and government, however, has gone even farther in allowing the School to compile case histories from their experiences to enrich its teaching. They have welcomed students into their plants and offices for field trips so that they might be given a working knowledge of assorted types of operations. Many senior executives and administrators visit the School each year to speak, lecture, take part in seminar discussions and to head panels on Canadian problems of management and administration. These companies and institutions also offer a very important experience to students in summer employment between their academic terms.

METHODS OF INSTRUCTION

A variety of teaching methods are currently being used at the School. Many courses given by the School are taught by the case method, under which students are presented with a series of situations or problems taken from actual administrative situations, to be analyzed and discussed. The number and the variety of cases presented give ample opportunity to develop thinking in terms of the effective treatment of management problems. At the same time, a considerable knowledge of management practices and techniques is acquired.

THE LIBRARY

The Business School Library is the largest library in Canada devoted solely to material in the field of Business Administration. In addition to its rapidly growing collection of collection of books, monographs, pamphlets, and Donimion Bureau of Statistics publications, it contains more than 450 periodicals, both general and specialized, and the annual reports of over 700 Canadian and 2,000 U.S. companies. Many services such as the Financial Post Corporation Service, Moody's, Standard Rate and Data, and the CCH Tax Service are available. Special emphasis is given to the collection of resources dealing with Canadian business.

The library has a reading room which accommodates 300 students, twenty-eight carrels in the stacks, and space for 100,000 volumes. Microfilm and microcard readers are provided as more and more material is being acquired in micro photographic form.

Elsewhere on the campus are extensive library resources. The book collections of the university total more than 500,000 volumes, with over 4,000 periodicals in all subjects and many languages being received annually. While the general library, located in the Lawson Memorial Library Building, houses the main collection, others can be found in the Biological and Geological, Sciences, Law, Engineering. Medicine, Music, Nursing, Education and the Physical and Chemical Sciences. These resources are designed primarily for the use of students in these fields, but may, of course, be consulted by any registered student.

Admission Requirements to the 4-Year Course in Honors Business Administration

Grade 13 (Ontario)

Mathematics A	2 credits
English or one other language	2 credits
Two other subjects	3 credits
Total	7 credits
Minimum acceptable total	420 marks
Minimum acceptable average	60%/7 credits

Any one of the Five Year Programs in the Arts and Science, Business and Commerce, or Vocational Branches, is considered suitable preparation for entrance to the University, when the program taken includes the above subjects.

Adult special students desiring admission to the Business Administration Course must be at least 21 years of age and absent from formal education for at least three years. Students in this category will be given special consideration. However, such students must submit evidence of standing in two Grade XIII papers in English, two in another language and two papers in Mathematics (preferably including Algebra), or their equivalents.

Applications: Candidates seeking admission to the University of Western Ontario must present to the Registrar, not later than September 1st, an official statement of the marks on which their certificates were awarded. For the evaluation of other than Ontario certificates a fee of $2.00 is charged. The sum must accompany the certificates and is not returnable.

ADMISSION WITH ADVANCED STANDING

Students from other universities and colleges may be admitted to the Arts and Science programs with advanced standing if they are eligible to continue and advance at the institution from which they wish to transfer.

Undergraduate credits obtained while in attendance at another University will be assessed in terms of advance credit at this University by Admissions Committees. **Transfer of credit will not be permitted for courses completed with a minimum passing grade, nor for the senior courses of the major subject.** The amount of advance

standing that may be granted is limited by the residence requirement of The University of Western Ontario.

Each application for admission with advanced standing will be dealt with individually by the Admissions Committees.

COURSE REQUIREMENTS

The program consists of 22 courses spread over four years. A minimum of 10 courses must be selected from among those offered by the Faculties of Arts, Science, and Social Science, and a minimum of 10 courses must also be selected from among those offered by the School of Business Administration. Selection of courses must conform to the general regulations of the University of Western Ontario, set forth in the calendar of the Faculties of Arts and Social Science and to the regulation of the School of Business Administration given below.

FIRST YEAR

Principal Courses

Any General Program of the University of Western Ontario (i.e. Arts, Social Sciences, or Natural Sciences) including Economics 20 and Mathematics 20 or 24 (or equivalent).*

(*Mathematics 20 or 24 may be deferred until the second year, but must be completed prior to admission to the Third Year of the Program.)

SECOND YEAR

Requirements for Admission

First Year General Program including Economics 20. All courses taken in the first year are construed, by the School of Business Administration, to be principal courses.

Principal Courses

Business 250
Four other courses to fulfill the concentration and option requirements of the School of Business Administration.

Concentration Requirement

Of the four optional courses taken, two must continue the study of a subject started in the first year. The student is free to select the subject of concentration from among the courses selected in the first year. The concentration requirement must normally be fulfilled by the end of the second year.

Option Requirement

The student must select two additional courses from two Divisions to fulfill the option requirement. One of these courses may be in the subject of concentration and at least one must be outside of the Division of concentration. No more than one course may be selected from Division D. With an average of 70% or greater in the first year and the written permission of the appropriate Dean, a student may be permitted a sixth course in the second year. This course may be in the subject of concentration if the student so desires.

THIRD YEAR

Requirements for Admission

Students who have completed the first and second years as outlined above with an overall average on the two years of at least 70% and no single grade below 60% will be automatically accepted. Students who have completed the two years as outlined above with an overall average on those two years of better than 60% are encouraged to apply and will be considered for admission to the third year.

Principal Courses

Business 351	Marketing
Business 353	Finance
Business 354	Production
Business 355	Management Science
Business 357	Control
Business 358	Organizational Behaviour

Neither a seventh course nor a substitution for any of the above courses will be permitted under any circumstances.

FOURTH YEAR

Requirements for Admission

Students who have successfully completed the third year with an average of 70% or more and no subject below 60% will automatically be admitted to the fourth year. Other students may be admitted to the fourth year having at least an average of 60% in the courses of the third year with at least one course above 70% and no more than one course below 60%.

Principal Courses

Business 478 Executive Problems

The equivalent of two full year courses from among the optional courses offered by the School of Business Administration.

The equivalent of two full year courses which may be selected from among the option courses offered by the School of Business Administration or from among any senior courses offered by the University.

The Student also has the option of taking up to the equivalent of one half course each term in the Law School.

Requirements for Graduation

To graduate a student must:

(a) pass all courses taken in the senior year,

(b) obtain an average of 60% or better in all courses,

(c) obtain a grade of 70% or better in at least one full course or two half-year courses,

(d) obtain for each grade of less than 60% a balancing grade of 70% or better in courses of equivalent weight. One full-year course will be weighted equivalent to two half-year courses.

A Suggested Program

While any four year program which meets the requirements described above would be acceptable to the School of Business, many students would prefer more guidance as to what the School might hold to be a **desirable** *program for the first two years. The Faculty of the School of Business Administration feel quite strongly that each student's program should be tailored, as much as possible, to that student's own needs and interests. Should the student not feel such strong needs of interests, the School suggests the following program as one which seems to provide a strong foundation for the courses in the School of Business Administration. The suggested program, however, is in no sense a preferred one and should not be construed as having any bearing whatsoever on admissions policy. A student who does well in a program far removed from that suggested below will be much more likely to gain admission to the School than will a student who displays only marginal academic performance, but adheres closely to the suggested program:*

FIRST YEAR

Principal Courses

Economics 20
Mathematics 20 or 24*
English 20
Psychology 20 or
Sociology 20

One of: Politics 20, History 20, Psychology 20, Sociology 20, Geography 20 or A Laboratory Science (Natural Sciences II)

SECOND YEAR

Principal Courses

Business 250
Two courses to fulfill concentration requirement selected from List I below.
Two courses to fulfill option requirement selected from List II below.

List I:** (to fill concentration requirement)

Select **two** courses from any **one** of the following four subjects:

Division B (Social Sciences – 3 subjects)

Economics:	30	Price and Income Analysis
	31	International Trade & Finance
	33	Money and Banking
	35 or 255	Statistics
	36	Labor Economics
	37	Economic History of North America
	38	Economic Development
	39	Resource Alloc. & Growth Policies in Canada
	43	Public Finance
	230	Economic Theory
	237	The Economic Development of the Modern World in recent times
Psychology:	31	Theories of Personality
	38	Perceptual Processes
	234	Historical Systems
	235	Experimental Psychology
Sociology:	30	Sociological Theory
	32	Demography & Pop. Studies
	34	Community Structure
	36	Social Organization
	38	Social Change
	42	Sociology of Work

Division C (Natural Sciences – one subject)

Mathematics:	32	Analytical Geometry
	34	Calculus
	35	Statistics
	253	Mathematics of Finance

List II:* (to fill option requirement)

Select any **two** of the following in **two** different divisions

Division A

Any Senior English
Any Foreign Language

Philosophy:	20	Intro. to Philosophy
	30	Philosophical Classics
	31	Introduction to Logic
	34	Intro. to Philosophy of Science

**May be deferred until second year.*

***Lists I and II are in no sense either compulsory or complete. Both lists are subject to change from time to time as new courses are developed within the University and as alterations in these lists may be suggested by various departments of the Faculties of Arts, Science and Social Science.*

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Division B

History:	20	Modern Europe
	30	Medieval Europe
	31	Canada
	32	England to 1688
	33	The British Empire
	35	England since 1688
Politics:	20	Intro. to Political Science
	30	Canadian Govt. and Politics
	31	International Politics
	36	Provincial and Local Govt.
Geography:	20	Elements of Physical Geography
	32	Cultural Geography
	39	Elements of Economic Geography

Division C

Computer Science:	20	Computer Science
	31	Elements of Information Processing

Or any course not previously selected from List I and not in the field of concentration.

THIRD and FOURTH YEARS: as specified in the required program given previously.

COURSE DESCRIPTIONS

Business 20. Introduction to Business.
NOTE. Business 20 is neither a prequisite for any other Business course nor a requirement of the Undergraduate Program.

This is an introductory survey course which assumes no prior study of business administration.

The course is designed to present an opportunity for students to examine and discuss a broad range of business cases involving situations where analysis and decision-making are required. Emphasis is placed on developing an undertaking of the nature and scope of the field of business administration; the various knowledge, attitude, and ability factors involved in administrative effectiveness in the functional areas of business; the business decision-making process, business terminology; and general information about various industries and types of companies.

The course is divided into five parts: (1) financial function, (2) personnel administration, (3) production, (4) marketing, and (5) general management.

The first part of the course, dealing basically with the financial function-figure management aspects of administration and the management of the funds that must be invested in a business in order to achieve its objectives- is concerned with legal and financial implications of different forms of business organization, analysis of balance sheets and profit and loss statements. Special attention is paid to the flow of funds resulting from a company's operation, formulation of policies in regard to the nature and timing of capital expenditures, sources of capital in Canada and the methods whereby it may be obtained, and investment management.

In the second section of the course, an opportunity is provided for the student to develop an awareness of the administrative practices and human relationships that form the core of any business. Cases and readings in this area consider the importance of people in administrative situations, the motivations, actions, and relationships of people in various levels of a business and the conflicts that may stem from differing individual and group characteristics, attitudes, and value systems. The material deals primarily with the problems arising from the interpersonal relationships of people in working situations and emphasizes working relationships, selection and placement, training and evaluation, salary and wage administration, union-management relations, and personnel department operations.

Topics studied in the production section of the course include plant location and layout, equipment installation, inventory control, methods for controlling the amount and quality of the product(s) being produced, decisions as to whether a product should be made by a company or purchased from an outside manufacturer, methods of evaluating worker performance, and the many different overall problems involved in organizing the manufacturing function of a company with special emphasis on the necessity for close cooperation and liaison with other functions of the firm.

The cases in the marketing section of the course present problems involving consideration of the characteristics and buying habits of consumers; determination of the types of products that should be sold; choice of distribution channels; use of promotional tools such as personal selling, advertising, and special sales promotion methods; pricing; marketing research and the planning of marketing programs.

The fifth and concluding section of the course focuses on general management problems. It enables the student to become acquainted with the problems of a business as seen from the level of top management where company-wide objectives are set and departmental policies and operations are coordinated.

While the student is expected to learn much about the problems which businessmen face, the major benefit that he will receive from the course should be a feeling for, and an understanding of, the environment in which the businessman must make his decisions. The course should teach him something of what is involved in good judgment as against bad; and above all, it should develop the capacity for forming sound decisions on the

basis of the information available. The course continually stresses that it is management's function to make decisions, to make them promptly, and to make them on the basis of what is known, with no more than a proper respect for what is unknown.
One course

Business 250. This course is primarily designed as a preparation for entry to the Business School. The Course is divided into two main parts.

(1) **Data Analysis.** The development, interpretation and use of statistical information to isolate, quantify and communicate facts and opinions. This part of the course is taught by the analysis and interpretation of real information in an ongoing project orientation and includes student team projects.

(2) **Financial Accounting.** Commencing with the concepts of costs and benefits developed in the first term this part deals with the relevant/non relevant information flows of a firm. It examines the problems and constraints in classifying the economic aspects of the firm and develops the Financial Accounting model used in public reporting. The uses and limitations are developed so that a student can read and interpret the published financial reports and obtain an appreciation of the important information they do not contain.
One course

Business 351. Marketing. The Basic course in marketing introduces the major problems encountered by businesses when they decide what products and/or services to sell, how to distribute them and how to promote them to potential customers.

Since the seller should make all of these decisions after considering the wants and needs of these potential customers, the course begins with a study of the consumer. Then, after examining the many factors which influence consumer buying decisions, the impact of these factors on the nature of the products to be sold is studied.

The next section of the course deals with the formulation of distribution channel strategies to move the product from producer through wholesalers, retailers, etc., to the final buyer; it also deals with promotion programs to supply the incentive to the consumer in order to achieve a favorable sales volume. The concluding section of the course deals with the development of overall marketing programs where the individual elements must be fitted into a meaningful whole.

The point of view taken is that of the marketing manager. The student is continuously asked to recommend the decision which should be taken in each of the many cases studied. This procedure necessarily involves studing the economic social and political framework surrounding the seller, as well as detailed marketing research with more operational objectives.

Cases and readings are used as the basis for classroom discussion.
One course

Business 353. Business Finance. The first half of the course is concerned with working capital, the day to day use of funds in producing and selling a product or a service. The influence of seasonal fluctuations in cash requirements and the financial implications of growth, contraction, and changes in business conditions are explored in a series of cases selected to highlight variations in the need for current funds. Major types of loan arrangements are discussed and an understanding of the bargaining process between the lender and the borrower is developed through the shifting of the point of view from that of the financial representative of the company to that of lending officer of the institution involved.

The second part of the course deals with the financing of long run needs. The financial characteristics of securities are illustrated by having the student consider different situations where the capital structure of the companies is planned with due regard for the interests and right of the various participants. A series of cases is presented to show how securities are planned and sold. Regulation of security dealers is discussed, and the effect and treatment of subscription rights is dealt with in several cases. Reserve and dividend policy is treated in a number of cases and the concluding section on Promotion, Expansion, and Combination treats briefly the more complicated and legalistic side of finance.
One course

Business 354. Production. Production is a course which emphasizes the management of activities. The activities may be those involved in manufacturing, the provision of services, or generally speaking, any task that necessitates moving or operating on materials and information. The course has an operating focus and is concerned with the development of a systematic way of thinking about the structure and interrelationships of production situations within an organization.

To achieve these objectives students are exposed to relevant knowledge about the economic, organizational and technical aspects of production management and decision-making. Thus they deal with problems ranging from job design through to the planning and operation of production systems within the company organization.

Certain concepts and techniques are taught or applied so that the student may effectively analyze the above problem areas. Methods of work measurement, facilities planning, assembly line balancing, and production control, and so on will be discussed and utilized. However, the emphasis in the course will not be on the techniques themselves but on their application to improve the firm's competitive performance.
One course

Business 355. Management Science. The course in Management Science introduces some of the mathematical and statistical techniques available to the decision maker. It is designed to provide a level of understanding which will help the student follow developments in his own field of specialization and to make use of the techniques in his analysis of business problems.

The emphasis of the course will be on decision analysis under uncertainty, preference theory, linear programming, classical statistics, model building and simulation.

A portion of the class time is devoted to teaching the student the use of the computer. This will require him to learn FORTRAN and/or BASIC programming.

One course

Business 357. Control. This course emphasizes the use of figure date in administration. To this end, it deals in large measure with figure data prepared to assist in making business decisions and in appraising the results of business operations. In order to provide a sound and realistic basis for discussing these administrative activities, the method of the statistician and accountant are both considered. The student is expected to obtain and understanding of the processes by which statistical and accounting data are developed, but is not expected to acquire the skills of the staff specialist in these areas.

The use as well as the preparation of figure data is illustrated, and the relevance of figure data to business problems is continually emphasized. By appreciating the value of figures to the businessman, students with the familiar dislike of figures will become less reluctant and more facile users of figure data. During the course many representative problems concerning the use of quantitative date will be discussed. Other factors which cannot be measured quantitatively are also considered.

The student should gain from this course, ability in the preparation of figure data, understanding and appreciation of the use to which it may be put, as well as the limitations to its use, and finally an enquiring attitude towards all figure data which come to his attention.

One course

Business 358. Organizational Behavior. This course is concerned with the major forces that affect or determine behavior in a business organization. The course is so organized as to delineate these forces and to consider them individually and in relation to each other. The goals of the course are twofold:

(i) to communicate to the student a coherent body of knowledge and theory relating to behavior in organization.

(ii) to develop in the student a capacity to utilize this knowledge and theory in the formulation, diagnosis and resolution of administrative problems prevalent in organizations.

The course material consists of cases and assigned readings. The readings provide the knowledge and theory relating to organizational behavior. The cases provide exercise material for students to formulate and diagnose administrative problems as well as to present a reasoned course of action. The case analyses and readings will be augmented by periodic lectures aimed at integrating various diverse viewpoints presented by the readings and class discussions.

One course

Business 443. Financial Management. This course is concerned primarily with the financial implications of various kinds of business decisions. Although the point of view of the financial officer is emphasized, the students are expected to consider the views of other executives including the top officer.

The course begins with an analysis of the problems of financial control and then examines the basic concepts of investment worth and cost of capital from the standpoint of both the individual concern and the community. Representative problems depicting the fundamental issues at stake and the conflicting interests of the parties involved as well as the complex nature of the underlying assumptions constitute the balance of the course. While stress is placed on the responsibility of the financial officer for assembling and presenting quantitative data as a focus for the discussions, the prime emphasis is on the decision-making process.

An important objective of the course is to reinforce the student's understanding of the principles discussed in the Junior program and add to his appreciation of the broad scope of the subject.

Half course

Business 444. Manufacturing Operations. Management of a productive facility of necessity involves a number of repetitive planning decisions. These short run policy and operational problems are functions of the work force, production rate, inventory position, forecasts and sales. The manager's ability to develop a decision system that will fit today's shipping, production, work force and purchasing needs and characteristics has substantial impact on the firm's operating and income statements.

Mathematical and statistical methods are tools of manufacturing operations and are used to reduce costs through improved production planning and inventory control systems. Students in the course develop appropriate operating policies using the above tools of analysis. Competence in the application of decision rules are developed using simulation techniques and electronic computers.

Half course

Business 450. Industrial Accounting. This course designed to develop in the student an understanding of the problems of controlling production and distribution through the use of budgets, accounting

procedures and reports. The course provides, practice, adequate to develop in the student some skill in handling the figure work; it also provides general discussions, sufficient in number to prepare him to approach each new situation realistically in terms of its own particular needs.

Emphasis is placed upon the accumulation and uses of operating data for control purposes. Problems of inventory valuations, allocation of overhead costs, joint and by-product costing, processes of job costing and analysis of variance are dealt with.

The course is designed to meet the needs of those who are interested primarily in the use of accounting data in handling general administrative problems.
Half course

Business 451. Sales Management. The objective of this course is to develop student understanding and decision-making skills in the building and maintenance of an effective sales organization. Conceptually, materials utilized in the course are organized around three separate, though interrelated, sections of approximately equal duration:

(a) **The Salesman:** This introductory portion of the course is designed to increase student understanding of the role of the salesman in the marketing mix, of the elements of an effective sales presentation, and of the nature of the transactional process of selling.

(b) **The Field Manager.** This section is designed to familiarize the student with the role and importance of field management in the activities of the sales force direction at the supervisory level.

(c) **The Sales Executive.** This section is designed to increase skills in analyzing and planning effective selling strategy, and in selecting and implementing policies which foster the achievement of marketing objectives.

To achieve these ends, case materials covering industrial and consumer sales organizations are supplemented in the classroom by appropriate readings and films.
Half course

Business 452. Personnel Administration. This course is concerned with the design of personnel policies and procedures and their practical implementation. The course is planned for students of general management on the premise that personnel matters comprise an important part of most managerial decision processes. Particular attention is given to the role of the personnel function. The first part of the course gives an overview of traditional functions such as recruiting, interviewing, training, management development, performance appraisal, pay systems and the administration of discipline.

A major part of the course concerns the personnel function as a motivator. Problems of motivation are considered in both union and non-union settings, with particular concern for isolating the elements of success and failure which accompany such programs and the impact thereof on organizational effectiveness.
Half course

Business 453. Investment Management. The primary concern of this course is to introduce the student to the analytical techniques available to both select a security and to develop a conceptual framework for establishing and maintaining a portfolio of securities. The emphasis throughout the course is on the personal requirements and objectives of an individual investor and the problems he faces in the Canadian environment.

The course is devoted solely to the study of marketable securities rather than the broader area of investments which would include such areas as real estate, life insurance and so on. As a result, about one third of the course is concerned with bonds and preferred stocks as investment vehicles, about one third in common stock investments and about one third on such collateral areas as portfolio planning, investment counseling, investment funds, formula plan investing etc.

The particular thrust of the course, then, is to study the investment problems that will probably face an individual during his lifetime. It is not a course aimed at investment management in an institutional environment.
Half course

Business 454. Production Policy. This course approaches production management from the viewpoint of the vice-president of manufacturing. Emphasis is on the making of production decisions in the light of marketing, financial, organizational, and general economic aspects as well as the more purely "production" factors.

The course material is oriented around several industries selected from furniture, oil, textiles, plastics, electronics and steel. The material on each industry comprises notes and pictures on the manufacturing processes; notes on the general economic structure, problems, and trends in the industry; and three to five cases on companies in the industry. Three industries are studied in any one year.

This approach provides the student with the opportunity to analyze a variety of production problems involved in integrated and nonintegrated structures, centralized and decentralized organizations, conventional and unique marketing ventures, old and young, stable and unstable, multi-company and few-company industries, and industries in which legal pressures may be strong or weak. The task of the student is to recognize the problems and to come to production decisions, harmonious with the situation in the company and with the industry as a whole.
Half course

Business 455. Probability and Statistics. Recent developments in statistical decision theory provide the manager with a framework for dealing with problems which involve decisions under uncertainty. The main focus of the course is the revision of subjective probability distributions as a result of sampling. The basic mathematical

models which are developed link together the economics of the decision, the cost of additional information and the key probability assessements so that rational choices can be made. The framework allows the decision maker to determine the value of information.

The topics which will be covered include statistical inference, Bayesian decision theory with and without sampling, use of standard distributions for approximations of prior and posterior probabilities, and regression analysis.

A variety of structured problems will be supplemented by some short cases and other less structured assignments.
Half course

Business 456. Business Law I and II. (Full year course, Law I may be taken separately).

The course is not designed to make lawyers of business students. The aim is to contribute to an awareness in the student of the legal significance of business transactions and to the making of an intelligent client for the practicing lawyer. It is assumed that detailed knowledge of the law is properly left to the lawyer. Thus, detailed examination of particular areas of law is sacrificed to place major emphasis on a broad base of substantive rules of law relating to commerce. A combination text and case method is used with the cases designed to illustrate the principles summarized in the text material.

The first term deals with the law of Contract, including special types of contracts such as the contract of Sale, Insurance, Guarantee, and Bailment. The second term includes Business Associations (Agency, Partnership, and Corporations); Labour Law; Credit Transactions; and Real Property.
One term: half course
Two terms: one course

Business 457. Management Planning and Control Systems. The course is designed for students who have had a course in management accounting and who wish to study management control in greater depth.

The material is concerned with those areas of management control that are less well developed as opposed to such areas as standard costs and flexible budgets. In particular, the course is concerned with the control of managed costs, with profit centers and with capital acquisitions. These are dealt with from a systems point of view as opposed to an accounting aspect.
Half course

Business 459. Research. The purpose of the research course is to provide students with the opportunity of learning the research process by undertaking an individual project and preparing a research project. The experience of conducting an individual project can be useful to persons considering further academic work or doing special projects in industry.

Specific topics and activities are developed between the student and a faculty member of the student's choosing, who agrees to supervise the student's work. For example, a topic can be chosen on the basis of previous work experience, special interest in research techniques, or particular academic interest.

In order to make best use of the research course the student is advised to plan his research and contact a faculty member in the spring or early summer of the calendar year in which the research course is to be started.
One course

Business 460. Auditing. The techniques that have been classified under the general heading of auditing have expanded to such an extent in the last fifty years that they are now included in almost every phase of management control. This course is designed to examine the whole area of auditing as it affects and can be used by the modern business administrator.

The first part of the course will deal with case studies of topics such as budgeting, decentralization, internal control and internal audit. These topics will be studied as tools which can be used in establishing intelligent company goals and measuring management performance.

In the second part of the course, the role of the external auditor will be studied. While a small amount of time will be devoted to understanding the auditing and consulting profession, the major emphasis will be on studying the kinds of service available from a public accounting firm, and an evaluation of these services from the point of view of a business manager.

The student will be required to write at least one mid-term test. While it is not a prerequisite for admission to this course, a familiarity with the concepts developed in the Financial Accounting course will be helpful.
Half course

Business 461. Management of Retail and Wholesale Institutions. This course offers an investigation of the intermediary marketing structure with particular emphasis on strategy and operations problem of medium and large retail and wholesale units. Topics include: (1) trends in channel structure and the function of channel units, (2) analysis of consumer shopping behavior and channel unit buying behavior, (3) strategy problems in location, merchandising, pricing and promotion, and (4) problems in channel unit operations planning and control.
Half course

Business 462. Industrial Relations. (full year course, Industrial Relations I may be taken separately)

This is a survey course designed to explore the st of labor-management realtions in Canada and the United States and its impact on management. The

course presumes that all executives must consider issues of labor-management relations from time to time as they discharge their decision-making responsibilities. Hence, this is a non-legalistic, non-technical survey of the day-to-day problems connected with collective bargaining relationships with emphasis on decision-making skills.

Industrial Relations I considers the following topics: union organization, grievance handling, arbitration, collective bargaining and public interest disputes. Special attention is given to administration of collective agreements, to management rights, union security, technological change, featherbedding, discipline, pay systems and concepts of seniority. The course includes case analyses, lectures, audio-visual presentations, and mock sessions in collective bargaining and arbitration. Attention is devoted throughout to relevant current happenings - especially as they relate to issues of public policy.

Industrial Relations II has two parts. The first is an in-depth simulated experience in designing and implementing industrial relations policies. This involves work as members of management and as union representatives engaged in union organizing efforts. It features a close look at certification procedures, representation elections, picketing, injunctions, wildcat strikes, mediation, conciliation, and unfair labor practices. The second part considers comparative industrial relations systems, government involvement in the bargaining process and emerging characteristics of labor relations.
Half course

Business 464. Purchasing. This course recognizes the increasing importance of purchasing as one of the major functions of business, and seeks to develop currently useful principles upon which sound procurement policy and its administration are based.

There are two major sections to the course. The first is designed to establish a good understanding of basic concepts and techniques in the field of materials management. This takes approximately two thirds of the course. The remainder is devoted to a series of options selected by the class from topics like personal buying, negotiation, plant visits, reports, selected commodity studies, etc.

The introduction to the basic section is devoted to the relationships between the purchasing department and other departments of the business. It is designed to indicate the nature and scope of the purchasing function especially as it affects the profitable operation of a business. Subsequently attention is devoted to problems involved in determination and description of proper quality, including the relation of price to quality; materials management, including inventory control; value analysis; source selection and the assurance of supply; price policies; procurement by manufacture and leasing as alternatives to purchasing.

The course concludes with problems requiring an appraisal of the efficiency with which the purchasing function is being performed. Study materials consist of readings and cases taken from business situations involving an array of purchasing problems. The point of view is essentially that of top management.

Business 468. Human Relations. This course has a twofold purpose: to develop increased self-awareness and a deeper understanding of the individual in his environment. The first part of the course will stress personal growth and development. The final section of the course will deal with the effects of the social and cultural environment on individuals. Throughout the semester students will be expected to draw on diverse disciplines, materials and experiences to expand their source of useful and relevant information for their growth as individuals and professional managers.

In addition to classroom discussion, exercises of various types will be used. Time and instructor guidance will be provided for pursuit (individually or in groups) of a topic of special interest to the student.
Half course

Business 470. Financial Accounting. This course is concerned primarily with accounting as a means of communicating financial facts to various interested groups such as owners, analysts, and government officials, outside the immediate business organization. Its secondary concern is with further development of the student's knowledge of certain accounting techniques and principles which were introduced in the Control course.

After a review of fundamental accounting techniques and a critical examination of some company annual reporting, several cases concerned with the measurement of business income are discussed. These cases are selected with the objective of illustrating the variety of ways in which the computation of business income may be made, all within the framework of generally accepted accounting principles.

Subsequent cases deal with special problems of widespread importance in accounting for changes in the equity accounts of a business, and in accounting for various intangibles. The course also considers problems arising from mergers, holding companies, and the preparation of consolidated financial statements.

Since the course is concerned with communication of financial facts to outsiders, considerable attention is devoted to company annual reports and to the bulletins and regulations of the professional accounting bodies, the securities exchanges and various government agencies. The course is based primarily on case discussions, but a substantial amount of reading of appropriate literature is an integral part of the course.
Half course

Business 471. Marketing Communication. The objectives of the course are to develop (1) the concept that advertising, personal selling, and other promotional activities have a common objective - the communication of incentives to buy, (2) specific models of the buying decision process and the communication process which can provide a framework for the analysis of promotional problems and the evaluation of promotional activities, (3) student skills in analysis and decision making, and (4) student knowledge of the strengths and weaknesses of various techniques used to measure the effect of promotional activity.

Both readings and cases are used in development of the topics considered in the course. These topics include: opportunities for, and limitations of promotion; the buying decision process; the communication process; the promotional job; creative strategy and the promotional mix; consideration of the effect of the source, the medium, and the message on the successful implementation of creative strategy; and evaluation of promotional effort.
Half course

Business 473. Financial Institutions. This course has two broad objectives. The first is to study the organization, co-operation and regulation of the money and capital markets in the Canadian economy. The second is to analyze the effectiveness of banks and financial intermediaries in influencing the flow of funds as well as the problems of the businessman in making maximum use of the services they provide. The course is designed to be of interest and value to those who are considering careers with such firms. It should also be of benefit to those who desire to develop their understanding of the world of finance for a career in nonfinancial firms.

During the course the following kinds of questions will be discussed: What is the structure of Canada's financial community in terms of legal organization, locus of voting control, distribution of equity ownership, availability and adequacy of coverage of financial services? What are the kinds and magnitudes of the various fund flows through different classes of financial institutions? How does the bank of Canada regulate the flow of funds? How can financial managers anticipate monetary and debt policies and guard against adverse consequences of sudden reversals in policy?

Particular attention will be given to an evaluation of the institutional strategies used in competing for deposit and other funds, and on the effective employment of these funds in the financing of business and individual capital needs. An examination will be made of the extent to which trust and loan companies, consumer and industrial finance companies, and industrial development corporations facilitate the business operation of nonfinancial firms. Also examined is the role of investment bankers in developing opportunities for the temporary investment of idle balances in the short term money market, as well as their activities in private and public placement of securities. Of overriding concern throughout this course is the reconciliation of the objectives of various financial institutions with the demand for funds by the business community, the requirements of supervisory authorities, and the public interest.
Half course

Business 474. Management of Technology. The impact of technological change on the manufacturing facilities of the firm is far-reaching in its implications. For management the penalties of poor decisions about production technology rise quickly with technological sophistication. This course focuses on management of technological resources with some emphasis on production facilities. Its objectives are (1) to improve student analysis of economic and technological factors relevant to management decisions about uses and control of technological change within the firm, (2) to increase student understanding of technological change as a factor in business activities, and (3) to develop approaches to managing production processes under conditions of technological change.
Half course

Business 475. Planning Models in Production Systems. The essence of this course is the examination of management science applications in the planning and design of production systems. Production is viewed as a complex man-machine system, operating in an organizational environment with cost as a significant criterion of success. Techniques involving information systems, decision processes, and mathematical models are studied in terms of improving the performance of this system.

Specifically, the course adopts a systems approach to production built on a basic economic model of the production function. The role of formal models such as mathematical programming, network analysis and queuing, and techniques such as simulation, are related to the design of the production system. Developments in behavioral models related to decision processes and information systems are studied for their managerial implications. Throughout, the emphasis is on the application of planning models in production systems as opposed to their theoretical derivation or degree of complexity.
Half course

Business 478. Executive Problems. The course in Executive Problems will focus on business problems faced by executives at the top administrative levels of business organization. In most cases these will be general management problems. The purpose of taking such a frame of reference is to help the Student develop better ways of seeing, describing, and thinking about:

(a) The interrelatedness of functional problems in business-those that we traditionally break down into financial, marketing, and production problems;

(b) The mutual dependence of the external economic survival and expansion of a business organization and its internal social stability and growth; and

(c) The knowledge, ability, and other human qualities required for exercising effective leadership of a business organization as a whole.

Case materials will draw on executive situations in companies both large and small.
Half course

Business 480. Taxation. The course has two major objectives. The first is to gain a broad understanding of the Canadian tax system in its economic, legal and accounting settings. Fundamental legal and economic concepts will be studied as well as specific provisions and problems that commonly arise. The second objective is to relate the provisions of the taxing statutes to common business situations and problems. Emphasis here is on tax planning and the responsibilities of management to live within the tax law.
Half course

Business 481. Marketing Research. In marketing, as in any other aspect of business, the manager must develop relevant information to support decisions. Planning and controlling marketing programs requires a variety of facts-from data on the needs, habits and attitudes of customers, to information on the effectiveness of promotional efforts. The manager must understand and contribute to marketing research designed to provide such information, if he is to ensure a flow of appropriate information and its proper use.

The Marketing Research course has been designed with three aims in mind:

(1) Developing skills in defining and placing priorities on information requirements,

(2) Providing familiarity with the basic methods used to gather and analyse marketing data,

(3) Developing skills in interpreting research results and applying them in specific marketing situations.

An important aspect of the course is the project work done by students. Experimental and survey studies are carried out in a number of marketing problem areas with a view to establishing first-hand acquaintance with the research process.
Half course

Business 485. Operations Research. The objective of this course is to develop the student's understanding of the functions and methods of Operations Research in the solution of business problems. Because the manager needs to contribute a great deal to the early stages of problem definition if he is to make better decisions with an O.R. model, attention is focused on this aspect. Similarly, effective use of Operations Research will often depend on factors such as familiarity with the implications and consequences of key assumptions and on the ability to recognize the need for an elaboration of the basic model.

Most of the topics of the course are treated from an applications viewpoint. In the introduction to each topic short problems are used. Later, more complex problems are examined as the topic is developed. The subject areas to be covered are competitive bidding, linear programming, dynamic programming, queuing theory and Markov chains. Students will be expected to use some standard programs and to develop others of their own at the Computer Centre and time-sharing terminals. The chief use of mathematics in the course will be in the derivation of the models where appropriate.
Half course

Business 489. The Practice of International Trade. Recent years have seen a growing emphasis on the international operations of business. Operating across national boundaries raises a number of unique problems for the business administrator in the areas of general policy, marketing, finance, personnel, production, and control. The course on the practice of international trade deals specifically with those management problems that arise by virtue of a firm's international orientation.

The course consists largely of readings and discussions on various aspects of the international environment of business. Throughout, emphasis is placed on the implications of the environmental features for business management.
Half course

Business 495. Mathematical Programming. Mathematical programming is one of the many facets of Operations Research. This course will deal with the mathematical theory behind the various optimization techniques for linear and non-linear systems.

Throughout the course theory and applications will be intermingled. The depth to which each topic will be covered will depend on the students in the course. In general, the areas treated will be introduction to linear algebra and functional analysis, extensions to linear programming and various topics in non-linear programing.
Half course

Business 496. Computers and Information Systems. This course is designed to give the student a thorough understanding of management information technology, systems design and implementation.

One of the comments heard most often about computers and their relation to management is that the aspiring manager should be a knowledgeable consumer of computers, that is he should be able to

participate effectively in the design of an information system, the acquisition of an appropriate computer, and the operation of a computer installation. He should also have some awareness of the impact of computers on organizations. The CIS course is therefore designed to convert a neophyte into a knowledgeable consumer.

The student will be required to write several computer programs, carry out systems analysis, evaluation of systems, and participate in a group project.
Half course

Business 499. Topics in Management Science. This course is a vehicle for teaching topics not covered by other courses in the Management Science area.

In 1969-70 the general theme of the course was Replacement Analysis. Topics treated were replacement with and without technological progress, dynamic programing and Markov processes as applied to replacement problems. In addition each student was required to review and present research papers found in recent professional journals.
Half course

Advisory Committee as at February 1, 1970

J. W. *Adams, Vice President Finance, Emco Limited*

Ralph M. Barford, President, General Steel Wares Limited

Brigadier W. A. Bean, Deputy Chairman & Vice President, Canada Trust-Huron & Erie

J. E. Brent, Chairman of the Board and Chief Executive Officer, IBM Canada Ltd.

Lt. Col. G. Allan Burton, Chairman and President, Simpsons, Limited

N. R. Crump, Chairman & Chief Executive Officer, Canadian Pacific, Honorary

Paul Desmarais, Chairman, Power Corporation of Canada Limited

H. George DeYoung, Industrialist

J. S. Dinnick, President, McLeod, Young Weir & Co. Ltd.

J. C. Eaton, Chairman, Eaton's of Canada Ltd.

Eric L. Harvie, Q. C., Barrister

J. Claude Herbert, President, Warnock-Hersey Co. Ltd.

Brigadier W. H. Hemphill, President & General Manager, Imperial Furniture Mfg. Co. Ltd.

R. G. Ivey, Q. C., Barrister

Richard M. Ivey, Q. C., Barrister

Captain Joseph Jeffery, Q. C., Chairman of Board, London Life Insurance Co.

Allen T. Lambert, Chairman and President. The Toronto-Dominion Bank

Dr. D. s. R. Leighton, Professor, School of Business Administration

J. H. Moore, President, Brascan Ltd.

Trevor F. Moore, Senior Vice President, Imperial Oil Limited

Alfred Powis, President, Noranda Mines Limited

W. Harold Rea, Chairman of the Board, Great Canadian Oil Sands Ltd.

Robert H. Reid, President and Managing Director, The London Life Insurance Co., Honorary

E. R. Rowzee, President and Managing Director, Polymer Corporation Limited

Karl E. Scott, President, The Ford Motor Company of Canada Ltd.

A. E. Shepherd, Q. C., Barrister, Chairman of the Board of Governors

Frank T. Sherk, Industrialist

Leroy D. Smithers, President, Dow Chemical of Canada, Limited

Dr. W. J. Stenason, Vice President Transport and Ships, Canadian Pacific

J. A. Stewart, President and Chief Executive Officer, Continental Can International Corp.

J. A. Taylor, Chairman and President, The Canada Trust-Huron & Erie

R. B. Taylor, Vice President & Treasurer, The Steel Company of Canada, Ltd.

Walter A. Thompson, Professor and Associate Dean, School of Business Administration

The Hon. K. R. Thomson, Times Newspapers Ltd.

Marcel Vincent, Chairman, Bell Canada

J. L. Walker, President, Bank of Montreal

Lt. Col. D. B. Weldon, Chairman, Midland-Osler Securities Ltd.

David B. Weldon, President, Midland-Osler Securities Ltd.

J. J. Wettlaufer, Professor and Dean, School of Business Administration

J. R. White, Director, Standard Oil Co., Honorary

Dr. D. Carlton Williams, President and Vice-Chancellor, The University of Western Ontario

R. B. Willis, Vice President, Administration and Finance, The University of Western Ontario

J. E. Woods, Woods Investment Limited, Honorary

EXAMINATIONS

Fee for Special Examination. $15.00

Fee for each Supplemental Examination written at the University of Western Ontario. $10.00

Fee for each Supplemental Examination written at a center other than the University of Western Ontario $15.00

Late application for admission–if submitted after July 1st. . . . . $25.00 (non-refundable)

Late Registration Fee applicable to all full-time students:

First day. $10.00

Each day additional . . . . . $ 3.00

Maximum. $25.00

CERTIFICATES

Evaluation of non-Ontario certificates for admission . . . . . $ 2.00

Transcript of record, each copy . . . . . $ 1.00

Fees are paid in full on registration day, but if necessary, they may be divided after consultation with the Comptroller, into two instalments payable on the first day of each term. The extra charge for this division is $5.00. Students must pay their fees as above before attending any lectures or examinations, except by permission of the Dean of the Faculty and the Comptroller. No student shall be recommended for any certificate, diploma or degree until his tuition fees and other accounts owed to the University are paid.

The Board of Governors reserves the right to amend fees after the printing of this list.

EXPENSES

The following estimates are based on an academic year of 33 weeks:

	Single Student	Married Student with wife working no children
Tuition.	$ 540.00	$ 540.00
Housing and Food.	1,000.00	2,000.00
Books and Supplies. . .	310.00	310.00
Other Expenses.	750.00**	900.00**
	$2,600.00	$3,750.00

**Other expenses are certain personal expenses which vary greatly with the requirements of the individual student, such as clothing, laundry, transportation, social and other personal services. A careful estimate of these expenses should be included in your financial plans.

The above may be varied by the type of accommodation chosen and/or paying for meals in conjunction with accommodation.

There are good cafeterias on the main campus and and adequate lunch can be purchased for a very reasonable price. Students of Business Administration should not count on cutting expenses by using secondhand books. Secondhand casebooks where exhibits often have been removed or answers supplied are of little value.

The University provides a wide range of facilities: e.g., student government and student publications such as Folio, Gazette and Occidentalia offer several responsible posts; such groups as the Players' Guild, the Debating Society, the Political Economy Club, the International Affairs Society and the U.W.O. Choir are all active bodies. For those interested in sports, there is a particularly well-rounded program; facilties and instruction are available for football, soccer, hockey, basketball, skiing, boxing, wrestling, badminton, tennis, golf, bowling and swimming. The gymnasium in Thames Hall is one of the best-equipped in the country.

GRADUATE COURSES IN BUSINESS ADMINISTRATION

In addition to its undergraduate program, the School of Business Administration offers the opportunity for graduate work in the field of business administration. The Master of Business Administration program is designed to cover two academic years and requires for entrance a recognized undergraduate degree from an accredited University plus an undergraduate record which demonstrates the ability to do good graduate work.

In 1960, the School instituted a program leading to the Doctor of Philosophy degree in Business Administration. It is a stated purpose of this course to train prospective teachers and researchers of business administration. Admission procedures will be highly selective.

Further information on the MBA and PhD programs may be obtained from the Admissions Office, School of Business Administration.

SCHOLARSHIPS, PRIZES AND AWARDS

The following scholarships, prizes and awards are of particular interest to undergraduate students of Business Administration.

The Clarkson, Gordon & Co. Prize: A prize of $100, the gift of Clarkson, Gordon & Co., Chartered Accountants; awarded annually to the student who completes the third year of the Honors Course in Business Administration with the highest standing in accounting.

Gold Medal: The Gold Medal is to be awarded by the faculty upon graduation to the undergraduate student with the highest first class standing.

Price Waterhouse & Co. Scholarship: This award of $250 will be made to a student completing the third year of the course in Business Administration whose academic record in the first three years and whose ability and other qualifications are considered to be outstanding. Preference will be given to those who plan to continue their studies after graduation with a practising firm of chartered accountants.

Riddell, Stead, Graham & Hutchison Award: This award of $500 to be applied against university fees in the fourth year will be given to a male Canadian student who has completed the third year of the Business Administration course with high standing who is proceeding into the fourth year, and who intends, upon graduation, to continue studying with a practising firm of Chartered Accountants. The award is made on the recommendation of the Dean of the Faculty of Business Administration.

Touche, Ross Award: An award of $300 will be given to the student entering the fourth year of the course in Honors Business Administration with the best marks in the humanities and social sciences. He should have at least a second class standing in the business subjects taken in his junior year, and should possess other qualifications which, in the opinion of the faculty, indicate that he could, if he so desires, have a successful and happy career in the accounting profession.

Wilhelmina and J. Gordon McIntosh Scholarship No. 1: $100 awarded for general proficiency in the second year of the School of Business Administration, payable during the third year at the School.

Wilhelmina and J. Gordon McIntosh Scholarship No. 2: $150 awarded for general proficiency in the third year of the School of Business Administration payable during the fourth year at the School.

The William C. Benson Prize: A prize of $50, the gift of William C. Benson, awarded annually to the highest ranking student in the Business 250 course in the second year, who is entering the third year in the School of Business Administration the following fall. The award will be made at the beginning of the third year.

Student Assistantships

The school has openings for a number of student assistants to help faculty members in grading and supervising undergraduate work. These assistantships normally carry a small honorarium. Applications should be made to the Secretary, Financial Aid Committee, School of Business Administration, who will provide current information.

STUDENT FINANCIAL ASSISTANCE

Ontario Student Awards: These pay the full amount of assessed educational need for students who are Ontario residents; there is no academic-average requirement. The awards are comprised of part grant and part loan. Application forms are available at all post secondary and secondary institution in Ontario; this one application gains consideration fo tthe Canada Student Loan, the Ontario Award, and most of the other bursaries and grants mentioned in this calendar.

LOANS

Canada Student Loans Plan: Full details of this Plan are available in a brochure issued by the Government of Canada which may be obtained at all eligible post-secondary institutions in Canada. (Ontario residents see Ontario Student Awards).

University Loan Funds: Amounts up to $500 are available to full-time students in any year of any program who have a satisfactory academic record and need financial assistance to continue their studies.

Commercial Bank Student Loans: In recent years, there has been a trend on the part of the Canadian banks to make sums of money available to students for educational purposes. Interested students should contact the bank of their choice.

TUITION AND EXPENSES

Annual Tuition and Prescribed Accessory Fees

For full-time intramural undergraduate students.

(This annual sum includes registration, regular examination and graduation fees, laboratory charges, University Students' Council, University Concert Series, Athletic Association, Thames Hall facilities, Students'Health Insurance and Health Service fees).

First and Second Years, each $540.00

Third and Fourth Years, each. $540.00

Part-time students:

Intramural, each course including examinatio $105.0

SPECIAL FACILITIES OF THE SCHOOL

The Placement Office

The conditions of study in the program place a premium on free time. Most of each day is spent in the serious study of business problems. Each student must, therefore, plan his placement program in order to use his free time as economically as possible. It must be understood that the effective placement of each student is wholly his own responsibility. The Placement Office endeavours to assist each man to make the most of his efforts.

During a six-week period in January and February each year, all interested companies are invited to visit the School for the purpose of discussing employment with graduating students. During the fall term, the School provides opportunities for students to participate in meetings dealing with career counselling, effective placement procedure, résumé writing and general orientation to effective placement.

Continuing efforts are made to advise industry and business, both large and small, of the pool of manpower offered by each class. Information about the class is forwarded to over 5,000 top management people across the country. Over 200 companies and institutions recruit regularly at the School.

The success of each student's job-seeking activity is in direct relationship to the effectivenss of the personal effort he makes toward placement. The Placement Office plays a significant role in helping each student to set career goals, develop job strategy and make the whole process as effective as possible.

The Business Quarterly

The Business Quarterly is in its thirty-seventh year of publication as a professional management journal. It is published by the School of Business Administration as an extension classroom for the continuing education of Canadian business men.

The Business Quarterly contains articles and special features written by business men and academics recognized in their fields of special interest. Its articles are directed to those in positions of administrative responsibility. High quality work submitted by students is considered by the Editorial Advisory Board for publication. This Board is comprised of faculty members and Canadian business men. An honorarium is paid for all articles accepted and a $500 award is made to the author of the article judged to be the best in the current year. Reprints of most articles are available.

The Business Quarterly has grown rapidly in recent years with a paid circulation in excess of 6,000. The majority of these subscribers are in upper and middle arrangement.

The Business Council

The School of Business Administration sees extracurricular activities as an important part of college living and encourages its students to participate. The Undergraduate Business Council is the organization which governs undergraduate student activities within the Business School. The Council makes arrangements for social events and cooperates with the Graduate Student's Association and the Faculty in sporsoring many extracurricular activities. Through the Council, undergraduate students can participate in the Business Forum, Marketing Club, Investment Club and the student newspaper "Dollars and Sense" as a means of rounding out their education program. The Association works with the Placement Office to provide knowledge of career opportunities and actively assists in the placement function, both at the summer and permanent levels.

MEMBERS OF FACULTY OF THE SCHOOL OF BUSINESS ADMINISTRATION

PROFESSORS

Grindlay, A.A., BSc *Saskatchewan;* MBA; PhD *California*

Jones, F.W.P., BA

Leighton, D.S.R., BA *Queen's;* MBA, DBA *Harvard*

McDougall, W.J., BA; FCA (Ontario)

Nicholson, J.T., SB *Cornell;* MBA, DBA *Harvard*

Taylor, J.C., BA; FCA (Ontario). Senior Professor

Thain, D.H., MBA, DBA *Harvard*

Thompson, W.A., AB *Drury;* MBA *Harvard;* LLD *Waterloo Lutheran.* Associate Dean

Wettlaufer, J.J., BA, MBA; LLD *Waterloo Lutheran.* Dean

Wood, A.R., BSc *Queen's;* MBA; DBA *Harvard*

ASSOCIATE PROFESSORS

Fry, J.N., BScEng *Alberta;* MBA; PhD *Stanford*

Gordon, J.R.M., BASc *British Columbia;* MBA *Queen's;* PhD *MIT*

Hodgson, R.C., BSc, MSc *McGill;* DBA *Harvard*

Johnston, C.B., BA, MBA

Kuechle, D., BA, JD *Wisconsin;* MBA, DBA *Harvard*

Leenders, M.R., BSc *Alberta;* MBA, DBA *Harvard*

Martin, S.A., CA *Manitoba;* MBA, DBA *Harvard*

Mikalachki, A., BCom *Sir George Williams;* MBA, PhD

Portis, B., BA, MA, PhD *Harvard*

Sproule, R.E., BComm *McGill;* MBA; PhD *MIT*

Washington, J.B., BBA *Tulane;* MBA *Harvard;* PhD *Alabama*

ASSISTANT PROFESSORS

Archibald, T.R., BA; MBA, PhD *Chicago;* CA (Ontario)

Bishop, P.M., BSA *OAC;* BASc *Toronto;* MBA

Britney, R.R., BEngSc; MBA *Bowling Green;* DBA *Indiana*

Burgoyne, D.G., BA, MBA

DiStefano, J.J., BA *Rensselaer;* MBA *Harvard;* MA, PhD *Cornell*

Drinkwalter, D.A., BA, MA

ffolliott, J.D., BComm *Rhodes;* MBA; CA

Forsyth, G.R., BIndEng *Georgia Inst. of Tech.;* MBA

Frankiel, H.H., BSc *Berkeley;* MBA, PhD *California, L.A.*

Graham, J.F., BA *Assumption;* MBA

Haehling von Lanzenauer, C., Dipl-Volkswirt, PhD *Bonn*

Hardy, K.G., BA; MBA, PhD *Michigan*

Hicks, B.E., BComm *Toronto;* MBA *McMaster;* PhD *Illinois;* CA

Humphrey, J.A., BA, MBA; DBA *Harvard*

Kennedy, J.R., BComm *Manitoba;* MBA; PhD *Stanford*

Kirkham, P.G., BASc *U.B.C.;* MBA, MA

Little, B., BComm *UBC;* DBA *Harvard*

Nourse, R.E.M., BSc *Queen's;* MBA; DBA *Harvard*

Rowland, F.H., BA

Shaw, D.C., BComm *Dalhousie;* MBA, PhD *Pennsylvania;* CA *Nova Scotia*

Smith, D.B., CA (Ontario)

Weinstein, A.K., BS *Pennsylvania;* MBA *Columbia*

Zabransky, F., BASc *Toronto;* MA, PhD

LECTURERS

Crookell, H., MBA; RIA *Alberta*

Erskine, J.A., BESc, MBA

Warner, T.N., BA *Oxford;* SM *MIT*

INSTRUCTORS

Handley, T.G., CA *Natal;* MBA

Pearce, M.R., BA

Piper, C.J., BSc *McGill;* MBA

Stevens, R.G., BASc, MBA

Faculty of Dentistry

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ACADEMIC CALENDAR

1970

August 7	Last day for receiving applications for examinations for removal of conditions.
August 28	Examinations for removal of conditions begin at 9:00 a.m. in the Dental Sciences Building.
September 8	Clinical Orientation — Third Year.
September 14	Registration Day for all Years in Thames Hall. (9:00 a.m. to 12:00 noon).
September 15	Lectures begin for all Years.
October 12	Thanksgiving Day – Holiday with classes cancelled.
October 30	Autumn Convocation.
November 6	First Quarter ends for all Years.
November 9	Second Quarter begins for all Years.
November 11	Remembrance Day Ceremony
December 18	Chirstmas Vacation for all years begins at 5:00 p.m.

1971

January 4	Lectures resume for all Years.
January 15	Second Quarter ends for all Years.
January 18	Third Quarter begins for all Years.
	Payment of final instalment of fees is required on or before this date.
March 12	Third Quarter ends for all Years.
March 15	Fourth Quarter begins for First, Second and Third Years.
	Study Week begins for Fourth Year.
March 22	Examinations begin for Fourth Year.
March 29	Fourth Quarter begins for Fourth Year.
April 9	Good Friday – Holiday with classes cancelled.
May 7	Classes end for First, Second, and Third Years.
May 10	Study Week begins for First, Second, and Third Years.
May 17	Examinations begin for First, Second, and Third Years.
May 21	Fourth Quarter ends for Fourth Year.
May 24	Victoria Day – Holiday.
May 25	Summer Clinic commences – Third Year.
May 28	Spring Convocation – Dentistry
June 25	Summer Clinic ends - Third Year

Regular meetings of the Council of the Faculty of Dentistry or its Executive Committee are held on the fourth Monday of every month, September to June inclusive.

History

As early as October, 1947, the Board of Governors of The University of Western Ontario had approved, in principal, the development of a Faculty of Dentistry. This was endorsed by the Canadian Dental Association and the Royal College of Dental Surgeons of Ontario in 1949. In 1950, however, it became obvious there was need to expand the existing facilities in the province. The Royal College of Dental Surgeons accordingly recommended the creation of new and expanded premises for the existing dental school.

In 1962, the RCDS, in a report to the Minister of Health, recommended two sites for the establishment of a second dental school in Ontario. One of these was within The University of Western Ontario. The Honorable John P. Robarts, Prime Minister of Ontario, announced on October 29, 1964, that the Government of Ontario had approved the development of a Faculty of Dentistry at The University of Western Ontario within the Health Sciences Centre.

On November 20, 1964, the Board of Governors officially established the Faculty of Dentistry, effective January 1, 1965, and at the same meeting appointed its Dean, who took office on February 1, 1965.

The first class in the Faculty of Dentistry was enrolled in September, 1966.

On September 27, 1966, the Honorable Dr. M.B. Dymond, Minister of Health of Ontario, officiated at the Ground Breaking Cermony for the Dental Sciences Building and on October 20, 1967, the cornerstone was placed by Col. D.B. Weldon in his last official act as Chairman of the Board of Governors. The Official Opening of the Dental Sciences Building took place on October 25, 1968.

The undergraduate dental program was fully approved by the Council on Education of the Canadian Dental Association on February 21, 1970.

The degree of Doctor of Dental Surgery was first conferred by The University of Western Ontario on the seven graduates of the first class on May 29, 1970.

Objectives

The objectives of the Faculty of Dentistry are to select students who are intellectually, morally, and physically qualified for a career in dentistry and to provide them with an academic environment conducive to a broad education including the acquisition of the special knowledge and skills of dentistry. There should be developed within the student an intellectual curiosity, an ability to reason, the realization of the need for continuing education, and a superior sense of responsibility to society. The student should also attain a knowledge of the basic sciences related to dentistry including the application of these sciences to his clinical practice, a high degree of clinical ability, and understanding and interest in research and education, a knowledge of and the ability to practise preventive dentistry, a competence to organize and administer a practice properly including the utilization of auxiliary personnel, and a highly developed sense of ethical principles in professional life.

Specifically, the DDS program is intended to graduate dentists who possess the knowledge and skill to conduct a superior general practice and also sufficient knowledge of basic and applied science to permit and stimulate professional and intellectual growth.

The Library

The Dental Library is a fully integrated part of the Health Sciences Library serving Dentistry, Medicine, Nursing and associated Basic Sciences.

Although located separately on the main floor of the Health Sciences Centre the Health Sciences Library is part of the main University Library.

The collection of the Health Sciences Library contains about 89,000 books. Approximately 1,200 journals are currently received. The library also has a collection of several thousand volumes dealing with the history of the medical sciences.

Hours during the term are Mon-Fri 8:30 a.m. – 11:00 p.m., Sat 8:30 a.m. – 5:00 p.m. and Sundays 1:00 p.m. – 11:00 p.m.

Admission Requirements

Admission to the Faculty of Dentistry is based on academic ability and personal qualities as evidenced by scholastic records, aptitude tests, and personal references. Because facilities for pre-clinical and clinical instruction are limited, it is necessary to restrict enrollment to those who, in the opinion of the Faculty, are best qualified to meet the mental and physical demands of the curriculum and most likely to complete successfully the full course of study. The presentation of the minimum requirements for admission will not assure acceptance.

Students are eligible to apply for admission to the Faculty of Dentistry at The University of Western Ontario when they have successfully completed at The University of Western Ontario or at other universities where comparable programs are offered, two years of university study beyond the level of Ontario Grade 13, or its equivalent, provided that satisfactory standing is achieved in at least the work of one year in each of Biology, Chemistry, Physics and Organic Chemistry.

Note: Chemistry 203, 253, 313, 353 and 453 individually satisfy the Organic Chemistry requirement of this Faculty.

In their choice of options for the second "predental" year, students are urged not to anticipate dental school courses. Rather, they should seek a broad background of education in keeping with their own interests.

Applicants from other recognized Universities who have acquired equivalent qualifications are also eligible for consideration for admission.

Application for Admission

Application for admission to the Faculty of Dentistry must be made upon the regular application form obtainable from the Registrar's Office, The University of Western Ontario, London 72, Canada. The completed forms and supporting documents (originals) are to be mailed to The Director of Admission, The University of Western Ontario, London 72, Canada. Applications should be submitted not later than March 1, 1971.

A student who has never been registered at The University of Western Ontario must:

(a) attach to his completed application form all his Ontario Grade 13 certificates (originals) or an official certified transcript of his complete secondary or high school record;

(b) request the Registrars of all universities, colleges and other institutions of post-secondary education which he attended or is attending, to forward directly to The Director of Admissions, certified official transcripts of his academic record;

(c) request the Registrar of the University which he is currently attending to forward directly to The Director of Admissions a second transcript of his record at the end of the current academic year.

Dental Aptitude Test

All applicants to this Faculty must complete the Dental Aptitude Test administered by the Canadian Dental Association. Information on this test program may be obtained by writing to:
The Administrator
Dental Aptitude Test Program
Canadian Dental Association
234 St. George Street
Toronto 180, Ontario

Registration

Students in the Faculty of Dentistry will register in Alumni Hall before 12:00 noon on Monday, September 14, 1970.

No student will be registered after September 15 except by special permission of the Dean. Those who register late will pay a late registration fee of $10.00 for the first day, plus $3.00 for each additional day, up to a maximum of $25.00.

Fees

All Years Fee

Payable on Registration Day
September 14, 1970 ..... $727.50
If paid in two installments–
Registration Day $400.00
First Day of Second Term. 332.50
The fee includes Student Activity and Health Insurance fees totalling $54.00

Instrument Fee

(Estimate only) – Payable at Registration
First year $850.00
Second Year 515.00
Third Year 380.00
Fourth Year 105.00
Advanced Standing Student $1275.00
If paid in two installments, an extra $5.00 handling charge will be levied.

Late Registration

Specified date (September). $10.00
Thereafter. 25.00

Other Charges

Evaluation of non Ontario certificates for admission ..... $ 2.00
Transcript of record, each copy (first two copies) 1.00
Examination for removal of conditions, each paper 15.00

The Board of Governors reserves the right to amend fees after the printing of this brochure.

NOTES

1. *A non refundable $50.00 deposit on tuition fee* is required from an admitted applicant to retain his place in the first year class.

2. Students must pay their fees as above, before attending any lectures or examinations, except by permission of the Dean of the Faculty and the Comptroller.

3. No Student shall be recommended for any *diploma or degree until his tuition fees and other* accounts owed to the University have been paid.

4. The fees outlined above represent only a fraction of the cost of dental education. The balance is provided by Federal, Provincial and Municipal grants, endowment income and other grants and gifts.

5. The Instrument Fee includes the purchase or rental of instruments, equipment and materials; laboratory costs and compulsory Bulletins and stationery supplies.

Student Housing

For students who will not be living in residence, the Off-Campus Housing Office provides a listing service of housing accommodation available in London by the following categories:
Rooms (with or without breakfast)
Rooms with Board
Light Housekeeping
Apartments
Houses

To use this service students should apply in person to Room 23, Thames Hall; lists of available accommodation are not produced for distribution by mail. An estimate of Room and Board (two meals) would be $20 to $25 per week or $650 or $825 per session per student.

Financial Aid

Western's student-aid program makes it possible for any able and motivated student to balance his educational budget. Bursaries, grants, and loans are available for those students with genuine financial need.

Application for assistance should be made to the Director of Financial Aid, as outlined in the General Information Brochure.

Ontario Student Awards

These awards, which are a combination of Canada Student Loan and Province of Ontario Grant, are available to all full-time students registered at the University, who are residents of Ontario, providing they can demonstrate financial need. There is no "academic average" requirement. Application forms, which are obtainable at all secondary and post-secondary institutions, should be completed in duplicate and sent to the Financial Aid Office, Room 103, Thames Hall. Completion of this one form automatically secures consideration for the majority of awards administered by the University.

Restricted and Unrestricted Bursaries

These bursaries are generally awarded to students who have an average of "B" or better in their previous year's work. In every case it is absolutely essential that the applicant demonstrate genuine financial need. Completion of an application form for the Ontario Student Awards automatically gains consideration for all the restricted and unrestricted bursaries except where otherwise stated.

The following bursaries are restricted by residence, sex, course, year, as indicated:

The Maude Gordon Educational Fund. Up to $500 each. The purpose of this bursary is to assist deserving students from the counties of Elgin, Essex, Kent, Lambton, Middlesex, Huron, Oxford and Perth. This fund was established by a bequest of the late Miss Maude E. Gordon of Wallaceburg, Ontario.

The Greek Ladies' Philoptochus Society Award. $100. This bursary is provided annually to a student of Greek descent.

The Kathleen Gordon Hanna Educational Fund. Up to $500 each. The purpose of this fund is to assist deserving students from the counties of Elgin, Essex, Kent, Lambton, Middlesex, Huron, Oxford and Perth. This fund was established by a bequest of the late Mrs. Kathleen Gordon Hanna of Wallaceburg.

Huron County Bursaries. Up to $250 each. This bursary is available to students who have lived in Huron County for at least three years.

IODE (Nicholas Wilson Chapter) Bursary. $100. Students entering the final year of any Honors or Professional course are eligible for this bursary.

Leonard Foundation Bursaries. Up to $400 each (for from one to four years). Available to selected students in any year of any course. Preference is given to sons and daughters of Clergymen, School Teachers, members (active or retired) of Her Majesty's Armed Forces, graduates of the Royal Military College of Canada, members of the Engineering Institute of Canada, and members of the Mining and Metallurgical Institute of Canada. These bursaries are paid from the income of a Trust created by the late Lieut.-Colonel and Mrs. Reuben Wells of St. Catharines, Ontario. Application forms may be obtained from the Awards Officer and must be filed by February 15th of the year preceding the award.

Ontario Dental Association Bursaries. The Ontario Dental Association has provided $500 for bursaries which may be awarded to students in any year of the course. Academic standing must be satisfactory and there must be a demonstrated financial need. The maximum value of any one bursary is $250. Applications should be made to the Dean.

Oxford County Bursaries. Up to $250 each. Students from Oxford County, excluding Ingersoll and Woodstock, are eligible.

Perth County Bursaries. Up to $250 each. Students from Perth County, excluding St. Mary's and Stratford, are eligible.

Royal Canadian Legion (London) Student–Aid Fund. Up to $200 each. Deserving undergraduates who are veterans or dependents of veterans are eligible.

Wellington County Bursaries. Up to $250 each. Students from Wellington County, excluding Guelph, are eligible.

The following bursaries are unrestricted:

Atkinson Charitable Foundation Student-Aid Funds. Up to $200 each. Students who are residents of Ontario are eligible.

A.T.A. Trucking Industry Educational Foundation Fund. Up to $250 each.

The Circle "K" Club Award. $100.

H.M.C.S. Prevost Student-Aid Fund. $75.

The I.B.M.—Thomas J. Watson Memorial Bursaries. Up to $200 each.

I.O.D.E. (Eldon House Chapter) Bursary. $100.

I.O.D.E. (Overseas Chapter) Bursary. $100.

I.O.D.E. (Princess Patricia Chapter) Bursary. $100.

I.O.D.E. (The Colonel G. Eric Reid Chapter) Bursary. $100.

I.O.D.E. (Nicholas Wilson Chapter) Bursary. $100.

The Interprovincial Pipe Line Company Bursaries. Up to $250 each.

The Local 27 U.A.W. Bursary. $250.

The Proctor and Gamble Company of Canada Bursaries. Up to $250. each.

The W.F. Thomas Student-Aid Fund. Up to $300 each. Preference is given to applicants whose residence is in St. Thomas or Elgin County.

The U.W.O. Alumni Association Bursary. Up to $400 each.

Walter Wright Scholarships. Up to $250 each.

Grants

A "grant" is an award to a student who demonstrates financial need and who has a satisfactory academic standing. Completion of an application form for the Ontario Student Awards automatically secures consideration for the following grants which are described in the preceding bursary sections:

A.T.A. Trucking Industry Bursary Fund.

The Atkinson Charitable Foundation Student-Aid Fund.

The Circle "K" Club Award.

The Maude Gordon Educational Fund.

The Greek Ladies' Philoptochus Society Award.

The Kathleen Gordon Hanna Educational Fund.

H.M.C.S. Prevost Student-Aid Fund.

The Royal Canadian Legion (London) Student-Aid Fund.

The W.F. Thomas Student-Aid Fund.

Loans

To be eligible for a loan, a student must have a satisfactory academic record and be able to show that he cannot continue his studies without financial assistance. Application should be made to the Awards Officer.

Canada Student Loan Plan. Full details of this Plan are available in a brochure issued by the Government of Canada which may be obtained at all eligible post-secondary institutions and secondary schools in Ontario. (Ontario residents see Ontario Student Awards).

University Loan Funds. Up to $400. Available to full-time students in any year of any program.

Commercial Bank Student Loans. Several Canadian banks make money available to students for educational purposes. Interested students should consult the bank of their choice.

Scholarships and Awards

ADMISSION

The Royal College of Dental Surgeons Scholarships. Two awards, one in the amount of $350.00 and the other $250.00 are established in the Faculty of Dentistry by the Royal College of Dental Surgeons of Ontario.

To be eligible for these awards candidates must:

(a) Register in the first year of the course in the Faculty of Dentistry.

(b) Be an Ontario resident and have completed Ontario Grade 13 or equivalent.

(c) Have attained at least a "B" standing in each of the mandatory pre-dental science subjects at university level (physics, general chemistry, organic chemistry, and biology), as well as an over-all "A" average in these subjects.

In the event that the two scholarship recipients cannot be differentiated academically, two equal scholarships in the amount of $300.00 each will be awarded. No application is required.

FIRST YEAR

The Royal College of Dental Surgeons Scholarships.
A scholarship valued at $150.00 established in the Faculty of Dentistry by the Royal College of Dental Surgeons of Ontario will be awarded to the student ranking highest in honors (an average of at least 80%) at the annual examinations of the first year. Applications are not required.

Mosby Book Awards.
Book awards established in the Faculty of Dentistry by the C.V. Mosby Company. The awards are made by the Council of the Faculty to the members of the first year selected by the Examinations Committee in the following subjects: anatomy, occlusion and physiology. Applications are not required.

SECOND YEAR

The Royal College of Dental Surgeons Scholarship.
A scholarship valued at $150.00 established in the Faculty of Dentistry by the Royal College of Dental Surgeons of Ontario will be awarded to the student ranking highest in honors (an average of at least 80%) at the annual examinations of the second year. Applications are not required.

Hamilton Academy of Dentistry Award in Oral Medicine.
An award, in the form of a plaque, is established in the Faculty of Dentistry by the Hamilton Academy of Dentistry. The award shall be presented annually to the member of the second year class who, on the recommendation of the Department of Oral Medicine, displays the highest degree of academic excellence in Oral Medicine. An application is not required.

Mosby Book Awards.
Book awards established in the Faculty of Dentistry by the C.V. Mosby Company. The awards are made by the Council of the Faculty to the members of the second year selected by the Examinations Committee in the following subjects: oral pathology and restorative dentistry. Applications are not required.

THIRD YEAR

International College of Dentists Award.
$100 plus certificate is established in the Faculty of Dentistry by the International College of Dentists (Canadian Section). The scholarship shall be awarded annually on the recommendation of the Promotions Committee to a member of the third year class who exhibits the highest degree of both academic proficiency and participation in extra-curricular activities. An application is not required.

Centennial Paediatric Dentistry Award.
An award in the amount of $100.00 is established in the Faculty of Dentistry by the Ladies' Auxiliary to the London and District Dental Society. The scholarship shall be awarded annually to the member of the third year class who, on the recommendation of the Department of Paediatric Dentistry, is the most proficient in Paediatric Dentistry and who by scholarship and attitude towards his responsibilities has met the requirements for the award. An application is not required.

Oral Surgery Award.
$50 plus a plaque is established in the Faculty of Dentistry by the Elgin Dental Association. The award shall be presented annually on the recommendation of the Department of Oral Surgery to the third year student who shows the greatest proficiency in Oral Surgery. No application is required.

Restorative Dentistry Award.
$100 and a plaque is established in the Faculty of Dentistry, by Dr. D.B. Gilboe in memory of Dr. Erick T. Anderson. The award shall be presented annually on the recommendation of the Department of Restorative Dentistry to the third year student who shows the greatest proficiency in Restorative Dentistry. No application is required.

W.B. Saunders Book Award.
A one-year subscription to the Dental Clinics of North America. The award shall be presented annually on the recommendation of the Department of Social Dentistry to the Third Year student who shows the greatest proficiency in Social Dentistry. Application is not required.

FOURTH YEAR

The Board of Governors' Medal.
Gold medal awarded by the Board of Governors to the fourth year student for general proficiency throughout the entire four years of the program.

London & District Dental Society Award.
A gift, awarded annually to the senior student for general proficiency in the fourth dental year. No application is required.

The Dental Sciences Research Award.
Plaque and a one year subscription to the *Journal of Dental Research* donated by the Department of Restorative Dentistry on behalf of Dean W. Scott Hamilton and awarded to the senior student who has demonstrated outstanding interest and activities in research related to the dental sciences throughout his undergraduate program. No application is required.

The American Association of Endodontists Award.
A one year membership in the American Association of Endodontists, which includes a subscription to *Oral Surgery, Oral Medicine, Oral Pathology;*

awarded annually on the recommendation of the Division of Endodontics, Department of Restorative Dentistry, to the senior student who has shown the greatest interest and proficiency in the field of Endodontics. An application is not required.

The American Academy of Oral Medicine Award.
Certificate plus a copy of the *Journal of the American Academy of Oral Medicine* in which the student's name will appear; awarded annually to the 4th year student who on the recommendation of the Department of Oral Medicine shows the greatest proficiency in Oral Medicne. An application is not required.

The American Association of Orthodontists Award in Oral-Facial Growth.
Certificate; awarded annually to the senior student who on the recommendation of the Division of Orthodontics, Department of Paediatric Dentistry demonstrates the most outstanding qualities and interest in the development of the oral-facial complex. An application is not required.

The Canadian Society of Dentistry for Children Award.
A textbook with application to dentistry for children, and a one year subscription to the *Journal of Dentistry for Children,* awarded annually to the senior student who on the recommendation of the Department of Paediatric Dentistry is proficient in subjects relating to dentistry for children. No application is required.

Clinical Paedodontic Award.
Medal; established in the Faculty of Dentistry by the Canadian Society of Dentistry for Children in honor of Dr. S.A. MacGregor. Awarded annually to the senior student who on the recommendation of the Division of Paedodontics, Department of Paediatric Dentistry has shown the greatest proficiency in clinical paedodontics. No application is required.

The American Academy of Periodontology Award.
Certificate and a one year subscription to the *Journal of Periodontology-Periodontics;* awarded annually to the senior student who on the recommendation of the Division of Periodontics, Department of Oral Medicine has excelled in the area of periodontics. An application is not required.

The Canadian Academy of Periodontology Award.
Medical Dictionary; awarded annually to the student who on the recommendation of the Division of Periodontics, Department of Oral Medicine attains the highest standing in the final year in periodontics. No application is required.

The American Academy of Dental Radiology Award.
Certificate; awarded annually to the senior student who on the recommendation of the Division of Radiology,Department of Oral Medicine, is most proficient in Dental Radiology. An application is not required.

Senior Award in Oral Surgery.
A plaque established in the Faculty of Dentistry by Dr. A. G. Parnel . Awarded annually on the recommendation of the Department of Oral Surgery to the Fourth Year student who achieves the greatest proficiency in Oral Surgery. An application is not required.

***Removable Prosthodontics* Award.**
A plaque established in the Faculty of Dentistry by Dr. J. E. Ryan. Awarded annually on the recommendation of the Division of Removable Prosthodontics, Department of Restorative Dentistry, to the senior student who has shown the greatest proficiency in Removable Prosthodontics throughout his undergraduate dental program. An application is not required.

Fixed Prosthodontics Award.
A plaque established in the Faculty of Dentistry by Dr. W. R. Teteruck. Awarded annually on the recommendation of the Division of Fixed Prosthodontics, Department of Restorative Dentistry, to the senior student who has shown the greatest proficiency in Fixed Prosthodontics throughout his undergraduate dental program. An application is not required.

The Pro Liberis Prize.
$50 accompanied by a key; established in the Faculty of Dentistry by the Dental Public Health Committee of the Ontario Dental Association. Awarded annually to the senior student who on the recommendation of the Division of Paedodontics, Department of Paediatric Dentistry shows the greatest proficiency in Paedodontics. An application is not required.

Prizes

The Ontario Dental Association Honorary Members Prize.
$40; awarded annually when applicable to a student who on the recommendation of the Executive Council of the Ontario Dental Association on advice from the Publications Committee has written the best article of a cultural nature (non-dental) published in the undergraduate journals of the Ontario Faculties of Dentistry during the previous year. An application is not required.

Student Regulations

Any statement in this Brochure applies only to the session of 1970-1971. Students registering in the Faculty of Dentistry are subject to any decisions which may be made by the Council of the Faculty of Dentistry and by the Senate or Board of Governors of the University.

University Health Services

Physical Examination.

A physical examination by a practising physician is required of all students who are enrolling in this University for the first time as intramural students in the winter session. The submission of this report on the pro forma supplied is the responsibility of the incoming student prior to registration.

Health Services on Campus.

The Health Service clinic in Somerville House where students, while at University, may consult the University physicians for general medical care. A counselling service for students with personal problems is also available.

Testing for Tuberculosis.

All students must take a skin test for tuberculosis at the time arranged during the school year. Students showing a positive reaction must have a chest x-ray which is to be repeated each year. No further skin testing will be carried out on previous known positives. Students showing a negative reaction are to have the skin test repeated each year.

Hospital Services Insurance.

Hospital insurance is not provided by the University. Hospital insurance offered by the Ontario Hospital Services Commission is the only form of basic hospital insurance permitted in Ontario. It is the student's responsibility to obtain the necessary coverage under the Ontario Hospital Services Insurance Plan. Coverage does not become effective for three months from time of application for Ontario Hospital Insurance. The premium is $16.50 for three months for a single person and $33.00 for three months for a family, payable in advance.

Students from other provinces who already have hospital insurance are urged to ascertain, before coming to Ontario, if their policies will be honored in Ontario hospitals and for how long.

Students from outside Canada should apply for Ontario Hospital Insurance as soon as possible after arriving in Ontario. For the three-month waiting period, they may avail themselves of Blue Cross Insurance.

Students are reminded that if they do not hold hospital services insurance and are required, by reason of accident or illness, to enter hospital, they will incur charges of approximately $50.00 per day.

Medical Services Insurance.

The only medical services insurance allowed in Ontario at the present time is the Ontario Health Services Insurance Plan (OHSIP) administered by the provincial government. This plan is comprehensive and may be purchased through OHSIP directly or through one of its agents. Coverage does not become effective for three months from time of application. The premium is $17.70 for three months for a single person, $35.40 for three months for a couple, and $44.25 for three months for a family, payable in advance. Persons who have been resident in the Province for twelve months may receive assistance in paying premiums in accordance with regulations relating to personal income. More detailed information may be obtained from Health Insurance Registration Board, 2195 Yonge Street, Toronto 7, Ontario. Telephone: 482-1111.

Financial Responsibility

All students who are reported as having an unsound financial record will be subject to special review by the Council of the Faculty of Dentistry before being recommended for a promotion.

A student or students will be held financially responsible for any actions of a negligent or wantonly destructive nature which result in the damage of University property. Such charges will form part of the amount due to the University. Nonpayment will result in disciplinary action by the Dean's Office.

Attendance

(a) Students registered in any year are expected to attend the courses of instruction in all subjects prescribed for that year.

(b) In dentistry, a high proportion of a student's knowledge, understanding, and clinical competence, is acquired through observation and participation in assignments, laboratory sessions, and preclinical demonstrations. Consequently, attendance is considered essential.

(c) Classes desiring postponement of any lecture, clinic or laboratory periods shall be required to secure permission for such postponement from the Dean-In-Council, who shall thereupon notify the Chairman or Head of the Department concerned.

Academic Requirements

1. To complete the year's work and be permitted to register in the succeeding year of the dental course, a student must:

(a) complete the prescribed assignments,

(b) obtain at least a satisfactory level of Performance in each subject in which a final examination is held.

2. A student may be given permission by the Council of the Faculty of Dentistry to write no more than two supplemental examinations, provided:

(a) his general average is at the satisfactory level,

(b) his grades are below satisfactory level in no more than two subjects.

3. A student will be considered to have failed to complete the year's work, if:

(a) his general average (in all subjects of that year) falls below the satisfactory level,

(b) he has failed to obtain a satisfactory level in more than two subjects,

(c) he has been given permission to write supplemental examinations and has failed to meet the requirements under section 1 (b) above.

4. A student who fails to complete a year may be permitted by the Council of the Faculty of Dentistry to repeat that year. Permission is given only under exceptional circumstances, and then only when a vacancy is available in that year. The work of the complete year must be repeated; credit for any completed course or courses in a failed year shall not be allowed.

5. A student who obtains an average at the excellent level in a year's work, is considered to have passed that year with honors. A student who passes with honors in each year in the Faculty of Dentistry will be graduated "with distinction".

6. In each subject the ratio of term grades to final examination grades is determined by the teaching staff of the Department concerned.

7. At the end of each academic year, a report will be mailed to each student showing his grade in each subject. Key to Grades is as follows:
E – Excellent performance
G – Good performance
S – Satisfactory performance
U – Unsatisfactory performance

Academic Rights of Students

The Senate has established procedures for petitions and appeals.

PETITION

A petition is an instrument whereby a student may seek to have a regulation of the University waived on academic or compassionate grounds.

Procedure. The student may institute a petition in the Office of the Dean of his Faculty on a form provided for the purpose, and will be notified later of the Dean's decision.

Reconsideration by Senate. A student shall have the right to require the Senate to consider the decision of the Dean by making application to the Secretary of the Senate on a form provided for the purpose.

APPEAL

An appeal is an instrument by which a student is protected against an error in grading or in final standing, unfair prejudice of a professor, or serious negligence in instruction.

Procedure. A student is required to make a formal complaint to the Chairman of the Department concerned. If the problem cannot be solved in this way a written appeal setting forth the grounds of the complaint may be instituted to the Dean of the academic unit concerned who may appoint or request an appropriate committee composed of students and faculty to advise him.

Reconsideration by Senate. A student shall have the right to require the Senate to consider the decision of the Dean by making application to the Secretary of the Senate on a form provided for the purpose.

First Year Curriculum, 1970-1971

DEPARTMENT OF ANATOMY

1. Gross Anatomy. A course of lectures and demonstrations in the regional anatomy of the head and neck mainly, and in the systemic anatomy of the body generally. The important developmental changes in human embryology are discussed, together with the regional anatomy and functional systems of the brain and spinal cord.
120 hours.

A laboratory course involving a detailed dissection of the head and neck and a study of the thoracic and abdominal viscera and the extremities, by students working in small groups.
112 hours

2. Histology
(a) A course of lectures, demonstrations and laboratory periods in cytology and the histology of the fundamental tissues, followed by the microscopic anatomy of the major components of the various bodily systems.
(b) A lecture and laboratory course in the microscopic anatomy of the oral cavity and related structures. The embryology of the oro-facial region is included.
144 hours (Total)

3. Human Genetics. A short course stressing the application of several genetic principles to medicine and dentistry and acquainting the student with the basic terminology of the various branches of human genetics.
16 hours

DEPARTMENT OF BIOCHEMISTRY

1. Biochemistry. A course of lectures in general biochemistry: chemistry of carbohydrates, lipids and proteins; protein structure; chemistry of tissues; chemistry of the cell; blood; enzymes; cellular metabolism; structure and function of nucleic acids; biochemical genetics, lipid metabolism; protein metabolism and synthesis; mineral metabolism and chemistry and function of hormones.
88 hours

A laboratory course illustrating the lecture material and involving "project" exercises for small groups.
64 hours

DEPARTMENT OF ORAL MEDICINE

1. Oral Diagnosis. The technique and importance of taking an emergency case history will be discussed and applied. Also the importance of the general physical and psychological appraisal of the patient will be emphasized and demonstrated. The relationship of dentistry to medicine and what a short case history should elicit will be covered.
4 hours

2. Periodontics. In the first quarter, nine lectures are given on personal oral health. At this time it is demonstrated how a knowledge of basic sciences such as physiology, histology, pathology and bacteriology is necessary, and how it is applied to the retention of one's teeth. Preventive periodontics, the significance of the dental plaque, caries reduction and the importance of proper nutrition and home care are stressed. During the other quarters, orientation, theory, instrumentation and laboratory procedures are taught. The methods used in the examination of the oral cavity will be stressed.
28 hours

DEPARTMENT OF PAEDIATRIC DENTISTRY

1. Paediatric Dentistry. This is an introductory program devoted to the general topic of facial growth and illustrated with clinical demonstrations.
8 hours

DEPARTMENT OF PHYSIOLOGY

A course of lectures, tutorials, demonstrations and laboratories designed to enable the student to acquire a basic knowledge of the principles of Human Physiology. Emphasis is placed on the development by the student of individualized learning and self evaluation, and he is expected to be able to evaluate physiological data in terms of changes in the homeostatic processes in response to alterations in the internal and external environment. The content includes: the general properties of the living cell and tissue, excitable tissue and muscle, blood, metabolism and nutrition, digestion, circulation, respiration, kidney and body fluids, acid-base balance, endocrinology, reproduction, growth and development.
160 hours

DEPARTMENT OF RESTORATIVE DENTISTRY

Restorative Dentistry (General). This course represents a combined approach to the traditional subjects of Operative Dentistry and Dental Materials Science. A lecture series introduces the student to fundamental principles involved in the treatment of diseases of the calcified dental tissues. Dental caries and basic restorative technological procedures are considered in detail. The physical and mechanical properties of human teeth are described and compared differentially with those of the various materials used in dental restorative procedures. The theoretical aspects of various topics included in the course will be supported by practical laboratory demonstrations and exercises.
Lectures 40 hours; Laboratory 112 hours

DEPARTMENT OF SOCIAL DENTISTRY

Social Dentistry I

1. Professional Conduct. A short course designed to encourage the development of responsible professional attitudes and to emphasize that dentistry is an integral part of society and that its practitioners, accordingly, have obligations and responsibilities in respect of it.

2. History of Dentistry. A short course tracing the trials and tribulations in the development of dentistry as a profession and identifying its major contributors and the nature and significance of their contributions.

3. Scientific Writing. An outline of requirements for guidance in the preparation of manuscripts for publication in scientific journals.
8 hours (Total)

INTER-DEPARTMENTAL

1. Conjoint Course in Occlusion. This course is a study of the morphological characteristics of both primary and permanent teeth and their positional relationships in the dental arches. Emphasis is placed on the practical relationships of the external morphology of the teeth as they relate to their adjacent members. The relationship between form and function and preventive clinical dentistry is also stressed. The student begins to develop technical proficiency by utilizing a wax addition method of restoring the anatomical crowns of selected representative teeth.

The principles of occlusion are covered to provide the student with a basic understanding of the fundamentals involved. The use of the dental articulator is introduced and explained as a method of orientating students to the field of occlusion. The student learns mounting procedures basic to instrumentation. Articular patterns are fabricated in wax on mounted casts, and the relationships of the natural and artificial teeth to their antagonists and the jaws are studied. The Departments of Restorative Dentistry and Paediatric Dentistry cooperate in this program.
112 hours

Second Year Curriculum, 1970-71

DEPARTMENT OF BACTERIOLOGY AND IMMUNOLOGY

1. Dental Microbiology. A course of lectures and tutorials dealing with the nature and morphology of bacteria; host-parasite relationships; disinfection and sterilization; a survey of bacteria of medical and dental importance; the nature of viruses and virus infections; serological diagnostic methods; immunization, hyper-sensitivity; antibiotics and chemotherapy; and special topics in mycology and parasitology. After an intensive introduction there will be detailed consideration of the part played by microbes in disease and, specifically, those affecting dental practice, hygiene and preventive measures.

A course of laboratory exercises integrated with the lecture course and seminars and illustrating the principles and the applications of microbiology.
128 hours (Total)

DEPARTMENT OF ORAL MEDICINE

1. Oral Diagnosis. Continuation of case history taking and what information should be ascertained. Lectures and demonstrations of the principles and procedures employed in oral diagnosis will be given. Examination of the oral region will be discussed and demonstrated. Diagnostic aids will be covered in order that the dental student will learn to make a complete examination. The relationship of oral and systemic conditions will be stressed.
16 hours

2. Periodontics. Instruction in instrumentation will be given and simple therapeutic measures will be demonstrated. The lecture series on periodontal diseases will cover the history, histological and anatomical definitions and clinical examples, etiology, clinical classification, periodontal traumatism, subgingival curettage, calculus formation, simple gingival surgery and other periodontal procedures, clinical practice in periodontal examination and diagnosis.
32 hours

3. Radiology. A series of lectures and laboratory exercises designed to acquaint the student with the principles of radiation production, control and hygiene. Instruction in radiographic techniques is commenced.
20 hours

DEPARTMENT OF ORAL SURGERY

1. Local Anaesthesia. A course of lectures and demonstrations which will include a review of the anatomy, physiology, and pharmacology pertaining to local anaesthesia; detailed instruction and demonstration of intra-oral techniques of administration and emergency resuscitation.
12 hours

2. Oral Surgery. A short introduction to practical oral surgical procedures that apply to students prior to commencing clinical instruction in the third year.
4 hours

DEPARTMENT OF PAEDIATRIC DENTISTRY

1. Paediatric Dentistry. A pre-clinical paedodontic and orthodontic laboratory program will prepare the student in the technical procedures he will be required to perform clinically, in his junior and senior years.
48 hours

DEPARTMENT OF PATHOLOGY

1. General Pathology. A course of lectures, demonstrations and laboratory periods dealing with fundamental aspects of disease processes. Subjects include inflammation and repair, regressive changes, circulatory disturbances, disorders of growth and neoplasia, and specific examples of inflammation. The dental students receive their lectures concurrently with the medical students. The laboratory periods are held separately.
78 hours

2. Systemic Pathology. A survey course designed to stress those aspects of systemic pathology which have a special relation to the practice of dentistry. The course is taught by means of formal lectures, gross and microscopic demonstrations, and informal teaching to small groups. Museum specimens, collections of microscopic slides, and current postmortem and surgical material from participating hospitals are used in the teaching program.
42 hours

3. Oral Pathology. A course in pathology of the teeth, oral cavity and related structures. The oral manifestations of many systemic diseases, as well as the systemic manifestations of oral disease, are also discussed. This course is taught by means of formal lectures, which are supplemented by clinical and histopathological illustrative material and by the study of collections of microscopic slides. The students are encouraged to read the current literature in the field.
72 hours

DEPARTMENT OF PHARMACOLOGY

1. Pharmacology. The course of lectures will outline the principles involved in the absorption, metabolism and excretion of drugs and the mechanism of action, therapeutic uses and toxic effects

of the major groups of drugs used clinically. In the laboratory the effects of important drugs will be demonstrated.
72 hours

DEPARTMENT OF RESTORATIVE DENTISTRY

1. Restorative Dentistry (Fixed). The aim of this course is to prepare the student for the clinical practice of Restorative Dentistry as it relates to the restoration of the calcified dental tissues with materials that are permanently secured to the teeth. This course combines those subjects traditionally taught in Operative Dentistry and Fixed Prosthodontics. It is a continuation of the course in Restorative Dentistry offered in the first year. Particular emphasis is placed on cariology, pulp biology, caries control, advanced restorative techniques and the differential choice of restorative materials.

Special emphasis is placed on the preparation of students to treat patients with dental problems resulting from loss of teeth or aberration of function. Diagnosis, treatment planning, design and fabrication of prostheses, and restoration of occlusion are all stressed. The principles of dental hard tissue surgery involving extra-coronal restoration are discussed along with the basic theoretical concept associated with each technique. The relationship between various restoration types and the patients' biological needs is considered. The lecture series is supplemented by practical laboratory assignments, slide and film presentations, television demonstrations and appropriate reading assignments.
Lectures 56 hours; Laboratory 128 hours

2. Restorative Dentistry (Removable). A course of lectures and demonstrations illustrating the biological and technological principles of complete and/or partial arch restoration by means of removable prostheses; applied anatomy and physiology; diagnosis, prognosis and treatment planning; occlusion factors; design and technical procedures.
32 hours

A laboratory course affords practical experience in various clinical and laboratory techniques.
136 hours

3. Endodontics. A series of lectures designed to introduce the student to the treatment of pulp diseases and sequelae. The lectures include biological principles and basic clinical endodontic techniques.
Lectures 8 hours

DEPARTMENT OF SOCIAL DENTISTRY

Social Dentistry II

1. Orientation to Public Health. Relationships of dental health to total personal health and community health. The historical and philosophical background, evolution, organization and functions of public health are covered.

2. Dental Public Health and Preventive Dentistry. The concept of community dental health with the major emphasis on the role of dentistry in public health services is introduced. The development, growth and current status of principles, legislation and practices related to dental public health are discussed. The application of dental public health procedures including dental health education, elementary statistics, epidemiological techniques and administrative practices in the prevention and control of dental diseases will be introduced.

3. Behavioral Science. Introduction to general principles and concepts of this discipline with clinical illustrations where possible. The concept of behavioral science depends upon the interaction of a large number of variables. From a knowledge of these factors and their interactions, the dentist should be better able to understand his own behavior as well as the behavior of others. Social determinants of dental care will be discussed.
24 hours (Total)

INTER-DEPARTMENTAL

1. Occlusion. The objectives are to teach the physiology of occlusion and mastication, jaw positions and movement patterns as they relate to the natural and artifical dentition. Also, the relationship between occlusion and the various branches of dentistry is explained as well as dysfunctional disturbances of the masticatory system. Occlusion is correlated with basic sciences. Indications, objectives, principles, and procedures for occlusal adjustment are taught in this lecture and laboratory course. The Department of Oral Medicine organizes this program.
64 hours

2. Oral Biology. Neurophysiology, and special biochemistry, functional anatomy, and physiology of the oro-facial area are considered.
48 hours

Third Year Curriculum, 1970-71

DEPARTMENT OF ORAL MEDICINE

Within the regular academic year a total of 80 hours of lecture and seminar instruction is combined with 168 hours of clinical and related experience in respect of the disciplines of this Department.

1. Oral Diagnosis. A lecture and practical course is given in the practice and procedure of oral diagnosis. General appraisal of the patient, use of diagnostic aids, laboratory tests and diagnosis of oral lesions and treatment planning are discussed. Again specific emphasis is placed on the relationship of systemic diseases to oral diseases and oral diseases to the body. The student is also assigned to the oral diagnosis division to learn the concept of total patient care.

Also the students are assigned to the emergency clinic where they will treat a variety of acute oral complaints, and to treatment planning seminars where discussion of interesting and difficult diagnostic and treatment planning cases will take place.

2. Oral Medicine. Principles of general medicine will include special emphasis on the oral manifestation of systemic and emotional diseases and physician dentist inter-relationship. Management of oral lesions will be covered. Seminars with various disciplines participating will be most helpful to the students' understanding of oral medicine, and general principles of medicine. Members of the Department of Medicine of the Faculty of Medicine will participate in the teaching program.

3. Periodontics. Specific diagnosis, prognosis, treatment planning and instrumentation and also therapy of the periodontally involved mouth are covered. Therapeutic measures including temporary splinting, various periodontal surgical procedures, as well as conservative therapy are taught by demonstrations, seminars and clinic experience. Periodontal research is briefly discussed. Training in the removal of the multitude of etiological factors is emphasized. Practical applications of previous principles in previous courses are given.

4. Radiology. A course of lectures on the radiographic interpretation of disease processes which affect the teeth and jaws. The normal radiographic appearances and their normal variations are stressed as a basis for understanding and recognizing abnormal and pathologic conditions which the student may encounter. Experience is furthered in the practice of techniques presented in the second year pre-clinical program during assignment to the department.

DEPARTMENT OF ORAL SURGERY

1. Oral Surgery. A preliminary course of lectures and demonstrations on the principles of exodontics will be given in the first quarter which will prepare the student for subsequent clinical experience in exodontic procedures.

Following this, a course of lectures in Oral Surgery will commence in the third quarter and continue into the fourth year.
16 hours

2. General Anaesthesia. During the first and second quarters lectures on the principles of general anaesthesia, emergency procedures and resuscitation will be given.

Practical demonstrations will complement the lectures during the student's clinical experience.
12 hours

3. General Surgery. A course of lectures and demonstrations on the basic principles of surgery with special reference to the surgical treatment of the head and neck not covered by the lectures in Oral Surgery.
32 hours

DEPARTMENT OF PAEDIATRIC DENTISTRY

1. Orthodontics. (a) A course of lectures and seminars will be presented dealing with craniofacial growth, etiology of malocclusion and diagnostic procedures.
24 hours
(b) The clinic program is designed to provide opportunities for the diagnosis and treatment of selected clinical problems.

2. Paedodontics. (a) A course of lectures and seminars will be presented dealing with general growth and emotional growth. In addition, the management of the more common clinical problems occurring in children will be included.
24 hours
(b) The clinical program in paedodontics is patient-centred and provides experience in the diagnosis and treatment of dental problems of a limited number of children.

DEPARTMENT OF RESTORATIVE DENTISTRY

1. Restorative Dentistry (Fixed). A series of lectures devoted primarily to the clinical application of various treatment techniques and procedures involved in the management of hard tissue lesions. Particular emphasis is placed on a biological approach to general restorative dentistry. The following topics are considered in detail: esthetic fixed restorations; clinical diagnosis relative to Operative Dentistry; preventive periodontics in restorative procedures; clinical control of dental caries; choice of restoration; occlusion; composite systems and adhesives. Differential diagnosis, treatment techniques and preventive procedures are stressed.
Lectures 40 hours; Laboratory 32 hours

2. Restorative Dentistry (Removable). A course of instruction in the clinical application of basic principles in prosthodontics. Students perform prosthodontic services for patients and are given ample opportunity to become clinically proficient in this discipline.
Lectures 24 hours

3. Endodontics. A series of lectures dealing with the etiology, diagnosis and treatment of diseases of the dental pulp and associated structures. Practical clinical procedures, both surgical and non-surgical, are discussed in detail.
Lectures 24 hours

DEPARTMENT OF SOCIAL DENTISTRY

Social Dentistry III

1. Jurisprudence. Introduction to legal aspects of the practice of dentistry dealing with contracts, leases and other legal documents.

2. Practice Administration. Introduction to the utilization of auxiliary personnel.

3. Professional Development. The professional man has a responsibility to be reasonably competent in oral communication. Arrangements will be made to provide students with the opportunity to give dental health talks to various community groups.

4. Behavioral Science. The psychology of doctor-patient relationship will be considered. The mechanisms of sensation and perception, the significance and effects of anxiety, personality types and their extremes, and methods applicable for dealing with them.

5. Dental Public Health and Preventive Dentistry. Field visits and exercises to acquaint students with community programs for various groups. The area of preventive dentistry will be further expanded as an extension of material covered in Social Dentistry II.
Total – 48 hours (including field experience)

INTER-DEPARTMENTAL

Weekly sessions throughout the year will be both clinically oriented and directed towards the teaching of topics common to several Departments of the Faculty, including the Basic Sciences. The appropriate Departments will collaborate in the teaching of the topics and student involvement will include case presentations, seminars and televised procedures.
128 hours

Clinical Pathological Conferences

Conferences are held throughout the academic year in co-operation with the clinical departments as part of the interdepartmental teaching program. Interesting cases are discussed from the standpoint of clinical, radiographic and pathological findings.

Conjoint Occlusion

Weekly interdisciplinary seminars with active student participation including discussion of more advanced problems of occlusion, particularly those with temporomandibular joint involvements; psychological implications in patients with temporomandibular joint problems and their treatment is discussed.

Clinical experience in occlusal equilibration and treatment of temporomandibular joint patients is provided.

DEPARTMENT OF CLINICS

1. Clinical Orientation. A one-week session without assigned patients to familiarize the student with routine clinic procedures and administration and with the operation and maintenance of cubicle equipment.
27 hours

2. Clinical Practice. The periods allotted will provide an opportunity for the students to apply the principles taught in the pre-clinical years to the actual treatment of patients in an atmosphere as closely related to private practice as is possible in a teaching institution. The student will also be assigned to the various clinical departments where he will carry out the normal procedures involved and observe the more advanced techniques demonstrated by the instructors.
768 hours

3. Summer Clinic. A continuation of the periods of clinical practice. The student may have the opportunity of concentrating on selected aspects of the treatment services.
162 hours

Fourth Year Curriculum, 1970-1971

DEPARTMENT OF ORAL MEDICINE

A total of 40 lecture hours is combined with 96 hours of clinical and related experience in respect of the disciplines of this department.

1. Oral Diagnosis. Seminars cover the prognosis and more advanced principles for the rationale and outline of treatment plans, identification keys as diagnostic aids, differential diagnosis of oral diseases, and clinical findings in disease.

2. Oral Medicine. A series of seminars will discuss the case management and treatment of specific oral diseases. Included will be therapeutics, geriodontics, nutrition, oral manifestations of diseases of occupational origin, and laboratory aids in dentistry.

3. Periodontics. A series of lectures and seminars devoted to the didactic aspects of the management of more advanced periodontal disease; involving instruction in treatment planning including mucogingival surgery, management of osseous defects, soft and hard tissue implantation, minor tooth movement, combined periodontal – endodontic problems and periodontal and diagnostic aspects of temporary and permanent splinting of teeth for periodontic purposes. A discussion of special problems in periodontal therapy and office management of the periodontal phase of practice. The students will be encouraged to become involved in periodontal research.

Clinical experience in the treatment of temporomandibular joint disorders and periodontal patient management will be provided.

4. Radiology. Clinical assignments in which proficiency is gained and experience extended in all aspects of radiographic techniques provide a logical extension of lecture and laboratory sessions. Case reporting under guidance affords a practical application of lecture material. Seminars which correlate clinical observations, pathologic findings and radiographic appearances provide further opportunity to improve the ability to interpret radiographs.

DEPARTMENT OF ORAL SURGERY

A comprehensive course of lectures, seminars and demonstrations will be given on the principles and practice of Oral Surgery.
32 hours

After demonstrating competence in exodontics, students will be allowed to undertake suitable cases of minor oral surgery under local anaesthesia.

Students will assist in the out-patient operating room where oral surgical procedures are carried out under general anaesthesia. A review of emergency procedures, closed heart massage and mouth to mouth resuscitation on a manikin will be given.

DEPARTMENT OF PAEDIATRIC DENTISTRY

1. Orthodontics. (a) The lecture and seminar program will be devoted to diagnostic techniques, treatment problems, and procedures likely to be encountered in general practice.
20 hours
(b) The clinical program will be a continuation of the Third Year Program.

2. Paedodontics. (a) Lectures and seminars are directed to specific clinical problems and the review of current Paedodontic literature.
20 hours
(b) The clinical program is an extension of the Third Year Program into the more complex problems found in general practice.

DEPARTMENT OF RESTORATIVE DENTISTRY

Restorative Dentistry. A series of lectures and seminars on advanced restorative dentistry to include the following: Maxillo-facial prosthodontics; management of cleft palate; comprehensive diagnosis and treatment planning; patient and practice management; advances in restorative materials; the role of auxiliaries; advanced endodontics; pulp biology and research.
40 hours

DEPARTMENT OF SOCIAL DENTISTRY

Social Dentistry IV

1. Emergency and Disaster Preparedness. Introduction to principles of emergency medical care and the role of the dentist in emergency and disaster situations which would not be part of the usual dental training.

2. Ethics and Jurisprudence. Principles of law, legislation, and ethics related to the practice of dentistry are discussed. Purposes and functions of the legal and voluntary agencies of the profession and the administrative structure of organized dentistry will be considered.

3. Practice Administration. Fundamental considerations related to professional and efficient care for a maximum number of patients, having due regard for the individual dentist and patient concerned. Consideration will be given to efficient physical organization of a dental office, dental office procedures, insurance and investments, etc., as well as the effective utilization of dental auxiliaries.

4. Dental Economics. Discussion of measures which will help and encourage every economic level of society to receive regular dental care. Trends and emerging patterns in types, organization and administration of plans for providing and financing dental services as well as blocks to dental care will be considered.

5. Dental Public Health and Preventive Dentistry. Development of dental public health programs and the role of the private practitioner in community dental programs will be considered. When possible, field experience will be arranged to complement the lecture content. The area of preventive dentistry in private practice and dental public health programs will be discussed.
Total – 40 hours (including field experience)

INTER-DEPARTMENTAL

The program introduced in the Third Year will continue for the second and third quarters of the Fourth Year.
64 hours

Conjoint Occlusion. Lectures and seminars will discuss the establishing of the occlusion for difficult cases. Orthodontics and Restorative Dentistry will be responsible for presenting the seminars.

Clinical Pathological Conferences. The Department of Pathology participates in the series of clinical pathological conferences which commenced in third year and which continues on through fourth year.

Oral Cancer. The Department of Pathology organizes this interdepartmental course in which the diagnosis, treatment, and rehabilitation of the patient with cancer of the oral cavity are discussed.

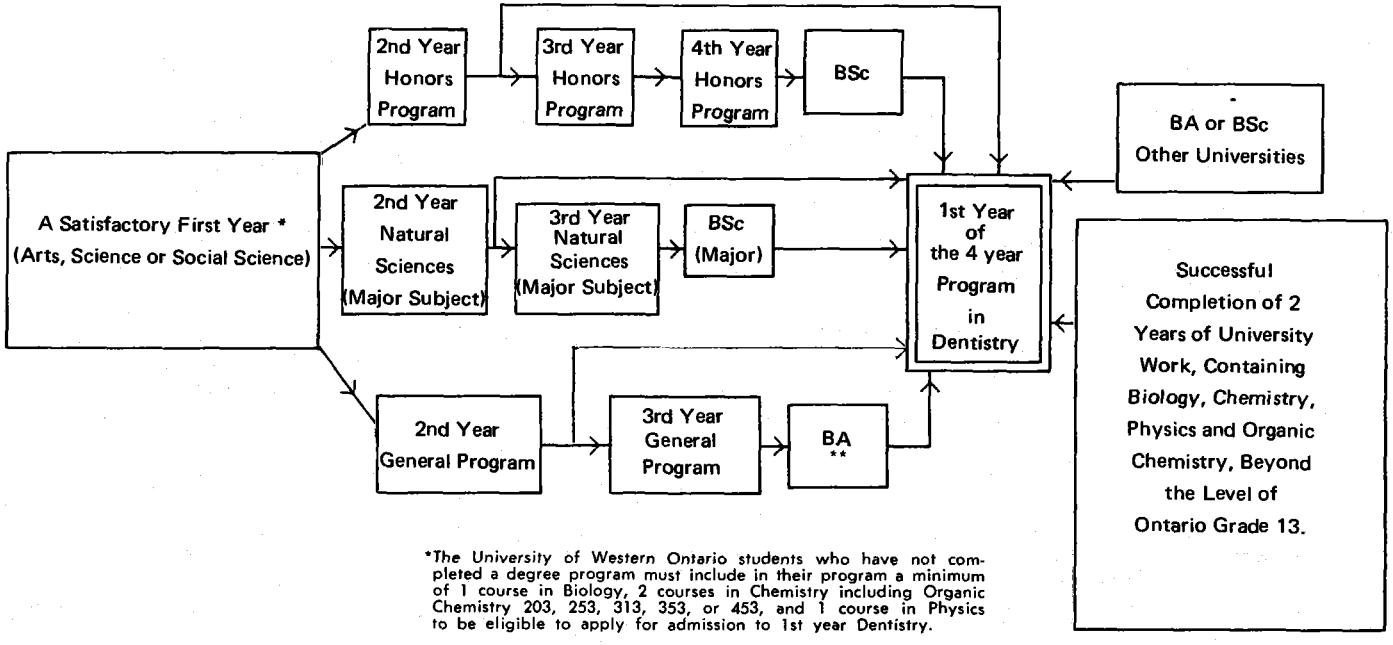
DEPARTMENT OF CLINICS

1. Clinical Practice. (a) The first three quarters of the curriculum are a progression of the third year clinical sessions with assignment of cases involving more comprehensive and more complex treatment programs. The periods allotted also include blocks of time during which the student will function in the hospital environment.
600 hours
(b) The fourth quarter may include additional periods of clinical practice if the student is required to improve his competence in specific areas.

AREA OF CONCENTRATION

The last quarter of the Fourth Year is set aside for special studies by the student in a research or clinical area of interest to him. The student is expected to plan his activities for this eight week period with an adviser of his choice and to proceed as independently as possible under the guidance of his adviser. A report on his activities is required and in the case of research, may take the form of a paper ready for publication.

ACADEMIC PREPARATION FOR ADMISSION



*The University of Western Ontario students who have not completed a degree program must include in their program a minimum of 1 course in Biology, 2 courses in Chemistry including Organic Chemistry 203, 253, 313, 353, or 453, and 1 course in Physics to be eligible to apply for admission to 1st year Dentistry.

**The University of Western Ontario graduates with B.A., or B.Sc., degrees must have demonstrated their ability to succeed in Science courses and must have credit for at least Organic Chemistry to be eligible for admission to 1st year Dentistry

THE UNIVERSITY OF WESTERN ONTARIO

Faculty of Dentistry

TEXTBOOKS 1970-1971

The decision to purchase or not to purchase any textbook is one to be made by the student. For those textbooks listed under the heading "Assigned" it is expected that rather frequent reference will be made to them and that at least portions of the various courses will be based on the contents of these textbooks.

Unless otherwise indicated it is the latest edition of any textbook which will be employed.

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
Anatomy							
Genetics	Genetics in Medicine	Thompson & Thompson	Saunders	1		X	
Gross	Essentials of Human Anatomy	Woodburne	Oxford Univ. Press	1		X	
	Oral Anatomy	Sicher	Mosby	1		X	
	Atlas of Anatomy	Grant	Williams & Wilkins	1		X	
	Medical Embryology	Langman	Williams & Wilkins	1		X	
Histology	Histology	Ham	Lippincott	1		X	
	Histology	Leeson & Leeson	Saunders	1		X	
	Textbook of Histology	Bloom & Fawcett	Saunders	1		X	
	Oral Histology & Embryology	Sicher	Mosby	1	X		
Neuro-Anatomy	*The Neural Basis of* Human Behavior	Barr	UWO (Watt Letter Service)	1		X	
Bacteriology							
	Oral Microbiology and Infectious Disease	Burnett & Scherp	Williams & Wilkins	2	X		
	Review of Medical Microbiology	Jawetz, Adelberg, Melnick	Lange	2		X	
	Oral Microbiology	Nolte	Mosby	2		X	

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
Biochemistry							
	Biochemistry	Cantarow & Schepar	Saunders	1	X		
	The Science of Nutrition and Its Applications to Clinical Dentistry	Nizel	Saunders	1	X(see oral Medicine		
	Principles of Biochemistry	White, Handler & Smith	McGraw-Hill	1		X	
	Outlines of Biochemistry	Conn&Stumpf	Wiley	1		X	
	Biochemistry	Kleiner & Orten	Mosby	1		X	
	Textbook of Biochemistry	Harrow & Mazur	Saunders	1		X	
	Review of Physiological Chemistry	Harper	Lange	1		X	
	Molecular Insights into Living Processes	Green & Goldberger	Academic	1		X	
	General Biochemistry	Fruton & Simmonds	Wiley	1			X
	Introduction to Modern Biochemistry	Karlson	Academic Press	1			X
	Textbook of Biochemistry	West & Todd	MacMillan	1			X
	Diseases of Metabolism	Duncan	Saunders	1			X
	Metabolic Basis of Inherited Disease	Stanbury, Wyngaarden, & Frederickson	McGraw-Hill	1			X
	Biological Chemistry	Mahler & Cordes	Harper & Row				X
	Basic Biological Chemistry	Mahler & Cordes	Harper & Row				X
	Hawk's Physiological Chemistry	Oser	McGraw-Hill				Lab.
	Experimental Biochemistry	Clark	Freeman				Lab.
	Laboratory Instructions in Biochemistry	Kleiner & Orten	Mosby				Lab.
	Dental Biochemistry	Lazzari	Lea & Febiger				X

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
Oral Medicine							
Oral Diagnosis	Oral Diagnosis	Kerr, Ash & Millard	Mosby	1,2,3,4	X		
	Synopsis of Oral Pathology	Bhaskar	Mosby	1,2,3,4	X		
Oral Medicine	Accepted Dental Therapeutics		Amer. Dent Assoc	3,4		X	
	Oral Medicine	Burket	Lippincott	2,3,4	X		
	Internal Medicine in Practice	Collins & Crane	Lea & Febiger	3,4	X		
Perio-dontics	Clinical Periodontics	Glickman	Saunders	3,4		X	
	Orban's Periodontics	Grant, Stern Everett	Mosby	3,4		X	
	Periodontal Therapy	Goldman & Cohen	Mosby	1,2,3,4	X		
	The Science of Nutrition and Its Application to Clinical Dentistry	Nizel	Saunders	1,2,3,4		X(see bio-chemistry)	
Radiology							
	Principles and Practice of Oral Radiologic Interpretation	Worth	Year Book Med, Publish (Wiley)	2,3,4		X	
	Oral Roentgenographic Diagnosis	Stafne	Saunders	2,3,4			X
Oral Surgery							
Anaesthesia	Local Anaesthesia and Pain Control in Dental Practice	Monheim	Mosby	2	X		
Oral Surgery	The Extraction of Teeth	Howe	Macmillan	3,4	X		
	Minor Oral Surgery	Howe	Macmillan	3,4	X		
	Oral Surgery	Kruger	Mosby	3,4		X	
	The Impacted Wisdom Tooth	Killey & Kay	Livingstone	3,4			X
	Benign Cystic Lesions of the Jaw	Killey & Kay	Livingstone	3,4			X
Hospitals	A Guide to Hospital Dental Procedure		Amer. Dental Assoc.	4	X		

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
Paediatric Dentistry							
Orthodontics	Handbook of Orthodontics	Moyers	Year Book Med. Publish	2,3	X	X (1 Yr.)	
Paedodontics	Clinical Paedodontics	Finn	Saunders	3	X		
Pathology							
	Pathology	Robbins	Saunders	2		X	
	A Textbook of Oral Pathology	Shafer, Hine & Levy	Saunders	2	X		
Pharmacology							
	Medical Pharmacology	Goth	Mosby	2		X	
	The Pharmacological Basis of Therapeutics	Goodman & Gilman	Macmillan	2		X	
	A Handbook of Dental Pharmacology and Therapeutics	Goulding	Heinmann	2			X
	Dental Pharmacology and Therapeutics	Francis & Wood	Saunders	2			X
	Drug Therapy for Dentists	Dille	Year Book (Wiley)	2			X
	Pharmacology and Oral Therapeutics	Dobbs	Kimpton				X
	Pharmacotherapeutics of Oral Disease	Kutscher, Zegarelli & Hyman	McGraw-Hill	2			X
Physiology							
	Review of Medical Physiology	Ganong	Lange	1	X		
	Paperback Series	Comroe, Davenport, Burton, Pitts, Tepperman	Year Book Med. Publish	1		X	
	An Introduction to Human Physiology	Green	Oxford Medical Publications	1		X	
	The Physiology of the Mouth	Jenkins	Blackwell Sci.	2	X		

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
Restorative Dentistry							
Dental Materials Science	Restorative Dental Materials	Peyton	Mosby	1,2,3,	X		
	Dental Materials: A Programmed Review of Selected Topics	O'Brien & Ryge	Saunders	1		X	
	The Science of Dental Materials	Skinner & Phillips	Saunders	1,2,3,			X
Fixed Prosthodontics	Introduction to Occlusal Anatomy	Lundeen	Lundeen	1	X		
	Practical Crown and Bridge Prosthodontics	Wilson & Lang	McGraw-Hill	1,2,3,4	X		
	Modern Practice in Dental Ceramics	Johnston Mumford & Dykema	Saunders	2,3,4	X		
Operative Dentistry	Cavity Preparation for Elementary Operative Dentistry	Stibbs	Univ. of Washington Press	1		X	
	Technique Textbook of Operative Dentistry	Gilmore	Mosby	2,3,4	X	X	
	The Art and Science of Operative Dentistry	Sturdevant	McGraw-Hill	1,2,3,4		X	
Endodontics	Endodontics	Ingle	Lea & Febiger	3,4	X		
Removable Prosthodontics	Swenson's Complete Dentures	Boucher	Mosby	2,3,4	X		
	Partial Denture Construction	McCracken	Mosby	2,3,4	X		
Social Dentistry							
	The Story of Dentistry	Bremner	Dental Items of Interest Pub. Co. (Henry Kimpton)	1			X
	The Dentist, His Practice and His Community	Young & Striffler	W.B. Saunders Company	2,3		X	

	Title of Text	Author(s)	Publisher	Year(s) Applic.	Assigned (see note above)	Recommended	Reference
	Principles of Dental Public Health	Dunning	Harvard Univ. Press	3,4		X	
	Dental Jurisprudence	Sarner	Saunders	3,4		X	
	Dental Practice Management	Stinaff	Mosby	4		X	
Inter-Departmental							
Occlusion	Dental Anatomy & Occlusion	Kraus, Jordan Abrahams	Williams & Wilkins	1		X	
	Introduction to Occlusal Anatomy (also in Rest. Dent'y)	Lundeen	Lundeen	1		X	
	Physiology of Occlusion and Rehabilitation	Posselt	Blackwell	1,2,3,4	X		
	Occlusion	Ramfjord	Saunders	2,3,4	X		
	A Textbook of Dental Anatomy and Physiology	Wheeler	Saunders	1	X		
General	The Scientific Bases of Dentistry	Shapiro (Ed)	Saunders	1,2,3,4		X	
	Review of Dentistry	Hine (Ed)	Mosby	1,2,3,4			X

MEMBERS OF THE FACULTY OF DENTISTRY

Dean of the Faculty

Dunn, W. J., DDS *Toronto;* FACD

Director of Clinics

Baird, K. M., OBE, CD; DDS *Toronto;* FICD

DEPARTMENT OF ANATOMY

Professors

Barr, M. L., SM, BA, MSc. MD; LLD *Queen's, Toronto and Alberta;* Dr med hc *Basel,* FRCP(C), FACP, FRSC

Buck, R. C., MSc, MD, PhD *London.* Chairman of the Department

Associate Professors

Gwinnett, A. J., LDS, RCS(Eng); BDS, PhD *London*

Gwyn, D. G., MRCS, LRCP(Eng), MBBS *London;* PhD *Birmingham*

Hollenberg, M. J., BSc(Med), MD *Manitoba,* MSc, PhD *Wayne State*

Hoshino, K., MD, DMedSc *Tokyo*

Montemurro, D. G., BA, MSc, PhD

Soltan, H. C., BA, PhD *Toronto* (Human Genetics)

Wilson, A. S., MB, ChB, MD *Glasgow*

Assistant Professors

Altmann, G. G., BSc *Dalhousie;* MSc, PhD *McGill*

Donisch, E. W. K. F., MD *Bonn,* MSc

Gammal, E. B., MB *Cairo;* BCh, PhD

Sergovich, F. R., BA *McMaster;* PhD (Part-time)

Shaver, Evelyn L., BSc, MSc, PhD

Singh, R. P., BA, MSc, PhD

Honorary Lecturers

Clattenburg, R. E., BSc, MSc

Robinow, C. F., MD *Hamburg;* FRSC

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

Lecturers

Cline, Aileen, MD (Part-time)

Instructors

Goldberg, A., MBBS *Dublin;* LRCPI, LRCSI

Jory, T. A., MD, FRCS(C), FASC

Leyshon, G. A., BA, MS *Illinois*

Warma, S. K., MBBS *Calcutta,* FRCS(Eng), CRCS(C), FACS

DEPARTMENT OF BACTERIOLOGY AND IMMUNOLOGY

Professors

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

Murray, R. G. E., BA, MA *Cantab,* MD, CM *McGill,* FRSC. Head of the Department

Robinow, C. F., MD *Hamburg;* FRSC

Associate Professors

Ebisuzaki, K., BSc; MS, PhD *Wisconsin*

Medzon, E. L., BSc, MSc *Manitoba,* PhD *McGill*

Robinson, J., BSA *British Columbia,* MSc, PhD *McGill*

Zajic, J. E., MS *Wisconsin;* PhD *California;* JD

Assistant Professors

Rozanis, J., MSc *Hebrew University, Jerusalem;* PhD *McGill*

Sinclair, N. R. S., BSc, MD, PhD *Dalhousie*

Singhal, S. K., BSc *Arga, India;* PhD *McGill*

Strejan, G. W., MSc *Romania;* PhD *Hebrew University*

Wilkins, P. O. B., MS, MB *Hawaii;* PhD *Penn.*

Clinical Professor

Hatch, L. A., MBBS, DipBact&Immun *London;* FC *Path.*

Clinical Assistant Professor

Bakerspigel, A., BA, MA *McMaster;* PhD

Campsall, E. W. R., BA *Queen's;* MD, CM *McGill*

Honorary Lecturers

Chodirker, W. B., BSc(Med), MD *Manitoba*

Hannay, C. L., BSA *Toronto;* DIC, PhD *London*

Roslycky, E. B., BSc, MSc *Manitoba;* PhD *Wisconsin*

Toogood, J. H., MD *Toronto;* DipIntMed *McGill;* FRCP(C)

Fellows

Behme, R. H., PhD

Chester, I. R., PhD

DEPARTMENT OF BIOCHEMISTRY

Professors

Bigelow, C. C., BASc *Toronto;* MSc, PhD *McMaster*

Carroll, K. K., BSc, MSc *New Brunswick;* MA *Toronto;* PhD

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

McCarter, J. A., BA, MA *British Columbia;* PhD *Toronto;* FRSC

McMurray, W. C., BSc, PhD

Rossiter, R. J., BSc *W.Aust.;* BA, MA, DPhil, BM, BCh, DM *Oxon.;* FRIC(Eng.); FRSC

Smith, D. B., BA, MA *British Columbia;* PhD *Toronto*

Stewart, H. B., MD, PhD *Toronto,* PhD *Cantab.* Head of the Department

Strickland, K. P., BSc, MSc, PhD

Associate Professors

Ball, Judith K., BSc *Mount Allison;* MSc, PhD *Dalhousie*

Heagy, F. C., MD, MSc, PhD

Magee, W. L., BSc, MSc, PhD

Walker, I. G., BA *Saskatchewan;* MA, PhD *Toronto*

Webling, D. D., BSc, MB, BS, PhD *Adelaide;* DTM&H *Sydney*

Assistant Professors

Cook, R. A., BSc, MSc, PhD *Manitoba*

Donisch, Valentine, MD *Bonn;* PhD

Galsworthy, P. R., BSc *Queen's;* PhD *Wisconsin*

Gatfield, P. D., MD *Queen's*

Gordon, B. A., MDCM, MSc, PhD *Queen's*

Guthrie, J. P., BSc, PhD *Harvard*

Haines, D. S. M., BA, MD, PhD *Toronto*

Trevithick, J. R., BSc *Queen's;* PhD *Wisconsin*

Honorary Lecturers

Chefurka, W., BSc *Manitoba;* MSc *Montana State;* PhD *Harvard*

Hudson, A. J., MD, BSc *Toronto;* FRCP(C)

Krupka, R. M., MA *Saskatchewan;* PhD *McGill*

Spencer, E. Y., BSc, MSc *Alberta;* PhD *Toronto;* FCIC

DEPARTMENT OF ORAL MEDICINE

Professor

Moore, D. S., DDS, DipPerio *Toronto;* FRCD(C)

Assistant Professors

Kogon, S. L., DDS *Toronto*

Reid, J. A., DDS *Toronto*

Zulqar-nain, B. J., BDS *Panjab;* MS, CertPerio *Rochester;* CertDPH *Harvard*

Clinical Lecturers

Cappa, C. F., BA, DDS *Toronto*

Jack, R. N., DDS DipPerio *Toronto;* FRCD(C)

Klein, W. C., DDS *Toronto*

Pellow, W. R., BA *Queen's;* DDS *Toronto*

Thompson, E. S., DDS *Toronto*

Whitman, C. S., BSc, DDS *McGill;* DipPerio *Toronto;* FRCD(C)

Instructors

Beam, L., DDS *Toronto*

Morris, R. W., DDS *Toronto*

Whiteman, D. E., DDS *Toronto*

DEPARTMENT OF ORAL SURGERY

Professor

Parnell, A. G., LDS, RCS(Eng.); FDS, RCS(Eng.). Chairman of the Department

Associate Professor

Schofield, I. D. F., DDS, DipOS&Anaes *Toronto;* BA; FRCD(C)

Clinical Lecturer

Glennie, G. D., MBBS *London;* DA *McGill;* MRCS(Eng), LRCP(London), CRCP(C)

Instructor

MacFarlane, N. A., DDS *Toronto;* BA

DEPARTMENT OF PAEDIATRIC DENTISTRY

Professor

Eastwood, A. E., DDS *Dalhousie;* BDS *Liverpool;* MS *Michigan*

Feasby, W. H., DDS, DipPaed *Toronto;* FRCD(C). Chairman of the Department

Hunter, W. S., DDS *Toronto;* MS, PhD *Michigan* (Chairman of Division of Orthodontics)

Assistant Professor

Wright, G. Z., BSc *Winnipeg;* DDS *Toronto;* MSD *Indianapolis*

Clinical Lecturers

Parrott, H. C., DDS, DipOrth *Toronto*

Scott, R. L., DDS, DipPaed *Toronto;* FRCD(C)

Instructors

Campbell, D. A., DDS, DipOrth *Toronto*

Frey, G. C., DDS *Toronto*

King, D. A., BSc, DDS *Alberta;* MS *Rochester*

Smith, B. R. W., DDS, DipOrth *Toronto*

Way, D. C., DDS *Toronto;* MS *Michigan;* FRCD(C)

DEPARTMENT OF PATHOLOGY

Professors

Haust, M. Daria, MD *Heidelberg;* MSc *Queen s;* CRCP(C)

Paterson, J. C., OBE, MD, BSc(Med) *Toronto*

Wallace, A. C., BA, MD; FACP, CRCP(C). Head of the Department

Associate Professors

Gardner, D. G., DDS *Toronto;* MSD *Indiana* (Chairman of Division of Oral Pathology)

Warren, B. A., BSc(Med), MBBS *Sydney;* DPhil, MA *Oxford*

Assistant Professors

Frei, J. V., MDCM *Queen's;* MSc, PhD *McGill;* CRCP(C)

Jones, D. S., BA *Albion College;* BS *Michigan State;* PhD

Lewis, F. N., BA, MD, MCPath, CRCP(C)

Sapp, J. P., DDS *Dalhousie;* MS *Michigan*

Clinical Professors

Mills, D. M., BA, MD, CRCP(C)

Smout, M. S., MD, MCPath, FCAP

Clinical Assistant Professors

Abdelnour, G. M., MB, ChB *Alexandria, Egypt,* CRCP(C)

Ball, M. J., MD *Toronto;* CRCP(C)

Davies, Eleanor M., MD *Toronto;* CRCP(C)

Enriquez, A. A., MD *Santo Tomas;* CRCP(C)

Slinger, R. P., BA, MD *Toronto;* MCPath

Turnbull, D. I., BSc, MDCM *McGill*

Instructors

Adilman, H. B., BA *Saskatchewan;* MD *Alberta;* CRCP(C)

Bell, J. H., DDS *Toronto*

Dietrich, M., MD, CRCP(C)

Frishette, W. A., MD, CRCP(C)

Fellows

Albarracin, Aurora, MD

Beattie, Lillian M., MD, FRCS(C)

Joshi, V. V., MBBS, MD(Path)

Oteruelo, F.

Trillo, A., MD

DEPARTMENT OF PHARMACOLOGY

Professors

Gowdey, C. W., BA, MSc, DPhil *Oxon.* Head of the Department.

Parker, J. M., MD *Manitoba;* DPH, PhD *Toronto*

Associate Professors

Colhoun, E. H., BSA *Toronto;* PhD *Cantab*

Hamilton, J. T., BSc, PhD *Edinburgh*

Philp, R. P., DVM *Toronto;* PhD

Assistant Professors

Hersey, M. L. W., BSc *McGill;* MD, PhD; CRCP(C), FACA

Hirst, M., BSc, PhD *Liverpool*

Honorary Lecturers

Borda, I. T., MD *Budapest;* FRCP(C)

Lovegrove, T. D., BA, MD, MSc

Meltzer, D. B., BSc *Manitoba;* MD; FRCP(C)

Spoerel, W. E. G. A., MD *Frankfurt-on-Main;* FRCP(C)

Instructors

Dinel, B., BScPhm *Toronto;* MSc *Ohio State*

White, D. F., MD, FRCP(C)

DEPARTMENT OF PHYSIOLOGY

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Stevenson, J. A. F., BA, MA, MDCM *McGill;* FRSC. Head of the Department

Associate Professors

Bondy, D. C., MD, FRCP(C)

Calaresu, F. R., BA *Pavia;* MD *Milan;* PhD *Alberta*

Critz, J. B., BSEd, MA, PhD *Missouri*

Dellow, P. G., BDS, MBBS *Adelaide;* FACDS

Mercer, P. F., DVM *Toronto;* PhD *Cornell*

Seguin, J. J., BSc, MSc, PhD

Squires, B. P., BA, MD, PhD

Vanderwolf, C. H., BSc *Alberta;* MSc, PhD *McGill*

Assistant Professors

Girvin, J. P., MD, PhD *McGill;* FRCS(C)

Harding, P. G. R., MD, MSc, FRCS(C)

Hinton, G. G., BSc, MDCM *McGill;* DCh, FRCP(C)

O'Hea, E. K., BAgrSc, MAgrSc *Dublin;* PhD *Illinois*

Stewart, D. J., BSc *British Columbia*

Honorary Lecturers

Chess, G. F. H., BASc *Toronto;* MEng *McGill*

Hart, J. S., BA, MA, PhD *Toronto;* FRSC

Manning, G. W., MA, MD, PhD *Toronto;* FRCP(C)

Rounthwaite, F. J., BSc, MDCM *McGill;* FRCS(C), FACS

Steele, J. E., BSc *Dalhousie;* MSc, PhD *Saskatchewan*

Lecturers (Sessional Part-Time)

Reese, L., MDCM *Queen's;* FRCS(C), FACS

Sellery, G. R., MD, DA *England;* DA *Toronto;* FRCP(C)

Instructors

Stein, P. B., MBBS *London*

Walker, Esme H., BA, MA *Toronto*

Fellows

Barker, J. H., BDS

Belbeck, L. W., DVM

Gentil, C. G., DSc

Lund, J. P., BDS

Steffens, A. B., PhD

DEPARTMENT OF RESTORATIVE DENTISTRY

Professor

Jordan, R. E., BA *Saskatchewan;* DDS *Alberta;* MSD *Washington;* FICD. Chairman of the Department

Associate Professors

Gwinnett, A. J., LDS, RCS, BDS, PhD *England*

Johnson, L. N., BS *Pacific;* MS *Oregan;* PhD *Michigan* (Chairman of Division of Dental Materials Science)

Ryan, J. E., DDS *Washington;* MSc *Ohio* (Chairman of Division of Removable Prosthodontics)

Skinner, D. H., DDS *Toronto*

Teteruck, W. R., BSc, DDS *McGill;* MSD *Indiana* (Chairman of Division of Fixed Prosthodontics)

Assistant Professors

Suzuki, M., DDS *Tokyo;* MS *Rochester;* DMD *Manitoba*

Bunston, H. G., DDS *McGill*

Visiting Assistant Professor

Gota, G., DDS, DDentSc *Tokyo*

Clinical Associate Professor

Guest, J. A., DDS *Toronto*

Clinical Assistant Professor

Bedrosian, G. A., DDS *Toronto;* BSA *Guelph*

Clinical Lecturer

Taylor, L. V., DDS *Toronto*

Instructors

Cluett, A. W., DDS *Dalhousie*

Cousins, D. E., DDS *Toronto*

Currie, F. V., DDS *Toronto*

Currie, P. E., DDS *Toronto*

Emmerton, R. J., DDS *Toronto*

Reddon, J., DDS *McGill*

Sears, G. M., DDS *Dalhousie*

Setterington, K. R., DDS *Toronto*

Shaw, R. M., DDS *Toronto*

Snelgrove, J. M., DDS *Toronto*

Walker, W. J., DDS *Toronto*

DEPARTMENT OF SOCIAL DENTISTRY

Associate Professors

Baird, K. M., OBE, CD; DDS *Toronto;* FICD

Dunn, W. J., DDS *Toronto;* FACD

Martinello, B. P., DDS, DDPH *Toronto.* Chairman of the Department

Assistant Professors

Banting, D. W., DDS, DDPH *Toronto*

Smith, J. M., CD; DDS *Toronto*

Instructors

Dinniwell, W. A., DDS *Toronto*

Leake, J. L., DDS *Toronto*

McKay, H. W., DDS *Toronto*

McParland, S. J., DDS, BSc *McGill*

Nordine, M. C., DDS *Toronto;* BA *Saskatchewan*

Way, D. C., DDS *Toronto;* MS *Michigan;* FRCD(C)

Faculty of Engineering Science

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Registration as a Professional Engineer

The requirements for registration as a Professional Engineer vary somewhat from province to province. Applicants for registration with the Association of Professional Engineers of Ontario (A.P.E.O.) must have successfully completed a university course in engineering accredited by the Association or have passed qualifying examinations set by the Association. The program in Engineering Science at The University of Western Ontario has been accredited by the Association. In addition, applicants must obtain two years of acceptable engineering experience as Graduates-in-training to qualify for registration.

The Association of Professional Engineers of Ontario is responsible for the administration of the Professional Engineers Act, the control of registration and such things as maintenance of ethical standards of its members in the interest of the general public. The title Professional Engineer, P. Eng., is employed by members in good standing with the Association.

Registration in other Provinces is subject to similar regulation, the details of which may be obtained from the Professional Engineering Associations of the various provinces.

Engineering Science Curriculum

This program is subject to changes introduced after the publication of this Calendar.

Core Studies

One of the consequences of the growth of Engineering Science has been the tendency to recognize certain specific streams of special interest to engineers which have hitherto fallen under the general headings of Civil, Chemical, Electrical, Materials, and Mechanical. None of these streams is completely isolated; they not only emerge from a common heritage but flow in contact and overlap one with the other.

The common source and the common currents form what is called the "core" at Western. This embraces in total the first two years of the four-year program, and extends into the later years. In practical terms it means that all Engineering Science students study the same subjects in the first two years of their course. A slight exception has had to be made in the case of those intending to specialize in Chemical Engineering. They are advised to substitute Inorganic Chemistry for Mechanics in the second year. Otherwise, our students do not choose a field of specialization until they enter third year, by which time, it is hoped, they shall have a better idea of what their tastes and aptitudes are. The First Year Engineering Science program is the same as First Year Natural Science enabling students to proceed in another program without loss of time.

At Western, the Faculty of Engineering Science has pioneered many innovations leading to better faculty-study communication and cooperation. Every effort is made to promote this, and although the First Year student may find himself, or herself, most of the time physically separated from the Engineering building, taking classes in other colleges of the University, the Faculty of Engineering Science is ever watchful of their progress and sensible of their needs. To aid in this, the professors conducting classes attended by Engineering Science students in their first and second years are regarded as the Core Group, the chairman of which is specifically charged with the duty of supervising the education and morale of the Freshmen and Second Year students. It is in the "core" that the foundations of knowledge and habit are laid, and student confidence and aspiration fostered.

FIRST YEAR PROGRAM

		Hours/Week	
		Lecture	Laboratory/ Tutorial
Appl. Math 20	Engineering Mathematics I	3	1
Chem. 20	General Chemistry	2	3
E.S. 21	Engineering Mechanics I	2	3
Physics 20	Introductory Modern Physics	2	3
One elective course		3	0
		12	10

Note: One hour per week timetabled for Engineering Orientation.

DESCRIPTION OF COURSES

NOTE: E.S. denotes an Engineering Science Course.

E.S. 21. Engineering Mechanics I. Analysis of force systems and equilibrium conditions with applications to engineering problems involving structures and machines. Dynamics of a particle and of rigid bodies, including kinematics and force energy and momentum methods of solution.
2 lectures, 1 tutorial, 2 problem hours – 8

Chem. 20. General Chemistry. The fundamental principles of Chemistry, including the kinetic theory and states of matter, the properties of solutions, chemical equilibrium, rate process and energy changes. Experiments in the laboratory are selected to illustrate these principles.
2 lectures, 3 laboratory hours – 25

Appl. Math. 20. Engineering Mathematics I. Limit of a function, continuity; differentiation and integration of functions of one variable; applications; numerical methods of approximating definite integrals; polar coordinates; parametric equations; infinite series.
4 lecture/tutorials – 29

Physics 20. Introductory Modern Physics. A treatment at the elementary level of the experimental facts of modern physics and the interpretation of these facts in terms of atoms and molecules, electrons and other particles, and quantized energy. Conservation laws are stressed. The necessary concepts from classical physics are reviewed.
2 lectures, 3 laboratory hours – 22

SECOND YEAR PROGRAM		Hours/Week	
All Second Year Students		Lecture	Laboratory/ Tutorial
E.S. 200	Engineering Graphics	1	3
E.S. 202	Mechanics of Materials I	2	0
E.S. 203	Heat, Mass and Momentum Transfer	2	0
E.S. 205	Electrical Science	3	0
E.S. 208	Computer Programming for Engineers	1	0
Appl. Math. 270	Engineering Mathematics II	3	0
E.S. 210	Engineering Laboratory	0	3
	Option A – Chemical Engineering		
Chem. 213	Organic Chemistry	2	1½
Chem. 214	Elementary Physical Chemistry	3	0
and ONE of:			
E.S. 201	Engineering Mechanics II	2	3
E.S. 209	Materials Science	2	0
Biol. 21	Biology	2	2
Biol. 22	Biology	2	3
Botany 20	Introductory Botany	2	3
	Total hours per week Option A	19	7½, 9½ or 10½
	Option D – Materials Science		
E.S. 209	Materials Science		
and TWO of:			
Chem. 213	Organic Chemistry	2	1½
Chem. 214	Elementary Physical Chemistry	3	0
E.S. 201	Engineering Mechanics II	2	3
E.S. 204	Applied Thermodynamics	2	0
	Total hours per week Option D	18 or 19	7½ or 9
	Options B, C and E. – Civil, Electrical and Mechanical		
E.S. 201	Engineering Mechanics II	2	3
E.S. 204	Applied Thermodynamics	2	0
E.S. 209	Materials Science	2	0
	Total hours per week Options B, C and E	18	9

E.S. 200. Engineering Graphics. Use of instruments, geometrical constructions, sketching, orothographic, projections, sectional views, dimensioning, auxiliary projections, axonometric projection, perspectives, vector analysis, layouts for empirical equations, nomographs and graphical mathematics. Each student must submit a design project, emphasizing an original concept.
1 lecture, 3 problem hours – 2

E.S. 201. Engineering Mechanics II. A continuation of Engineering Science 21. Kinematics and kinetics of plane motion; application of work-energy and impulse-momentum relationships; introduction to vibrations.
2 lectures, 1 tutorial, 2 problem hours – 6

E.S. 202. Mechanics of Materials I. Stress and strain, elastic and inelastic material idealizations, behavior of assemblages, analysis of thin-walled pressure vessels, shearing force and bending moment, stresses in beams, deflection of beams, torsion of shafts, buckling of columns.
2 lecture hours – 30

E.S. 203. Heat, Mass and Momentum Transfer. An introduction to the basic principles of fluid mechanics and of the transport of heat and mass in systems of interest to engineers.
2 lecture hours – 25

E.S. 204. Thermodynamics. Properties of a pure substance, first law of thermodynamics, processes in open and closed systems, second law of thermodynamics, ideal gases, mixture of ideal gases, and psychiometry, compressors and ideal power cycles.
2 lecture hours, 0 laboratory hours

E.S. 205. Electrical Science. Electrostatics, conductors and semi-conductors, magnetism and electrodynamics, principles of electric-circuit theory, principles of energy conversion, electrical measurements; sinusoids, complex numbers, phasors, transient and steady-state behavior of simple circuits, power and energy, network equations and theorems, polyphase systems; coupled circuits, transformers; Fourier analysis of non-sinusoidal quantities.
3 lecture hours – 35

E.S. 208. Computer Programming for Engineers. An elementary course in Fortran programming for the IBM 1130.
1 lecture hours,

E.S. 209. Materials Science. An outline of the scientific understanding of those properties of materials which are most important in engineering. The dependence of these properties upon the nature, structure and treatment given to materials.
2 lecture hours – 13

Chem. 211. Principles of Inorganic Chemistry. Inorganic Chemistry: A survey of the principles necessary to an understanding of atomic structure and the forces between atoms, and methods used in their study. Some aspects of chemical reactions in a variety of solvent media, coordination compounds, and a systematic study of the reactions and compounds of some of the elements.
2 lecture, 3 laboratory hours – 6

Chem. 213. Organic Chemistry.
2 lecture hours, 1½ laboratory hours – 23

Chem. 214. Elementary Physical Chemistry. Kinetic theory and elementary thermodynamics.
3 lecture hours – 12

Appl. Math. 270. Engineering Mathematics II. Partial differentiation, multiple integrals, infinite series including power series, an introduction to complex variables, elementary ordinary differential equations.
3 lecture hours – 20

E.S. 210. Engineering Laboratory. Selected Experiments in Engineering Science.
3 laboratory hours

Biol. 21. Biology. The fundamental principles of biology with stress on the cell as a unit, the origin and preservation of the individual and the race, the mode of inheritance, and the application of biology to social and economic problems.
2 lecture hours, 2 laboratory hours – 7

Biol. 22. Biology. The fundamental principles of biology stressing the features common to all living organisms.
2 lecture hours, 3 laboratory hours – 8

Botany 20. Introductory Botany. General principles of botany.
2 lecture hours, 3 laboratory hours – 16

Chemical Engineering Option

Chemical engineering encompasses all activities associated with the conversion of raw materials into unique products through the application of chemistry. This includes the research, development and design of the process and plant and extends to the production, control and sales of the product. The chemical engineer must have a good knowledge and appreciation of chemical as well as engineering principles. The Third Year Chemical Option extends the work in physical chemistry and heat, mass and momentum transfer started in Second Year. A Unit Operations course and a Process course starts in Third Year and extends into Fourth Year. Electives in the Fourth Year enable a student to study in greater depth biochemistry, microbiology, quantum chemistry, mathematics or selected topics.

The range of employment for chemical engineers is wide. It includes the petrochemical industry, brewing and food industry, pulp and paper industry, mining industry and a variety of jobs in secondary industries.

THIRD YEAR PROGRAM – OPTION A – CHEMICAL ENGINEERING

		Hours/Week Lecture	Laboratory/ Problem
E.S. 303	Fluid Mechanics (1st term)	2	0
E.S. 305	Electronics (2nd term)	2	0
E.S. 306	Electromechanics I (1st term)	2	0
E.S. 307	Heat Transfer (2nd term)	2	0
E.S. 310	Chemical Engineering Laboratory I	0	6
E.S. 311	Unit Operations I	2	0
E.S. 312	Industrial Process Chemistry	2	0
Appl. Math.370	Engineering Mathematics III	3	0
Chem. 313	Elementary Organic Chemistry	2	1½A*
Chem. 314	Intermediate Physical Chemistry	3	1½A
Humanities or Social Sciences Elective		3	0
		19	7½

"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."

*1½A indicates a 3-hour laboratory period on alternate weeks.

DESCRIPTION OF COURSES

E.S. 303. Fluid Mechanics. Additional principles of incompressible and compressible fluid flow: dimensional analysis, dynamic similarity, fluid resistance, ideal (potential) flow, frictionless compressible flow; application of basic principles: fluid measurements, flow in closed conduits and open channels, aerodynamics, turbomachinery.
2 lecture hours, first term

E.S. 305. Electronics. Characteristic behavior of vacuum tube and semiconductor devices, and their use in linear amplifiers, oscillators and measuring instruments. – 17

E.S. 306. Electromechanics. Characteristics and applications of dc generators and motors, ac power generation and transmission; ac motors; transformers.
2 lecture hours, first term

E.S. 307. Heat Transfer. Principles of heat transmission by conduction, convection and radiation.
2 lecture hours, second term – 3

E.S. 310. Chemical Engineering Laboratory I. A laboratory course associated with the topics discussed in E.S. 311.
6 laboratory hours

E.S. 311. Unit Operations I. A detailed study of the theory of heat, mass and momentum transfer, and the design of heat exchangers.
2 lecture hours – 36

E.S. 312. Industrial Process Chemistry. A correlative discussion of a number of chemical industries in terms of unit processes, unit operations, physical chemistry, economics, and power.
2 lecture hours – 11

Appl. Math. 370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering students, covering the following topics. First Term: finite differences, difference tables, interpolation, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second Term: linear algebra, elementary probability theory, Fourier series.
3 lecture hours – 26

Chem. 313. Elementary Organic Chemistry. For Chemical Engineering students. Content similar to Chemistry 203.
2 lecture, 1½ laboratory hours – 23

Chem. 314. Intermediate Physical Chemistry. For Chemical Engineering students. Content similar to Chemistry 354.
3 lecture, 1½ laboratory hours – 7

FOURTH YEAR PROGRAM – OPTION A – CHEMICAL ENGINEERING

		Hours/Week Lecture	Laboratory/ Problem
E.S. 400	Project, Report and Seminar	0	5
E.S. 408	Engineering Practice	3	0
E.S. 410	Chemical Engineering Laboratory II	0	3
E.S. 411	Unit Operations II	3	0
E.S. 412	Chemical Processes and Plant Design	2	3
E.S. 414	Instrumentation and Control	2	0
E.S. 415	Chemical Engineering Kinetics	2	0
"Any two full courses or the equivalent chosen with the approval of the Chairman of the Undergraduate Division of the Executive Committee."			
Humanities or Social Sciences Elective, E.S. 300, 400 or 500 courses. Faculty of Science 3rd or 4th year courses.		4/6	0/6
		16/18	11/18

DESCRIPTION OF COURSES

E.S. 400. Project, Report and Seminar. Selection and investigation of an engineering problem. Analytical and/or experimental work is carried out by individual students or project groups under the supervision of a faculty member. Progress reports and a final engineering report are prepared; each student must deliver a public lecture.

A student who, in connection with another course, undertakes a project which culminates in the preparation and presentation of a report and which meets all the requirements of E.S. 400, may with the permission of the Chairman of his Group, substitute a technical elective for E.S. 400.
5 hours

E.S. 408. Engineering Practice. A discussion of the structure and operation of business organizations with emphasis on the following functions and disciplines: financial control, marketing, organizational behavior, production and general management. Cases and business problems are analysed in such a manner as to relate the engineer to his economic and industrial environment. Lectures are also included on other topics including labor, law, professional ethics and practice.
2 lecture hours, second term – 17

E.S. 410. Chemical Engineering Laboratory II. A combined laboratory associated with the topics discussed in E.S. 411, E.S. 414 and E.S. 415.
3 laboratory hours.

E.S. 411. Unit Operations II. The principles given in E.S. 311 are utilized in the detailed study of stage and differential contacting processes, and of unit operations involving particulate solids.
3 lecture hours – 7

E.S. 412. Chemical Process and Plant Design. A preliminary design is prepared of a process for making a selected chemical. This involves: size of the market; method of manufacture; raw materials and energy required; selection, size and cost of equipment; and evaluation of the profitability of the proposed venture. In this way an integrated application is achieved of economics and the principles of chemical engineering.
2 lecture, 3 problem hours

E.S. 413. Selected Topics in Chemical Engineering. Chemical engineering problems not covered in other courses are defined and examined for solutions.
2 lecture hours – 11

E.S. 414. Instrumentation and Control. Theory and application of automatic control of variables in industrial processes.
2 lecture hours – 21

E.S. 415. Chemical Engineering Kinetics. Concepts of reaction rates, reaction order, adsorption, and catalysis, together with heat- and mass-transfer phenomena, are used to define and indicate methods of solving the problems of designing chemical-reaction equipment.
2 lecture hours – 25

E.S. 416. Biochemical Engineering. Principles and operations of biochemical processes. The laboratory associated with this course will be integrated with E.S. 410.
2 lecture hours, 3 laboratory hours

E.S. 417. Catalytic Processes in Modern Industry. Kinetics and mechanisms of heterogeneous catalysis including case studies of several modern catalytic processes in industry.
2 lecture hours per week for one term. – 33

E.S. 418. Fluidized Bed Processes. Principles and operations of fluidized bed processes.
2 lecture hours per week for one term. – 14

Civil Engineering Option

Civil engineering has traditionally been associated with the design, operation and construction of canals, docks, railways, roads, bridges, airports, tunnels and industrial as well as commercial and domestic buildings. All these involve structures or other engineering works to adopt the environment for the needs of man. Within Civil engineering there are several areas of specialization: construction engineering, geotechnical engineering, hydraulic engineering, sanitary engineering, structural engineering, and transportation engineering. There has been a widening application of other fields such as geophysics, geography and biology to Civil Engineering in recent years in an attach on the major technological and sociological problems associated with man's environment, including urban sprawl and air and water pollution. The Third Year Civil option includes structural theory and design as well as courses in materials and geology. The structural theory and design continues into Fourth Year and is complementary to the soil mechanics. Through the electives in Fourth Year it is possible to study in greater depth transportation engineering, structures or mathematics.

THIRD YEAR PROGRAM – OPTION B – CIVIL ENGINEERING

		Hours/Week Lecture	Laboratory/ Problem
E.S. 302	Mechanics of Materials II	2	0
E.S. 303	Fluid Mechanics (1st term)	2	0
E.S. 305	Electronics (2nd term)	2	0
E.S. 306	Electromechanics (1st term)	2	0
E.S. 320	Civil Engineering Laboratory I	0	6
E.S. 321	Structural Theory I	2	0
E.S. 322	Structural Design I	2	3
E.S. 324	Surveying (2 weeks in Fall)		
E.S. 326	Civil Engineering Materials (2nd term)	2	0
E.S. 327	Soil Mechanics I (2nd Year)		
Geol. 391	Geology for Engineers (1st term)	2	3
Appl.Math.370	Engineering Mathematics III	3	0
Humanities or Social Sciences Elective		3	0
"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."		18	9

Students intending to register for the third year civil engineering option – Option B – must enroll for E.S. 324 (Surveying) two weeks prior to the beginning of term.

DESCRIPTION OF COURSES

E.S. 302. Mechanics of Materials II. A continuation of E.S. 202 to include theory of buckling, elastic theories of failure, variation of shearing stress, deflection due to shear, stresses in thick spheres and cylinders, and energy methods. The laboratory work is designed to elucidate and extend the knowledge gained from lecture material.
2 lecture hours – 23

E.S. 303. Fluid Mechanics. Additional principles of incompressible and compressible fluid flow: dimensional analysis, dynamic similarity, fluid resistance, ideal (potential) flow, frictionless compressible flow; application of basic principles: fluid measurements, flow in closed conduits and open channels, aerodynamics, turbomachinery.
2 lecture hours, first term

E.S. 305. Electronics. Characteristic behavior of vacuum tube and semiconductor devices, and their use in linear amplifiers, oscillators and measuring instruments.
2 lecture hours, second term – 17

E.S. 306. Electromechanics. Characteristics and applications of dc generators and motors; ac power generation and transmission; ac motors; transformers.
2 lecture hours, first term

E.S. 320. Civil Engineering Laboratory I. Laboratory supporting all the Engineering Science courses.
6 laboratory hours

E.S. 321. Structural Theory I. An introduction to the theory of statically determinate and statically indeterminate structures. Emphasis is placed on an understanding of the basic elastic theorems and their application.
2 lecture hours – 36

Engineering Science 322. Structural Design I. An introduction to structural engineering design including the use of manufactured and natural materials.
1 lecture hours, 3 laboratory hours – 31

E.S. 324. Surveying (two weeks in Fall). The principles of plane surveying and the use of surveying in design and construction. Only students without second year condition examinations are permitted to register for this course. All civil engineering students must satisfactorily complete E.S. 324 before registration for Fourth Year.

E.S. 326. Civil Engineering Materials. Study of materials of particular importance to civil engineers such as steel, concrete, timber and polymers.
2 lecture hours, second term – 3

Engineering Science 327. Soil Mechanics I (one term). Principles of particulate mechanics in relation to the properties of soils and rocks used as engineering materials and as load carrying strata. Introductory course emphasizing the principles of soil mechanics.
2 lecture hours

Geol. 391. Geology for Engineers. *Introduction to* minerals, rocks, weathering, transportation, deposition and glacial geology. Engineering properties *of geologic materials; application of principles of* weathering to the deterioration of construction materials; ground water seepage conditions and their influence on slope stability; glacial soils and their importance in engineering practice. Case histories of engineering projects markedly influenced by site geology.
2 lecture, 3 laboratory hours, first term

Appl. Math. 370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering students, covering the following topics. First Term: finite differences, difference tables, interpolation, numerical differentiation and integration, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second Term: linear algebra, elementary probability theory, Fourier series.
3 lecture hours – 26

FOURTH YEAR PROGRAM – OPTION B – CIVIL ENGINEERING

		Hours/Week	
		Lecture	Laboratory/ Problem
E.S. 400	*Project, Report and Seminar*	0	5
E.S. 408	Engineering Practice	3	0
E.S. 421	Structural Theory II	2	0
E.S. 422	*Structural Design II*	1	3
E.S. 423	Engineering Hydraulics	2	0
E.S. 426	Soil Mechanics	2	0
	Civil Engineering Laboratory II	0	8
Humanities or Social Sciences Elective		3	0
One of:			
E.S. 425	Transportation Engineering	2	0
Appl.Math.470	Engineering Mathematics IV	3	0
E.S. 427	*Science of Structures*	2	0
"Any two full courses or the equivalent chosen with the approval of the Chairman of the Undergraduate Division of the Executive Committee."		15/16	16

DESCRIPTION OF COURSES

E.S. 400. Project Report and Seminar. Selection and investigation of an engineering problem. Analytical and/or experimental work is carried out by individual students or project groups under the supervision of a faculty member. Progress reports and a final engineering report are prepared; each student must deliver a public lecture.

A student who, in connection with another course, undertakes a project which culminates in the preparation and presentation of a report and which meets all the requirements of E.S. 400, may with the permission of the Chairman of his Group, substitute a technical elective for E.S. 400.
5 hours

E.S. 408. Engineering Practice. A discussion of the structure and operation of business organizations with emphasis on the following functions and disciplines: financial control, marketing, organizational behavior, production and general management. Cases and business problems are analysed in such a manner as to relate the engineer to his economic and industrial environment. Lectures are also included on other topics including labor, law, professional ethics and practice.
3 lecture hours

E.S. 421. Structural Theory II. A continuation of E.S. 321 to include elastic behavior and analysis of trusses and frames by matrix methods and moment distribution. Inelastic behavior of beams and frames is considered with concepts of plastic design. Dynamics of structures is discussed together with the approximate estimation of natural frequencies and the dynamic loads due to wind and earthquake. Laboratory periods include testing of structural elements, models and materials and practice in the use of computer programs and computer languages oriented to structural engineering problems.
2 lecture hours – 7

E.S. 422. Structural Design II. Design methods applied to reinforced concrete, steel and other structural media leading to design of a complete structural project.
2 lecture hours – 7

E.S. 423. Engineering Hydraulics. The fundamentals of hydraulics associated with hydrology, channel flow, sediment transport and flow through pipe networks.
2 lecture hours – 11

E.S. 425. Transportation Engineering. Planning, design and construction of highways and other transportation systems.
2 lecture hours – 25

E.S. 426. Soil Mechanics. Characteristics of soil particles with geological origin and textural classification. Investigation of soils with respect to structure, moisture content, void ratio, Attenberg limits, specific gravity, relative density, sensitivity, permeability, compaction, and stabilization. Analysis of bearing capacity, shear strength, settlement and unretained earth slopes. Design of spread foundations, pile foundations, and retaining walls.
2 lecture hours – 21

E.S. 427. Science of Structures. A fundamental study of structural media and their environment. To include inelastic action, matrix methods, dynamics of structures, etc. A critical study of the sufficiency of structures in relation to the actual loads imposed on them.
2 lecture hours – 25

Civil Engineering Laboratory II. A combined laboratory period associated with E.S. 421, 423, 425, and 426.
8 laboratory hours

Appl. Math. 470. Engineering Mathematics IV. A sequel to Applied Mathematics 370 including the following topics. First Term: Vector calculus, ordinary linear differential equations with variable coefficients, orthogonal function expansions, introduction to partial differential equations. Second Term: Random variables and probability distributions, sample theory, statistical estimations, confidence intervals, curve fitting, experimental design.
3 lecture hours – 24

Electrical Engineering Option

Electrical engineering is based on the economic application and use of the wide range of phenomena associated with the electron, one of the fundamental particles of nature. In many respects, man's ability to control electrons and to predict their behavior has played a central role in the development of technology and of today's standard of living. Electrical energy is the most flexible and versatile form of energy known at the present time. Electrical engineering is the science and art of designing, constructing, and operating systems by which (a) energy is converted from some form to the electrical form, (b) electrical energy is transmitted, distributed, and controlled, and (c) electrical energy is converted to some other form for utilization.

Two of man's greatest desires are to substitute machines for his muscles and to establish communication. Electrical engineering is concerned with the satisfaction of these two desires. The conversion, transmission, and reconversion of energy in a large electric system is a good example of how the first desire, the substitution of machines for human muscles and the means of turning the wheels of industry, is satisfied. In such a system, two of the major problems are the efficiency and reliability of conversion and transmission. Electrical engineers satisfy the second desire by establishing communication in many ways, telephone, radio, data transmission, radar, television, computers, control systems.

Energy systems and information systems are never independent; energy systems require information and information systems require energy. In addition, no system is purely electrical. As a result, electrical engineers must work closely with other engineers, with scientists and technologists, and with businessmen.

THIRD YEAR PROGRAM – OPTION C – ELECTRICAL ENGINEERING

		Hours/Week	
		Lecture	Laboratory/ Problem
E.S. 451	Electronic Structures and Properties of Materials	3	0
E.S. 330	Electrical Engineering Laboratory I	0	8
E.S. 331	Electric Circuits	3	0
E.S. 332	Semiconductor Electronics	2	0
E.S. 333	Electromagnetic Field Theory	2	0
E.S. 334	Electrical Energy Conversion	2	0
Appl. Math 370	Engineering Mathematics III	2	0
Humanities or Social Sciences Elective "Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."		3	0
		3	0
		18	8

DESCRIPTION OF COURSES

E.S. 330. Electrical Engineering Laboratory I. Laboratory supporting all the Engineering Science courses.
8 laboratory hours

E.S. 331. Electric Circuits. Analysis of linear networks with the emphasis on general network equations, the complex frequency plane, one- and two-port networks. Fourier series, Fourier transform and Laplace transform applied to linear circuits. Introduction to non-linear network analysis.
3 lecture hours, – 36

E.S. 332. Semiconductor Electronics. An introduction to semiconductor physics with applications to the circuit behavior of semiconductor diodes and transistors.
2 lecture hours – 23

E.S. 333. Electromagnetic Field Theory. A vector treatment of the theory of static and dynamic electric and magnetic fields, leading to Maxwell's equations and solutions of Maxwell's equations to specific problems. Boundary value solutions using vector calculus and partial differential equations. Propagation of plane EM waves. 2 lecture hours.

E.S. 334. Electromechanics. Principles of electromechanical energy conversion and their applications in direct-current and alternating-current machines.
2 lecture hours, second term – 31

Appl. Math. 370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering students, covering the following topics. First Term: finite differences, difference tables, interpolation, numerical differentiation and integration, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second Term: linear algebra, elementary probability theory, Fourier series.
3 lecture hours –26

E.S. 451. Electronic Structure and Properties of Materials. Quantum theory, electronic structure, Brillouin zones, electrons in crystals, conductivity, insulation and semi-conduction, electrical and thermal conductivity, resistance of alloys, magnetic properties, domains, semiconductors, rectification, transistors, optical properties, lasers, dielectrics, piezoelectricity, and superconductivity.
3 lecture hours – 2

FOURTH YEAR PROGRAM – OPTION C – ELECTRICAL ENGINEERING

		Hours/Week Lecture	Laboratory
E.S. 400	Project, Report and Seminar	0	5
E.S. 408	Engineering Practice	3	0
E.S. 430	Electrical Engineering Laboratory II	0	9
E.S. 431	Digital Logic Systems (1st term)	3	0
E.S. 432a	Radiation and Propagation (2nd term)	2	0
E.S. 433	Electric Power Systems	2	0
E.S. 434a	Electromechanical Energy Conversion (1st term)	2	0
E.S. 434b	Electrical Energy Conversion (2nd term)	2	0
E.S. 435a	High Frequency Electronics (1st term)	2	0
E.S. 436	Control Systems	2	0
E.S. 333	Electromagnetic Field Theory	2	0
Applied Mathematics 403b - 2nd term		3	0
Humanities or Social Science Elective		3	0
"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."		19	14

DESCRIPTION OF COURSES

E.S. 400. Project, Report and Seminar. Selection and investigation of an engineering problem. Analytical and/or experimental work is carried out by individual students or project groups under the supervision of a faculty member. Progress reports and a final engineering report are prepared; each student must deliver a public lecture.

A student who, in connection with another course, undertakes a project which culminates in the preparation and presentation of a report and which meets all the requirements of E.S. 400, may with the permission of the Chairman of his Group substitute a technical elective for E.S. 400.
5 hours

E.S. 408. Engineering Practice. A discussion of the structure and operation of business organizations with emphasis on the following functions and disciplines: financial control, marketing, organizational behavior, production and general management. Cases and business problems are analysed in such a manner as to relate the engineer to his economic and industrial environment. Lectures are also included on other topics including labor, law, professional ethics and practice.
3 lecture hours

E.S. 430. Electrical Engineering Laboratory II. Laboratory supporting all the Engineering Science courses.
6 laboratory hours

E.S. 431. Digital Logic Systems. Theory of Boolean algebra, switching circuits, Venn diagrams; Karnaugh maps; logic and memory systems, design of combinational and sequential switching machines; electronic switching circuits; basic design of digital computors.
2 lecture hours

E.S. 432a. Radiation and Propagation Plane EM wave propagation, wave polarization, antenna radiation, parallel plate wave guide, reciprocity theorem, scattering, propagation through ionosphere. (1st term)
2 lecture hours

E.S. 432b. Microwave Systems. Introduction to the theory of the principal types of microwave devices and transmission, klystrons, magnetrons, travelling wave tubes, Elementary principles of varactors, lasers, masers and parametric amplifiers. (2nd term)
2 lecture hours

E.S. 433. Electric Power Systems. Parameters and performance of transmission lines, transformers, and machines; performance of transmission and distribution systems, symmetrical components, voltages and currents in systems under fault conditions; introduction to power-system stability.
2 lecture hours – 7

E.S. 343a. Electromechanical Energy Conversion Theory of AC machines, electric transients in AC machines, dynamics of electro mechanical systems. (1st term)
2 lecture hours

E.S. 434b. Electrical Energy Conversion. Other methods of energy conversion will be considered, fuel cells, thermoelectric generatory. (2nd term)
2 lecture hours

E.S. 435a. High Frequency Electronics. Low-pass and band-pass amplifiers, sinusoidal and non-linear oscullators. Principles of amplitude, frequency and phase moduation; modulators and demodulators; negative feedback; large signal amplifiers, microwave oscillators and amplifiers. (1st term)
2 lecture hours

E.S. 435b. Communication Theory. Introduction to communication systems and statistical communication theory. Deterministic and random signals; linear systems; special analysis; introduction to information theory. (2nd term)
2 lecture hours

E.S. 436. Control Systems. Analysis of feedback control systems using both root locus and frequency response techniques; includes the application of stability criteria, gain adjustment and compensation to meet performance specifications.
2 lecture hours – 21

Materials Science Option

Scientific understanding of the materials used by engineers has grown very rapidly recently. Its application in engineering is now widespread and becoming the occupation of engineers who specialize in the area. A great variety of new types of materials is coming into engineering application. New methods of fabricating and using materials are constantly developed and applied. Advances are also taking place in the traditional engineering media such as concrete, steel and timber.

The materials scientist works to achieve such progress and applies it to serve society. He must appreciate the progress in those areas of chemistry, crystallography, mechanics, physics, metallurgy, economics and the other sciences which he can employ and keep in touch with developments in these areas. He should be aware of new materials as they are developed and appreciate when use of them can help. But, he must keep in touch with traditional materials and note when developments make it wise to use them in further fields or in altered ways. When materials do not exist, he applies his science in efforts to develop them. The methods of fabricating materials are similarly his concern. Means of testing and controlling engineering materials are now determined by materials science.

Materials science has in recent years contributed to the major developments in creep resistant high temperature materials; in engineering with polymers and in semiconductors. Superconductivity conditions under which certain alloys elongate several hundred percent before failure, and fibres of metals or ceramics with many times the normal strength of these materials are typical of the more unusual areas in which practical advances are to be expected. At the same time developments in conventional materials and in the methods of using them will occur largely because of the work of materials scientists and will prove of even greater practical importance.

THIRD YEAR PROGRAM – OPTION D – MATERIALS SCIENCE

		Hours/Week	
		Lecture	Laboratory/ Problem
E.S. 305	Electronics (2nd term)	2	0
E.S. 306	Electromechanics (1st term)	2	0
E.S. 350	Materials Science Laboratory I	0	6
E.S. 352	Phase Equilibria and Transformations	2	0
E.S. 353	Mechanical Properties of Materials	2	0
E.S. 356	Crystallography (1st term)	2	0
E.S. 357	Structure of Real Materials (2nd Term)	2	0
E.S. 452	Surfaces and Interfaces	2	0
Appl Math 370	Engineering Mathematics III	3	0
Humanities or Social Sciences Elective "Any student may replace the Humanities or Social Science elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."			
One of:			
E.S. 201	Engineering Mechanics II	2	3
Chem. 211	Principles of Inorganic Chemistry	2	3
Chem. 214	Elementary Physical Chemistry		
		18	9

DESCRIPTION OF COURSES

E.S. 305. Electronics. Characteristic behavior of vacuum tube and semiconductor devices, and their use in linear amplifiers, oscillators and measuring instruments.
2 lecture hours, second term – 17

E.S. 306. Electromechanics. Characteristics and applications of dc generators and motors; ac power generation and transmission; ac motors; transformers.
2 lecture hours, first term

E.S. 350. Materials Science Laboratory I. A laboratory course associated with the lecture courses.
6 laboratory hours

E.S. 352. Phase Equilibria and Transformations. Phase equilibria in engineering materials. Transformation, precipitation effects and their influence. Metastable and non-equilibrium states. The application of this knowledge to the treatment and control of engineering materials.
2 lecture hours – 7

E.S. 353. Mechanical Properties of Materials. Elasticity, plasticity and fracture. Mechanical testing. The working and forming of materials.
2 lecture hours – 31

E.S. 356. Crystallography. Crystal classes, symmetry, point groups, space groups, X-ray methods, crystal structure determination.
2 lecture hours, first term

E.S. 357. Structure of Real Materials. Structure of the elements, defects in crystals, structure of alloys, inorganic compounds, glasses, polymers, microstructures, macrostructures.
2 lecture hours, second term – 23

E.S. 452. Surfaces and Interfaces. Thermodynamics of surfaces, structure of surfaces, surface energy, adsorption, adhesion, surface area measurement. Sintering mechanisms and the sintering process. Friction, wear, lubrication, bearing materials.
1 lecture hours – 7

Appl. Math. 370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering students, covering the following topics. First Term: finite differences, difference tables, interpolation, numerical differentiation and integration, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second Term: linear algebra, elementary probability theory, Fourier series.
3 lecture hours – 26

E.S. 201. Engineering Mechanics II. A continuation of Engineering Science 21. Kinematics and kinetics of plane motion; application of work-energy and impulse-momentum relationships; introduction to vibrations.
2 lecture, 1 tutorial, 2 problem hours – 6

Chem. 211. Principles of Inorganic Chemistry. Inorganic Chemistry: A survey of the principles necessary to an understanding of atomic structure and the forces between atoms, and methods used in their study. Some aspects of chemical reactions in a variety of solvent media, coordination compounds, and a systematic study of the reactions and compounds of some of the elements.
2 lecture, 3 laboratory hours – 6

Chem. 214.

FOURTH YEAR PROGRAM – OPTION D – MATERIALS SCIENCE		Hours/Week	
		Lecture	Laboratory
E.S. 400	Project, Report and Seminar	0	5
E.S. 408	Engineering Practice	3	0
E.S. 450	Materials Science Laboratory II	0	4½
E.S. 451	Electronic Structure and Properties of Materials	3	0
E.S. 358	Thermodynamics (1st term)		
E.S. 359	Oxidation and Corrision (2nd term)		
E.S. 455	Applications of Materials Science	2	0
E.S. 456	Properties of Engineering Materials (1st term)	2	0
E.S. 457	Transformations (1st term)	2	0
E.S. 458	Structure and Engineering Properties (2nd term)	2	0
E.S. 459	Transformation Structures (2nd term)	2	0
Appl.Math.470	Engineering Mathematics IV (2nd term)	3	0
Humanities or Social Sciences Elective		3	0
"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chariman of the Undergraduate Division of the Executive Committee."		20	9½

DESCRIPTION OF COURSES

E.S. 400. Project, Report and Seminar. Selection and investigation of an engineering problem. Analytical and/or experimental work is carried out by individual students or project groups under the supervision of a faculty member. Progress reports and a final engineering report are prepared; each student must deliver a public lecture.

A student whok in connection with another course, undertakes a project which culminates in the preparation and presentation of a report and which meets all the requirements of E.S. 400, may with the permission of the Chairman of his Group substitute a technical elective for E.S. 400.
5 hours

E.S. 408. Engineering Practice. A discussion of the structure and operation of business organizations with emphasis on the following functions and disciplines: financial control, marketing, organizational behavior, production and general management. Cases and business problems are analyzed in such a manner as to relate the engineer to his economic and industrial environment. Lectures are also included on other topics including labor, law, professional ethics and practice.
3 lecture hours

E.S. 450. Materials Science Laboratory II. A laboratory course associated with E.S. 451, 452, 456, 457, 458 and 459.
4½ laboratory hours

E.S. 451. Electronic Structure and Properties of Materials. Quantum theory, electronic structure, bonding, Brillouin zones, electrons in crystals, conductivity, insulation and semiconduction, electrical and thermal conductivity, resistance of alloys, magnetic properties, domains, semiconductors, rectification, transistors, optical properties, lasers, lielectrics, piezoelectricity, and superconductivity.
3 lecture hours – 2

E.S. 358. Thermodynamics. The laws of thermodynamics, the production of work from heat, statistical interpretation of entropy, free energy of reaction, solutions, phase equilibria, free energy of binary systems, defects in crystals.
2 lecture hours, first term – 36

E.S. 359. Oxidation and Corrosion. Reaction rate theory, oxidation rate curves, techniques, oxidation behavior of metals and alloys, alloys for high temperature service, cladding. Electrochemistry. Pourbaix diagrams, E-I diagrams, types of corrosion, corrosion protection, electropolishing.
2 lecture hours, second term – 36

E.S. 455. Applications of Materials Science. The application of materials science in engineering illustrated by examples from the production of materials and their employment in various areas of engineering.
2 lecture hours – 11

E.S. 456. Properties of Engineering Materials. Improvement or modification of the following properties of engineering materials; Young's modulus, damping capacity, elastic limit and tensile strength, resistance to brittle fracture, resistance to stress corrosion, fatigue and creep strength.
2 lecture hours, first term – 21

E.S. 457. Transformations. This course covers the basic kinetic theory of transformations in materials and deals with the concepts of nucleation and growth. Activation energies, rates of reaction in ideal cases.
2 lecture hours, first term – 25

E.S. 458. Structure and Engineering Properties. Properties of lattice imperfections in metallic, ionic and covalent solids. Generation and physical observation of point and line defects. Irradiation damages.
2 lecture hours, second term – 21

E.S. 459. Transformation Structures. This course applies the theory of transformations to actual situations, solidification, precipitation, polymorphism, order-disorder, vitrification, etc. The structural aspects of transformations are also considered, e.g., effect of dislocations, imperfections, foundaries, etc.
2 lecture hours, second term – 25

Appl. Math. 470. Engineering Mathematics IV. A sequel to Applied Mathematics 370 including the following topics. Random variables and probability distributions, sample theory, statistical estimations, confidence intervals, curve fitting, experimental design.
3 lecture hours, second term – 24

Mechanical Engineering Option

All fields of engineering have common patterns, and the mechanical engineer is likely to be concerned with one of the following functions: research and development, design and application, production, construction, operation and maintenance, marketing and distribution, consulting, teaching. Each of these can entail management or supervisory responsibilities, in which the mechanical engineer can become involved with problems of policy, planning, finance, organization, public relations and personnel administration. These functions will be found in varying degrees in the many subdivisions of mechanical engineering.

Power Generation: mechanical engineers are concerned with the thermodynamics and structural design of thermal and hydro-electric power plants, steam turbines, gas turbines, internal combustion engines, ram-jet and rocket engines.

Manufacturing: mechanical engineers are involved in the design, development and economic production of a product; they are often concerned with the design of the factory and machinery to produce and package the product.

Transportation: the design, manufacture and maintenance of various conveyances such as automobiles, trucks, buses, locomotives, rolling stock, construction vehicles, marine vessels, aircraft, elevators and escalators, together with the power equipment required in these conveyances, are the province of the mechanical engineer. Also, his responsibility often includes the design, installation and operation of equipment which is used in the transportation and distribution of water, gas and oil for industry and the municipalities.

Space Engineering: Aircraft and missiles are the concern of aerodynamic specialists, who often have a mechanical engineering background. They require and advanced knowledge of the aerodynamics of flight and the engineering principles involved in the design and instrumentation of aircraft and missile structures and of power plants.

Power Services: mechanical engineers are involved in the design, manufacture, installation and operation of a wide variety of equipment for industrial and domestic use in such fields as heating, ventilating, air-conditioning, refrigeration and automatic controls.

Nuclear Energy: the mechanical engineer's training prepares him for many diverse activities associated with nuclear engineering; these range from the thermal and structural design of reactors and their special components to highly specialized equipment used in radiation medicine and radiography.

Bioengineering: a challenging area of interdisciplinary study combines engineering with the biological and medical sciences in the design and development of equipment and instrumentation in hospitals and medical laboratories, research in physiology, biophysics, orthopaedics, studies in the control of air and water pollution, and noise abatement.

The mechanical engineer, like all engineers, must work in close harmony with the scientists, the technician and the draftsman, as well as with individuals whose disciplines are often quite remote from engineering. He must, above all, have an insatiable curiosity about *why* things work as well as *how* they work.

THIRD YEAR PROGRAM – OPTION E – MECHANICAL ENGINEERING

		Hours/Week	
		Lecture	Laboratory/ Problem
E.S. 302	Mechanics of Materials	2	0
E.S. 303	Fluid Mechanics (1st term)	2	0
E.S. 304	Thermodynamics	2	0
E.S. 305	Electronics (2nd term)	2	0
E.S. 306	Electromechanics (1st term)	2	0
E.S. 307	Heat Transfer (2nd term)	2	0
E.S. 340	Mechanical Engineering Laboratory I	0	6
E.S. 341	Mechanical Analysis and Design I	3	3
E.S. 353	Mechanical Properties of Materials	2	0
Appl. Math.370	Engineering Mathematics III	2	0
Humanities or Social Sciences Elective		3	0
"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."		22	9

DESCRIPTION OF COURSES

E.S. 302. Mechanics of Materials II. A continuation of E.S. 202 to include theory of buckling, elastic theories of failure, variation of shearing stress, deflection due to shear, stresses in thick spheres and cylinders, and energy methods. The laboratory work is designed to elucidate and extend the knowledge gained from lecture material.
2 lecture hours – 23

E.S. 303. Fluid Mechanics. Additional principles of incompressible and compressible fluid flow: dimensional analysis, dynamic similarity, fluid resistance, ideal (potential) flow, frictionless compressible flow; application of basic principles: fluid measurements, flow in closed conduits and open channels, aerodynamics, turbomachinery.
2 lecture hours, first term

E.S. 304. Thermodynamics. Properties of a pure substance, first law of thermodynamics, processes in open and closed systems, second law of thermodynamics, ideal gases, mixture of ideal gases, and psychrometry, compressors and ideal power cycles, introduction to heat transfer.
2 lecture hours – 11

E.S. 305. Electronics. Characteristic behavior of vacuum tube and semiconductor devices, and their use in linear amplifiers, oscillators and measuring instruments.
2 lecture hours, second term – 17

E.S. 306. Electromechanics. Characteristics and applications of dc generators and motors; ac power generation and transmission; ac motors; transformers.
2 lecture hours, first term

E.S. 307. Heat Transfer. Principles of heat transmission by conduction, convection and radiation.
2 lecture hours, second term – 3

E.S. 340. Mechanical Engineering Laboratory I. This course supports and supplements those courses which are given in the Third Year mechanical option. Students work in small groups on engineering experiments, utilizing equipment in the thermal power, fluid mechanics, mechanics of materials, electrical, chemical, experimental analysis and material science laboratories.
6 laboratory hours

E.S. 341. Mechanical Analysis and Design I. Displacement, velocity and acceleration analysis of linkage mechanisms, static and inertia force analysis of mechanisms with particular application to reciprocating engine mechanical analysis; determination of indicated torque, horsepower and speed regulation; balancing of rotating and reciprocating masses; vibration analysis of single degree of freedom systems; gyroscopic forces. Analysis and principles of design of cams, gears, gear-trains, belt and rope transmissions, clutches and brakes.
2 lecture, 3 problem hours – 36

E.S. 353. Mechanical Properties of Materials. Elasticity, plasticity and fracture. Mechanical testing. The working and forming of materials.
2 lecture hours – 31

Appl. Math. 370. Engineering Mathematics III. This is a general course in Applied Mathematics for Third Year Engineering students, covering the following topics. First Term: finite differences, difference tables, interpolation, numerical differentiation and integration, numerical solutions of differential equations, direct and iterative methods for solving linear algebraic equations. Second Term: linear algebra, elementary probability theory, Fourier series.
3 lecture hours – 26

FOURTH YEAR PROGRAM – OPTION E – MECHANICAL ENGINEERING

		Hours/Week Lecture	Laboratory
E.S. 400	Project, Report and Seminar	0	5
E.S. 408	Engineering Practice	3	0
E.S. 414	Instrumentation and Control	2	0
E.S. 440	Mechanical Engineering Laboratory II	0	6
E.S. 444	Experimental Measurement and Analysis (1st term)	1	1½
E.S. 447	Manufacturing Processes	2	0
Humanities or Social Sciences Elective		3	0
"Any student may replace the Humanities or Social Science Elective by any other full course or its equivalent, provided that this change is approved by the Chairman of the Undergraduate Division of the Executive Committee."			
Appl.Math.403B Statistics (2nd term)		1½	0
Any two of the following courses chosen with the approval of the Chairman of the Mechanical Engineering Option.			
E.S. 411	Mechanical Analysis and Design II		
E.S. 442	Heat Transfer		
E.S. 443	Applied Thermodynamics	2/4	3/0
E.S. 445	Fluid Mechanics II		
E.S. 446	Mechanical Vibrations		
E.S. 456	Properties of Engineering Materials (1st term only)		
with			
E.S. 453	Corrosion and Wear (2nd term)		
Electrical Option course			
Civil Option course			
Optional courses will only be given provided that a sufficient number of students register for the course.		14½/16½	15½/12½

DESCRIPTION OF COURSES

E.S. 400. Project, Report and Seminar. Selection and investigation of an engineering problem. Analytical and/or experimental work is carried out by individual students or project groups under the supervision of a faculty member. Progress reports and a final engineering report are prepared; each student must deliver a public lecture.

A student who, in connection with another course, undertakes a project which culminates in the preparation and presentation of a report and and which meets all the requirements of E.S. 400, may with the permission of the Chairman of his Group, substitute a technical elective for E.S. 400.
5 hours

E.S. 408. Engineering Practice. A discussion of the structure and operation of business organizations with emphasis on the following functions and disciplines: financial control, marketing, organizational behavior, production and general management. Cases and business problems are analyzed in such a manner as to relate the engineer to his economic and industrial environment. Lectures are also included on other topics including labor, law, professional ethics and practice.
3 lecture hours

E.S. 414. Instrumentation and Control. Theory and application of automatic control of variables in industrial processes.
2 lecture hours – 21

E.S. 440. Mechanical Engineering Laboratory II. This course supports and supplements the work given in E.S. 442, 443 and 445. Students work in small groups on engineering experiments and projects, using equipment in the thermodynamics, fluid mechanics, experimental analysis and computer laboratories.
6 laboratory hours

E.S. 441. Mechanical Analysis and Design II. Functional, physical and economic selection and design of machine components; manufacturing processing of components; creative analysis and design problems in which project synthesis is emphasized. Principles of experimental analysis: photo-elasticity, photostress, transducers, instrumentation, techniques and evaluation in static and dynamic measurement of variables such as strain, pressure, vibration, sound, flow.
2 lecture, 3 laboratory hours – 2

E.S. 442. Heat Transfer. Principles of heat transmission under conduction, convection and radiation. Discussion of boiling and condensation. Energy conversion and transmission involving fluids in the vapor state, with applications to steam power or process plant. Introduction to nuclear energy conversion.
2 lecture hours – 25

E.S. 443. Applied Thermodynamics. Refrigeration, one-dimensional compressible fluid flow, gas-turbine cycles and components, jet propulsion, psychrometry, heating- and cooling-load calculations, air conditioning, combustion and effects of dissociation, general themodynamics relationships.
2 lecture hours – 7

E.S. 444. Experimental Measurement and Analysis. Selected topics in creative design and application of principles of experimental analysis: photoelasticity, photostress, transducer instrumentation techniques and evaluation. First term.
1 lecture hour, 1½ laboratory hours

E.S. 445. Fluid Mechanics II. Selected topics in Fluid Mechanics, including (a) Gas Dynamics – isentropic flow through nozzles; diabatic flow with heat addition; adiabatic and isothermal flow with friction; normal and oblique shock waves; analysis of the ram-jet and rocket; (b) fluid vibrations and sound, water-hammer; (c) fluid turbo-machinery theory and performance characteristics of centrifugal and axial flow fans, compressors, pumps and turbines; and (d) introduction to fluid power control and fluid amplifiers.
2 lecture hours – 11

E.S. 446. Mechanical Vibrations. Single and multi-degree of freedom systems, torsional vibrations, Holzer's method, matrix iteration, continuous systems, vibration of strings, rods and beams, Rayleigh's method, Rayleigh-Ritz method, Dunkerley's formula, whirling of shafts, Lagrange's equations.
2 lecture hours – 9

E.S. 447. Manufacturing Processes. The relationships between design, material selection and process choice in general manufacture as they apply to modern technology.
2 lecture hours

E.S. 453. Corrosion and Wear. Corrosion principles, types of corrosion, corrosion protection; friction, wear, lubrication, bearing materials. Second term.
1 lecture hour

Undergraduate Medals

Professional Engineers Gold Medal: Awarded annually by the Association of Professional Engineers of the Province of Ontario to the fourth year student enrolled in any Engineering Science option with the highest aggregate percentage for the final examinations of the four years of his undergraduate course provided that the student obtains first class honors standing in the work in his final year.

Harry Cross Medal: This medal is the gift of Mr. J.R. Cross in memory of his father, the late Harry Cross. The award, a silver medal, is made annually to the fourth year student enrolled in the Electrical option of Engineering Science with the highest aggregate percentage for the final examinations of the Third and Fourth years, provided that the student obtains first class honors standing in the work of the final year.

Board of Governors Medals: Silver medals may be awarded by the Board of Governors to those fourth year students obtaining highest standing in options

other than Electrical Engineering Science. The regulations governing awards shall be similar to those applying to the Harry Cross Medal.

Awards and Prizes

Engineering Institute of Canada Prize: This award in the amount of $50 is conferred on the student who in his third year has made the greatest contribution to student engineering society affairs and at the same time has maintained a good academic record.

Engineering Institute of Canada (London Branch) Best Paper Award: This award, in the amount of $50, is presented to the student in his fourth year, whose project, presentation and thesis has been judged to have the greatest merit with regard to originality, scope, technical content and written and verbal presentation.

W.W. Tamblyn Prize: $75 for the highest standing in the use of language (English Composition and Public Speaking) at the first year level. The capital fund for this prize was bequeathed to the University by the late W.W. Tamblyn of Bowmanville and by his son, the late Professor W.F. Tamblyn of London, formerly Head of the Department of English in this University.

Canadian Construction Association Thesis Prize: $50 and an engineer's handbook awarded to the fourth year student in Engineering Science with the best thesis on the subject of construction. Prize winning theses to be reviewed by the Division of Building Research of the National Research Council and the Canadian Construction Association Research and Education Committee with an additional $100 prize for outstanding theses.

Chemical Institute of Canada Prize: $25 to the student with the highest academic standing in the penultimate year of Chemical Engineering.

Student Road Safety Competition: The Engineering Institute of Canada supported by the North American Life Assurance Company sill be sponsoring a Student Road Safety Competition in 1968-69. This is a competition for all undergraduate engineering students in Canada on ideas and methods to reduce motor vehicle accidents and thereby increase road safety. The awards include, a first prize of $1,000.00, second price of $600.00, third prize of $400.00 and a fourth prize of $200.00. New or novel ideas are particularly desired. The only stipulation is that such ideas should be within reasonable economic reach and possible within the next 10 to 15 years. Contestants are encouraged to select their own subjects but may coordinate the subject or form of presentation to suit thesis requirements. Presentations may be made by groups of students providing all are eligible; any awards would then be made to the group.

Members of the Faculty of Engineering Science

Dean

R.M. Dillon, MC, BA, SM *MIT;* PEng

Professors

W. Bulani, BSc, MSc *Saskatchewan;* PhD *McGill.* Chairman, Chemical Engineering Group

A.G. Davenport, BA, *Cantab.;* MASc *Toronto;* PhD *Bristol;* PEng

J.E.K. Foreman, BASc *Toronto;* MME *Cornell;* PEng. Chairman, Mechanical Engineering Group

G.A. Geach, BSc, MSc, PhD *Sheffield;* FIM, PEng

L.S. Lauchland, ED, BASc, MASc *Toronto;* PEng

M.P. Poucher, BSc, MSc, DIC *London;* PEng. Chairman, Civil Engineering Group

Associate Professors

J. Beeckmans, BSc *London;* MASc, PhD *Toronto*

M.A. Bergougnou, MS *Nancy;* PhD *Minnesota*

J.D. Brown, BSc *McMaster;* PhD *Maryland.* Chairman, Materials Science Group

G.F.H. Chess, CD, BASc *Toronto;* MEng *McGill;* PEng

W.H. Davis, BASc *Toronto;* PEng

G.S. Emmerson, BSc, ARCST *Glasgow;* MSc *London;* PEng. Chairman, Core Studies Group

I.I. Inculet, Dipl Ing *Bucuresti;* MSc *Laval;* PEng. Chairman, Electrical Engineering Group

M. Novak, Dipl Ing *Prague;* PhD *Acad. Sc. Prague*

E.S. Nowak, BEng *McGill;* MSME, PhD *Purdue;* PEng

A.T. Olson, BSc *Queens;* MSc *Birmingham*

R.M. Quigley, BASc, MASc *Toronto;* PhD *MIT;* PEng

K.A. Shelstad, BE *Saskatchewan;* MSc *Dalhousie;* PhD *Toronto*

R.K. Swartman, BSc, MSc *Queen's;* PEng

B.J. Vickery, BE, PhD *Sydney;* PEng

J.E. Zajic, BA *Kansas;* MS *Wisconsin;* PhD *Davis, California;* JD *Oklahoma*

Assistant Professors

S.H. Abu-Sitta, BSc *Cairo;* PhD *London;* PEng

C.G.J. Baker, BSc *Eng.;* DIC, PhD *London*

T.E. Base, HNC, BSc *Bristol;* MSc *Brown*

T. Bonnema, BSc *Queen's;* MASc *Toronto;* PhD *Purdue;* PEng

G.S.P. Castle, DIC *London;* PhD

S.M. Dickinson, PhD *Nottingham;* CEng

I.J. Duerden, BSc *Leeds;* DPhil *Oxon,* AIM

A.J. Frick, BE *Adelaide;* ScM, PhD *Brown*

N. Kosaric, MESc *Zagreb;* PhD

C.E. Livingstone, MSc *British Columbia;* PhD

J.A. MacDonald, BE *N.S. Tech;* MSE *Michigan;* PEng

W.H. Peacock, BASc, MASc *Toronto;* PhD *Berkeley, California;* PEng

P.A. Rosati, BA, MA *Oxon;* MESc

C. Roy, BSc *Laval;* DIC, PhD *London;* PEng

J. Sheasby, BSc *Birmingham;* PhD *New South Wales,* AIM

M.H. Sherebrin, BSc *Manitoba;* MSc, PhD

J.W. Stewart, CD, BA, BSc *Saskatchewan;* MSc *Michigan;* PEng

J.D. Tarasuk, BASc, MASc *Toronto;* PhD *Saskatchewan*

P.O. Wilkins, BMus *Roch;* MS *Hawaii;* PhD *Penn.*
Assistant Professor, Bateriology

Senior Lecturer

Elizabeth Barton, BSc *London;* ARCS (Joint Appointment – Applied Math.)

SESSIONAL STAFF

Assistant Professor

N. Isyumov, BESc, PEng

L.D. Macdougall, BEng *McGill;* PEng

V. Vitols, PhD *Michigan*

Lecturers

E.M. Aziz, BESc, MSc, DIC *London;* PEng

A.M. MacKenzie, BASc *Toronto;* OLS, PEng

P.J. Sullivan, BASc, MASc *Waterloo;* PhD *Cantab*
(Assistant Professor, Applied Mathematics)

Teaching Fellow

E. Hanff, BASc *Toronto*

Faculty of Graduate Studies

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The University's "General Information" booklet presenting concise introductory information about The University may be obtained from the Office of the Dean of Graduate Studies or The Registrar's Office, The University of Western Ontario, London 72, Canada.

ACADEMIC CALENDAR
1970

May 11	Lectures commence for School of Library and Information Science Summer Term.
June 12	Last day for registration and payment of fees for all graduate students who are in residence, or are receiving official instruction, or who are on Non-Resident status. An administrative fee of $25.00 will be assessed each late registrant.*
June 29	Lectures commence for Summer School and School of Library and Information Science Summer Session.
July 5	Last day for submitting course enrollments, Registrar's Office, Stevenson Hall, for Summer Term or Summer Session. Course enrollments subsequent to this date, and all course changes, will be subject to an administrative fee of $10.00 per transaction.*
August 7	Last day for submission of PhD theses to departments for examination in time for Autumn Convocation.
September 1	All applications for new students in the Faculty of Graduate Studies, and for students beginning work in a new degree program, should be received by this date. Applications received later than this date may not be processed in time for registration for the Fall Term. Late registration, by reason of late application, will be the responsibility of the student, and will be subject to the usual administrative fees.*
September 14	Lectures commence for the Fall Term.
September 25	Last day for submission of Master's theses to departments for examination in time for Autumn Convocation.
October 2	Last day for registration and payment of fees for all students in the Faculty of Graduate Studies. An administrative fee of $25.00 will be assessed each late registrant after this date.*
October 9	Last day for submitting course enrollments. Course enrollments subsequent to this date, and all course changes, will be subject to an administrative fee of $10.00 per transaction.*
October 9	Last day for oral examinations of PhD and Master's candidates for Autumn Convocation.
October 12	Thanksgiving Day.
October 14	Last day for submission of theses to appropriate libraries in time for Autumn Convocation.
October 20	Meeting of the Executive Committee of the Faculty of Graduate Studies for approval of candidates for Autumn Convocation.
October 30	Autumn Convocation.
December 12	Fall Term ends. Christmas vacation begins.

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January 4	Lectures resume after Christmas vacation. Winter Term begins.
January 15	Last day for registration and payment of fees for all students in the Faculty of Graduate Studies for the Winter Term. An administrative fee of $25.00 will be assessed each late registrant after this date.*
January 15	Last day for submission of course enrollments for courses begun in the Winter Term. Course enrollments subsequent to this date, and all course changes will be subject to an administrative fee of $10.00 per transaction.*
February 22-27	Conference Week.
March 5	Last day for submission of PhD theses to departments for examination in time for Spring Convocation.
April 9	Good Friday.
April 10	Winter Term ends.
April 23	Last day for submission of Master's theses to departments for examination in time for Spring Convocation.
April 30	Last day for oral examinations of PhD and Master's candidates for Spring Convocation.
May 5	Last day for submission of theses to appropriate libraries in time for Spring Convocation.
May 11	Meeting of Executive Committee of the Faculty of Graduate Studies for approval of candidates for Spring Convocation.
May 28**	Spring Convocation.
June 11	Last day for registration and payment of fees for all students in the Faculty of Graduate Studies. An administrative fee of $25.00 will be assessed each late registrant after this date.*

*Fees are due and payable on or before the designated date for each term. Notification of fees due will be mailed to each student in advance, provided he ensures that the Registrar's Office is always aware of his current address.

Administrative fees for late registration and late course enrollments are not wholly punitive, but reflect the additional cost to the University of registering students out of phase. They will, therefore, be assessed universally and without exception.

It is the student's responsibility to ensure that his fees are paid on time, and that other deadlines are met, notwithstanding any attempts by the University to ensure that deadlines are advertised in advance. If a student knows he cannot personally register by the designated day, he should arrange for someone to register on his behalf. Alternatively, he may forward his fees by mail to the Fees Supervisor, Stevenson Hall. Cheques must be made payable to The University of Western Ontario and should include exchange.

**This date has not been officially approved and may be subject to change.

SENATE ELECTIONS 1970

Call for nominations of eligible candidates to represent the Faculty of Graduate Studies as required by The University of Western Ontario Act, 1967: Up to October 15, 1970.

Polling of Ballots – November 24-30, 1970.

COMMITTEES OF THE FACULTY

Dean of the Faculty

James Alexander Franklin Stevenson, MD, CM

Assistant Deans

Howard Wesley Baldwin, PhD

William John McClelland, PhD

Associate Registrar

Richard Paul McCutcheon, BA

Administrative Assistant

Gwen Taylor

EXECUTIVE COMMITTEE OF THE FACULTY, 1969-70

Chairman

Dean J.A.F. Stevenson

Members

Ex officio: H.W. Baldwin, K.H. Burley, H.C. Clark, J.F. King, W.J. McClelland, E.G. Pleva, R.J. Rossiter, V.W. Sim, D.C. Williams; *Representatives of Faculty of Graduate Studies on Senate:* W.E.D. Atkinson, H.W. Baldwin, C.C. Bigelow, J.H. Blackwell, W. Bulani, R.H. Cole, P.A. Forsyth, M.J. Hollenberg, R.W. Packer, M.M. Schnore; *Chairmen of Divisional Committees:* J.W. Davis, A.C. Groom, F.G. Lyon, W.R. Wightman; *Chairmen of Professional Degree Committees;* J.M. Beeckmans, W.J. Cameron, A.E. Griffin, R.C. Hodgson, D.A. McKellar, E.R. Plunkett; *Representatives of Divisions:* W.M. Dobell, P.W. Jacobs, W.C. McMurray, R.M. Stingle; *Graduate Students:* T.C. Dubas, C.B. Gunn, G.C. Johnstone, H. Kreek, E. Lilygreen, S.J. Michna, W.D. Staples.

ARTS

Chairman

J.W. Davis

Members

Ex officio: W.J. McClelland, J.G. Rowe, J.A.F. Stevenson, C. von Kuster; *Representatives of Departments and Professional Committees:* W. Burghardt, W.S. Bush, P.G. Downs, D.A. McKellar, H. Spencer, D.P. Stanley-Porter, R.M. Stingle; *Representative of Faculty of Graduate Studies on Senate:* W.E.D. Atkinson; *Graduate Student:* E. Lilygreen.

BIOSCIENCES

Chairman

A.C. Groom

Members

Ex officio: H.W. Baldwin, D. Bocking, G.L. Reuber, A.E. Scott, J.A.F. Stevenson; *Representatives of Departments and Professional Committees:* R.C. Gardner, M.D. Haust, L.W. Hersey, M.H.A. Keenleyside, W.L. Magee, E.L. Medzon, D.G. Montemurro, A.H. Neufeld, E.R. Plunkett, C.G. Rand, J.A.F. Stevenson, D.B. Walden, M.H. Yuhasz; *Representatives of Faculty of Graduate Studies on Senate:* C.C. Bigelow, M.J. Hollenberg, M.M. Schnore; *Graduate Students:* T.C. Dubas, G.E. Lucier, S.J. Michna, G. Young.

PHYSICAL SCIENCES

Chairman

G.F. Lyon

Members

Ex officio: H.W. Baldwin, R.M. Dillon, A.E. Scott, J.A.F. Stevenson; *Representatives of Departments and Professional Committees:* A.E. Beck, J.M. Beeckmans, D. Borwein, J.K. Carroll, T.M. Luke, J.M. Marlborough, P. de Mayo, K.A. Shelstad, J. Starkey; *Representatives of Faculty of Graduate Studies on Senate:* H.W. Baldwin, J.H. Blackwell, W. Bulani, R.H. Cole, P.A. Forsyth; *Graduate Students:* C.B. Gunn, H. Kreek, P. Watkins.

SOCIAL SCIENCES

Chairman

W.R. Wightman

Members

Ex officio: R.C. Aikin, W.J. McClelland, A.D. Osborn, G.L. Reuber, J.A.F. Stevenson, J.J. Wettlaufer; *Representatives of Departments and Professional Committees:* W.J. Cameron, D.W. Conklin, P.M. George, A.E. Griffin, R.C. Hodgson, M.R. Leenders, S.J.R. Noel; *Representative of Faculty of Graduate Studies on Senate:* R.W. Packer; *Graduate Students:* S.S. Ahmed, G.C. Johnstone, A. Meisner, S.F. Spencer, W.D. Staples.

PROFESSIONAL DEGREE COMMITTEES OF THE FACULTY, 1969-70

MASTER OF BUSINESS ADMINISTRATION

Members

Ex officio: W.J. McClelland, J.A.F. Stevenson, J.J. Wettlaufer; *Representatives of Faculty of Graduate Studies:* J.J. DiStefano, R.C. Hodgson (Chairman), J.A. Humphrey, B. Little, D.H. Thain, T.N. Warner; *Graduate Student:* W.D. Staples.

MASTER OF CLINICAL SCIENCE

Members

Ex officio: H.W. Baldwin, D. Bocking, J.A.F. Stevenson; *Representatives of the Faculty of Graduate Studies:* H.W. Barr, D.C. Bondy, D.S.M. Haines, R.B. Passi, E.R. Plunkett (Chairman), J.M. Thompson.

MASTER OF ENGINEERING

Members

Ex officio: H.W. Baldwin, R.M. Dillon, J.A.F. Stevenson; *Representatives of the Faculty of Graduate Studies:* J.M. Beeckmans (Chairman), E.A. Beecroft, I.I. Inculet, D.A. McLarty, K.A. Shelstad, J.E. Zajic.

MASTER OF LIBRARY SCIENCE

Members

Ex officio: W.J. McClelland, A.D. Osborn, J.A.F. Stevenson; *Representatives of the Faculty of Graduate Studies:* W.J. Cameron (Chairman), A.J. Jamieson, B.J. Palmer, G.R. Pendrill, R.H. Prodrick, J.H. White; *Graduate Student:* G.C. Johnstone.

MASTER OF MUSIC

Members

Ex officio: W.J. McClelland, J.A.F. Stevenson, C. von Kuster; *Representatives of Faculty of Graduate Studies:* P.G. Downs, G.K. Greene, C.F. Haenselman, D.A. McKellar (Chairman), R.A. Skelton, G.W. VanOstrand.

MASTER OF SCIENCE IN NURSING

Members

Ex officio: R.C. Aikin, W.J. McClelland, J.A.F. Stevenson; *Representatives of Faculty of Graduate Studies:* A.E. Griffin (Chairman), D.M. Hibbert, E.N. Healey, E.M. Horn, T.I. Potter, V. Wood.

STANDING COMMITTEES OF THE COUNCIL OF THE FACULTY, 1969-1970

ARTS AND SOCIAL SCIENCES AWARDS COMMITTEE

Members

A.R. Anderson, K.H. Burley, D.A. Chambers, D.F. Chapin, W. Flint, J.J. Leach, J.C. Ogelsby, V.W. Sim (Chairman).

BIOSCIENCES AND PHYSICAL SCIENCES AWARDS COMMITTEE

Members

W.H. Davis, J.A. Fulford, M.J. Hollenberg, J.F. King (Chairman), P.W. Manuel, H.G. Murray, H.C. Palmer, J.E. Steele.

INTERNAL APPRAISAL COMMITTEE

Members

J.C.D. Brand, R.G.E. Murray, E.G. Pleva (Chairman), B. Rajan, J.G. Rowe, D.H. Thain.

LONG-TERM PLANNING COMMITTEE

Members

C.C. Bigelow, K.H. Burley (Chairman), W.J. Cameron, H.C. Clark, G.K. Greene, D.S.R. Leighton, J.W. McGowan, J.A.B. Somerset, D.B. Walden.

COMMITTEE ON POST-DOCTORAL FELLOWS

Members

H.C. Clark (Chairman), P.A. Forsyth, G.F. Lyon, G.J. Mogenson.

DEGREES OFFERED

The Faculty of Graduate Studies offers courses of study leading to graduate degrees as follows:

Doctor of Philosophy (PhD) in Anatomy, Applied Mathematics, Astronomy, Bacteriology and Immunology, Biochemistry, Biophysics, Botany, Business Administration, Chemistry, Economics, Engineering Science, English, Epidemiology, French, Geography, Geology, Geophysics, German, History, Mathematics, Pathology, Pathological Chemistry, Pharmacology, Philosophy, Physics, Physiology, Political Science, Psychology, and Zoology.

Master of Arts (MA) in Classics, Economics, English, French, Geography, German, History, Mathematics, Musicology, Philosophy, Physical and Health Education, Political Science, Psychology, Sociology, and Spanish.

Master of Business Administration (MBA)

Master of Clinical Science (MClSc) in Anaesthesia, Diagnostic Radiology, Medicine, Obstetrics and Gynaecology, Ophthalmology, Otolaryngology, Paediatrics, Psychiatry, Surgery, Therapeutic Radiology.

Master of Engineering (MEng)

Master of Engineering Science (MESc) in Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Materials Science.

Master of Library Science (MLS)

Master of Music (MusM) in Music Theory, Composition, Music Education, and Literature and Performance. (For Musciology, see Master of Arts above.)

Master of Science (MSc) in Anatomy, Applied Mathematics, Astronomy, Bacteriology and Immunology, Biochemistry, Biophysics, Botany, Chemistry, Computer Science, Epidemiology, Geography, Geology, Geophyiscs, Pathology, Pathological Chemistry, Pharmacology, Physics, Physiology and Zoology.

Master of Science in Nursing (MScN) in Nursing Administration and Nursing Education.

THE SOCIETY OF GRADUATE STUDENTS (SOGS)

The Society of Graduate Students, which includes all full-time graduate students except those pursuing degrees in the Master of Business Administration Program, was established in 1963-64 to give graduate students a recognized organization to voice their opinions and to promote friendship and cooperation among members of the various departments. The Society works closely and actively with the University Students' Council, the Faculty Association and the Faculty of Graduate Studies. Policy decisions in the Society are made by a Council composed of officers and elected departmental representatives.

The Society's activities include academic planning, athletics, colloquia, cultural events, social events, "Happy Hour" (Grad Pub), Grad orientation, housing and publications. SOGS also has representation on more than 20 university committees and subcommittees and has the privilege of nominating members for election to the Senate committees. Graduate Student representative on Senate (1969-70): Charles Raymond (MBA).

CONSTITUTION OF THE FACULTY OF GRADUATE STUDIES

1. Composition

The Faculty of Graduate Studies shall be comprised of the following Divisions: Arts, Biosciences, Physical Sciences, and Social Sciences.

2. Divisions

The respective *Divisions* of the Faculty of Graduate Studies shall consist of all members of the Faculty of Graduate Studies in the following departments, faculties, schools, or professional degree programs:

(a) Arts – Classics, English, French, German, Music, Mus. M. Program, Philosophy and Spanish.

(b) Biosciences – Anatomy, Bacteriology and Immunology, Biochemistry, Biophysics, Botany, Epidemiology, MCISc Program, Pathology, Pathological Chemistry, Pharmacology, Physical and Health Education, Physiology, Psychology, and Zoology.

(c) Physical Sciences – Applied Mathematics, Astronomy, Chemistry, Computer Science, Engineering Science, Geology, Geophysics, Mathematics, MEng Program, and Physics.

(d) Social Sciences – Business Administration, Economics, Geography, History, MBA Program, MLS Program, MScN Program, Political Science and Sociology.

Admission to Division

Admission of other departments, faculties, schools or professional degree programs to the Faculty of Graduate Studies shall require the following steps:

(i) application of the department, faculty, school, or professional degree program to the desired Divisional Committee, which committee shall make a detailed study of the proposed application and the resources (faculty, space, library, laboratory facilities, etc.) available.

(ii) approval of this application by the Council of the Faculty of Graduate Studies, after consideration of a recommendation from the Divisional Committee concerned.

(iii) approval of this application by the Senate, after consideration of a recommendation from the Council of the Faculty of Graduate Studies and after consultation with any other faculty that may be concerned.

Meeting of Divisions

Each Division shall meet at least once a year and at such other times as the Division, Divisional Committee, or Council may prescribe.

3. Dean and Assistant Deans

The academic and administrative head of the Faculty shall be the *Dean* of the Faculty of Graduate Studies. The Dean shall be assisted by four *Assistant Deans* representing the four Divisions of the Faculty of Graduate Studies.

Appointment of the Dean shall be made in accordance with current University policy. Appointments to the positions of Assistant Dean shall be for a term of three years, renewable. Recommendations shall be made to the Vice-Chancellor by a selection committee constituted as follows:

(i) The Vice President (Academic)

(ii) The Dean of Graduate Studies (who shall be chairman)

(iii) Four members of the Faculty of Graduate Studies elected by the Division to be represented

(iv) Two members of the Faculty of Graduate Studies from the other Divisions elected by the Council of the Faculty of Graduate Studies.

4. Appointment to Faculty

Recommendations for appointment to the Faculty of Graduate Studies shall be upon nomination from the department, faculty, school, or professional degree committee, and shall be made to the Dean by the Divisional Committee, which Divisional Committee shall give careful consideration to nominations.

5. Membership of Faculty

Members of the Faculty of Graduate Studies shall be those persons appointed to the Faculty by the Board of Governors on the recommendation of the Dean. They shall normally be of the rank of assistant professor or above and shall be of such academic achievement and distinction as to enable them to offer instruction to students registered in the Faculty.

6. Graduate Students

Graduate Students shall be those students admitted to the Faculty of Graduate Studies by the Dean on the advice of the appropriate Divisional Committee, and formally registered in the Faculty.

7. Faculty Council

There shall be a Council of the Faculty of Graduate Studies responsible to the Senate and composed of:

(a) the following *ex officio* members:

(i) the Vice Chancellor

(ii) the Vice President (Academic) and such other Vice Presidents as the Senate may determine

(iii) the Dean (who shall be Chairman of the Council) and Assistant Deans of the Faculty of Graduate Studies

(iv) the Deans of Arts, Business Administration, Engineering, Library and Information Science, Medicine, Music, Nursing, Science, and Social Science

(v) such other *ex officio* members as the Senate may, from time to time, determine.

(b) (i) all members of the Faculty of Graduate Studies

(ii) eight full-time graduate students, two from each of the four Divisions of the Faculty of Graduate Studies, plus one additional student for each 100 students or major part thereof over and above the first 100 students registered in the Division as of December 1st of the preceding year, elected by the full-time students of the Division concerned. There shall be not more than one student representative from each department, faculty, school or professional degree program, as defined in Clause 2.

(iii) such other members as the Senate may, from time to time, determine.

8. Meetings of Council

The Council shall meet at least three times each year and at such other times as the Council, Chairman or Senate may prescribe.

9. Quorum of Council

At meetings of Council a quorum shall consist of 75 members.

10. Duties of Council

The Council shall advise Senate on all matters concerning the Faculty of Graduate Studies and on matters referred to the Council by the Senate.

11. Committees of Council

The Council shall establish an Executive Committee and such other committees as it considers necessary. The Council may delegate authority to its committees, but such committees shall be responsible to the Council.

Executive Committee

1. The Executive Committee of the Council of the Faculty of Graduate Studies shall be composed of:

(a) the following *ex officio* members:

(i) the Vice Chancellor

(ii) the Vice President (Academic)

(iii) the Dean (who shall be Chairman of the Executive committee) and Assistant Deans of the Faculty of Graduate Studies.

(iv) the Chairmen of the following five Standing Committees: Arts and Social Sciences Awards, Biosciences and Physical Sciences Awards, Long-Term Planning, Post-Doctoral Fellowship, and Internal Appraisals.

(b) (i) the ten representatives of the Faculty of Graduate Studies on the Senate

(ii) the Chairmen of the four Divisional Committees of the Faculty of Graduate Studies

(iii) the Chairmen of Professional Degree Committees

(iv) four full-time members of the Faculty of Graduate Studies, one from each of the four Divisions of the Faculty of Graduate Studies and elected by them for a two-year term, once renewable

(v) eight full-time graduate students on the Council of the Faculty of Graduate Studies, two from each of the four Divisions of the Faculty of Graduate Studies, elected by the full-time students of the Division concerned.

Meetings of Executive and Quorum

2. The Executive Committee shall meet at such times as the Council or Chairman may prescribe. A minimum of 50% of the members of the Executive Committee shall constitute a quorum.

12. Divisional Committees

There shall be four Divisional Committees within the Faculty of Graduate Studies: Arts, Biosciences, Physical Sciences, and Social Sciences. Each Divisional Committee shall be responsible to the Council. It shall be composed of:

(a) the following *ex officio* members:

(i) the Dean of the Faculty of Graduate Studies

(ii) the Assistant Dean representing the Division concerned

(iii) the Deans of those faculties and schools with membership in the Division concerned.

(b) (i) one member of the Faculty of Graduate Studies elected by each department, faculty, school, or professional degree committee within the Division, one of whom shall be elected Chairman by the Divisional Committee

(ii) those representatives of the Faculty of Graduate Studies on the Senate from the Division concerned

(iii) the graduate Students on Council from the Division concerned.

13. Meetings of Divisional Committee and Quorum

The Divisional Committee shall meet at least four times each year and at such times as the Division, Chairman, or Council may prescribe.

A special meeting of the Divisional Committee shall be called on the written notice of 12 of the members of the Division concerned, and shall be convened within seven days thereafter, to consider the matter(s) set out in the notice.

A minimum of 50% of the members of the Divisional Committee shall constitute a quorum.

14. Duties of Divisional Committees

The Divisional Committee shall advise Council on appointments to Faculty, new graduate programs, admission of students, and on other matters concerning the Division (e.g., progress of students, appointment of examiners, etc.), and on matters referred to the Divisional Committee by the Council.

15. Divisional Subcommittees

The Divisional Committee shall establish such subcommittees as it considers necessary. The Divisional Committee may delegate its authority to departments, faculties, schools, or professional degree committees within its Division, or to duly constituted subcommittees. Such bodies shall however remain responsible to the Divisional Committee.

16. Professional Degree Committees

There shall be a series of *Professional Degree Committees* for those professional degree programs within the Division concerned. Each Professional Degree Committee shall be responsible to the Divisional Committee. If the Council so decides, the Professional Degree Committee may report directly to the Council.

The Professional Degree Committee shall be composed of:

(a) the following *ex officio* members:

(i) the Dean of the Faculty of Graduate Studies

(ii) the Assistant Dean representing the Division concerned

(iii) the Dean of the faculty or school offering the professional degree program

(b) (i) six members of the Faculty of Graduate Studies elected by the members of the professional degree program

(ii) the representative(s) of the Faculty of Graduate Studies on Senate from the professional degree program concerned

(iii) the graduate student(s) on Council from the professional degree program concerned

The professional Degree Committee shall elect a chairman from within its own membership. The chairman may be a Dean of the faculty or school offering the professional degree program.

17. Meetings of Professional Degree Committees and Quorum

A Professional Degree Committee shall meet at such times as the Division, Chairman, or Council may prescribe. A minimum of 50% of the members of a Professional Degree Committee shall constitute a quorum.

18. Duties of Professional Degree Committees

A Professional Degree Committee shall advise the Divisional Committee or Council on matters concerning the professional degree program and on matters referred to the Professional Degree Committee by the Divisional Committee or Council.

19. Area Committees

A Divisional Committee, or groups of Divisional Committees, may establish such other committees, including Area Committees, to represent unusual interdisciplinary groupings, or for other purposes, as it considers necessary. The Divisional Committee may delegate authority to such Area Committees, but these committees shall be responsible to the Divisional Committee(s).

20. Appeals

Appeals concerning admissions, examinations, supervisors, theses, and other matters should be made in writing to the Dean of the Faculty of Graduate Studies, with a copy to the chairman or Dean of the department, faculty, school, or professional degree committee concerned. On receipt of such an appeal, the Dean of the Faculty of Graduate Studies shall appoint an *ad hoc Appeals Committee* consisting of:

(i) at least two members of the Faculty of Graduate Studies from the department, faculty, school, or professional degree program concerned

(ii) at least two members of the Divisional Committee concerned, but from another department, faculty, school, or professional degree program.

The Appeals Committee shall report to Council. If: (a) the appeal is rejected by Council, and (b) the plaintiff so requests, the Dean shall transmit all relevant material, including the report of the Appeals Committee and the decision of Council, to the Senate Appeals and Petitions Committee, whose decision shall be final.

21. By-laws and Procedure

The by-laws and regulations for the conduct of the proceedings of Council, its Executive Committee, Divisional Committees, Professional Degree Committees, Area Committees, and all other committees or subcommittees within the Faculty shall, where practicable, be those adopted by the Senate.

22. Student members of Council shall be excluded from Council and other committee or subcommittee meetings when academic standing or scholastic offenses of students are to be discussed and may be excluded when the Council, committee, or subcommittee, by a majority vote, deems their participation inappropriate.

GENERAL ADMISSION REQUIREMENTS

Programs leading to M.A., M.Sc., M.E.Sc. and Ph.D. Degrees

Applicants for admission normally must be graduates of a recognized University, College or Institute, and provide evidence or promise of scholarly achievement.

Admission to the Faculty of Graduate Studies is granted by the Dean only on recommendation of the Department or Division in which the applicant intends to work toward completion of degree requirements. Ordinarily at least second class (or B) standing (or equivalent grade point average) is required; in exceptional cases, where high quality performance in post-baccalaureate work can be substantiated, admission may be granted without this requirement.

Admission with Full Standing is normally accorded applicants who are graduates of an Honors (or four year) program of an accredited institution, and who have intensive specialization in the subject matter of their chosen discipline.

Admission to Prerequisite Year may be recommended for students intending to proceed to a graduate degree, but who are graduates of an ordinary, general or three-year program of an accredited institution and are deficient in degree of specialization in their discipline. The courses taken in the Prerequisite Year are to be chosen on the recommendation of the departments concerned, and should normally include at least five undergraduate courses. Students in a Prerequisite Year are not considered degree candidates until, on satisfactory completion of the prescribed courses, their Department or Divisional Committee formally recommends to the Dean a change in their registration status. Retroactive credit for residence time toward degree requirements cannot be given.

Admission as Special Graduate Student may be recommended for students whose background preparation is difficult to evaluate. Such students are not considered degree candidates until such time as their Department or Divisional Committee formally recommends to the Dean a change in their registration status. At that time a student may be granted retroactive credit toward a degree for courses completed and residence time fulfilled, up to one academic year.

Degree Candidacy. Change in designation will be made by the Dean only on recommendation of the student's department or Divisional Committee; retroactive registration may be granted for not more than one year.

Students with less than a "B" average in an ordinary (three-year) degree program (or equivalent) who wish to undertake graduate studies may be advised by the department to which they make application to register as special students in the appropriate undergraduate Faculty. Admission to the Faculty of Graduate Studies would be considered on the basis of achievement in that year of study, which should ordinarily be comprised of five undergraduate courses selected in consultation with the department concerned.

Students who have not a clearly expressed intention of proceeding to completion of all requirements of a graduate degree and who propose to take undergraduate courses (i.e. students attempting to 'upgrade' for Ontario Type A teaching certification and students attempting to improve their academic record for application – or reapplication – to a professional program) are recommended to register as special students in an undergraduate Faculty.

Honors Bachelor's degree holders who, as a result of changing their field of specialization, are required to take all or a majority of undergraduate courses in their first year will be admitted with **Full Standing** and pay normal graduate fees.

Students classified as **Special Graduate Students** will be accorded all privileges of **Full Standing** and pay normal graduate fees.

Application

(Procedure for all applicants except those in Business Administration)*

An Application for Admission form may be obtained from the Faculty of Graduate studies or from the Faculty or Department concerned. The completed form should be returned, together with two copies of certified official undergraduate and graduate transcripts covering all academic studies to date. It is the responsibility of each applicant to ensure that all documents, i.e. transcripts and letters of recommendation, are submitted. A graduate of a university outside North America may be required to submit a description of all courses taken in his field of specialization and cognate fields. No application will be considered until it is complete. This procedure must be followed even if the applicant has corresponded with a Department and has been assured of space and facilities for research. An applicant will receive notification from the Office of the Dean of Graduate Studies of the decision concerning his application.

Language Proficiency

Applicants for admission to Graduate Studies may be asked to furnish evidence of their proficiency in the use of the English language by satisfactory achievement in the University of Cambridge Certificate of Proficiency in English examination or the Test of English as a Foreign Language administered by the U.S. Educational Testing Service. (Application forms for the latter are available in the Office of the Faculty of Graduate Studies, The University of Western Ontario.) The student will bear the cost of taking such examinations.

*For procedure in Business Administration, write directly to the School of Business Administration, The University of Western Ontario, London 72, Canada.

Graduate Record Examinations

Applicants for admission to Graduate Studies may be asked to take the Graduate Record Examinations which are prepared by the Educational Testing Service of Princeton, New Jersey and Berkeley, California and administered on campus several times each year. The student will bear the cost of taking such examinations. Application forms* are available in the Office of the Faculty of Graduate Studies, The University of Western Ontario.

General Information for Prospective Students from Outside North America

A general information booklet for prospective students from outside North America may be obtained from the Office of the Faculty of Graduate Studies.

INTER-UNIVERSITY CO-OPERATION

Arrangements have been made to enable students registered in one Ontario university to take graduate courses in another Ontario university. The departmental chairman must request admission for his student from the departmental chairman of the host university. Unless the host chairman agrees, the transfer will not take place. If the host university agrees to accept the transfer student, there will be no further admission requirements.

A transfer student must enrol and pay regular fees in his home university and register in a course but pay no fees to the host university. The home university will accept the grade reported by the host university and will grant appropriate course credit on the student's program. Work done as a transfer student will be credited towards the residence requirement. Student awards will not be affected by transfers.

UNIVERSITY HEALTH SERVICES

Physical Examination

A physical examination by a practising physician is required of all students who are enrolling in this University for the first time as intramural students in the Winter Term. The submission of this report on the pro forma supplied is the responsibility of the incoming student prior to registration.

Health Service on Campus

The Health Service Clinic is in Somerville House where students, while at University, may consult the University physicians for general medical care. A counselling service for students with personal problems is also available.

Testing for Tuberculosis

All students must take a skin test for tuberculosis at the time arranged during the school year. Students showing a positive reaction must have a chest x-ray which is to be repeated each year. No further skin testing will be carried out on previous known positives. Students showing a negative reaction are to have the skin test repeated each year.

Hospital Services Insurance

Hospital insurance is NOT provided by the University. Hospital insurance offered by the Ontario Hospital Services Commission is the only form of basic hospital insurance permitted in Ontario. It is the student's responsibility to obtain the necessary coverage under the Ontario Hospital Services Insurance Plan. Coverage does not become effective for three months from time of application for Ontario Hospital Insurance. The premium is $16.50 for three months for a single person and $33.00 for three months for a family, payable in advance.

Students from other provinces who already have hospital insurance are urged to ascertain, before coming to Ontario, if their policies will be honoured in Ontario hospitals and for how long.

Students from outside Canada should apply for Ontario Hospital Insurance as soon as possible after arriving in Ontario. For the three-months waiting period, those who are landed immigrants may avail themselves of Blue Cross Insurance.

Students are reminded that if they do not hold hospital services insurance and are required, by reason of accident or illness, to enter hospital, they may incur charges of more than $50.00 per day.

Medical Services Insurance

Medical services insurance offered by Ontario Health Services Insurance Plan (OHSIP), is now the only form of basic medical insurance permitted in Ontario.

Ontario Residents

Students under the age of 21 should normally be covered under their parents' coverage. If they do not qualify as dependents they may submit an application for coverage. If you have just turned twenty-one years of age and apply within 30 days of your 21st birthday, OHSIP protection will begin on the first day of the month following that in which your application is received by the Health Insurance Registration Board.

If you are covered as an eligible dependant on someone else's contract - and you apply within 30 days following your 21st birthday — there will be no break in your OHSIP protection: your own contract will be effective on your birthday.

Premium Assistance is available immediately to students over the age of 21 years who have been residents of Ontario for at least 12 consecutive months prior to the date of their application. Students from outside Canada must complete the 12 months residency requirement before becoming eligible for Premium Assistance. Eligibility for Premium Assistance is based on the student's total taxable income for the year ending Dec. 31st., last. Students under 21, in addition to the above, must submit a signed statement stating, that to their knowledge they are not being declared as dependents for Income Tax purposes, in order to get premium assistance.

Students may also apply for Temporary Assistance if they are unable to pay their premiums because of illness, disability, or unemployment. Applications for this assistance may be obtained by writing to: Health Insurance Registration Board, Medical Services Administration Section, 2195 Yonge Street, TORONTO 7, Ontario.

If you do not now have any form of Health Insurance, OHSIP coverage begins 3 months after your application and first Premium Payment is received. Students may avail themselves of Blue Cross Insurance during this waiting period.

Canadians From Outside Ontario

Students who are normally residents of other provinces in Canada should obtain their medical coverage in the province of their residency, since that insurance usually costs less than does Ontario's.

However, if you intend to remain an Ontario resident and have lived in the province for at least 90 days but for less than 120 days, your OHSIP protection will begin on the first day of the month following that in which your application is received.

Students From Outside Canada

Students coming from outside Canada may make application for OHSIP coverage. However, they must have lived in the province for at least 90 days but less than 120 days. OHSIP protection will begin on the first day of the month following that in which the application and premium payment are received.

Blue Cross Insurance is available for the three month waiting period for those who are landed immigrants. The cost for this period is: Single — $7.50; Family — $22.50.

The Student Health Service in Room 133, Somerville House, has application forms and is prepared to assist those students who wish to make application for Ontario Hospital Insurance, OHSIP, or Blue Cross Insurance.

REGULATIONS GOVERNING ADVANCED DEGREES

General

Academic Year

The academic year in the Faculty of Graduate Studies consists of three terms (Fall or third term, Winter or first term, and Summer or second term), commencing on or about September 15, January 15, and May 15. The minimum residence requirement for an academic year is two terms. This does not reduce the requirement of paying for three terms in order to receive credit for one year of residence. In most Departments residence for a certain number of Fall and Winter Terms is required.

Adding and Dropping Courses

Following registration, a student may add or drop courses (whether graduate or undergraduate) only with the joint approval of the Dean of Graduate Studies and the Department in which the student is registered or the appropriate Divisional Committee on Graduate Studies. Changes must be made before the following dates:
November 13--for Fall Term only course or for a two-term course
March 1--for Winter Term only course
August 2--for Summer Term only course

A student wishing to change a course after these dates must obtain permission in the form of an explanatory letter from his Department and the approval of the Dean of Graduate Studies. A fee may be charged for changes in course enrolment (see Academic Calendar).

Illness

Should a student suffer from an illness or accident which might impair his academic performance, documentary evidence from a physician must be submitted to the Department concerned or the appropriate Divisional Committee on Graduate Studies as soon as possible. Unless medical evidence is presented at this time it may not be considered in support of a subsequent appeal.

Examinations Other Than Regular Examinations

(a) **Graduate Students Taking Undergraduate Courses**

Supplemental Examinations: A graduate student may apply to the Dean of Graduate Studies for permission to write a Supplemental Examination on the recommendation of the Department responsible for the course in which the student is registered. To be eligible to write a Supplemental Examination the student must have

(i) passed two-thirds of the year's work
(ii) obtained at least 40% in the course concerned

Deferred Examinations: A graduate student may receive permission from the Dean of Graduate Studies to write a Deferred Examination only on compassionate grounds.

Special Examinations: A Special Examination is an examination other than a regular or Supplemental examination. Permission to write a special Examination must be obtained from the Dean of Graduate Studies on the recommendation of the appropriate Divisional Committee and the Department responsible for the course in which the student is registered.

(b) **Graduate Courses**

For graduate courses **Special Examinations** only are permitted. Permission to write a Special Examination must be obtained from the Dean of Graduate Studies on the recommendation of the appropriate Divisional Committee and the Department responsible for the course in which the student is registered.

Reporting of Examination Results

Graduate students are expected to maintain at least a B average in their major courses, and at least a B average throughout their program.

All examinations within the Faculty of Graduate Studies will be reported as follows:

Major Courses

Major courses are usually courses offered by the Department (or Departments if the student is registered in a joint program) in which the student is registered.

A	Above 80%
B	70 - 79% inclusive
C	60 - 69% inclusive
COMPLETE	(only for requirements other than full courses, e.g. thesis, field trips, etc.)
F	Fail, i.e. less than 60%
INCOMPLETE	(This will be interpreted "no grade received" and will be removed from the record if or when a grade is submitted.)

Note: (1) Either a numerical or a letter grade may be submitted by the Department to the Registrar.

(2) The Medical Science Departments require Students to obtain a grade of a least B (70%) in each course taken as a major course.

Minor Courses

Minor courses are usually offered by a Department other than that in which the student is registered.

A	above 80%
B	70 - 79% inclusive
C	60 - 69% inclusive
D	50 - 59% inclusive
COMPLETE	(this may replace either "C" or "D")
F	Fail, i.e. less than 50%
INCOMPLETE	(This will be interpreted "no grade received" and will be removed from the record if or when a grade is submitted.)

Note: Either a numerical or a letter grade may be submitted by the Department to the Registrar.

Doctor of Philosophy (Ph.D.)

The degree of Doctor of Philosophy will be granted only to a candidate who has shown high aptitude and attainment in research and has presented in a scholarly manner a thesis containing an original contribution to knowledge. Graduate students are expected to maintain at least a B average in their major courses, and at least a B average throughout their program.

Academic Qualifications

A candidate must be a graduate of an approved university or hold equivalent qualifications. He must have received a Bachelor's degree with Honors (or its equivalent), or a Master's degree, or a degree in Medicine, Dentistry, or Veterinary Medicine.

Period of Study

The period of study will be determined by the academic qualifications of the candidate and by his previous experience in research. Usually three academic years full-time will be required, though this period of residence will be extended for part-time students. The time may be reduced to two academic years full-time, or longer for part-time students, if the candidate holds a Master's degree, or a degree in Medicine, Dentistry or Veterinary Medicine. If more than six hours a week are spent in teaching or other departmental duties, the period of study will be extended. Students in the sciences are usually expected to continue their laboratory or field work during the Summer Term.

With the consent of the Chairman of the Department, School or Faculty, and with the approval of the appropriate Committee on Graduate Studies, permission may be granted to a candidate to study elsewhere. A maximum period of one academic year of such studies may be credited towards the period of study required for the degree.

Course of Study

The course of study shall be determined by the Chairman of the Department in which the candidate is working and shall be approved by the appropriate Committee on Graduate Studies.

For each candidate the Chairman of the Department shall appoint a chief adviser and at least two assistant advisers.

Language Requirements

The candidate for the degree of Doctor of Philosophy must have a reading knowledge of at least one language, other than English, which is acceptable to his Department, School or Faculty, and is useful in his research. The candidate must furnish evidence of such reading knowledge either in the form of university credits or by passing an examination conducted by the language department concerned. This shall normally be interpreted to mean credit for at least one year's work in the language at college level, e.g. French 20 or 45; German 20 or 45; Russian 1 and 10 or 15. If the nature of a candidate's research makes it desirable, a Department, School or Faculty may require him to show reading knowledge of an additional language.

Courses in Scientific French, German, Russian and Spanish are given each year in the Faculty of Arts.

Teaching

The University believes that a graduate student's training should include some experience in teaching. Students may, therefore, be called upon to undertake assignments in demonstrating or lecturing without remuneration. Departments are asked to make such opportunities available to their students when possible but the assignments should not be so heavy as to lengthen the student's normal graduate course.

Thesis

A thesis is required of every candidate for the degree of Doctor of Philosophy. The thesis must consist of the candidate's own account of his research. It may describe work done in conjunction with his supervisor if the candidate clearly states his personal share in the investigation. The candidate must indicate in what respects his investigations have increased the knowledge of the subject.

A candidate will not be permitted to submit a thesis for which he has previously received a degree. Permission may be given to a candidate by the appropriate Committee on Graduate Studies to incorporate in his doctoral thesis work included in a previous thesis.

The regulations of the University Library as to the quality of paper, title page, margins, typing, bibliography, acknowledgements, etc., must be fulfilled. The U.W.O. Thesis Guide should be consulted in the General Library, the Health Sciences Library, or the Natural Sciences Library.

The candidate shall submit to his Chief Adviser portions of his thesis when requested and a complete draft on a date specified by his Adviser. When the candidate is prepared for the Faculty Oral Examination he shall submit to the Chairman of the appropriate Committee on Graduate Studies FIVE unbound copies of the completed thesis, at lease one of which shall be an original typewritten copy on 100 per cent rag paper (such as Superfine Linen Record available at the U.W.O. Bookstore, or Royal Record). The remaining four copies may be carbon copies of the original (on any good quality opaque paper) or electrostatic copies (such as Xerox, made on regular Xerox paper or on Provincial Bond, but not on the treated paper used by some electrostatic and chemical copiers). The thesis may be submitted at any time of the year, but to be sure of being examined in time for graduation at any given Convocation, the candidate must submit the thesis at least TWELVEweeks before the date of that Convocation. Each copy of the thesis shall contain a technical Abstract of not

more than five hundred words and the candidate's Vita. A copy of the Abstract will be made available to members of the Faculty on request, by the Department concerned.

Following a successful examination and at least THREE weeks before Convocation, the candidate shall present THREE copies of his thesis to the Chief Librarian or the Health Sciences Librarian for acceptance and binding. The Librarian should also be consulted regarding a special bibliographical description which is required for the National Library. Candidates must make their own arrangements for the binding of personal copies.

The thesis shall become the property of the University and will be microfilmed by the National Library of Canada. Two copies of the bound thesis, the original and either the first carbon copy or an acceptable electrostatic copy will be filed in the General Library or the Health Sciences Library, and one copy kept in the Department.

Departmental Examinations

Any department may require that a student pass any or all of: oral or written examinations on course work; a comprehensive examination; a qualifying examination. All requirements, including language requirements, must be completed (except with special permission of the Dean of Graduate Studies) before recommendation for the Faculty Oral Examination.

Notice of any type of examination required shall be given by the Chairman of the Department to the candidate at least two months before the date on which the examination is to be held.

Public Lecture

The candidate shall present a lecture on his research, open to all members of the University, to be followed normally within 24 hours by the Faculty Oral Examination. The public lecture shall be arranged by the Department concerned. However, the *announcement* of this lecture shall be arranged by the Dean of the Faculty of Graduate Studies in the weekly *University of Western Ontario News*. Departments shall arrange for a Chairman of the public lecture. Arrangements for the *Faculty Oral Examination* shall be made by the Dean of the Faculty of Graduate Studies.

The requirement of the public lecture is at the discretion of the Division concerned, and has been retained by the Biosciences and Physical Sciences Divisions. The requirement has been waived for all Departments in Arts and Social Sciences.

Faculty Oral Examination

1. **Board of Examiners**

The Board of Examiners shall consist of:
(a) a non-voting Chairman appointed by the Dean of Graduate Studies,
(b) the following four Examiners:
(i) Two Examiners who shall normally but not necessarily be from the candidate's Department.
(ii) a third Examiner from outside the candidate's Department (or discipline where no department exists). This Examiner shall be knowledgeable in the general field of the thesis and may be from this University or any other institution.
(iii) a fourth Examiner who shall be from outside this University and who shall be competent in the special field of the thesis.

The Board of Examiners shall exclude the candidate's chief adviser. The presence of the fourth Examiner (2 b.iii) at the oral examination may be waived by the Dean.

2. ***Appointment of Examiners***

All Examiners (1 b.i., b.ii., b.iii.) shall be appointed by the Dean after consultation with the appropriate Divisional Committee.

3. ***Evaluation of the Candidate***

Each Examiner shall examine the thesis in detail and make a written evaluation of the content and form of the thesis, to be received in the Office of the Faculty of Graduate Studies at least 48 hours before the examination. Those examiners present at the examination shall also evaluate the oral defence of the thesis.

The acceptability of the content of the thesis shall be determined by the vote of three of the four Examiners, such majority vote to include the vote of the external Examiner (2 b. iii).

The acceptability of the form of the thesis shall be determined by a majority vote of the Examiners.

The acceptability of the oral defense of the thesis shall be determined by a majority vote of the Examiners present at the examination.

Where substantial disagreement arises as to the acceptability of the content of the thesis the Dean shall appoint an *ad hoc* committee to determine the course of action to be taken. The candidate's chief advisor shall be a member of this committee.

If the thesis is acceptable, but the oral examination is unsatisfactory, a second oral examination (with preferably the same Examining Board) shall be scheduled at least three months later.

If the content of the thesis is unacceptable, the *ad hoc* committee shall establish the basis for this decision, and advise the candidate of the reasons for its unacceptability. The oral examination may be rescheduled when appropriate steps have been taken to make the thesis acceptable (mandatory three-month delay).

If the content is acceptable, but the form is unacceptable, the candidate shall be advised in what respects the thesis is deficient. The Examiners must be satisfied with any amendments or changes before signing the thesis for submission to the Library.

4. **The Examination**

The Faculty Oral Examination shall consist of:

(a) A brief introduction of his work by a candidate from a Division not requiring the public lecture as part of the oral examination.

(b) Questioning on the subject of the thesis, and/or on pertinent topics arising from the thesis by the Board of Examiners and by any other members of the Faculty of Graduate Studies present at the examination.

The candidate's chief adviser shall attend the examination but may not take part in the examination except with the permission of the Chairman.

The Faculty Oral Examination may be attended by members of the Faculty of Graduate Studies, and visiting faculty members from other institutions on the invitation of a member of the Faculty of Graduate Studies. Other persons may attend the examination only on the invitation of the Dean.

5. **Decision**

The decision to recommend the awarding or withholding of the degree shall be rendered at the end of the examination, following discussion by the Board of Examiners and the candidate's chief advisor, but in the absence of the candidate, and shall be lodged with the Office of the Dean immediately following the examination. Each Examiner shall record his decision on official Faculty of Graduate Studies forms.

Master of Arts (M.A.)
Master of Science (M.Sc.), and
Master of Engineering Science (M.E.Sc.)

Academic Qualifications

A candidate must be a graduate of an approved university or hold equivalent qualifications. Normally only applicants who have graduated with at least a B standing and who, by their undergraduate records have demonstrated the potential ability to succeed in graduate work, will be considered. Graduate students are expected to maintain a least a B average in their major courses and at least a B average throughout their program.

Period of Study

The duration of the program will be adjusted individually for each candidate. A minimum of one academic year full-time, or two academic years part-time, will be required of graduates from Honors Programs in Arts, Business Administration, Music, Natural Sciences, Social Sciences, or graduates in Medicine, Dentistry, Engineering Science or Veterinary Medicine. A minimum of two academic years will be required of candidates with a General Course degree. If more than six hours a week are spent in teaching or other departmental duties at least two academic years will be required. Students in the Sciences are usually expected to continue their laboratory or field work during the Summer Term.

Course of Study

The course of study shall be determined by the Chairman of the Department, School or Faculty in which the candidate is working and shall be approved by the appropriate Committee on Graduate Studies. For each candidate the Chairman of the Department, School or Faculty shall appoint at least one adviser.

Language Requirements

The candidate for the Master's degree must have a reading knowledge of at least one language other than English which is acceptable to his Department and is useful in his research. The candidate must furnish evidence of such reading knowledge either in the form of university credits or by passing an examination conducted by the language department concerned. This shall normally be interpreted to mean credit for at least one year's work in the language at college level, e.g. French 20 or 45; German 20 or 45; Russian 1 and 10 or 15. If the nature of a candidate's research makes it desirable, a department may require him to show reading knowledge of an additional language. In the Biosciences, Physical Sciences, and Social Sciences Divisions the requirements of a language other than English may be waived at the discretion of the Chairman of the Department concerned.

Courses in Scientific French, German, Russian and Spanish are given each year in the Faculty of Arts.

Thesis

A thesis, incorporating the results of an investigation in the field of the major subject, is required of all candidates in the Medical Sciences and Engineering Sciences and normally in Arts, Natural Sciences and Social Sciences.

The regulations of the University Library as to the quality of paper, title page, margins, typing, bibliography, acknowledgements, etc., must be fulfilled. The U.W.O. Thesis Guide should be consulted in the General Library, Health Sciences Library, or the Natural Sciences Library.

The candidate shall submit to his chief adviser portions of his thesis when requested and a complete draft on a date specified by his adviser. Final revisions as demanded by his adviser or committee shall be completed. THREE unbound copies of the completed thesis, at least one of which shall be an original typewritten copy on 100 per cent rag paper (such as Superfine Linen Record available at the U.W.O. Bookstore, or Royal Record), shall be submitted to the Chairman of the Department or to the Chairman of the appropriate Committee on Graduate Studies. The remaining two copies may be carbon copies (on any good quality opaque paper) or electrostatic copies (such as Xerox, made on regular Xerox paper or on Provincial Bond, but not on the treated paper used by some electrostatic and chemical copiers. The thesis may be submitted at any time of the year, but to be sure of being examined in time for graduation at any given Convocation, the candidate must submit the thesis at least FIVE weeks before the date of that Convocation. Each copy of the thesis shall contain a technical Abstract of not more than three hundred words and the candidate's Vita.

Following a successful examination and at least THREE weeks before Convocation, the student shall present THREE copies of his thesis to the Chief Librarian or the Health Sciences Librarian for acceptance and binding. The Librarian should also be consulted regarding a special bibliographical description which is required for the National Library. Candidates must make their own arrangements for the binding of personal copies.

The thesis shall become the property of the University and will be microfilmed by the National Library of Canada. Two copies of the bound thesis, the original and either the first carbon copy or an acceptable electrostatic copy will be filed in the General Library or the Health Sciences Library, and one copy kept in the Department.

Examinations

Oral or written examination on course work, as well as a comprehensive examination, may be required by the Department, School or Faculty concerned. Notice of the type of an examination required shall be given by the Chairman of the Department, or equivalent appropriate authority, to the candidate at least two months before the date on which the examination is to be held.

A final oral examination on the thesis will be conducted under the supervision of the appropriate Faculty Committee on Graduate Studies, which will appoint a Chairman and an Examining Board on the recommendation of the Chairman of the Department, School or Faculty concerned. The Board will consist of a Chairman and at least three Examiners, at least one of whom will be from another Department, School or Faculty. At the discretion of the Department, a student who has been permitted to substitute additional course work for a thesis may be required to pass an oral comprehensive examination conducted by a similar Examining Board.

The Chairman of the Department, in consultation with the Chairman of the appropriate Committee on Graduate Studies, may request that a thesis be read by an External Examiner.

The candidate's chief adviser shall attend the examination but may not take part in the examination except with the permission of the Chairman. Any other members of the Faculty of Graduate Studies may attend and participate in the examination, but only members of the Examining Board shall vote on the approval of the candidate. To be successful a candidate must be approved by a majority of the Examining Board.

Master of Business Administration (M.B.A.)

Admission

A candidate must be a graduate of an approved university or hold equivalent qualifications. Only students who by their undergraduate records and performance on the Admission Test for Graduate Study in Business have demonstrated the potential ability to do graduate work will be considered. Proficiency in English is required.

Period of Study

The course of studies normally covers two years. It is sometimes possible for a graduate of an Honours program in Business Administration or its equivalent to complete the M.B.A. program in less than two years.

Course of Study

The graduate student is required to take a specific group of closely related courses during the first year of his program. In the second year the graduate student is required to take the equivalent of five courses.

Further details concerning this program should be obtained from the Dean of the School of Business Administration.

Master of Clinical Science (M.Cl.Sc.)

The objective of the M.Cl.Sc. degree is the attainment by medically trained people of a level of experience in clinical research and an association with a Basic Science Department not only to satisfy the need for special experience but also to serve as an encouragement to the development of the clinical investigator.

Admission

A candidate must have an M.D. or an equivalent degree in Medicine, from an institution recognized as suitable by the Biosciences Divisional Committee of the Faculty of Graduate Studies and must have one

year of experience as a general or rotating intern, or an acceptable equivalent. It is considered desirable, but not necessary, for the candidate to have in addition at least one year of experience in the clinical specialty of his choice. Normally only applicants who have graduated with at least a B standing will be considered.

The Biosciences Divisional Committee of the Faculty of Graduate Studies in accepting the registration of a suitable candidate for the M.Cl.Sc. shall appoint a supervisory committee to act in the academic guidance and direction of the work of the candidate. This supervisory committee shall consist of:

1. A representative of the Clinical Department to which the candidate is attached.
2. A representative of a Basic Science Department interested in the research to be undertaken.
3. A member of a Department not directly involved in the candidate's work. This committee shall appoint its own chairman.

The course and duration of study required of an individual candidate shall be a matter of recommendation by the supervisory committee and be ratified by the Biosciences Divisional Committee of of the Faculty, but shall be not less than one academic year. Course work shall be considered in terms of its particular appropriateness to the area of research.

Candidates are encouraged to have competence in at least one language other than English; this requirement may be satisfied by credit for a university course in a foreign language.

The candidate must sit for those examinations formally required for the course work assigned by the Biosciences Divisional Committee. A general examination may be required and its form determined by the supervisory committee provided that the student is given a warning of at least three months. In all examinations a 60% mark will be required for passing.

A thesis shall be presented by the candidate in accordance with the standards and regulations outlined for the M.A., M.Sc. and M.E.Sc. degrees.

There shall be a thesis examination with at least three examiners appointed by the Biosciences Divisional Committee of the Faculty of Graduate Studies and one of these shall be an Examiner External to the University whose presence shall be requested at the examination.

Master of Engineering (M.Eng.)

Course of Study

Course work programs leading to the degree of Master of Engineering are offered to those engineers whose interests lie in analysis, design, and development rather than research. An individual program shall consist of a mimimum of 4 courses (totalling at least 10 credits), a project (3 credits), and a seminar, and shall be approved by the appropriate Graduate Board. Credits for courses shall be computed on the basis of 1 credit for each hour per week of lectures and 1 credit for each three hours per week of laboratories. It is intended that all candidates for the degree of Master of Engineering be required to undertake a program of studies which has been approved in advance by the Engineering Science Division of the Faculty of Graduate Studies. This does not preclude the inclusion of electives for certain students. The objective of each program will be clearly defined and the courses will be chosen to best serve the interests of a specific group of candidates and that segment of the engineering profession which the program is intended to serve.

Academic Qualifications

A candidate for the degree of Master of Engineering must be a graduate of the recognized university or hold equivalent qualifications. Only students who by their previous academic records have demonstrated their potential ability to succeed in graduate work will be considered. Proficiency in English is required of non-English speaking students, who are required to show evidence of proficiency by satisfactory achievement in the University of Cambridge Certificate of Proficiency in English, or the Test of English as a Foreign Language administered by the U.S. Educational Testing Service.

Qualifying Students

An acceptable graduate whose background is such that he may not register immediately as a candidate for the degree may be registered in the Prerequisite Year of the Faculty of Graduate Studies. On the successful completion of an individually prescribed program of study he will then be permitted to register as a candidate for the degree.

Period of Study

The minimum period of full time study is one academic year, i.e. the Fall and Winter Terms in residence. Students may be permitted to undertake the program on a part-time basis provided that satisfactory arrangements can be made for the project; this may require that not less than one term be spent in full time studies. Students registered on a part-time basis must complete all the requirements for the degree within the four year period following registration as a graduate student.

Advisers

A faculty adviser shall be appointed for each candidate; additional advisers may be appointed as required.

Project

The project report shall be read by at least two examiners only one of whom need be a member of the Faculty. The candidate shall be required to give a public lecture on the subject of his project

but shall not be required to defend it at an oral examination.

At present the Faculty of Engineering Science offers an M.Eng. program in **Environmental Engineering.** Other programs are planned. Further details may be obtained from the Secretary of the Faculty of Engineering Science

Master of Library Science (M.L.S.)

Admission

A candidate for admission to M.L.S. studies must be a graduate of an approved university or hold equivalent qualifications. Normally only applicants with at least a B standing can be considered. Candidates with a three-year bachelor's degree may be admitted to the School's four-term program in the September following graduation or in any subsequent term beginning in January, May, and September. Candidates with a four-year honors degree or its equivalent may be admitted to the School's three-term program at the beginning of any of the three terms. Candidates who wish to transfer at the end of one year from other graduate library schools with at two-year M.L.S. or who hold a B.L.S. from another accredited library school or its equivalent may complete their M.L.S. after two terms. Prospective school librarians who have completed a year of study, with at least B standing, at a College of Education or its equivalent, may be admitted to the three-term program. All students must have proficiency in spoken as well as written English in order to contribute to seminar discussions.

Period of Study

Dependent upon the conditions laid down upon admission to the Faculty of Graduate Studies, a student may complete his studies for the M.L.S. in four, three, or two consecutive terms. An extra term is often required for those non-Canadians whose native language is not English; it is sometimes preferred by students who wish to reduce the load per term. It is possible to earn the M.L.S. in the appropriate number of consecutive summer terms or in summer sessions plus a final term. The program may also be taken part time.

Language Requirements

Because of the importance of languages in the field of library and information science, a reading knowledge of at least one language other than English is expected. The second language must be useful in study and research in the School's field of knowledge.

Master of Music (Mus.M.)

Master of Arts in Musicology (M.A.)

Areas of Concentration

The Master of Music degree is offered in the field of Music Theory, Music Education, Composition, and in Music Literature and Performance. The Master of Arts degree is offered in Musicology.

Admission

A candidate must be a graduate of an accredited university or hold equivalent qualifications, including an Honors degree (Bachelor of Music) or its equivalent with at least a B average. Students who have taken a Pass degree (three year) program may be admitted conditionally, but they must complete a Prerequisite year before being admitted to candidacy or must demonstrate exceptional competence beyond the Pass degree on entrance examinations and auditions. A student shall be recommended for candidacy when all admission requirements have been met.

Entrance Examinations

All new graduate students shall be required to take a number of examinations which serve as placement tests. These examinations are given at various times during the year and must be taken prior to registration. Courses to remedy deficiencies that become apparent as a result of these examinations must be taken at the earliest opportunity. A student will be presumed to be deficient in any area in which he does not take the entrance examination.

All students whose applications are accepted will be admitted conditionally until entrance examinations have been passed. If the results of the examinations show deficiencies in one or more areas, the conditional status continues until the entrance examinations have been passed or courses to remove the deficiencies have been completed. The student must maintain a B standing in deficiency courses and in all courses for the degree.

Students should achieve an A on the entrance examination in their chosen area of specialty, and not less than B in the other areas. Deficiency courses may not be used as a means of improving the academic average so as to meet the minimum level for admission to candidacy.

Entrance examinations will be given in the areas of Music Theory, Music History, Piano Proficiency, and in the student's applied music area (piano, voice, violin, etc.). The content of these examinations may be obtained by writing to the Dean of the Faculty of Music.

Special Prerequisites

A course in Acoustics and undergraduate training in Orchestration is required of candidates pursuing the degree in Music Theory. Knowledge of German is required of candidates in Musicology. Students concentrating in Music Education must have completed two years of successful classroom teaching.

This prerequisite does not apply to all courses, but it does apply to the music education seminar, advanced conducting, and the choral and instrumental technique courses. Candidates in Composition must submit scores of their recent cinpositions and have them accepted by the Graduate Music Faculty.

Candidates in the area of Literature and Performance must demonstrate in their audition a level of performing ability comparable to an A standard of the final undergraduate year before being admitted to candidacy.

Language Requirements

Before being admitted, all candidates must demonstrate competence in the English language. They must also have a reading knowledge of at least one language other than English which is acceptable to the student's department and is useful in his research. If a student is not able to meet the foreign language requirement at the time of his application for admission, he may be allowed to pursue some graduate courses while he is gaining language competence.

Musicology majors will be required to obtain a reading knowledge of German and any other language necessary for the student's research. Voice majors, in addition to obtaining a reading knowledge of one language other than English, must satisfy the Faculty of Music that they have facility in the pronunciation of German, French, and Italian, before graduating. In the Music Education program, the foreign language requirements may be waived depending on the nature of the student's thesis research. This will be done only on the recommendation of the Professional Degree Committee for Music.

Period of Study

Candidates shall be required to spend one academic year (at least two terms) in residence, and to complete the program within five years. Students must register for each session during which they plan to use any university facilities, and must register in the session during which they plan to complete their degree program.

It is expected that the minimum time in which the requirements can be completed is one full year (three terms). Candidates who undertake remunerative employment must be prepared to spend additional time. When a deficiency in any area is indicated by the entrance examinations, the student must plan to devote more than one academic year to complete the program.

Course of Study

The course of study shall be determined by the Head of the Department in which the candidate is working and shall be approved by the Music Committee on Graduate Studies. For each candidate, the Head of the Department shall appoint at least one adviser.

The course of study normally involves five courses (fifteen hours) and a thesis. The suggested content of the study program in each of the areas of concentration may be obtained from the Dean of the Faculty of Music.

Participation in ensemble is required of all students who register for applied music study.

Thesis

A thesis incorporating the results of an investigation in the field of the student's major area is required of all candidates in Music Theory, Musicology, Music Education, and Composition. Students working toward a Master of Music in Literature and Performance will present a document following the procedure laid down for theses. The regulations of the Faculty of Graduate Studies will be followed concerning the preparation and presentation of the thesis and the makeup of the Examining Board that conducts the oral examination.

Examinations

Oral or written examinations on course work, as well as a comprehensive examination, may be required. Notice of the type of any examination required shall be given by the Head of the Department to the candidate at least two months before the date on which the examination is to be held.

A final oral examination on the thesis will be conducted under the supervision of the Faculty Committee on Graduate Music Studies, which will appoint a Chairman and an Examining Board on the recommendation of the Head of the Department. The Board will consist of a Chairman and at least three Examiners, at least one of whom will be from another Department, School or Faculty. At the discretion of the Department, a student who has been permitted to substitute additional course work for a thesis may be required to pass an oral comprehensive examination conducted by a similar Examining Board.

The Head of the Department, in consultation with the Chairman of the appropriate Committee on Graduate Studies, may request that a thesis be read by an External Examiner.

The candidate's chief adviser will attend the examination but may not question the candidate except with the permission of the Chairman. Any other members of the Faculty of Graduate Studies may attend and participate in the examination, but only members of the Examining Board shall vote on the approval of the candidate. To be successful a candidate must be approved by a majority of the Examining Board.

Master of Science in Nursing (M.Sc.N.)

Programs offered, Periods of Study

Two graduate programs in nursing are offered. One program leads to the degree of Master of Science in Nursing (Administration) in hospital nursing service administration OR public health nursing service administration OR administration of schools of nursing. The other leads to the degree of Master of Science in Nursing (Education) and is intended for not only beginning, but experienced teachers in schools of nursing. The program with a major in administration is two academic years in length. The program with a major in teaching may be one

to two academic years in length, dependent on the educational background of the student. With either major students may elect to study or continue research during the summer months (see page 62).

Admission

A. **Major in Administration**

1. A Bachelor's degree in Nursing

or

2. A Bachelor's degree in Arts or Science, in addition to graduation from an approved diploma school of nursing and an academic year of post-basic study with a diploma in one of the nursing specialties at a university school of nursing

and

3. An overall B average in undergraduate courses.

B. **Major in Teaching**

Entrance is to the final year of the teacher preparation program for graduates with an overall B average, in the year 1970 or later, of either the Four-Year Basic Baccalaureate program, or the three-year Post R.N. Baccalaureate program of the Faculty of Nursing, The University of Western Ontario, or their equivalent. Other students will be considered on an individual basis and may be required to take the prerequisite year or part thereof before acceptance into the program with a major in teaching.

Candidates for the M.Sc.N. are admitted conditionally for the first term. At the end of the first term each student's progress is evaluated and recommendations are made as required. Individual applicants or students may be required to complete additional or alternative courses, depending upon facility in the use of the English language, previous academic studies, nursing experience and /or the subject chosen for research.

Admission of students from countries other than Canada will be considered on an individual basis. Students coming directly from countries other than Canada or the United States may be required to attend summer school to complete at least one course successfully and to have a period of planned clinical experience in their area of interest in nursing. Following this, an assessment will be made as to whether the candidate will be admitted to graduate work.

Academic Standards to be Maintained

An average of B is required each year. An assessment is made of each candidate's progress at the completion of year one, and no student is allowed to continue into year two of the program with anything less than a B average without special permission from the Professional Degree Committee (Nursing) of the Faculty of Graduate Studies.

If a student fails a course, permission to continue in the program by passing a special examination and/or repeating the course, can be granted only by the Professional Degree Committee of the Faculty of Nursing in consultation with the particular professor involved, and with the permission of the Dean of Graduate Studies.

Special Examinations

There may be a final written comprehensive examination in nursing in the final year of the M.Sc.N. program.

If a student elects to do a thesis, the Coordinator of the Graduate programs will appoint two readers who will

(a) submit in writing to the adviser, suggestions for needed modification,
(b) discuss these with the student's chief adviser for her thesis, if she so requests,
(c) rate the thesis as acceptable or unacceptable.

The student has the option of defending or not defending her thesis before the readers in an oral examination.

REGISTRATION

Resident Students

First Registration

A candidate whose application has been accepted by the Faculty of Graduate Studies may register for the first time at the beginning of the Fall, Winter, or Summer Terms. He should consult the Head of his Department concerning the program of study for which he will be required to register.

Students whose registration in the Faculty of Graduate Studies is their first registration at The University of Western Ontario must have had a physical examination completed by his own physician by the time of registration. All students registering at The University of Western Ontario are required to take the intracutaneous testing for tuberculosis each year. Students showing a positive reaction must have a chest x-ray, this to be repeated each year.

Fall

Graduate students are required to register on the day designated in the Academic Calendar. The payment of fees, depositing of student directory information, and student identification card, constitute preliminary registration. It is the student's responsibility to know the date, time and place of registration, since late registrants will be assessed an administrative fee.

Students who do miss the initial designated day may register on the "Late Registration" day (see Academic Calendar). Meanwhile, classes may be attended, whether registered or not.

Course enrolment is completely divorced from other aspects of registration. When a student pays his fees, he receives, in addition to an identification card, a Course Enrolment form. This must be completed in consultation with his Department Head or adviser, and deposited at the Course Enrolment Centre, the location of which will be announced to every student. The dates for course enrolment are specified in the Academic Calendar; late submission of courses, or changing of courses after submission, will cost $10.00 per transaction.

Winter

Graduate students are required to pay Winter Term fees at the Cashier's wicket, second floor, Stevenson Hall, on or before the designated date in January (see Academic Calendar). Late payments will be liable to the additional administrative assessment of $25.00.

In addition, students taking courses in the Winter term different from or additional to those for which they enrolled in September, must do so on the Course Enrolment form before that same designated date in January. The Course Enrolment form can be secured from the Registrar's Office and must be returned there when completed. Late course enrolments, or changes after submission, will cost an additional $10.00 per transation.

Summer

All graduate students who are in residence or receiving official instruction during the Summer Term must register on the designated day in June (see Academic Calendar). Course enrolment can be effected as for "Fall" above, except that forms should be deposited in the Registrar's Office, Stevenson Hall, when complete.

Note: Course enrolments in any term can only be effected on the prescribed form, and will not be accepted by the Registrar without proof that fees have been paid (Fee Receipt).

Students are reminded that they may not receive any credit for courses for which they are not properly enrolled. The onus to ensure that registration is completed satisfactorily lies with the student. If a student is not certain about the status of his registration at any time, he should be sure to consult the Registrar's Office or the Associate Registrar, Faculty of Graduate Studies' Office.

Non-Resident Students

A candidate for a graduate degree who (a) has fulfilled the residence requirements, (b) has completed all of the requirements for the degree with the exception of his thesis, (c) has paid the minimum degree fee, and (d) is no longer attending the University, must register each term as a Non-Resident student. The Non-Resident fee is $5.00 per term, and is due and payable on or before the designated registration day for each term. Non-Resident students who fail to register will be charged a reinstatement fee of $100.00 per annum.

A Non-Resident student who is a candidate for a Master's degree and who has not completed his thesis after three years of Non-Resident status, or a candidate for a Ph.D. who has not completed his thesis after five years of such status, shall cease to be enrolled in the Faculty of Graduate Studies. Such a student may apply to the Chairman of the Department for approval of the same or a different thesis topic and he may apply for readmission to the Faculty of Graduate Studies in the usual way. Such a student is eligible for readmission to the Faculty on payment of any outstanding Non-Resident fees.

The onus of maintaining Non-Resident status lies with the student. It is to the advantage of the student to mail or deposit the $5.00 fee **each term**, as it becomes due, rather than to allow the non-resident fees to accumulate into a large amount. The *Fees Supervisor will not accept tuition fees for* terms in advance of the current session.

FEES

Full-Time Intramural Students

The fees listed below for full-time students include Student Activity Fee and Health Insurance Fee totalling $40.00 per year ($34.00 for M.B.A. candidates). Fees expressed on a per term basis include one-third of these amounts.

Ph.D., Per Term $133.50

The per term fee is payable for each term the candidate is in residence or is receiving official instruction, for a maximum of nine terms, which is reduced to six terms for a candidate holding a Master's degree or a degree in Medicine, Dentistry, or Veterinary Medicine. Thereafter the per term fee will be $33.50. The minimum total Ph.D. fee is nine times the per term fee, or six times the per term fee for a candidate holding a Master's degree or a degree in Medicine, Dentistry, or Veterinary Medicine.

M.A., M.Sc., M.Cl.Sc., Per Term $133.50

The per term fee is payable for each term the candidate is in residence or is receiving official instruction, for a maximum of six terms, or three terms for graduates with an Honors Degree, graduates in Medicine, Dentistry, or Veterinary Medicine, or for students who have successfully completed a Prerequisite Year. Thereafter the fee per term will be $33.50. The minimum total fee is three times the per term fee.

M.E.Sc., Per Term $133.50

The per term fee is payable for each term the candidate is in residence or is receiving official instruction for a maximum of six terms, or three terms for graduates with an Honors Bachelor's degree or equivalent. Thereafter the fee per term will be $33.50. The minimum total fee is three times the per term fee.

M. B. A., Per Annum $532.50

M.L.S.-three-term program: per term ... $133.50
four-term program:
first two terms at $266.25 each .. $532.50
next two terms, per term $133.50

M. Eng., Per Annum $547.50

Mus. M., Per Annum $547.50

M.Sc.M., Per Annum $512.50

Prerequisite Year Students
(two terms, $266.25 each) $532.50

Miscellaneous Fees

Non-Resident Students, Per Term ..... $ 5.00
Non-Resident Students who fail to register, reinstatement fee per annum $100.00
Part-Time Students:
Per Full Course (not over 2 terms) .. $100.00
Per Half Course ..... $ 50.00
Students not proceeding to a Degree:
Per Course, Per Annum ..... $ 50.00
Ph.D. Examination Fee ..... $ 50.00
Late Payment of Fees:
Fee paid on late registration day .... $ 10.00
Fee paid after late registration day .. $ 25.00
Late Course Enrolment ..... $ 10.00
Course Changes, Per Transaction ..... $ 10.00

The Ph.D. examination fee is payable at least FOUR weeks before the Convocation at which the degree is to be received. No student is eligible for a degree until he has paid his full tuition fee.

PAYMENT OF FEES

Per Term Fees (Ph.D., M.A., M.Sc., M.Cl.Sc., M.E.Sc., M.L.S.)

Per Term fees for the Fall, Winter and Summer Terms are payable on registration day in September, the designated day in January and registration day in June, respectively (see Academic Calendar).

Per Annum Fees (M.B.A., M. Eng., Mus.M., M.Sc.N.)

Per Annum fees are payable in full on registration day in September (see Academic Calendar). The fee may, however, be paid in two instalments, the first payable on registration day in September and the second on the designated day in January (see Academic Calendar), without reminder. The charge for this division is $5.00, e.g.

	If Paid in One Instalment	If Paid in Two Instalments	
		September	January
M. B. A.	$532.50	$300.00	$232.50
M. Eng.	$547.50	$300.00	$247.50
Mus. M.	$547.50	$300.00	$247.50
M. Sc. N.	$512.50	$300.00	$212.50

On the recommendation of the Dean of Graduate Studies fees may not be required of a student who has been granted permission from the Head of the Department and the appropriate Committee on Graduate Studies to receive credit for work done at another University and who is paying fees to that University.

Students may not take examinations, or be recommended for a degree until tuition fees, fines, and other accounts owing to the University are paid.

THE BOARD OF GOVERNORS RESERVES THE RIGHT TO AMEND FEES AFTER THE PRINTING OF THIS ANNOUNCEMENT.

FELLOWSHIPS AND SCHOLARSHIPS

University Fellowships

The University awards a limited number of graduate fellowships, teaching fellowships, research assistantships, and demonstratorships tenable within the Departments in Arts, Biosciences, Physical Sciences, and Social Sciences. Prospective candidates should direct their inquires to the Chairman of the Department in which they wish to work.

Fellowships and Scholarships Tenable at the University

Many national and provincial organizations award fellowships and scholarships tenable at The University of Western Ontario, e.g. Canada Council, the National Research Council, the Medical Research Council, but there is a large list of foundations, companies, fraternal organizations, etc. which offer scholarships. Prospective graduate students should consult the biennial publication of the Donimion Bureau of Statistics, Education Division, Higher Education Section, entitled **Awards for Graduate Study and Research** (last published, 1969). This contains information concerning all such awards, their terms, dates and method of application. Students should also consult the publication entitled: **Fellowships and Scholarships offered by Private Donors and Foreign Governments for Canadian Students**, obtainable from the Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa 4.

Most graduate awards require the applicant to provide assurance that, if successful, he will be given accommodation by the University. Candidates should obtain such assurance by direct communication with the Chairman of the Department in which they wish to work.

Ontario Graduate Fellowships

The Government of the Province of Ontario provides annually a number of postgraduate awards known as "The Ontario Graduate Fellowships," tenable at Ontario universities only, for students who plan a career in university and college teaching.

The awards are open only to graduates of, or final year students in an Ontario Honors Bachelor of Arts degree (with at least second-class honor standing) or the equivalent. Special students and students enrolled in a Prerequisite Year are not eligible. A candidate must have been accepted by a department as a **full-time** student at the time he completes his Fellowship application.

The awards are intended primarily for students who are Canadian citizens and who are residents of Ontario at the time of application. Application for landed immigrant status must have been made before submitting an Ontario Graduate Fellowship application, and no award will be offered unless a certificate showing landed immigrant status is presented before the deadline for receiving applications. Students studying in Canada on student visas are not eligible under this program. Consideration will be given to the awarding of a limited number of Fellowships to students not now residents of Ontario but who meet all other requirements.

For 1970-71, Fellowships are available in the following departments:

Arts and Social Sciences	**Sciences and Mathematics**
Classics	Anatomy
Economics	Applied Mathematics
English	Astronomy
French	Bacteriology
Geography	Biochemistry
German	Biophysics
History	Botany
Library Science	Chemistry
Music	Computer Science
Nursing	Engineering Science
Philosophy	Geology
Political Science	Geophysics
Psychology	Mathematics
Sociology	Pharmacology
Spanish	Physics
	Physiology
	Zoology

A Fellow may receive an amount up to $1,500 for one academic session, and in addition an amount up to $750 for study during the summer term.

The actual amount of any award will be based upon the recommendation of the university where the applicant intends to pursue his graduate studies. A Fellow may hold other awards or accept a part-time teaching or demonstrating appointment, provided it does not interfere with the Fellow's status as a full-time graduate student and provided the total amount paid to any Fellow within a 12 month period commencing on registration day (September) shall not exceed $4,500 for a Master's candidate or $5,000 for a Doctor of Philosophy candidate. The maximum amount of assistance that any student may receive through the Ontario Graduate Fellowship Program is $3,000 at the Master's degree level; and $7,750 at the Doctor of Philosophy degree level (inclusive of any previous amount received at the Master's level).

Application Forms for Ontario Graduate Fellowships are available from the General Office of the Faculty of Graduate Studies. For 1970-71 applications must be received in the above office by February 16, 1970. It is anticipated that there will be a similar deadline for the 1971-72 competition.

National Research Council Postgraduate Scholarships and Bursaries

Each year, the National Research Council offers a number of postgraduate awards of different types to assist students in undertaking graduate study and research leading to advanced degrees. These awards are open to men and women on equal terms and are awarded on the basis of high scholastic achievement and evidence of capacity to do research.

TYPES OF AWARDS AVAILABLE

1. Postgraduate Scholarships

Postgraduate Scholarships valued at $3,600 for 12 months, plus a travel grant if required, are awarded in two categories:

(a) for the first year of postgraduate study in Canada, in which case the award is not renewable, but recipients may apply for a scholarship mentioned in (b) below for a second and succeeding years of graduate studies.

(b) for second or subsequent years of postgraduate study in Canada, renewable on the basis of certified reports of satisfactory progress. Only two such renewals may be granted.

2. Bursaries

Bursaries are awarded on the recommendation of a university. The qualifications are the same as for Postgraduate Scholarships. These awards are valued at $3,000 for 12 months. They are not renewable but may be awarded for each subsequent year of graduate study. A student may receive a maximum of 4 awards at the predoctorate level consisting of any combination of Bursaries and Postgraduate Scholarships.

CONDITIONS OF ELIGIBILITY APPLYING TO ALL AWARDS

The foregoing awards may be granted for study and research in the fields of agriculture, biology, chemistry, physics, geology, physical geography, mathematics, engineering, experimental psychology, science education and the history and philosophy of science.

At the time of application, an applicant must be either a **Canadian citizen, or a landed immigrant.** Tenure abroad will not be granted to students who are landed immigrants unless they have received a degree in science from a Canadian university. To be eligible for a first scholarship award, an applicant must not have reached his 30th birthday by March 31, 1970. A scholarship application is considered to be for a first award if the applicant is not engaged in study and research under the terms of an NRC scholarship at the time of his application.

Additional information on NRC awards may be obtained from the Office of the Dean of Graduate Studies, or from The Scholarships Officer, Awards Office, National Research Council of Canada, Ottawa 7, Ontario.

Application forms are made available through Departmental Offices in mid-October. The deadline for return of completed applications to the Chairman of the appropriate Department is usually late November.

Canada Council Doctoral Fellowships

The Canada Council awards Fellowships for Doctoral studies in the Arts and Social Sciences on the basis of an annual national competition.

General Conditions

Eligibility: Persons who, by the time of taking up the award can provide evidence that they:

(a) are registered in a program of studies leading to a doctoral degree or the equivalent and,

(b) have completed one year of graduate study beyond the Honors B.A. or its equivalent.

Applicants must be Canadian citizens or landed immigrants.

Value: up to $3,500 for students in the first two years of a doctoral program, and up to $4,500 for students who have completed the first two years of their programs. An extra $1,000 will be granted to teachers or the equivalent, and to a very limited number of the most meritorious candidates not qualifying for the teacher or equivalent classification.

Additional details and application forms may be obtained from the Office of the Dean of Graduate Studies, or from The Canada Council, 140 Wellington Street, Ottawa 4, Ontario.

Deadline for receipt of completed applications is normally December 15.

Henry Lewis Caulkins Scholarship

This scholarship was provided from the estate of the late Donald L. Springer and is tenable by a graduate of The University of Western Ontario at the University of Michigan for graduate study in any academic discipline. The value of the scholarship is approximately $2,000 (Canadian). Applications should be submitted to the Dean of Graduate Studies of The University of Western Ontario by March 16.

Collip Medal for Graduate Students

A medal to be awarded at Spring Convocation to the most meritorious graduate student obtaining a Ph.D. degree in the Medical Sciences during the past year.

The award shall be made on the merit of the candidate's thesis, final oral examination and ability shown during his graduate training.

The award may not be made in any one year on the decision of the Judges.

Ivie Cornish Memorial Fellowship

Graduate Fellowship in History, value up to $2,000 a year. Applications should be submitted to the Chairman, Department of History, not later than March 16.

Sir Arthur Currie Memorial Scholarship

Graduate Fellowship in the Social Sciences, preferably in some branch of Economics, value $500 a year; open to graduates of any Canadian university; tenable at this University unless the winner is a graduate of this University, in which case the award will be tenable at this or any other Canadian or British university designated by the winner. Applications should be submitted to the Dean of Graduate Studies not later than March 16.

Dow Chemical of Canada Limited Post Graduate Fellowship

Graduate Fellowship in Chemistry or Chemical Engineering, value $1,200 for the academic year. In addition, the Fellow will receive $800 if research is carried on during the summer months. Open to any graduate of a recognized university or college in Honors Chemistry or Chemical Engineering.

The Fellowship is granted on an annual basis. However, if in the opinion of the University and the Company a fellow shows by his progress that such a course is desirable, a fellowship may be awarded to the same person for a further term of one year.

Applications should be submitted to the Dean of Graduate Studies not later than March 16.

Nellie L. Farthing Memorial Fellowship

Graduate Fellowship in the Medical Sciences, value $1,500 per academic year. This Fellowship is available to students engaged in graduate work or medical research. Applications should be submitted to the Dean of Graduate Studies no later than March 16.

IBM Fellowship for Research in Computer Aided Instruction

Fellowship of $3,000 to be awarded to a graduate student in Computer Science engaged in C.A.I. research.

McIntosh Scholarships in Geography

Two scholarships of approximately $300.00 each are awarded annually for high academic achievement to graduate students in the Department of Geography. These scholarships will be given to graduates in Honors Geography at The University of Western Ontario or to students who have completed graduate degrees with distinction in the Department of Geography of The University of Western Ontario.

Spruce Falls Power And Paper Company Graduate Fellowship in the Arts

Graduate Fellowship in the Arts, value $1,300 a year for two years; open to any Canadian citizen or landed immigrant originating from the units of the British Commonwealth for graduate study leading to the degree of M.A. or Ph.D. in any of the Arts. For the purposes of this Fellowship the Arts are considered to include the following departments: Classics, English, French, German, Philosophy, and Spanish. Applications should be submitted to the Dean of Graduate Studies not later than March 16.

RESEARCH FACILITIES

General

The courses of instruction available in the various Departments, Divisions, Schools, and Faculties are given on the following pages. Not all courses are offered every year and their content may, at the discretion of the instructor, be modified for certain individuals. For additional details and preliminary enquiries about graduate work, students are urged to communicate with the Department concerned.

Library Facilities

J.J. Talman, Ph.D., D.Litt., F.R.S.C., Chief Librarian

Fundamental to all graduate research is the Library. The General Library of the University is housed in the Lawson Memorial Library Building. In the Periodical Room of the same building are the current issues of periodicals in the Arts and Social Sciences. The Bibliographical Centre, which is of particular value to graduate students, is also in this building. There are, in addition, excellent collections of books and periodicals, of value in graduate study, covering specific subjects in the following buildings: Business Administration, Engineering Science, Health Sciences Centre, Law, Natural Sciences Centre, College of Music, Althouse College of Education and School of Library and Information Science. A collection of maps, both topographic and topical, covering Canada and other parts of the world is housed in Middlesex College. The total book collection of the University is more than 725,000 volumes and over 570,000 microforms which include some of the best resources for graduate research in the collections of the libraries. Currently the University receives annually over 7,500 periodicals in all subjects and in many languages.

Reading rooms in the University accommodate about 1,800 students, and there are more than 180 carrells in various stacks for the use of the graduate students. Twenty-six microfilm and fifteen microcard readers are provided in view of the increased use being made of material in microphotographic form. Three of the microfilm readers are also printers; they are recently designed pieces of equipment from which photographic copies of microfilm can be made.

In cases where the University does not possess certain books or journals, and when these cannot be purchased either in the original format or in microphotographic form, it is usually possible to borrow them on Interlibrary Loan from a Canadian or United States library. The use of Interlibrary loans is restricted to faculty and graduate students. The Committee of Presidents of Universities of Ontario on the recommendation of the Ontario Council of University Librarians has set up an inter-university library transit system. Five station wagons carry books between the twelve universities in southern Ontario five days a week. The system has greatly expedited the transfer of research material between the Ontario universities and major federal libraries in Ottawa. Postal charges of more than $1.00 per transaction must be paid by the borrower. The lending library dictates the conditions under which the borrowed material may be used and these conditions must be rigidly adhered to. For example, frequently the borrowed book must be used within the library. In the General Library and other libraries referred to above there are a number of modern copying machines by means of which material may be reproduced at cost to the borrower, who then has the advantage of possessing a permanent record.

A graduate student registered in any Ontario university may visit any other university library and use its resources. In order to do so the graduate student is required to carry an inter-university library visiting request authorized by his

adviser and recommended by the chief librarian of the university. Application forms may be obtained in the Office (Room 106) at the General Library.

A new General Library, The D.B. Weldon Library, is under construction and should be available for use during 1970-1971. The collection will be primarily for Arts and Social Science faculties. Facilities will generally be more accessible than at present.

Cancer Research Laboratory

J.A. McCarter, Ph.D., Director

The Cancer Research Laboratory was established by a grant from the Ontario Division of the Canadian Cancer Society, and is maintained chiefly by annual grants from the National Cancer Institute of Canada. It is housed in its own building on the main university campus. Activities are centred on a variety of problems in basic cancer research. Senior members of the Laboratory hold joint appointments in appropriate departments of the Faculty of Medicine, and participate in the teaching of undergraduate and graduate students.

Graduate students may proceed to M.Sc. and Ph.D. degrees in the Laboratory receiving their advanced degree in whatever discipline their supervisor has his joint University appointment. These include at the present time, Bacteriology and Immunology, and Biochemistry.

Centre for Radio Science

P.A. Forsyth, Ph.D., Director

The University of Western Ontario has developed a particular competence in the scientific aspects of the generation, propagation and detection of radio waves. The Centre for Radio Science is not an instructional unit in the University, but does provide facilities for graduate research in many areas of radio science. In order to make use of these facilities a graduate student must be registered in an appropriate Department or Faculty of the University and be supervised by a menber or associate member of the Centre. The graduate courses and the student's degree program are administered by the Department or Faculty in which he is registered. Courses appropriate to graduate work in Radio Science are given in a number of departments in the Faculty of Science and in the Faculty of Engineering Science at The University of Western Ontario.

Facilities are now available for a variety of researches, including the generation and detection of radio waves ranging down to submillimeter wavelengths, quantum electronics, quasi-optical techniques, interaction of radio waves with solids, gases, plasmas and beams of charged particles, the exploration of all levels of the earth's atmosphere, the sun's atmosphere and the interplanetary medium, using groundbased, rocket-borne and satellite-borne instruments. Co-operative research arrangements exist with several universities in Ontario.

Computing Centre

G.T. Lake, B.Sc., Director

The University Computing Centre is a department under the Vice-President (Academic) providing central computing and data processing services for all departments on campus. Equipment consists of an IBM 7040 computer with 32,000 words of core storage, 800 card per minute reader, 250 card per minute punch, 1,100 line per minute printer, 7 magnetic tape drives, and 56 million characters of disk storage; also a DEC PDP 10/50 time sharing computer with 90,000 words of core storage, 100 million characters of disk storage, 4 magnetic tapes, and paper tape reader and punch, servicing multiple remote teletype terminals and 3 remote card reader-printer terminals located on and off campus. The PDP-10 system provides interactive computing capabilities for faculty and students within various departments. A 30 inch, incremental, drum type automatic curve plotter is also available to users.

In addition to operation of the computers the Computing Centre provides keypunching and programming analysis services on a cost basis. Users are encouraged to program their own research problems and assistance is provided free of charge by members of the Computing Centre staff to those who wish to write their own programs.

Inter-American Studies Group

N.L. Nicholson, Ph.D., Chairman
J.C.M. Ogelsby, Ph.D., Secretary

This group is a unit within the Faculty of Graduate Studies and is responsible to the Dean of Graduate Studies. Its purpose is to encourage and facilitate a cross-disciplinary and sometimes a cross-faculty approach to inter-American studies in close co-operation with existing faculties and departments. It does so by such means as promoting closer liaison between departments and faculties, assisting in building up the resources of the library and in general by any other method approved from time to time by the Graduate Dean and Faculty.

Canadian-American Studies — The University of Western Ontario has long been concerned with Canadian-American studies. It began offering a course in United States history, the first in Canada, in 1909; and it has given special attention to and emphasized work on North American (United States and Canadian) literature, including French-Canadian literature, since 1934. Its Department of Geography is particularly concerned with regional studies of the Great Lakes area in international terms; and its Departments of Economics, Political Science, and Sociology have a strong North American orientation.

Latin American Studies — Since 1936 the University has extended the scope of its interest in Canadian-American affairs to include Latin America, whose history has been taught since 1942 and

whose literature has been taught since the late 1940's. Specialists in Latin America have been appointed in Geography, Political Science, and Sociology, and the Department of Economics has begun offering work on developing countries including Latin America. The Department of Spanish and Italian offers courses in the Spanish and Portuguese languages and Latin American Literature. It is now possible for a student interested in Latin America to do graduate work in a specific discipline and to include course work from other departments.

Further information concerning programs in the Inter-American field may be obtained from the Chairman or the Secretary of the Group.

Inter-University Consortium for Political Research

W.D.G. Gagne, I.C.P.R. Official Representative

The University of Western Ontario is an Associate Member of the Inter-University Consortium for Political Research (I.C.P.R.). According to the I.C.P.R. "Memorandum of Organization", the I.C.P.R. ". . . is conceived as a partnership between a group of universities . . . and the Survey Research Center of the University of Michigan . . . The purpose of the Consortium is to promote the conduct of research on selected phases of the political process. It is expected that both partners will contribute to the success of the Consortium and that each will benefit from the association." In order to realize its aims, the I.C.P.R. offers summer seminars in research design, data analysis, mathematical politics, and special selected topics of general interest, serves as a repository for a wide variety of data, and provides technical services. Seminars, data, and technical services are available at little or no charge to faculty and students of member universities.

Those interested in further information on the I.C.P.R. should contact either their representative on the Committee or the I.C.P.R. Official Representative.

Urban and Regional Development Studies

E.A. Beecroft, Ph.D., Director

The University provides facilities for interdisciplinary research by its faculty and students in the field of urban and regional development. Through the Urban and Regional Development Studies Group, a unit of the Faculty of Graduate Studies, it enables the student seeking a Master's or Doctor's degree to undertake a program of courses and research projects in a number of departments and/or faculties. While each student is expected to take his degree in his basic discipline, arrangements are made, with the approval of the academic units concerned, for a program that includes work in other disciplines. The interests and proposals of each student are considered in defining his program.

Such interdisciplinary programs are intended for students desiring to prepare for research, teaching, administration or planning in the field of urban and regional development.

A number of students already engaged in such programs at the University are receiving assistantships and fellowships from the University and from the Canada Council, Central Mortgage and Housing Corporation, and other sources.

For further information, the student should write to the Director, Urban and Regional Development Studies.

COURSES OF INSTRUCTION

ARTS DIVISION

Classics

The M.A. in Classics, Latin or Greek may be taken either by four courses or by two or three courses plus a thesis, subject to approval of the Department. Detailed information is available from the Department of Classics; information is also available regarding special arrangements for applicants without knowledge of Greek. A selection from the graduate courses listed below is offered each year.

LATIN COURSES

500. Roman Historians/*C.L. Murison*
510. Roman Orators/*A.E. Raymond*
520. Lucretius/*I. Avotins*
521. Ovid/*V.A. Broege*
522. Catullus/*N.B. Crowther*
523. Horace/*V.A. Broege*
525. Roman Satire/*A.R. Littlewood*
526. Scriptores Erotici Latini/*A.R. Littlewood*
530. Graeco-Roman Philosophy/*H.B. Timothy*
540. Roman Drama/*D.E. Gerber*
550. Graeco-Roman Education/*G.R. Lambert*
560. Reading Course in Latin Authors/Staff***
590. M.A. Thesis

GREEK COURSES

500. Greek Historians/*C.L. Murison*
510. Attic Orators/*A.E. Raymond*
520. Greek Lyric/*D.E. Gerber*
521. Greek Epic/*D.E. Gerber*
522. Greek Writers under the Roman Empire/ *I. Avotins*
526. Hellenistic Greek Poetry/*A.R. Littlewood*
530. Greek Philosophers/*H.B. Timothy*
540. Greek Tragedy/*D.E. Gerber, D.P. Stanley-Porter*
560. Reading Course in Greek Authors/Staff***
590. M.A. Thesis

English

Special regulations governing the M.A. and Ph.D. in English are available on request from the Department. All requests for information should be addressed to the Chairman of the Committee on Graduate Studies in English.

Application forms for admission to the Faculty of Graduate Studies may be secured from the Department of English and should be returned to the Chairman of the Committee on Graduate Studies in English.

The Department must be notified before Registration which graduate courses you wish to take. The final decision on your admission to a particular graduate course cannot be made before Course Enrolment Day, September 17; but preference will naturally be given to students who have had undergraduate training in the area of literature with which the course deals.

The Department reserves the right to limit enrolment in any course.

The following is a list of the courses to be offered in 1970-71.

SUMMER 1970

525. Chaucer and the Mediaeval Frame Narrative/ *D.F. Chapin*
551. Byron/*P.D. Fleck*
567. Arnold and Clough/*Kenneth Allott*
583. Beginnings of American Fiction: Poe and Cooper/*G. Rans*

FALL AND WINTER 1970-71

500. M.A. Comprehensive
502. Tutorial
503–509. Literary Theory, Genres, and Problems
520–525. Mediaeval Language and Literature
526–528. Linguistics
528. *Beowulf* and Its Analogues/*C.B. Hieatt***
530–539. Renaissance Literature
531. Chaucer and Spenser/*A.K. Hieatt***
532. Milton/*A.E. Barker***
534. Shakespeare/*D. Kaula***
537. Renaissance Bibliography 1450-1700/ *E.J. Devereux*
540–549. Literature of the Restoration and Eighteenth Century
547. Origins of Romanticism/*F.E.L. Priestley***
560–569. Victorian Literature.
563. George Eliot/*C.E. Sanborn***
568. Browning and James: A study of artistic and intellectual kinship/*T.J. Collins***
570–579. Modern Literature
572. Yeats/*B. Rajan***
574. T.S. Eliot: Poet, Critic and Philosopher/ *A.C. Bolgan*
578. *Finnegans Wake:* Myth, Medium and the Message/*R.G.N. Bates***
580–589. North American Literature
582. Walt Whitman's *Leaves of Grass*/*G. Rans***
587. English-Canadian Literature in its Context/ *C.F. Klinck*
589. Canadian Literature and Culture/*J. Reaney***
590. M.A. Thesis
606. Bibliography and Scholarly Methods/ *E.J. Devereux*. This is a compulsory half-course for all students in the M.A. Year or in a Ph.D. program. Any student who regards his previous training in bibliography as satisfactory must arrange to see Professor Devereux, who will assess his previous training and determine whether or not he must take English 606.
610–619. Ph.D. Qualifying Examination
610. Area of Concentration
611. Oral in the Area of Concentration
612. Major Text
613. Old and Middle English
614. Renaissance Dramatic

*Half Course.

615. Renaissance Non-Dramatic
616. Restoration and Eighteenth Century
617. Nineteenth Century
618. Modern Literature
619. North American Studies
690. Ph.D. Thesis

Teaching Fellowships

The Department offers a number of Teaching Fellowships, ranging in value from $1500 to $3000, which involve tutorial work of not more than two hours a week.

French

The Department of French offers programs leading to the degrees of M.A. and Ph.D.

There are two avenues which lead to the M.A. degree. The student may take three courses and write a thesis, or he may take four courses and write an extended term essay in one of the courses. The extended term essay is intended to demonstrate that the candidate has mastered the mechanics of thesis construction and acceptable documentation.

Candidates for the Ph.D. degree are required to take four courses beyond the Master's degree, and to write, under supervision, a doctoral dissertation. All graduate courses must be passed with at least a B grade if graduate credit is to be given.

Candidates for the M.A. and the Ph.D. are expected to attend a non-credit course in methodology offered each year by the Department.

Applicants who are not graduates of an Honors Program in modern languages will be required to do a Prerequisite Year in anticipation of admission to graduate courses.

COURSES

541. Old French
560. The Literature of French Canada
562. L'humanisme en France au XVIe siècle
564. Rabelais
566. Montaigne
570. Molière
572. Corneille
573. Racine
574. Pascal
576. La Préciosité, esthétique et éthique au XVIIe siècle
580. Jean-Jacques Rousseau
585. Diderot
586. Montesquieu
587. Voltaire
588. Art and Literature from Diderot to Baudelaire
590. M.A. Thesis–Essay
591. Le Romantisme
592. Baudelaire
593. Stendhal
594. Proust
595. Péguy
596. Nerval
597. The Naturalist Novel: Emile Zola
598. Bernanos
599. Modern French Novel
610. Mallarmé
611. Camus
690. Ph.D. Thesis

The Department does not offer all the courses listed above in any one academic year. Each spring a list is issued indicating which of the courses will be offered for the following year.

German

The Department of German offers courses leading to the degrees of M.A. and Ph.D. There are two ways of qualifying for the M.A. degree: the student may take two courses and write a thesis or he may take four courses and submit a formal seminar report. All M.A. candidates will take a departmental oral examination.

Candidates for the Ph.D. are required to take at least four courses beyond the Master's degree and to write, under supervision, a dissertation.

Applicants should be graduates of an Honors Program in which German is one of the major subjects, or its equivalent.

Not all of the following courses are offered in any one year. Normally, each member of the Graduate Faculty offers only one course a year, and only those courses are offered for which there is sufficient demand.

COURSES

500. Reading and Research (Work with individual students on special reading and problems of critical evaluation.)

501–505. Special Topics
510. Survey of German Literature
520. Old High German and Middle High German (Phonology, Morphology, Syntax, and Readings)
523. Mediaeval German Literature
530. German Literature of the Reformation and Counter-Reformation
532. German Literature of the Barock
540. Lessing and the German Enlightenment
550. Studies in Goethe
551. Goethe's *Faust*
552. Schiller
560. German Romanticism
570. Nineteenth-Century German Drama
571. The Novelle of the Nineteenth Century
572. Nineteenth-Century German Poetry
573. Heine
574. Stifter and Keller
580. Modern German Drama
581. The Twentieth-Century German Novel
582. Twentieth Century German Poetry
590. M.A. Thesis
690. Ph.D. Thesis

Graduate courses which will definitely be offered in 1970-1971:

500. Reading and Research
523. Mediaeval German Literature OR
530. German Literature of the Reformation (G.H. Seufert)
572. Nineteenth-Century German Poetry (H. Spencer)
574. Stifter and Keller (A. Anderson)
581. The Twentieth-Century German Novel (H.J. Schlütter)

Music

COURSES

***530. Music Bibliography and Research Techniques Bibliography**
***582. Research Tutorial**

Theory and Composition

501. Theory Review I for Graduates (no credit)
502. Theory Review II for Graduates (no credit)
510. History and Pedagogy of Theory
***512. Advanced Orchestration**
514. Analytic Techniques
***516a. 16th Century Stylistic Counterpoint**
***516b. 18th Century Stylistic Counterpoint**
***516c. 20th Century Counterpoint**
518. Composition
591. Mus.M. Thesis
594. Mus.M. Composition Thesis

Musicology and Literature

503. Survey of Music History I for Graduates (no credit)
504. Survey of Music History II for Graduates (no credit)
534. Music Notation
536. Seminar in Medieval and Renaissance Music
538. Seminar in Baroque Music
540. Seminar in Pre-Classic and Classic Music
542. Seminar in Twentieth Century Music
544. Performance Practices in Early Music
***545. Seminar in the Interpretation of Musical Styles**
546. Beethoven
***548. History of Music Criticism**
550. Verdi and Wagner
552. Studies in Gregorian Chant
554. From Symphony to Symphonic Poem
556. Schoenberg and His School
557. Art Song
***558a. Keyboard Literature to 1700**
***558b. Keyboard Literature from Bach to Beethoven**
***558c. Piano Literature of the 19th Century**
***560a. Seminar in Choral Literature**
***560b. Seminar in Choral Literature**
562. Bach and Handel
***564. History of Vocal Art**
590. M.A. Thesis

Music Education

***570. Advanced Conducting**
***572. Advanced Brass Techniques**
***574. Advanced Woodwind Techniques**
***576. Advanced Choral Techniques**
***578. Advanced String Techniques**
580. Music Education Seminar

Performance

509. Applied Music
513. Phonetics for Singers (no credit)
***545. Seminar in the Interpretation of Music Styles**
592. Document for Mus.M. in Performance
593. Mus.M. Recital

Philosophy

Students will be admitted either to the M.A. program or to the Ph.D. program in accordance with their academic backgrounds. There are two programs leading to the Ph.D. in philosophy: the regular program in philosophy, and a special program in the history and philosophy of science. Details may be obtained by writing to the Chairman, Graduate Committee, Philosophy Department, University of Western Ontario, London, Canada.

COURSES

The Department of Philosophy offers approximately 18-20 one-term courses each year. Topics will be chosen from among the below listed areas of Philosophy. A list of topics to be offered will be circulated to all students in the spring of each year.

500–515. Topics in History of Philosophy
516–525. Topics in Logic and Philosophy of Logic
526–530. Topics in Ethics.
531–540. Topics in Epistemology
541–550. Topics in Metaphysics
551–560. Topics in History and Philosophy of Science
561–570. Topics in Contemporary Philosophy
571–580. Selected Topics in Philosophy
590. M.A. Thesis
595. M.A. Comprehensive Examination
596. Ph.D. Qualifying Examination
690. Ph.D. Thesis

Spanish and Italian

The Department of Spanish and Italian offers courses leading to the M.A. degree in Spanish.

Applicants who are not graduates of an Honors Program in modern languages will be required to do a Prerequisite Year in anticipation of admission to graduate courses.

There are two avenues which lead to the M.A. degree. The candidate may complete four courses, or if he prefers, three courses and a thesis.

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*Half Course

*Half Course

Details of the program may be obtained by writing to the Chairman of the Graduate Committee, Department of Spanish and Italian, The University of Western Ontario, London 72, Ontario, Canada.

COURSES

543. Old Spanish. A critical examination of major literary works of the medieval period and a detailed study of medieval Spanish phonology and morphology.

550. Spanish Mystic Writers. An analysis of the literary works of representative Spanish mystic authors in relation with the thought of other mystic writers.

552. Lope de Vega and his Dramatic School. A critical seminar encompassing pre-Lopean drama and including the major playwrights of the Lopean era.

553. Calderón de la Barca and his Contemporaries. A critical analysis of selected plays of Calderón and his dramatic school.

554. Cervantes. An analysis of Cervantes's narrative prose. Special emphasis is placed on his *Don Quixote.*

555. Tirso de Molina. A critical analysis of his principle plays and selected prose.

556. Golden Age Poetry. A study of selected poets of the 16th and 17th centuries.

557. Golden Age Prose. A survey of the major works of Golden Age prose, excluding Cervantes.

560. Galdós and the Nineteenth-Century Novel. A study of literary and social trends of the last half of the nineteenth century.

570. The Generation of 1898. A study of the "Spirit of 1898" with special emphasis on the novel and essay. Unamuno, Baroja, Azorín and Valle Inclán will be studied.

575. Aspects of Modern Spanish American Prose. Study of a selected trend in twentieth century Spanish American fiction. Analysis of significant works.

580. Modern Spanish Poetry. Study of a selected trend in twentieth century Spanish poetry.

582. Modern Spanish Novel. A study of tradition and innovation in the Spanish novel from Baroja to the present time.

590. M.A. Thesis Direction.

591. Bibliography. Six class meetings devoted to a practical introduction to Hispanic bibliography. A non-credit course required of all first year graduate students registered in the Department.

The Department does not offer all the courses listed above in any one academic year. Each spring a list is issued indicating which of the courses will be offered for the following year.

BIOSCIENCES DIVISION

Anaesthesia

Graduates in Medicine who have served one year of rotating internship in an approved hospital may apply for a three year course of training in Anaesthesia in a plan using the facilities of Victoria, St. Joseph's and Westminster Hospitals and of the Faculty of Medicine. This training is fully approved by The Royal College of Physicians and Surgeons of Canada.

A fourth year of postgraduate training is required for Certification and Fellowship in the Royal College of Physicians and Surgeons of Canada. This additional year may be spent in full-time research in Anaesthesia or in one of the Basic Science Departments. Such training is designed for those wishing to qualify for the degree of Master of Clinical Science (M.Cl.Sc.).

The main research interests of the Department are the development and evaluation of techniques of clinical anaesthesia, the study of problems in the care for critically ill patients, the treatment of respiratory failure, the evaluation and improvement of resuscitation techniques and the management of pain problems.

Anatomy

The Department of Anatomy accepts qualified students to study for the degrees of M.Sc. and Ph.D., as well as those not proceeding to a degree. Applicants for admission may have a background in either the Biological or Medical Sciences.

For advanced training of the professional anatomist the Department offers excellent facilities in the various branches of anatomical science. The current research interests of members of the Department include the following: histology, cytology, cytogenetics, neuroanatomy, reproductive biology, electron microscopy, tissue culture, cancer research, and certain aspects of gross anatomy. Graduate students may carry out their research projects in one of these fields.

Some medical graduates spend a year or more of their Fellowship training period on a research project in the Department, proceeding, if they wish, to the M.Sc. degree. Other medical graduates, seeking an opportunity for intensive review of gross anatomy as part of their training in surgery, study in the Department, and act as demonstrators.

While the emphasis in the graduate program is on research, students proceeding to a degree are required to take courses selected with the advice of

the supervisor and the Chairman of the Department. This part of the program is designed to provide a sound knowledge of various branches of anatomy, together with some insight into ancillary sciences. Students taking the Ph.D. will be expected to take a departmental comprehensive examination before the end of their second year in two branches of anatomical science, i.e. two of: Gross Anatomy, Histology and Cytology, Neuroanatomy, Developmental Anatomy, Cytogenetics.

Applications for admission should, in the first instance, be made to the Chairman of the Department. A brochure describing the research activity of the Department will be sent on request.

COURSES

500. Histology
510. Current Topics in Anatomy
530. Medical Genetics
531. Medical Histology
532. Neurological Science (Medical)
533. Medical Neuroanatomy
534. Medical Gross Anatomy and Embryology
535. Dental Gross Anatomy and Embryology
536. Dental and Oral Histology
560. Gross Anatomy
562. Cytogenetics
563. Embryology
564. Neuroanatomy
590. M.Sc. Thesis
661. Cell Structure
690. Ph.D. Thesis

Bacteriology and Immunology

Courses are offered leading to the degree of M.Sc. or Ph.D. Prospective graduate students should have an Honors degree, or its equivalent (preferably in Microbiology, Biology, Biochemistry or Physiology) or have an M.D., a D.D.S. or a D.V.M.

A program of research and directed reading is accompanied by courses offered by the Department or given in collaboration with other Departments of the Faculty and may include tutorials and graduate seminars. Students registered in the Department for degree courses must attain the required level (B grades) in the departmental courses. Those taking a Ph.D. will be required to pass a departmental comprehensive examination in the second year of their course. Those registered as Special Graduate Students will be expected to pass a departmental general examination at the end of one year before their registration is confirmed in a degree course.

The present research interests of the Department include: the structure of bacteria and fungi; the application of cytochemical and biochemical methods to the analysis of cell structure; the synthesis of protein cell components; endospores; macromolecular architecture of bacterial cell walls; taxonomy; toxin production, cell lysis and other physiological problems; bacterial metabolism; virus cell interactions; bacteriophage genetics; immunological and hypersensitivity problems. Facilities for electron microscopy, electrophoresis, analytical ultracentrifugation and other instrumentation are in the Department.

Applicants with acceptable training in biochemistry may be considered for research problems in microbial biochemistry, which are supervised conjointly with the Department of Biochemistry. Opportunities for research in clinical microbiology (including bacteriology, mycology and virology) are offered with the resources of the teaching hospitals at hand. Opportunities in Immunological research and training have been increased, and it is considered acceptable that candidates may specialize in either bacteriology or immunology.

COURSES

500. Microbiology. A comparative study of the morphology, biology and relationships of algae, protozoa, fungi, bacteria and viruses. Given in collaboration with the Department of Botany.

530. Medical Microbiology. A course of lectures, seminars and laboratory exercises for medical students and other requiring a basic knowledge of medical microbiology and applied immunology. 3 to 14 hours each week according to the quarter of the year.

531. Oral and Dental Microbiology. A course of lectures, seminars and laboratory exercises for dental students and others requiring a similar background.

541, 542. Seminar. Seminar courses involving detailed consideration of selected topics in microbiology.

560. Advanced Microbiology. An advanced treatment of the biology and physiology of microbes with particular emphasis on the bacteria and their viruses.

561a. Microbial Anatomy. A survey of cytological methods and applications to the understanding of the structure of procaryotic organisms and fungi.

562b. Virology. A survey of the structure and function of microbial, animal and plant viruses.

565. Microbial Biochemistry. Topics involving the biochemical activities and processes of microbes.

567a. Microbial Genetics. Aspects of genetics applying to micro-organisms. (Given in collaboration with the Department of Botany).

568. Medical Bacteriology: A lecture course concerned with pathogenesis and exemplary problems in diagnostic and determinative medical bacteriology. Not to be given in 1971-72.

569b. Medical Mycology. A consideration of fungi pathogenic for man and animals.

570a. Immunology. A course concerned with immunological theory and the interpretation of basic and medically applied immune phenomena. (Given in collaboration with the Department of Medicine).

571b. Immunobiology. An advanced course dealing with cellular mechanisms involved in the immune response, the ontogeny and phylogeny of the immune response, general concepts in immunopathology and immunological diseases, and other topics of current interest. Prerequisite: Bacteriology and immunology 570a or its equivalent.

572b. Immunochemistry. An advanced course dealing with the chemical structure of antigens and antibodies, with the molecular aspects of antigen-antibody reactions *in vitro* and *in vivo*. Given in conjunction with a laboratory. Prerequisite: Bacteriology and Immunology 570a or its equivalent.

573. Methods in Immunobiology. An advanced course offered to those specializing in immunology, and will deal with techniques in immunobiology and clinical immunology. (Given in collaboration with the Department of Medicine).

574. Methods in Immunochemistry. The students specializing in immunology will be given the opporunity to learn and use all the immunological techniques employed in this laboratory (equipment permitting).

575, 576. Immunology Seminars. Seminar courses involving detailed consideration of selected topics in immunology.

580. Methods in Microbiology. An advanced course offered to those specializing in microbiology. It will deal with specific techniques in microbiology.

590. M.Sc. Thesis.

610. Comprehensive (Ph.D.)

690. Ph.D. Thesis.

Biochemistry

The minimum requirement for acceptance into courses leading to the degree of M.Sc. or Ph.D. is an M.D. or an Honors degree, or its equivalent, in Biochemistry, Biology, Chemistry, Microbiology or Physiology.

The research interests of the Department are in the following general fields: Chemistry, metabolism and biosynthesis of phosphatides, chemistry and metabolism of brain, biochemistry of developing brain, biochemistry of mental disease, biochemical genetics, biochemistry of congenital abnormalities, fat metabolism, carbohydrate metabolism, metabolism of degenerating muscle. Studies on the physical and chemical properties of proteins, allosteric control of enzymes and the chemistry of differentiation are also proceeding.

Applicants with acceptable training in Bacteriology may be considered for research problems in microbial biochemistry, which are supervised conjointly with the Department of Bacteriology and Immunology. In arrangement with the Department of Physiology, students may take Biochemistry and Physiology as a major subject.

In addition to the general systematic course, tutorials, directed reading and research, graduate seminar courses are provided.

Students who wish to obtain the Masters degree will normally take the equivalent of two full courses and candidates for the Doctoral degree will normally take the equivalent of three full courses in addition to research and thesis requirements. Consideration is given to course work previously completed. Students seeking the Doctoral degree are expected to complete successfully an oral examination on the general field of biochemistry during the period of registration for the advanced degree.

COURSES

500. General Biochemistry. A survey course.

510. Advanced Enzymology. A course of lectures dealing with kinetics, thermodynamic and mechanistic characteristics of enzyme action. Prerequisite, Biochemistry 500, 530 or equivalent.

513. Current Topics in Biochemistry. A course of variable content dealing with contemporary problems in biochemistry.

514. Topics in Lipids and Neurochemistry. A survey of the composition and metabolic processes of lipids with particular reference to nervous tissues. Prerequisites, Biochemistry 500, 530 or equivalent.

530. Medical Biochemistry. A survey course in biochemistry related to medicine.

560. Biochemistry. An advanced treatment of intermediary metabolism. Prerequisites, Biochemistry 500, 530 or equivalent.

561. Nucleic Acids and Protein Synthesis. A discussion of the role of nucleic acids in promotion and regulation of protein synthesis. Prerequisite, Biochemistry 500, 530 or equivalent.

564. Enzymology. A survey of the principles of mechanism and function of enzymes. Prerequisite, 500, 530 or equivalent.

567. Plant Biochemistry. (Given in collaboration with the Department of Botany.) A discussion of the chemical, composition and metabolism of plant tissues. Prerequisite, Biochemistry 500, 530 or equivalent.

568. Physical Biochemistry. A discussion of the physicochemical properties of macromolecules of biological interest. Prerequisite, an introductory course in physical chemistry and Biochemistry 500, 530 or equivalent.

590. M.Sc. Thesis.

690. Ph.D. Thesis.

Note: All courses are not offered every year.

Biophysics

Graduates from physical or biological sciences or medicine are accepted for the degrees of M.Sc. or Ph.D. in Biophysics. Previous training in physics and mathematics is desirable. Graduate students are required to make up any deficiencies in physics, mathematics and biology during their program.

The present research interests of the Department are in the following general fields: fundamental hemodynamics and hemorheology, the state and function of the blood vessel wall, contraction of neonatal blood *vessels to oxygen*, microcirculation and capillary exchange, micromanipulation of living cells, protoplasmic streaming, electrical activity of muscle, bioelectric intercell communication in culture, biophysics of muscular contraction, mechanochemistry of contractile systems, studies of excitable membranes by infra-red spectrophotometry, studies on hemoproteins by electron paramagnetic resonance, respiration and photosynthesis in algae and bacteria, effect of ionizing radiation and chemicals on growth of solid tumors, properties of cultured mammalian cells in relation to malignancy.

The department is well equipped to study the application of physical laws to the behaviour of biological materials, living cells and organisms.

COURSES

500. General Biophysics. A survey of the Physics of living things.

501. Biophysical Analysis. The application of mathematics to the functional behavior of living things. Emphasis is on the application of mathematics and not on mathematics as a subject. A knowledge of first year calculus is assumed.

511. Current topics in Biophysics A.

512. Current topics in Biophysics B. Not to be offered in 1970-71

560. Cellular Biophysics. The physics of cell shape, size, surface properties, membrane diffusion and transport. Elasticity and viscosity of cells and body fluids. Contraction of the muscle cell.

561a. Bio-electrical phenomena. Bio-electric potentials, excitability and conduction, mechanism of biological transducers, and cybernetics.

562b. Radiobiology and Molecular Biophysics. Nature and effects of electromagnetic radiations on biomolecular structure and on living cells. Applied radiobiology and radioecology. (Given in collaboration with the Department of Botany.)

563a. Environmental Biophysics. The physical environment of life. The effects, on living things, of environmental factors such as temperature, solar radiation, pressure, gaseous atmosphere, water and solutes, gravity, sound and vibration, electric and magnetic fields.

564b. Bio-thermodynamics. Study of the transformation of energy in living things, applications of the laws of thermodynamics, energy exchanges with the environment, irreversible thermodynamics and the steady state.

570. Advanced Studies in Biophysics I. A detailed study of selected topics in Biophysics arranged to meet the needs of the student; may be taken only by permission of the Chairman of the Department, who will appoint the instructor, and an examining committee consisting of the instructor and at least one other member of faculty.

571. Advanced Studies in Biophysics II. Regulations as for 570. This course permits a student to take a second, and different, course of directed study.

590. M.Sc. Thesis.

690. Ph.D. Thesis.

Botany

Graduate students are accepted for programs of research, together with course work, leading to the degree of M.Sc. and Ph.D. The research interests of the Department are as follows:

Ecology. Comparative biology of closely related species inhabiting the same area. Analysis of vegetation and environment including ordination, classification and species pattern.

Genetics. Cytogenetics of mitotic and meiotic cells. Physiological genetics of pollen. Genetics of fungi. Biochemical systematics, with particular reference to secondary phenolic compounds and their inheritance. Evolution.

Morphogenesis. Morphological analysis of initiation and development in flowers and other organs.

Mycology and Plant Pathology. Biological effects of storing fungi in liquid nitrogen. Growth of fungal hyphae. Endotrophic mycorrhiza. Biology of plant pathogens, including root/fungus relationships, biology of zoospores, chytrid parasitism of algae, physiology of *obligate* parasitism and ultrastructural cytology, effect of pesticides on soil microflora, physiology of psychrophilic fungi.

Phycology Field, culture studies and chemical control of freshwater algae.

Plant Biochemistry and Physiology. Growth and metabolism of pollen. Enzymology. Plant sugars. Photoperiodism and timing. Phytochrome and endogenous rhythms as regulators of germination and flowering. Mode of action of phytochrome in de-etiolation. Role of phenolic metabolism in growth. Organic and amino acid metabolism. Cellulose and lignin degradation. Physiology of herbicidal action. Metabolic root pressure and solute uptake.

Radiobiology. Effects of high energy irradiation on metabolic processes, in particular on protein biosynthesis, and related nucleic acid studies.

Systematics. Patterns of variation at and just below the generic level with particular emphasis on multicharacter numerical Adansonian analyses and phyletic interpretations; problems of data coding and selection. Materials: Arundinelleae (Gramineae) and Podalyrieae (Leguminosae). Data: morphologic, anatomical, cytological, biochemical, geographical.

COURSES

550. Topics in Morphogenesis and differentiation/ *R.I. Greyson*

552. Advanced Plant Physiology and Biochemistry I */ F.S. Cook, B.G. Cumming, W.G. Hopkins, D.G. Wilson*

553. Advanced Ecology I/ *P.B. Cavers and L. Orloci*

554. Advanced Genetics I/ *D.B. Walden*

556. Biochemical Systematics/ *M.D. Fahselt*

558. Numerical Techniques in Taxonomy/ *R.C. Jancey and J.B. Phipps*

559. Philosophy of Systematics/ *R.C. Jancey and J.B. Phipps*

560. Freshwater Algae/ *D.A. McLarty*

561. Virus Diseases/ *W.E. McKeen*

570. Mycology and Plant Pathology/ *C.J. Hickman and A.M. Wellman*

571. Host-parasite Relations/ *W.E. McKeen*

590. M.Sc. Research and Thesis/ *Staff*

652. Advanced Plant Physiology and Biochemistry II */ F.S. Cook, B.G. Cumming, W.G. Hopkins, D.G. Wilson*

653. Advanced Ecology II/ *P.B. Cavers and L. Orloci*

654. Advanced Genetics II/ *D.B. Walden*

659. Advanced Radiobiology/ *R.B. van Huystee*

690. Ph.D. Research and Thesis/ *Staff*

Diagnostic Radiology

Graduates in Medicine who have served a year of rotating intership in an approved hospital may apply for admission to the integrated training program in Diagnostic Radiology.

This training is designed for those intending to sit the examination of either Certification or Fellowship of the Royal College of Physicians of Canada, as modified for Diagnostic Radiology. Residents are encouraged to undertake research projects in Clinical Diagnostic Radiology, in cooperation with members of other Clinical Departments, or in purely radiological fields.

The staff of the Department of Diagnostic Radiology participates extensively in the activities of the cardiovascular, neurological and paediatric services, and considerable specialization of both staff and equipment in those areas has developed.

Epidemiology

The research interests of the Department are chiefly in the fields of epidemiology and biostatistics with current emphasis on studies of perinatal mortality, child development, cancer, mental illness and individual patterns of morbidity.

A graduate training program in epidemiology is available for a limited number of students. Suitable graduates in medicine, biology, mathematics or the behavioral sciences are eligible for training for the M.Sc. or Ph.D. degree.

Also it is possible for physicians proceeding to the Fellowship of the Royal College in some specialties to take Epidemiology as their basic science.

COURSES

510. Statistics.

520. Methods of Clinical Research.

530. Epidemiology.

590. M.Sc. Thesis.

610. Advanced Epidemiology.

690. Ph.D. Thesis.

Medical History

A program leading to a graduate degree is not yet available.

COURSE

540. History of Scientific Ideas. An introductory survey of the historical growth and expansion of science, focusing on the aims, methods, discoveries, and organization of scientific activity, from antiquity to the 20th century.
(Half course, fall term)

Medicine

Graduates in Medicine may obtain further training in internal medicine at the intern, resident, or fellow level - through a program which integrates the clinical and research facilities of Victoria, St. Joseph's and Westminster Hospitals.

This program is designed to qualify individuals for the fellowship examination of the Royal College of Physicians and Surgeons of Canada, but is also available to those involved in other specialty training areas.

Postgraduate training in clinical research is offered in cardiology, pulmonary disease, endocrinology, gastroenterology, haematology, renal disease, therapeutics, allergy and immunology and others. Varied facilities in these disciplines are available for animal and human research, combined with clinical traineeship.

Obstetrics and Gynaecology

Graduates in Medicine may apply for training in Obstetrics and Gynaecology at Victoria or St. Joseph's Hospitals, London, Ontario.

Such further training is designed for those who wish to qualify for Fellowship in the Royal College of Surgeons of Canada, or for the degree of Master of Clinical Science (M. Cl. Sc.).

Within the Department there is an active basic research program in the field of Reproductive Endocrine Physiology. In addition, programs in the study of fetal and uterine physiology are well established. The special facilities for monitoring the forces of labour and fetal condition are available in an active Intensive Care Unit.

Clinical investigations are carried out in collaboration with the Departments of Physiology, Paediatrics, as well as other departments on occasion.

Opportunities for a year of clinical investigation approved by the Royal College of Surgeons of Canada are available for suitable applicants.

Ophthalmology

The Department of Ophthalmology is approved by the Royal College of Physicians and Surgeons of Canada to accept two candidates annually for training in this specialty. The facilities of Victoria, St. Joseph's and Westminster Hospitals, and the Health Sciences Centre of the University are utilized in this program.

Otolaryngology

The Department of Otolaryngology offers a four year postgraduate course of training approved by the Royal College of Physicians and Surgeons of Canada, leading to the F.R.C.S.(C) examinations. One year of general internship is a prerequisite for entering this course. The four years consist of three years of training in the specialty of otolaryngology, and one year of general surgery in the various Teaching Hospitals in London.

Paediatrics

Graduates in Medicine who have served a year of rotating intership in an approved Hospital may apply for further training in Paediatrics at Victoria and War Memorial Children's Hospital. Such further training is designed for those who wish to qualify for Fellowship in the Royal College of Physicians of Canada in Paediatrics, or for the degree of Master of Clinical Science, or for further general training before proceeding into practice. A one year resident training program in Paediatric Cardiology is available.

The main research interests of the Department lay in carbohydrate metabolism, metabolic studies, mental retardation, the study of mongolism, chromosome anomalies, immunohaematology, neonatology, disorders of mucopolysaccharides and aminoacidopathies. Research in perinatal mortality and morbidity is carried on in conjunction with the Department of Obstetrics and Gynaecology and the Departments to Physiology and Biochemistry. An active neonatal intensive care unit exists at St. Joseph's Hospital where detailed studies are performed on this important aspect of paediatric care. Various research opportunities exist at the Children's Psychiatric Research Institute in the fields of mucopolysaccharides and aminoacidopathies. An opportunity to participate in this investigational work is available to suitable applicants.

A formal course of training extending over five year period after graduation, is being developed which will qualify graduates for the degree of Master of Clinical Science, or to sit for the examinations for fellowship in the Royal College of Physicians of Canada.

Pathology

Graduate training is available leading either to an advanced degree in Pathology (M.Sc. or Ph.D.) or to qualification for Fellowship or Certification in the Royal College of Physicians and Surgeons of Canada. Training may be arranged in the Health Sciences Centre of the University or in the Pathology Departments of the Teaching Hospitals.

Dental graduates may study toward Fellowship in the American Academy of Oral Pathology or Certification by the American Board of Oral Pathology.

Graduates in Science as well as Medical, Dental and Veterinary graduates are eligible for M.Sc. and Ph.D. studies.

COURSES

500. General Pathology. A survey or core course in general pathology intended for individuals who desire some acquaintance with fundamental processes of disease. Some knowledge of gross and microscopic anatomy is desirable.

510. Current Topics in Pathology. A seminar course held throughout the year.

511. Oral Pathology Seminar.

512. Methods in Pathology. A course of lectures and demonstrations dealing with modern methods of investigating disease processes. Topics covered may vary from year to year, but include electron microscopy, transplantation techniques, immunofluorescent methods, study of disease in living tissues. Prerequisite: some previous survey course in general pathology.

530. General Medical Pathology. A course of lectures, demonstrations and laboratory periods dealing with fundamental aspects of disease processes. Subjects include inflammation and repair, regressive changes, vascular diseases, disorders of growth and neoplasia, specific examples of inflammation.

590. M.Sc. Thesis.

610. Comprehensive (Ph.D.).

630. Special Human Pathology. A comprehensive course in human pathology, taught on a regional and systemic basis. Prerequisite: Pathology 530.
248 hours.

631. Special Pathology. A course in human pathology taught on a regional and systemic basis. It is designed for students who require a less detailed course than 630. Primarily arranged for dental students. Preerequisite: Pathology 512 or 530.

640. Oral Pathology. A course, designed primarily for dental students, in pathology of the teeth, oral cavity and related structures. The oral manifestations of many systemic diseases, as well as the systemic manifestations of oral disease, are also discussed.
72 hours.

641. Graduate Oral Pathology. The pathology of the teeth, oral cavity and related structures are considered in detail. Selected topics such as neoplasms of the oral cavity, oral cytology, and histologic technique are also studied.
160 hours.

690. Ph.D. Thesis.

Pathological Chemistry

A B.Sc. or M.D. degree is required for acceptance to studies leading to the degree of M.Sc. or Ph.D. Seminars, directed reading and courses provided through co-operation with other Departments of the Faculty are planned for each student. Candidates are also accepted for further training to qualify for Fellowship, including specialized training in Clinical Pathology, Medical Biochemistry and Haematological Pathology, preparatory for Certification or for Fellowship in the Royal College of Physicians and Surgeons of Canada. Enquiries and applications should be addressed to the Head of the Department.

Present research activities in the department lie in the following general areas' special studies in medical biochemistry in various disease processes, including blood clotting factors and transfusion problems; the enzyme systems concerned in intermediary metabolism in health and disease including malignancy; ovarian hormones; environmental aspects of carcinoma; erythrocyte structure and function; parameters in renal function and immunofluorescence in tissue rejection; fluorescent antibody studies in red cells and amniotic cells; studies in the biogenesis of mitochondria and underlying control mechanisms; chronical dialysis and kidney transplants; investigations of steroid and other hormones; tissue histocompatability; catecholamines in plasma.

The research and clinical laboratories, situated in the Victoria Health Services Building and the Meek Memorial Laboratory, Victoria Hospital, include special facilities for chromatographic and electrophoretic studies; spectral analysis in the ultraviolet, visible and infrared range with spectrophotometers, recording instruments and flame spectrophotometers; amino acid analyzer and gas chromatography; ultracentrifuge; atomic absorption spectrophotometer; tracer techniques utilizing beta and gamma emitting isotopes.

COURSES

510. Selected Topics in Endocrinology and Metabolism.

511. Biochemical Haematology.

530. Pathological Chemistry (Medical).

590. M.Sc. Thesis.

690. Ph.D. Thesis.

Pharmacology

Students with an M.D., D.D.S., D.V.M., or an Honors degree in the Biological or Medical Sciences, Chemistry, or Pharmacy, are accepted as candidates for the degree of M.Sc. and Ph.D. in Pharmacology. Applications for admission should, in the first instance, be made to the Head of the Department.

The present research interests of the Department are in the pharmacology of the cardiovascular system, decompression sickness, thrombus formation, and neuromuscular transmission; in relations between chemical structure, enzymes and pharmacological activity, and in neuropharmacology. Facilities are available for research in these and other fields in Pharmacology.

COURSES

501. General Physiology and Pharmacology. In collaboration with the Department of Physiology.

511. Pharmacology of the Autonomic Nervous System.

530. Pharmacodynamics (Medical).

531. Neuropharmacology (Medical).

532. Neurological Sciences (Medical). In collaboration with Departments of Anatomy, Biochemistry and Physiology.

541. Seminar.

560. Advanced General Physiology and Pharmacology. In collaboration with Department of Physiology.

561. Chemical Pharmacology.

580. Laboratory and Tutorial.

590. M.Sc. Thesis.

610. Advanced Pharmacology. (Prerequisite course 530 or equivalent).

690. P.h.D. Thesis

Although the emphasis is on research in the graduate programs, students are required to take formal courses. The number and selection of these courses will depend in part upon the student's previous training.

Physical and Health Education

ADMISSION REQUIREMENT

The Department of Physical and Health Education offers a program leading to the M.A. degree:

Candidates are admitted at the discretion of the Department. The minimum requirements are as follows:

1. Graduation in Honors Physical and Health Education from The University of Western Ontario with first or second class standing, or from an accredited university with an equivalent degree and standing.
2. Graduation in any other course with first or second class standings, and completion of such additional make-up work as may be determined by the Department.

PERIOD OF STUDY

Applicants who meet the first requiremnt will normally be accepted for regular admittance to a one year program of study. Those who meet the second requirement will be accepted into a Prerequisite Year of study. The make-up work will be determined by the Department.

Admittance to regular admission will be dependent upon the satisfactory completion of the course work in the prerequisite year.

REQUIREMENTS FOR THE DEGREE

The program of study will consist of a thesis and three and one-half courses, one of which must be P.H.E. 501 (one term). In consultation with the Chairman of the Graduate Committee, a minimum of two courses are to be selected from the list below. The third course shall normally be a senior or graduate course related to the candidate's field of study, offered by another department in the Faculties or Schools of the University, with the concurrence of the Department concerned.

Students may petition the Graduate Committee to substitute two (2) courses in lieu of the thesis. Upon acceptance of his request the student may enrol in a maximum of four and one-half courses in the combined fall and winter term. He will normally enrol in his fifth course in the summer term. A final oral examination will be conducted by the Departmental Examining Board upon satisfactory completion of the course work.

COURSES

501. Research Methods in Physical and Health Education/ *B. Petrie*

502. Scientific Analysis of Physical Fitness and Sports Performance/ *M.S. Yuhasz*

503. Science and Principles of Modern Sports Training/ *R.B. Eynon*

510. A Cultural-Historical Study of Physical and Health Education/ *J.R. Fairs*

511. The Administration of Physical and Health Education/ *G.A. Paton*

512. Modern Health Problems/ *G. Wearring*

553. Theory of Motor Performance/ *J.R. Richardson*

555. Individual Study or Research/ *Faculty*

558. Sociology of Sport/ *B. Petrie*

590. M.A. Thesis/ *Faculty*

SEMINAR

Students will be required to attend the Department Seminar which meets regularly to hear and to discuss papers and reports on current issues and recent research given by faculty, visitors and students.

Physiology

The Department of Physiology accepts qualified candidates for the degrees of M.Sc. and Ph.D. The usual requirement for admission is an M.D., D.D.S., or Honors Degree in Science. In special cases, students with other qualifications may be accepted for a prerequisite year to achieve adequate standing. Applications for admission, in the first instance, should be made to the Chairman of the Department.

The research interests of the Department are currently in the following general fields: regulatory physiology including the role of the visceral brain and endocrine system in the control of energy, water and salt exchange, and in reproduction; behavioral physiology; physiological responses of the organism to environmental temperature, activity and dietary factors; nutrition and metabolism; physiology of the central nervous system; nerve muscle and receptor physiology; gastrointestinal physiology; perinatal physiology; oral physiology; cardiovascular physiology; and renal physiology.

Facilities for research and graduate training in these fields include controlled environmental rooms, a radioisotope laboratory, radio-immunoassay equipment, a shielded laboratory, an electronics workshop, recording, stereo-taxic, histological, photomicrographic and other equipment as well as special apparatus for chemical physiology including chromatography, electrophoresis, ultraviolet – visible spectrophotometry, fluorometry, etc. Both general and on-line (PDP12) computing facilities will be available.

In addition to the general systematic courses, tutorials, directed reading and research, graduate seminar courses are provided in co-operation with other Departments of the Faculty.

Students who wish to read for the M.Sc. in Physiology will take, or provide satisfactory evidence of having successfully completed the following courses, or their equivalent: Physiology 500, 501 and 514, a course in *Biochemistry* and such other courses as the Department may require.

Students who wish to read for the Ph.D. in Physiology will take or provide satisfactory evidence of having successfully completed the following courses, or their equivalent: Physiology 500, 501, 511, 512 and 614, a course in Biochemistry, a course in Statistics, and such other courses as the Department may require.

In arrangement with the Department of Biochemistry, students may take Biochemistry and Physiology as a major subject.

In addition to course and research work, graduate students and fellows in the Department must, as part of their training, demonstrate and tutor in various courses. Specific Departmental Regulations for the direction of candidates may be obtained from the Department.

COURSES

500. Mammalian Physiology.

501. General Physiology and Pharmacology.

511. Current Topics in Physiology A.

512. Current Topics in Physiology B.

514. Tutorial and Comprehensive in Physiology (M.Sc.).

541. Seminar.

542. Physiology of Exercise.

560. Advanced General Physiology and Pharmacology

561. Systematic Mammalian Physiology.

562. Metabolic Physiology.

563. Neurophysiology.

564. Physiological Controls and Regulations.

565. Behavioral Physiology.

580. Laboratory and Tutorial.

590. M.Sc. Thesis.

614. Tutorial and Comprehensive in Physiology (Ph.D.).

690. Ph.D. Thesis.

Psychiatry

Graduate training in Clinical Psychiatry is provided for suitable applicants wishing to qualify for Certification or Fellowship examinations of the Royal College of Physicians and Surgeons of Canada.

This training utilizes the extensive psychiatry facilities available in the area. Application is made directly to the Head of the Department. Suitable stipend is provided during the period of training by the Ontario Department of Health.

Psychology

PROGRAM OF STUDIES

The graduate program provides advanced training in general psychology with specialization in learning and motivation, sensation and perception, physiological and comparative, verbal learning and memory, cognition, measurement, experimental child, personality theory and assessment, experimental social, psycholinguistics, educational, mental retardation, and experimental psychopathology.

FACILITIES OF THE DEPARTMENT

Facilities for experimental research include animal laboratories and rooms specially designed for research with human subjects in perception, psychophysiology, learning, personality and experimental social psychology. Standard equipment is available, and additional special equipment necessary for a student's research may be purchased. Facilities to aid in running experiments include a PDP-8s and a PDP-12 computer complete with analog converter, oscilloscope, etc. An engineering shop, a work shop and electronic consultants are available. Data processing equipment includes programmable electronic calculators (in addition to standard mechanical and electronic calculators) and access to complete IBM 7040 and DEC PDP-10 computer facilities. The Department has a remote terminal, card reader and printer for use with the PDP-10. In addition to a library of computer programs, a full-time programmer is available for special programs or consultation.

Potential field settings (and sources of subjects) for research include, in addition to industry and schools, three mental hospitals, psychiatric wards in two general hospitals, an Alcoholism and Drug Addiction Research Foundation, a Child Guidance Clinic, a Children's Psychiatric Research Institute, a Crippled Children's Treatment Center and a nursery school. Four mobile laboratories are available for off-campus research with children.

M.A. DEGREE

The purpose of the master's program is to increase the student's general knowledge of psychology beyond that obtained in undergraduate courses and to train him for research and scholarly work. The program also provides a foundation for advanced training in applied psychology. Candidates are required to take three graduate courses, and to submit a thesis based on an empirical investigation of a problem within some area of psychology. The thesis research is supervised by a faculty member to whom the student is apprenticed.

The minimum residence requirement is one academic year of full-time study by a candidate entering with a Canadian Honors degree or its equivalent, but students who have not completed the requirements for the degree are expected to remain in residence during the summer.

Ph.D. DEGREE

The primary purpose of the doctoral program is to train scientists and university teachers. The program typically includes graduate seminars and tutorials, a reading knowledge of one foreign language, a comprehensive examination in one area of specialization, and a dissertation based on a research project. Individual programs of study are encouraged, and include teaching and research apprenticeship training with members of staff. The minimum residence requirement is three academic years of full-time study after an Honors level Bachelor's or two after a Master's degree. Frequently, more time is necessary. All students are expected to be in residence during the summer.

ADMISSION REQUIREMENTS

M.A. Degree: A student must have obtained at least second class honors in the final years of his undergraduate work to be admitted to the Faculty of Graduate Studies.

Ph.D. Degree: An M.A. degree in psychology is normally required for admission as a Ph.D. candidate in the Department. A copy of the M.A. thesis may be requested at the time of application.

Graduate Record Examination results (Aptitude and Advanced Tests) are required and should be made available at the time of application. M.A.T. scores may be accepted in certain cases.

COURSES

500-509. Learning and Motivation. Introduction to theories of Hull-Spence, Logan Mowrer, Miller, Skinner, Estes; classical conditioning; operant conditioning; frustration; punishment; discrimination learning; partial reinforcement; mediation concepts; and, motivational models.

510-519. Sensation and Perception. Psychophysical theory and methods; physiological basis of sensory and perceptual processes and their stimulus correlates; spatial and temporal factors; color vision; adaptational processes; theories and models of perception; and, developmental and motivational aspects of perception.

520-529. Physiological and Comparative. Neural mechanisms of learning; memory; language; sensory and perceptual processes; attention; sleep and wakefulness; and, neural and endocrine integrations underlying drives and emotional behavior.

530-539. Experimental Child. Motivational and associative factors in children's learning; development of sensory integration; problem solving and cognitive development; behavioral modification in preschool children; assessment of brain-injury; and special problems in behavioral development.

540-549. Research Design and Measurement. Design of research and the analysis of data; general statistical principles; analysis of variance; correlation theory; multivariate techniques; methods and principles of measurement; numerical analysis; and, theory of errors.

550-559. Cognitive Processes. Concept formation; problem solving; computer simulation of cognitive processes; the creative process in literature; cross-cultural variation in thinking processes; decision-making and game theory.

560-569. Experimental Social. An overview of problems in social psychology; theory and method; social learning and motivation; person perception; attitudes; social influence; group structure and process.

570-579. Verbal Learning, Memory, and Psycholinguistics. Stimulus and response parameters; coding or mediating processes; structural aspects of language; theoretical interpretations of verbal learning; processes in short-term and long-term memory; psycholinguistic phenomena including developmental aspects; situational determinants, pathology, and individual differences in language and verbal behavior.

580-589. Personality Theory and Assessment. Critical evaluation of theories concerning the nature and function of the person as a psychological entity, and the theoretical and quantitative foundations of assessment; empirical foundations of personality theory; personality theory and practice; test theory; construct validation and test construction; classification and diagnosis; and, multivariate procedures.

600-609. Educational Psychology. Introduction to educational psychology; the analysis of the general principles of psychology as applied to education; education of exceptional children including children with emotional, neurological and perceptual disorders as well as the gifted, retarded, and culturally deprived; educational research; educational measurement; and the psychology of teaching and application of learning theory to classroom learning.

620-629. Experimental Psychopathology. Theoretical foundations of psychopathology; etiology; assessment and treatment of behavior disorders and organic impairments.

640. Current Topics. A seminar conducted in cooperation with many faculty members, this course is required of all M.A. students. Its purpose is to provide information on important current research areas.

680-689. Tutorial in Experimental and Theoretical Psychology.

590. M.A. Thesis.

690. Ph.D. Thesis.

Note: At least one seminar in each of the above areas is normally offered each academic year. Seminars are frequently inter-disciplinary with contributors from other Departments, such as: Computer Science, Neurology, Physiology, Sociology, Psychiatry, Physics, and Paediatrics.

Surgery

Graduates in Medicine who have served a year of rotating internship in an approved hospital may apply for further training in Surgery in a plan utilizing the facilities of Victoria, St. Joseph's and Westminster Hospital and of the Health Sciences Centre of the University.

This training meets the requirement for Fellowship in the Royal Colleg of Surgeons of Canada and candidates beginning the course are expected to proceed to this degree.

Research may be carried out during the period in training in general surgery or one of the surgical specialties and may lead to qualification for the degree of Master of Clinical Science (M.Cl.Sc.).

Therapeutic Radiology

The Department of Therapeutic Radiology is located in the London Clinic of the Ontario Cancer Treatment and Research Foundation, Victoria Hospital. Facilities are available for radiation therapy, nuclear medicine, radiation physics, radiobiology and chemotherapy of malignant disease. A close association with other clinical departments is maintained by joint consultative clinics. The department offers graduates in medicine who have served one year of rotating internship a full course of training leading to Fellowship or Certification by the Royal College of Physicians and Surgeons of Canada. Clinical or basic research may be carried out and submitted as partial fulfilment for the degree Master of Clinical Science (see page 17); with the approval of the College this may be used to satisfy the requirement for training in basic science.

Graduates in medicine or the basic sciences may carry on research in the Division of Nuclear Medicine, Radiation Physics or Radiobiology which may be used in partial fulfilment for the degrees, Master of Science or Doctor of Philosophy. These degrees are granted in the basic department in which the supervisor of the student holds a joint appointment, at present Biochemistry, Biophysics or Physics. Research interests in the Department currently include, factors influencing the sensitivity of solid tumours to ionizing radiation, the role of the cancer cell membrane in the development of distant metastases, dosimetry of high energy radiation sources and the application of new isotopes to clinical diagnosis.

A suitable stipend during the period of residency or graduate training may be obtained through the Ontario Cancer Treatment and Research Foundation.

COURSES

510a. Principles of Radiobiology

511b. Selected Topics in Nuclear Medicine. (Prerequisite: residency training in Therapeutic or Diagnostic Radiology, admission to such a training program or equvalent.)

512, Applied Radiotherapy. (Prerequisite — M.D. degree).

514. Tutorial — Current Topics in Radiotherapy. (Prerequisite: residency training in Therapeutic or Diagnostic Radiology, admission to such a training program or equivalent.)

590. Master of Clinical Science Thesis

610. Physics of Radiology. (Prerequisite Physics 20 or equivalent).

Courses are full term unless followed by (a) denoting first term or (b) denoting second term.

All courses will not necessarily be offered in any one year.

Further information on residency, graduate training and courses may be obtained from the Head of the Department.

Zoology

COURSES

544. Embryology. A lecture, laboratory and seminar course emphasizing molecular and experimental biology of development./ *J. Purko, H.I. Battle*

545. Ultrastructure of Animal Cells. A seminar course on cell organelles and cellular constituents with emphasis on their roles in cellular metabolism. The fine structure of selected vertebrate and invertebrate tissues will be examined./ *R.R. Shivers*

552. Environmental Physiology. A lecture and seminar course dealing with the effects of environment factors upon the physiology of animals./ *R. Roth*

553. Ecology of Vertebrates. A seminar course dealing with factors controlling the abundance of vertebrates./ *W.N. Holsworth, C.D. MacInnes, R.J. Planc*

554. Histology. A comparative and evolutionary study of the cellular structures of organs, as illustrated by selected vertebrates and invertebrates./ *D.B. McMillan*

555. Population Genetics. A lecture course dealing with large and small random and non-random populations, linkage, path analysis, inbreeding, generation matrix, mutation selection, subdivision and migration, inheritance of quantitative characters. and the implications of these considerations upon the process of evolution./ *R.K. Misra*

557. Advanced Biometry. Statistical methods, linear statistical models, multivariate analysis./ *R.K. Misra*

558. Logic and Theory in Experimental Zoology. A seminar and project course dealing with logic and philosophy of experimental zoology; use of computer languages and modern means of data acquisition./ *R.J. Planck*

562. Insect Physiology. A lecture and seminar course on the principles of insect physiology./ *J.E. Steele*

564 Insect Histology. A lecture and laboratory course involving the student's preparation and interpretation of his own slides./ *W.W. Judd*

565. Comparative Biochemisty. A systematic comparison of the phenomena of life throughout the phylogenetic scale. Emphasis on: sources of biologically useful energy, classes of metabolities, comparative enzymology, and comparative biochemistry of organized reaction systems./ *W. Chefurka*

571. Parasitology. A seminar and laboratory course in which the student will concentrate upon a group of parasites of his own choice. Prerequisite: Zoology 471 or equivalent./ *T.K.R. Bourns*

572. Ornithology. A lecture, laboratory and seminar course with emphasis on reproduction, distribution and ecology of birds./ *D.M. Scott* (Not to be offered in 1970-71)

573. Animal Behavior. A seminar course with discussion of current problems in the field of animal behavior. / *M.H.A. Keenleyside* (Not to be offered in 1970-71)

574. Population Dynamics. Mathematical theories of population structure and dynamics; statistical and field techniques for analysis of dynamics of real populations. (Prerequisite, Zoology 555)./ *R.K. Misra, W.N. Holsworth, C.D. MacInnes.*

590. M.Sc. Thesis.

690. Ph.D. Thesis.

PHYSICAL SCIENCES DIVISION

Applied Mathematics

The Department of Applied Mathematics offers programs leading to the M.Sc. and Ph.D. degrees. Current research interests of the faculty include: Fluid Dynamics (viscous flow, numerical methods, wake problems, turbulent flow, magnetohydrodynamics, dusty gases), Solid Mechanics, Plasma Physics, Wave Propagation, Heat Flow and Diffusion Theory, Atomic and Nuclear Structure, Quantum Field Theory and Elementary Particles.

DEPARTMENTAL REGULATIONS

In addition to the general degree requirements listed earlier in this Announcement the Department requires the following:

M.Sc. DEGREE

(1) Before being allowed to register, any candidate may be required to write the Graduate Record Examinations.

(2) A candidate having an Honors Bachelor's Degree or equivalent, and who is judged to have a sufficient background in applied mathematics, shall complete the requirements for the Degree of M.Sc. in one of two ways. Either he shall complete satisfactorily a minimum of two courses at the graduate level and prepare a thesis under the direction of a member of the faculty, or he shall complete four courses, of which at least two shall be at the graduate level, and prepare and present a review paper under the direction of one of the members of the Department.

(3) A candidate not satisfying the conditions of (2) shall first be required to enrol in a prerequisite year, during which he must complete satisfactorily a minimum of five undergraduate honors courses.

(4) A candidate for the Degree of M.Sc. will be required to demonstrate ability in computer programming. Short courses leading to proficiency in this subject are offered from time to time by the Department of Computer Science.

Ph.D. DEGREE

(1) An applicant for the Ph.D. Degree will ordinarily be expected to hold an M.Sc. Degree or else register for it first. In any case, the Department may require any accepted candidate to enrol first in the M.Sc. program.

(2) Shortly after enrolling in a Ph.D. program, ordinarily within one month, a Ph.D. candidate will normally be required to pass a preliminary examination dealing in a general way with Applied Mathematics. The purpose of this examination is diagnostic, and any weaknesses in background detected at this examination can normally be overcome by completion of particular courses.

(3) A candidate for the Degree of Ph.D. must complete satisfactorily at least three courses at the graduate level, in addition to the requirements for the M.Sc. Degree listed above, and prepare a thesis under the direction of a member of the Department.

(4) Each candidate shall prepare and present at least one paper at a graduate seminar, on a subject to be approved by his supervisor.

(5) After submission of his thesis, each candidate will be required to undertake an oral examination within the Department; this examination will be primarily concerned with the contents of the thesis, but may include questions of a general nature relating to his field of specialization.

COURSES

The following is a selection of courses offered from time to time within the Department. The selection offered depends upon the interests of the graduate students enrolled at the time. Course programs are arranged in consultation with the student's supervising committee.

500. Methods of Applied Mathematics.

510. Special Topics in Continuum Mechanics.

511. Magnetohydrodynamics.

512. Special Topics in Fluid Dynamics.

521. Relativity Theory.

522. Plasma Physics.

530. Special Topics in Theoretical Physics.

531. Nuclear Physics.

532. Quantum Field Theory.

533. The Physics of Elementary Particles.

552. Fluid Dynamics.

553. Solid Mechanics.

554. Quantum Mechanics.

556. Non-linear Mechanics.

560. Numerical Methods.

570. Mathematicsl Methods for Engineers.

588. Biomathematics II.

589. Biomathematics I.

590. M.Sc. Thesis.

591. M.Sc. Review Paper.

690. Ph.D. Thesis.

Note: At the discretion of the candidate's supervising committee, certain graduate courses in other Departments may be accepted as equivalent to Applied Mathematics courses.

Astronomy

The primary fields of interest in the Department are in astrophysics, particularly spectroscopy, photometry, variable stars, stellar atmospheres, radiation transfer, stellar evolution, optical instrumentation. Studies in solar magnetohydrodynamics, and observational radio astronomy are conducted in co-operation with the Departments of Applied Mathematics and Physics. Facilities include a 48-inch Ritchey-Chretien telescope equipped with Cassegrain and coude spectrographs, photo-electric photometers and a Cassegrain correcting system for direct photography. On the campus, additional facilities are provided in the Hume Cronyn Memorial Observatory.

Any student intending to do graduate work in astronomy should have adequate undergraduate preparation in Astronomy, Physics or Mathematics. Students who have not completed Astronomy 320 (Astrophysics I) and Astronomy 420 (Astrophysics II) or their equivalent will be required to do so in their first year in residence. The Department may require a student to elect any other courses it deems necessary for graduate study preparations.

Students are expected to obtain practical experience in Astronomy if they do not already have it. This may be satisfied by one summer in residence at the observatory or by equivalent experience.

M.Sc. REQUIREMENTS

M.Sc. candidates will plan their program of study in consultation with, and subject to, the approval of Departmental advisors. There is no foreign language requirement. The student must pass a comprehensive examination in astronomy. In addition the student must complete one of the following programs. The choice of program is subject to the approval of the Departmental advisors.

Program One - a) Complete a minimum of two graduate astronomy courses. b) Complete a thesis based on original astronomical research.

Program Two - a) Complete a minimum of three courses, including two graduate astronomy courses. b) Complete a comprehensive review paper on an astronomical topic.

Program Three - a) Complete a minimum of four courses, including two graduate astronomy courses. b) This program is normally restricted to students who have had substantial experience in astronomical research.

Ph.D. REQUIREMENTS

Ph.D. applicants must have fulfilled the requirements for the M.Sc.. An advisory committee will guide the student in his studies and research. The student must pass a comprehensive examination in astronomy and take such courses as the advisory committee may require. The student must demonstrate a reading knowledge of two foreign language normally selected from French, German, and Russian. Thesis regulations are stated elsewhere in this Announcement.

COURSES

Courses numbered 500-519 are offered starting in even years, those from 520-539 starting in odd years.

501. Stellar Atmospheres.
503. Galactic Structure.
***505. Variable Stars.**
***506. Galaxies.**
521. Stellar Interiors.
***523. Gaseous Nebulae and Interstellar Matter.**
***524. Photometry.**
***525. Spectroscopy.**
***526. Stellar Positions and Motions.**
***540. Astrophysical Laboratory.**
569. Research Review.
570. Topics in Astronomy (The topics considered will vary from year to year).
590. M.Sc. Thesis.
690. Ph.D. Thesis.

Chemistry

REQUIREMENTS AND PROCEDURES FOR ADMISSION

The department offers programs leading to the degrees of M.Sc. or Ph.D. For admission as M.Sc. candidates, students should normally have, or expect to receive, an Honors degree in Chemistry from an accredited University of equivalent qualification (e.g. Grad. R.I.C.). However, students with high standing in General degree courses may be granted admission to a Prerequisite Year.

Admission as Ph.D. candidates will be given to students having an M.Sc. degree from an accredited University or high standing in an Honors B.Sc. degree. Applicants without a master's degree may be required to register initially as M.Sc. candidates, with the possibility of transferring to a Ph.D. program after one year of satisfactory work.

Students registering in this graduate school for the first time must write orientation tests, usually in two of the fields of Inorganic, Organic, and Physical Chemistry. In some cases, substitution of a test in another scientific discipline for one of the above two may be permitted. These tests are held in early September every year, and it is the responsibility of the incoming student to arrive in time to write them.

Details of these tests may be obtained on application to the Departmental Secretary.

RESEARCH INTERESTS OF THE DEPARTMENT

Physical: Mass spectrometry. High resolution electronic spectroscopy. Chemistry and physics of high pressures; electrolytic conductance, dielectric properties and dipole moments. Kinetics of free radical reactions, photochemistry. Electrical conductance and thermoelectric power of ionic crystals; color centres in alkali halide crystals; thermal and photochemical decomposition of solids. Isothermal and non-isothermal transport of electrolytes and non-electrolytes in ion-selective membranes; light scattering in liquids and polymer solutions. Cathode overpotential, electrosorption of additives, and interfacial phenomena in electrodeposition.

Theoretical. Equilibrium statistical mechanics of crystals and simple fluids; theoretical and experimental studies of matter transport in solids and liquids. Semi-empirical and non-empirical calculations of bonding, energies and geometries for molecules. Atomic and molecular quantum mechanics; intermolecular and intramolecular forces; perturbation theory.

Inorganic. The chemistry of complex ions, including tracer studies, magnetochemistry, liquid ammonia solutions, spectral studies of metal chelates, stereochemistry of optically active metal complexes and broadline N.M.R, studies of metal-ligand bonding. Organometallic chemistry, including synthetic, structural and spectroscopic studies on compounds of metals or metalloids containing metal-metal or metal hydrogen bonds, perfluoroalkyl groups or fluorinated alkoxy groups. Single crystal x-ray structural studies of transition metal complexes. Determination of absolute configurations from the anomalous scattering of x-rays. Mossbauer spectroscopy.

Organic. Studies of the kinetics and mechanism of enzyme catalyzed reactions, and of enzyme model systems. Applications of ^{1}H, ^{13}C, and ^{17}O N.M.R. techniques in structural, stereochemical and mechanistic studies. The preparation of complex heterocyclic compounds. The study of synthetic applications and mechanisms of reactions of sulphenes and other organo-sulphar compounds. Synthesis and mechanistic studies in photochemistry. The chemistry of carbanions. Conformational methods of elucidating reaction mechanisms. New reactions at high temperatures (flash thermolysis) and related mechanistic studies. The synthesis of natural products. Alkaloid chemistry.

COURSE WORK REQUIREMENTS

On the basis of past work and of the results of the orientation tests, the candidate is advised about the courses in which he should enroll. Students with incomplete backgrounds will be required to take advanced undergraduate courses.

All Ph.D. candidates, before graduation, must furnish evidence of a reading knowledge of at least one of German, French or Russian. Unsatisfactory examination results will require the student to withdraw.

The following outline provides a guide to the minimum requirements for graduate students in Chemistry: M.Sc. — 2 graduate courses †, 558, 590
Ph.D. — 3 graduate courses †, 558, 690, Language

†A graduate course in any Chemistry course at the 500 or 600 level, or a Chemistry course at the 400 level (final undergraduate year) outside the field of specialization, or a course at the 300 (third year) or higher level outside the Department. For M.Sc. candidates at least one of the graduate courses must be a chemistry course at the 500 or 600 level and for Ph.D. candidates at least two of the graduate courses must be at this level.

*Half Course

The courses of instruction listed below are provided by the Department. All courses will not necessarily be offered every year, and the contents may be modified from time to time to suit the specialized needs of individual students.

*504. Group Theory/ *D.M. Graham*

*514. Molecular Spectroscopy/ *J.C.D. Brand*

*524. Electrochemistry/ *A.J. Sukava*

*534. Dielectric and Magnetic Phenomena/ *R.K. Chan*

*541. Inorganic Crystallography/ *N.C. Payne*

*543. Quantum Organic Chemistry/ *N.C. Baird*

*544. Chemical Kinetics/ *D.M. Graham*

*551. Inorganic Chemistry Topics/ *Inorganic Staff*

553. Physical Organic Chemistry/ *Organic Staff*

554. Statistical Mechanics/ *A.R. Allnatt*

558. Seminar/ *Staff*

*563. Organic: Modern Synthetic Methods/ *W.C. Howell, E.W. Warnhoff*

564. Solid State/ *P.W.M. Jacobs*

568. Research Proposition/ *Staff*
The selection and written presentation of one or more original research problems, and the defence of the choice. Good background knowledge and familiarity with general modern concepts will be expected. (This does not count as a formal graduate course).

573. Organic Problem Seminars/ *Organic Staff*
(This does not count as a formal graduate course, but it is a requirement for all Ph.D. candidates in Organic Chemistry).

574. Quantum Mechanics 1/ *W.J. Meath*

581. Spectroscopic Methods in Inorganic Chemistry/ *R.A. Haines, R.G. Kidd*

583. Organic: Photochemistry/ *P. de Mayo*

584. Advanced Physical Chemistry/ *D.M. Graham, J.W. Lorimer*

590. M.Sc. Thesis and Research

*593. Nuclear Magnetic Resonance Spectroscopy/ *J.B. Stothers*

*653. Organic: Selected Topics/ *Organic Staff*

*661. Organometallic Chemistry/ *H.C. Clark*

*663. Organic: Natural Products/ *E.W. Warnhoff*

*673. Organic: Stereochemistry/ *J.F. King*

674. Quantum Mechanics 11/ *W.J. Meath*

*681. Inorganic Reaction Mechanisms/ *H.W. Baldwin*

684. Molecular Orbital Theory/ *N.C. Baird*

690. Ph.D. Thesis and Research

*Half Course

Computer Science

RESEARCH INTERESTS OF THE DEPARTMENT

Systems Theory. Theory of General Systems and properties common to many or all systems, mathematical models of systems, study and/or mathematical formulation of interaction, dependence and control, self-organization in large systems, specific theories of deterministic and stochastic systems with applications to physical, biological and economic systems.

Sequential Machine Theory. Properties and potentialities of sequential machines, decomposition and synthesis, relation to computers and components.

Formal Languages and Automata. Language-generating devices (grammars), and language-recognizing devices (automata). Hierarchies of languages and hierarchies of automata, classification of languages by various measures of complexity.

Heuristic Problem Solving. Solution of problems for which no exhaustive algorithms exist or for which no algorithm is possible, theorem proving, game playing, concept formation.

Recursive Functions and Computability. Turning machines, mathematical logic and computable functions, unsolvable problems, degrees of recursive unsolvability, classification of functions by computational complexity.

Statistics and Information Processing. Theories of information and communication, applications of computers to statistics, applications of statistics to information processing.

Advanced Programming Systems. Study of compiler and monitor structures, design of systems for time-sharing, on-line applications, integrated data processing.

Computer-Aided Instruction. Information theory applied to CAI systems; analysis and design of specific systems.

Numerical Analysis. Approximation of one- and several-dimensional functions, theory and algorithms, approximation in abstract spaces.

REQUIREMENTS FOR THE M.Sc. DEGREE IN COMPUTER SCIENCE

Students who do not have an Honors B.Sc. in Computer Science enter the following two year graduate program leading to an M.Sc. degree in Computer Science:

Prerequisite Year: A minimum of four courses at the 300 and 400 level, three of which are normally C.S. 304, 313, and 405.

Second Year. Normally two graduate courses, of which one must be in Computer Science, and a thesis. With the permission of the department, the thesis may be substituted either by a report and an additional course or by two more courses.

Students with an Honors degree in Computer Scie or equivalent may enter directly into the second y of the program.

COURSES

501. Information Structures.

502. Topics in Numerical Computation.

503. Theory of Approximation.

504. Topics in General Systems.

505. Computer Simulation of Complex Process.

506. Topics in Statistics and Information Processing

507. Theory of Communication.

508. Theorem Proving and Heuristic Problem Solving.

512. Sequential Machine Theory.

513. Theory of Recursive Functions and Computability.

514. Advanced Programming Systems.

523. Theory of Formal Languages and Automata.

590. Thesis.

Engineering Science

Three degrees are offered in Engineering Science. The M.E.Sc. and Ph.D. are based on research while the M.Eng. is based on course work. Arrangements may be made for part-time enrolment in all programs.

MASTER OF ENGINEERING SCIENCE

For M.E.Sc. candidates an individual program will consist of a minimum of two graduate courses (or the equivalent), a thesis and a seminar. The program of study for each candidate will be approved by the appropriate Graduate Board. On the advice of this Committee and with the concurrence of the Chairman concerned, candidates may elect or be required to take graduate courses or Honor courses offered in other University departments.

Included are such courses as Mathematics, Computer Science, Chemistry, Physics, Geology, and Medical Sciences.

The student is encouraged to select the program which best suits his individual interest and aptitude and which meets the general requirements of the Faculty of Graduate Studies.

With the approval of the Dean of the Faculty of Graduate Studies, a candidate for the degree of Master of Engineering Science who is unable to attend full-time study may undertake his course work on a part-time basis provided satisfactory arrangements can be made for his thesis work.

MASTER OF ENGINEERING

Master of Engineering (M.Eng.) programs are designed primarily for the practising engineer and students wishing to obtain specialized academic training beyond the Bachelor's level. Emphasis is placed on specialized techniques, analysis and engineering design, associated with current engineering practices. M.Eng. programs comprise a prescribed set of at least five courses together with a project and engineering report. The requirements are completed within one academic year (8 months) except in the case of part-time candidates.

DOCTOR OF PHILOSOPHY

The program of study for each candidate for the Ph.D. degree must be approved by the Engineering Science Committee on Graduate Studies. The minimum requirements for the degree are listed below.

A. Six courses consisting of at least three from (1) and the remainder from (1), (2) and (3).

(1) An Engineering Science course at the 500 or 600 level.

(2) An Engineering Science course, outside the candidate's field of specialization, at a level not lower than 400.

(3) A course outside the Faculty of Engineering Science at a level not lower than 300.

B. A reading knowledge of at least one language other than English.

C. Comprehensive Examination: an oral or written examination normally taken in the first year of the Ph.D. program. The main purpose of the examination is diagnostic, to assist the student and his committee in recommending a program of study.

D. Seminar: A candidate must prepare and present a paper or papers on his thesis research to the faculty and graduate students. A candidate may be required to submit essays on assigned topics.

E. Thesis.

COURSES

Note: All of the following courses may not be offered.

500. M.Eng. Project and Report. Investigation of an engineering problem. A detailed engineering report is required and each candidate will present this material in a public lecture. Problems may be assigned in consultation with the candidate's employer./ *I.I. Inculet*
(6 hours, both terms)

505. Electronic Instrumentation. Systems of electronic instrumentation for measurement (analog and digital), control, amplification, data processing and generation of time varying signals. (Primarily for nonengineering students; no prerequisites)./ *T. Bonnema*
(2 hrs/wk lectures, 1-½ hrs/wk lab)

*511. **Applied Catalysis 1.** Principles of heterogeneous catalysis. Kinetics and mechanism of selected catalytic reactions. Case studies of several industrial catalysts and associated catalytic processes./ *K.A. Shelstad*
(1 hour, both terms)

*512. **Advanced Chemical Reactor Design.** Non-ideal flow in chemical reactors and its study through tracers. Micromixing and macromixing. Turbulence and its effect on chemical reactions./ *M.A. Bergougnou*
(2 hours, first term)

*513. **Advanced Fluidized Bed Reactor Design.** Fundamentals of all operations involving the interaction of fluids and particles. Systematic study of the design and scale-up fundamentals of fluidized bed reactors./ *M.A. Bergougnou*
(2 hours, first term)

514. **Food Engineering.** Detailed review and analysis of the processes and operations of Food Production./ *J.E. Zajic*
(2 hours, both terms)

*515. **Biochemical Engineering.** The application of the unit operations of chemical engineering to biocehmical process. Engineering concepts in the manufacture of beer, cheese, vinegar and other classical fermentation products as presented as well as problems in agitation mixing, aeration and batch fermentation kinetics./ *J.E. Zajic*
(1 hour, both terms)

516. **Chemical Process Simulation.** Simulation of chemical plants on the computer. Convergence and optimization problems in chemical plant simulation. / *J.M. Beeckmans*
(2 hours, both terms)

517. **Advanced Chemical Process and Plant Design.** Detailed application of advanced techniques for optimum design of chemical processes and plants./ *M.A. Bergougnou*
(both terms)

518. **Advanced Process and Plant Design.** Process engineering study of a new process. Detailed design of reactors, distillation columns, contols, start-up systems, optimization and simulation./ *M.A. Bergougnou*
(2 hours, both terms)

519. **Chemical Engineering Economics.** A critical examination of cost factors and of the procedures available for minimizing costs of chemical processes and plants./ *C.J.G. Barker*
(2 hours, both terms)

*520A. **Engineering Statistics and Reliability.** A basic course in the theory of statistics with applications to civil engineering. Theoretical probability distributions, sampling theory, probability of failure and reliability./ *A.G. Davenport*
(2 hours, first term)

*Half Course

*520B. **Random Vibrations.** Theory of random vibrations with applications to structural design. Theory of extreme values illustrated using problems in loads and material strengths. Response of multi-degree-of-freedom systems to random shock loads such as wind and earthquake. Simple physical models of wind and earthquake as quasi-stationary phenomena. Fatigue failure criteria. An integrated approach to structural design philosophy in which the loadings, the structural response and material properties are treated as a unity. (students should have or else take concurrently a basic course in dynamics such as 546 - Mechanical Vibrations)./ *A.G. Davenport*
(2 hours, second term)

*521A. **Properties of Concrete.** Properties of the constituent materials; mix design, theology of fresh concrete; strength, shrinkage and creep; other topics./ *M.P. Poucher*
(2 hours, first term)

*521B. **Reinforced Concrete.** Ultimate strength analysis and design methods for structural elements. The background to general code requirements are considered and design examples given./ *M.P. Poucher*
(2 hours, second term)

*522A. **Advanced Soil Mechanics 1.** Prerequisite: 426 or equivalent. The theoretical principles and practical application of effective stress to stability and consolidation problems. Shear strength, soil deformation, failure criteria. Principles of stability analyses and theory of consolidation including the influence of ground water seepage./ *R.M. Quigley*
(3 hours plus 1½ hours laboratory, first term)

*522B. **Advanced Soil Mechanics II.** Prerequisite: 522A or equivalent. Special topics not covered in detail in 522A are discussed in this course. The actual content varies from year to year depending on the interests of the participating staff members and visiting professors. Such subjects as soil dynamics, theoretical stress distribution, special problems in slope stability, computer applications, etc., are presented./ *Staff*
(3 hours, second term)

*523. **Geotechnical Properties of Soils.** The engineering properties of clay soils are related to the clay minerals present, the chemistry of the pore fluid and the fabric of the soil as derived from its environment of deposition. Emphasis is placed on the selection of engineering parameters for design purposes./ *R.M. Quigley*
(2 hours, second term)

*524A. **Elasticity I.** Theory of deformations. Equilibrium equations. Energy principles. Applications./*S.H. Abu-Sitta*
(2 hours, first term)

*Half Course

***524B. Elasticity II.** Fundamental formulae of linear elasticity. St. Venant's problem. Plane problem. Applications. Numerical Methods./ *S.H. Abu-Sitta*
(2 hours, second term)

***525A. Plates and Shells.** Introduction to the classical analysis of plates and shells. Small deflection behavior of plates, considering various shapes, loads and boundary conditions./ *S.H. Abu-Sitta*
(2 hours, first term)

***525B. Plates and Shells II.** Membrane and bending behavior of cylindrical shells, translational shells and shells of revolution. Edge disturbance theory. Numerical methods./ *S.H. Abu-Sitta*
(2 hours, second term)

***527. Reading Course in Engineering Geology.** Difficult engineering design and construction problems markedly influenced by geological factors will be studied in detail. Emphasis to be placed on such topics as: aggregate selection for concrete and asphalt mixes, geophysical methods of exploration used in engineering practice, ground water and its importance in design, properties of glacial deposits, frost action, permafrost, etc.

This course may also be adapted to the needs of graduate students in other disciplines such as geology and geography to enable them to study special topics in Soil Mechanics. By arrangement only./ *R.M. Quigley*

***528. Seepage.** Prerequisite: 426 or equivalent. Fundamentals of ground water seepage with application to engineering design of earth and rockfill dams, large excavations, sheet pile, walls and cofferdams. This course should be of interest to environmental engineers interested in ground water pollution./ *Staff*
(3 hours, first term or second term)

***529A. Foundation Engineering I.** Prerequisite: 426 or equivalent. Current practice in the design of foundations for all types of structures. Spread footings, raft and piled foundations, bulkheads and retaining walls, floated foundations, sheeted excavations, etc./ *Staff*
(3 hours plus 1½ hours laboratory, first term)

***529B. Foundation Engineering II.** Prerequisite: 529A or equivalent. Complex design problems are discussed with special emphasis on such subjects as foundation vibrations and soil structure interaction, floated foundations, tunnel design, etc. The actual course content will vary from year to year depending on staff interests./ *Staff*
(3 hours, second term)

530. Electric Power Systems. General problems; elements of power systems; parameters of transmission lines, transformers, synchronous and induction machines; voltage regulation; economic operation; power sytem stability; surge phenomena; special problems of extra-high-voltage transmission./ *L.S. Lauchland*
(2 hours, both terms)

531. Electromechanical Energy Conversion. Dynamic behavior of electromechanical energy converters as individual devices and as interconnected devices in control systems and in power systems./ *L.S. Lauchland and I.I. Inculet*
(2 hours, both terms)

532. Equivalent Circuits of Electric Machines. General theory of equivalent circuits; primitive and actual machines; symetrical-component theory, transformation from physical to sequence axes; space and time harmonics; interconnected machines./ *I.I. Inculet*
(2 hours, both terms)

535. Advanced Electromagnetic Theory. Potentials, forces, and energy in electro-static and magneto-static fields, electromagnetic fields, plane waves, cylindrical waves, spherical waves, radiation, boundary value problems./ *G.F. Chess*
(2 hours, both terms)

536. Control Systems. The analysis and design of linear systems is extended to include some elements of system optimization. Non-linear systems are examined using both describing function and phase plane techniques./ *G.F. Chess*
(2 hours, both terms)

537. Optimization Theory for Control Systems. State-determined dynamic processes; optimization using calculus of variations; dynamic programming; linear optimum control systems; computational method for two-point boundary value problems./ *G.F. Chess*
(2 hours, both terms)

538. Electrostatic Theory and Engineering Application. Review of basic principles; fields and charges, duality between electrostatics and electromagnetics, bonding theory, theory of metals, semiconductors and dielectrics, static electrification, the corona discharge and discharging of aerosols, electrets.
Applications, high voltage electrostatic generators, capacitors, electrostatic precipitation, xerography, electrostatic hazards in industry, static eliminators, etc./ *I.I. Inculet and J.D. Brown*
(2 hours, both terms)

***540A. Principles of Nuclear Reactors.** Nuclear energy and nuclear reactions, fission process, critical mass, radioactivity, interaction of alpha, beta, gamma and neutron radiation with matter. The principle of the fission chain reactor. Reactor fuels, radiation protection and reactor safeguards./ *G.S. Emmerson*
(2 hours, first term)

*Half Course

*Half Course

***540B. Nuclear Reactor Engineering.** Nuclear reactor systems and characteristics. Engineering design aspects — materials, energy removal, power plant./ *G.S. Emmerson*
(2 hours, second term)

***541. Mechanical Analysis and Measurements.** Selected topics in mechanical design involving experimental analysis: transducers, instrumentation, techniques and evaluation in temperature, measurement of variable such as strain, pressure, vibration, sound, flow./ *J.E.K. Foreman*
(2 hours, first term)

***542A. Viscous and Boundary Layer Theory.** Viscosity, review of vectors and tensors, the Navier-Stokes Equations, the viscous flow energy equation and dissipation function, creeping flow, laminar and turbulent boundary layer, mechanisms of transition, concepts of statistical theory of isotropic turbulence. */J.W. Stewart*
(2 hours, first term)

***542B. Hydrodynamics.** Kinematics and dynamics of two and three-dimensional fluid fields, vortex generation and dissipation, graphical, numerical and analogy methods of solution, conformal transformation and selected topics from thin aerofoil and finite wing theory./ *J.W. Stewart*
(2 hours, second term)

***543A. Classical Thermodynamics.** Review of First and Second Law, availability and irreversibility, thermodynamic relationships, and dissociation in chemical reactions./ *A.T. Olson*
(2 hours, first term)

***543B. Statistical Thermodynamics.** Introduction to Kinetic theory of ideal and real gases. Some models for the thermodynamic and transport properties of real gases will be studied./ *E.S. Nowak*
(2 hours, second term)

***544A. Conduction Heat Transfer.** One and two-dimensional conduction, variable conducticity, numerical solutions and advanced topics./ *E.S. Nowak*
(2 hours, first term)

***544B. Convection Heat Transfer.** Governing equations for flow in various coordinate systems. Free and forced convection in internal and external flows, similarity transforms, Reynolds analogy, turbulence, Von-Karmans analogy, liquid metals and selected topics./ *J.D. Tarasuk*
(2 hours, second term)

***545A. Energy Conversion.** Review of energy sources, methods of energy release such as combustion, and methods of energy conversion including turbomachinery, positive displacement machinery and non-conventional methods. Economics of plant selection.
(2 hours, first term)

*Half Course

***545B. Solar Energy Utilization.** Nature of solar radiation, flat plate collectors and their design, solar concentrators, solar stills, energy storage, solar power generation, and other techniques of solar energy utilisation./ *R.K. Swartman*
(2 hours, second term)

***546A. Mechanical Vibrations I.** Single degree of freedom systems, transient vibrations, Laplace transforms, non-linear vibration, self-excited vibrations, dynamic stability./ *M. Novak*
(2 hours, first term)

***546B. Mechanical Vibrations II.** Multi-degree of freedom systems, Lagrange's equations, generalized coordinates continuous systems, vibration of strings, beams, frames, membranes and plates, movable load on beams./ *M. Novak*
(2 hours, second term)

551. Mechanical Properties of Materials at High Temperatures. Mechanisms of deformation and sources of strength within materials at high temperatures. Failure at high temperatures. The development of materials for use at high temperatures./ *G.A. Geach.*
(2 hours, both terms)

552. The History of Materials Science. History of the development and application of materials, its interplay with developments in other learning, technologies, war and the status of nations. Factors which have led to discovery and progress in the uses of materials./ *G.A. Geach*
(2 hours, both terms)

553. Nuclear Engineering Materials. The mechanical, physical and chemical requirements of materials for power reactors, with special reference to fuels, sheathing and shielding materials, coolants and structural components. Behavior of fuel elements in service. Problems related to corrosion, radiation damage and high temperature./ *C. Roy*
(2 hours, both terms)

554. Spectroscopic Methods Applied to the Study of Engineering Materials. Theory of spectra in infrared, visible, ultraviolet and x-ray regions, instrumentation, application to the study of material properties, examples from the literature, nuclear resonance techniques./ *J.D. Brown*
(2 hours, both terms)

555. Chemical Properties of Materials at High Temperatures. The interaction of materials with their environment at high temperatures. Thermodynamics of high temperature chemical processes and stability. Recent developments in high temperature engineering materials./ *J.S. Sheasby*
(2 hours, both terms)

*Half Course

*556A. **X-Ray Techniques in Engineering.** Study of diffraction techniques to determine: alloy composition, composition of soils, concretes, etc., residual stresses, texture structures./ *I.J. Duerden*
(2 hours, first term)

*556B. **Advanced X-Ray Techniques.** Prerequisite: 556A or equivalent. Study of x-ray methods for chemical analysis, determination of particle size, grain orientation, crystal structures, (complex) deformation and relaxation./ *I.J. Duerden*
(2 hours, second term)

557. **Alloy Theory.** Electron theory of metals. Factors affecting formation and structure of phases. Types of phases. Thermodynamics of all alloys./ *I.J. Duerden*
(2 hours, both terms)

560. **Biochemical Engineering Seminar.** Lectures and discussions on applied enzyme kinetics, biocatalysis and continuous fermentations. Mathematics and automatic controls are emphasized. Students are expected to present seminars also./ *J.E. Zajic*
(1 hour, both terms)

*561. **Air Pollution.** Methods of generation, measurement and control. Pollutants considered are carbon monoxide, hydrocarbons, nitrogen oxides, sulphur dioxide, particulate matter. and noise./ *I.I. Inculet and J.M. Beeckmans*
(3 hours, second term)

*562. **Water Pollution.** Methods of generation, measurement and control. Topics included are domestic sewage, chemical manufacturing wastes, radioactive substances, chemical and sediments from land erosion, heat from power and industrial plants./ *J.E. Zajic*
(3 hours, first term)

*563. **Industrial Processes.** This course provides a synoptic view of major industrial processes with special emphasis on the operations and problems relevant to control of waste by-products./ *W. Bulani*
(2 hours, second term)

564. **Environmental Biology.** A special course covering elemental and theoretical information needed in determining normal and abnormal biological environments. Subjects covered are bacteriology, fungi, viruses, parasitology, nematodes, algae, botany, ecology, etc. Chemical control mechanisms of aquatic life using algicides, herbicides and insecticides will be presented. An extensive laboratory is given in conjunction with this course introducing methods of growth, identification, and control./ *P.O. Wilkins and D.A. McLarty*
(6 hours, first term; 4½ hours, second term)

*Half Course

*565. **Legal and Administrative Controls of Pollution.** Judicial control of pollution through common law, nuisance laws, legislation to regulate and establish standards, structures and control by local governmental authorities, enforcement techniques./ *C.G. Morley*
(2 hours, second term)

*566. **Medical Effects of Air and Water Pollution on Human Life.** A survey of organic and inorganic air pollutants, gaseous and particulate, with reference to their effects upon man. Clinical medical disease, epidemiology and survey methodology, wtih regard to both community and occupational industrial air pollution./ *N.M. Lefcoe*
(2 hours, first term)

567. **Environmental Engineering Seminar.** A special course reviewing the latest developments in environmental engineering/ *W. Bulani*
(2 hours, both terms)

568. **Environmental Engineering Laboratory.** Laboratory in Water Pollution. (1) aeration (2) B.O.D. and C.O.D. (3) activated sludge (4) refuse separation (5) flocculation and clarification (6) flotation (7) lagoons (8) Trickling filter (9) solvent extractions (10) filtration (11) gravity separators (12) emulsion breaking (13) incinerators./ *J.E. Zajic*
(3 hours, first term)
Laboratory in Air Pollution. (1) sampling (2) measurements of major pollutants (3) settling chambers (4) centrifugal separators (5) scrubbers (6) filters (7) electrostatic precipitators (8) conic precipitators (9) removal of gaseous pollutants./ *I.I. Inculet*
(3 hours, second term)

*570. **Soil Mechanics Seminar.** Lectures and discussions on current engineering projects, research programs, design techniques, etc. The course will include active participation by external practising soils engineers and professors. Students participation will include attendance at all seminars and presentation of up to two seminars each./ *R.M. Quigley*
(2 hours, both terms)

*571A. **Turbulent Flow I.** Description and analysis of random process. Averages, probability, correlations, spectra. Methods of spectral analysis./ *B.J. Vickery*
(2 hours, first term)

*571B. **Turbulent Flow II.** An introduction to the statistical theory of turbulence. Mixing length theories and applications to flow in pipes, boundary layers, wakes and jets. Statistical theory and scales, correlations, and spectra. Applications to diffusion and wind load problems./ *B.J. Vickery*
(2 hours, second term)

*Half Course

*572A. **Plastic Analysis.** Plastic analysis of frames and plates. Rigid plastic theory, elastic-plastic theory, strainhardening. Minimum weight design of frames. Multistorey frames. Stability. Yield line theory for flat plates./ *B.J. Vickery*
(2 hours, first term)

*572B. **Plasticity.** Prerequisite: 572A or equivalent. The stress tensor, yield conditions, plastic analysis of plates and shells, impulsive loading of simple structures./ *A.J. Frick*
(2 hours, second term)

574. **Topics in Numerical Analysis for Engineers.** Approximate and variational methods in elastic problems. Finite difference method. Finite element method. Matrices. Direct and indirect solution of simultaneous linear equations. Determination of Eigenvalues. Emphasis is placed on the application of these methods to practical problems./ *S.H. Abu-Sitta*
(2 hours, both terms)

581. **Advanced Unit Operations.** Methods of calculating and predicting thermodynamic equilibria and physical rate processes will be examined and utilized to evaluate separation techniques./ *Staff*
(2 hours, both terms)

582. **Chemical Process Control.** Application of feed-back, feed-forward, adaptive and direct digital control to chemical processes./ *Staff*
(2 hours, both terms)

590. **M.E.Sc. Thesis**

611. **Applied Catalysis II.** Prerequisite: 511 or equivalent. A continuation of the subject matter of 511 with emphasis on recent developments and the theory of heterogeneous catalysis./ *K.A. Shelstad*
(2 hours, both terms)

612. **Selected Topics in Chemical Engineering.** The choice of topics discussed varies somewhat from year to year but centers about electrostatic charge and field effects on chemical and physical rate processes./ *W. Bulani*
(2 hours, both terms)

*613. **Advanced Mathematics for Chemical Engineers.** Application of operational and matrix calculus to the solution of complex chemical engineering problems./ *M.A. Bergougnou*
(1 hour, both terms)

*620A. **Advanced Science of Structures.** Prerequisite: 520A and B or equivalent. A continuation of 520A and B. Advanced problems and more detailed application such as the design of tall buildings, towers suspension bridges./ *A.G. Davenport*
(2 hours, first term)

*620B. **Advanced Science of Structures II.** Prerequisite: 620A or equivalent. A continuation of 620A./ *A.G. Davenport*
(2 hours, second term)

*Half Course

622. **Advanced Theory of Soil Mechanics.** Difficult theoretical design problems primarily for doctoral candidates./ *Staff*
(2 hours, both terms)

*643A. **Radiative Heat Transfer.** A study of the Physics and the application of thermal radiation heat transfer which will include thermal radiation laws, characteristics of ideal and real systems, energy exchange concepts, geometric factors, energy exchange in grey enclosures, non-grey and non-diffuse system analysis, and energy transfer in absorbing and emitting media./ *J.D. Tarasuk*
(2 hours, first term)

*643B. **Advanced Topics in Thermodynamics and Heat Transfer.** Selected topics which can be chosen to meet the needs of the class./ *E.S. Nowak*
(2 hours, second term)

*660. **Advanced Biochemical Engineering Seminar.** Lectures and discussion on new process developments in Biochemical Engineering. Course covers processes for the manufacture and recovery of enzymes, amino acids, steroids, antibiotics, vitamins and other new biochemical products./ *J.E. Zajic*
(1 hour, both terms)

690. **Ph.D. Thesis.**

Geology

ADMISSION

Detailed instructions may be obtained by writing the Graduate Student Co-ordinator, Department of Geology. All graduate students upon first registration write a comprehensive examination to guide the faculty advisors in course selection.

M.Sc. degree: Minimum requirements are two graduate or equivalent courses, one year residence, seminar, and thesis.

Ph.D degree: Minimum requirements from an Honours B.Sc. degree are four graduate courses or equivalent, oral qualifying examination, three years residence credit, foreign language, seminars, and thesis.

RESEARCH INTERESTS OF THE DEPARTMENT

Details on these abbreviated listings can be obtained from the Head of the Department or a member of faculty as indicated by course offerings. Generally, financial assistance for research is available for these studies.

X-ray crystallography and crystal structure determinations

Experimental petrology, mineralogy of undersaturated alkaline rocks and eclogites

*Half Course

Crystallography and phase chemistry of sulphide minerals

Structural geology of western Newfoundland and the Proterozoic in Ontario

Genesis and metamorphism of base metal sulphide ores

Origin of mineral deposits, particularly rare-element pegmatites and evaporites

Lower and Middle Paleozoic stratigraphy

Glacial and Pleistocene geology especially sedimentation and stratigraphy

Invertebrate paleontology especially Paleozoic brachipods, corals, graptolites and conodonts

Proterozoic sedimentation and stratigraphy especially Ontario

Systems design for computers, especially storage and retrieval

Department facilities and equipment, and financial assistance is summarized on the graduate poster, available upon request.

An interdisciplinary **Quaternary Discussion Group** including participants from the fields of geology, geography and engineering meets on a regular basis.

COURSES

515. Advanced Mineralogy and Crystallography. Introductory X-ray crystallography, powder methods, advanced mineralogical concepts, illustrated by reference to the crystal chemistry and structural crystallography of selected mineral groups./ *J. Starkey*

517. Advanced X-ray Crystallography: The fundamentals of X-ray crystallography and space group theory. Single crystal X-ray investigation. Crystal structure analysis. X-ray techniques applicable to polycrystalline aggregates to determine grain size, strain, residual stress, preferred orientation./ *J. Starkey*

520. Igneous Petrology. Assessment of equilibrium and non-equilibrium processes in silicate systems. Origin and subsequent changes of state of magma in relation to regional tectonic setting./ *A.D. Edgar*

525. Metamorphic Petrology. Paragenesis of metamorphic mineral assemblages. The relations between lithostatic and fluid pressure stress, and kinetics in the range of metamorphic temperatures are considered in terms of the methods and results of experimental petrology.

527. Structural Petrology. Introduction to the techniques and principles of petrofabric analysis. Selected topics and applications./ *J. Starkey*

530. Advanced Geochemistry. Selected topics considered in detail./ *M.E.L. Fleet*

538. Phase Chemistry of Silicates, Sulphides and Other Rock-Forming Compounds. Multi-component systems; thermodynamic and kinetic criteria for determining equilibrium conditions; phase relations in silicate and sulphide systems pertinent to igneous and metamorphic petrogenesis and ore genesis. Laboratory work at pressures from 1 atmosphere to 10 kilobars. Registration by permission./ *A.D. Edgar, R.W. Hutchinson, N.D. MacRae*

539. Sulphide Phase Equilibria and Their Applications to Ores. Basic thermodynamic principles sufficient for understanding sulphide phase equilibria, details of the important sulphide systems, basic laboratory methods and procedures, and applications to naturally occurring ore-mineral assemblages will be presented./ *N.D. MacRae*

540. Structural Geology. Principles of geomechanics and theories of rock deformation; structural analysis./ *W.R. Church*

542. Geotectonics. Selected topics./ *W.R. Church*

544. Regional Metamorphism. A study of metamorphism as a phenomenon associated with orogenesis./ *W.R. Church*

550. Economic Geology. Study of recent literature on theories of ore deposition together with original laboratory work on ore suites of current interest. Informal discussions pertaining to same.

551. Iron Ore Deposits. A study of the various types of iron ores throughout the world, with consideration of their relative importance to the steel industry. A detailed study of a prominent North American deposit.

552. Non-Ferrous Base Metal Deposits of Canada. A survey of actual and potential producers. The position of Canada with respect to world production, consumption and exports. A study of the properties and operations of a large Canadian company.

553. Non-metallic Mineral Deposits. A survey of principal industrial and non-metallic mineral deposits, particularly in North America. Economic importance and uses of these commodities. Part lecture, part seminar-discussion treatment./ *R.W. Hutchinson*

554. Mineral Industry. Various aspects of the industry considered in relationship to interdisciplinary fields. Mineral exploration and exploitation; mineral economics and taxation; mine evaluation and finance; mineral rights, ownership and law. Coverage by lecture, seminar, guest speakers./ *R.W. Hutchinson*

555; Genesis of Base Metal Massive Sulfide Deposits. Comparison of different types of massive sulphide deposits, consideration of their metallogenic relationships and distribution in space and time. Study of recent literature on theories of their genesis. Lectures, seminar-discussions and original laboratory work or literature review./ *R.W. Hutchinson*

Note: 553, 554, 555 are given in successive years; 553 is planned tentatively for 1970-71.

559. Carbonaceous Fuels. The habitat of coal, petroleum, and natural gas; conditions of origin, methods of exploration, and economic aspects./ *C.G. Winder*

560. Stratigraphy. An advanced course on stratigraphic principles./ *C.G. Winder*

564. Advanced Sedimentation. Formation of sediments by physical, chemical and biological processes./ *G.M. Young*

567. Advanced Glacial Geology. Selected topics./ *A. Dreimanis*

568. Advanced Pleistocene Geology. Stratigraphy and correlations./ *A. Dreimanis*

Note: 567 and 568 are usually given in alternate years; 567 is planned for 1970-71.

569. Paleoecology. The interpretation of original conditions within the depositional environment from sediments, the primary and secondary features within the sediments, and the nature of the fossil record. The student should have had courses in sedimentation and invertebrate paleontology./ *C.G. Winder*

570. Micropaleontology. Morphology, classification, ecology, and stratigraphic occurrence of principal forms. Conodonts are emphasized laboratory exercises and problems./ *C.G. Winder*

571. Palynology. With emphasis on pollen analysis and its applications in geology and archeology./ *A. Dreimanis*

575. Invertebrate Macropaleontology. Advanced study of selected groups of Paleozoic invertebrates./ *A.C. Lenz*

579. Organic Evolution and Fossils. Organic evolution from the geologic-paleontologic viewpoint; incorporating biologic evidence. Illustrations from fossil record, and studies of particular invertebrates and vertebrate fossil groups, including man./ *A.C. Lenz*

581. Graduate Seminar/ *Staff*

598. Geological Data Analysis. Data presentation and analysis using graphic numerical and statistical methods; use of computers; courses in mathematics desirable but not required, includes a short course in Fortran IV./ *P.G. Sutterlin*

590. M.Sc. Thesis.

690. Ph.D. Thesis.

Geophysics

The Department offers courses leading to M.Sc. and Ph.D. degrees in Geophysics. The laboratories have facilities for research in terrestrial heat flow and geothermometry, rock magnetism and paleomagnetism, seismology, gravitation, methods of exploration geophysics, theoretical and model studies of the earth's interior, geochronology, gamma ray spectrometry, physical properties of rocks at high pressures and high temperatures.

In any one year the selection of courses offered depends upon the programs of the students in the Department.

COURSES

502. Physics and Chemistry of the Earth. A general course on the structure, composition, and evolution of the earth with special attention to its interior. Consideration is given to the origin and development of the elements, universe, solar system and planet earth using data of seismology, volcanology, geomagnetism, geochronology, geothermometry and gravity./ *Staff*

506. Crustal Structure. A general course on the structure of the crust of the earth, together with a discussion of the mechanisms of mountain building and continent formation./ *H.C. Palmer*

509. Deformation. Application of the theories of elasticity, viscosity and plasticity to the problem of the deformation of the earth's crust. Mathematical theories of folding. Fault and fracture propagation. Applications of dislocation theory./ *L. Mansinha*

510. Terrestrial Heat Flow. A course dealing with the instrumentation and techniques of measuring heat flow over land and ocean; the significance of the shield, non-shield and oceanic mean values and their bearing on the evolution and thermal history of the earth; the use of heat flow data as an aid in structural geology; the economic uses of geothermal power./ *A.E. Beck*

512. Theoretical Seismology. The theory of elasticity sufficient for application to the theory of seismology is developed. Other topics presented are – dilatational waves, rotational waves, Rayleigh waves, Love waves, dispersion, reflection, absorption, seismic ray theory, seismic wave generation, and applications./ *R.F. Mereu*

520. Solid State Physics. A study of the elastic, thermal, electrical and magnetic properties of crystalline solids./ *C.M. Carmichael*

550. Exploration Geophysics. The 550 set of courses are specialist courses in various exploration methods. The background theory and methods of interpretation will be discussed during term time and will be followed by a two week field camp in May when the students taking a course will be assigned a small field

problem so that they may become familiar with the instruments used, field practice and interpretation of actual field phenomena. All of the 550 group have a course weight of ½ and will be taught by full time faculty members and visiting staff.

551. Gravity Methods.

552. Magnetic Methods.

553. Electromagnetic Methods.

554. Electrical Methods.

555. Seismic Methods.

556. Other Methods.

580. Graduate Seminar. A course wherein each graduate student is required to (a) prepare a note in acceptable form for publication and give a full lecture on the topic; (b) prepare a full paper in acceptable form for publication and give a 15-minute talk on the topic at a symposium with all students taking part and all staff in attendance./ *Staff*

585. Special Topics/ *Staff and Visitors.*

590. M.Sc. Thesis.

690. Ph.D. Thesis.

Mathematics

The Department of Mathematics offers programs leading to the degree of M.A. and Ph. D. At present particular research interests of the faculty include the following: Commutative Algebra, Group Theory, Ring Theory, Ordinary and Partial Differential Equations, Summability Theory, Number Theory, Actuarial Mathematics, Mathematical Statistics, Foundations of Mathematics.

DEPARTMENTAL REGULATIONS

These are additional to the general regulations listed earlier in this announcement.

M.A. Degree

(1) A candidate with a General Bachelor's Degree will be required to enroll in a Prerequisite Year in which he shall complete satisfactorily a minimum of five undergraduate Honors Mathematics courses in addition to fulfilling the requirements specified below for a candidate with an Honors Degree.

(2) A candidate having an Honors Bachelor's Degree shall complete satisfactorily a minimum of four Mathematics courses numbered 300 or above of one year's duration, at least two of which shall be at the graduate level. At the discretion of the Department a candidate may be permitted to substitute a thesis for not more than two courses.

Ph.D. Degree

(1) At the discretion of the Department, an applicant may be required to complete a one-year program of approved courses before being accepted as a candidate for the Ph.D. Degree.

(2) In addition to fulfilling the thesis requirement, a candidate shall complete satisfactorily a minimum of seven Mathematics courses numbered 300 or above of which at least five must be at the graduate level. A candidate holding an approved Master's degree may be exempted from at most four of these courses unless he has successfully completed more than the minimum number of courses required for this degree. In the latter case the candidate may be exempted from more than four courses.

(3) After submission of his thesis, a candidate will be required to pass an oral examination within the Department; this examination will be primarily concerned with the contents of the thesis, but may include questions of a general nature relating to his field of specialization.

(4) Each candidate will be required to present at least one paper at a graduate seminar, on a subject to be approved by his supervisor.

COURSES

500-559. Pure Mathematics.

501. Measure and Integration Theory.

502. Theory of Summability of Series and Intergrals.

504. Comples Analysis.

505. Ordinary Differential Equations.

506. Number Theory.

507. Foundations of Mathematics.

509. Functional Analysis.

510. Topics in Analysis.

511. Partial Differential Equations.

512. Integral Transforms and Eigenfunction Expansions.

513. Mathematics for Graduate Students in the Social Sciences.

515. Algebra.

516. Advanced Theory of Groups.

517. Topics in the Theory of Groups.

518. Residuation Theory.

520. Algebraic Topology.

560-569. Actuarial Mathematics.

561. Advanced Life Contingencies and Construction of Mortality Tables.

570-588. Mathematical Statistics.

572. Theory of Linear Estimation.

573. Structural Analysis.

574. Topics in Multivariate Analysis.

580. Theory of Statistical Inference.

581. Characteristic Functions and Probability.

582. Theory of Estimation and Testing of Hypothesis.

583. Design of Experiments.

584. Non-parametric Statistics.

585. Stochastic Processes.

586. Multivariate Analysis

588. Theory of Sampling.

589. Directed Reading and Research. (No part of the minimum course requirements can be fulfilled by this course).

590. M.A. Thesis.

690. Ph.D. Thesis.

Note: At the discretion of his committee of advisors, a candidate for either the M.A. or the Ph.D. degree may be permitted to substitute certain graduate courses in other Departments for Mathematics courses.

Physics

The research interests of the Department are listed below. For greater detail please consult our graduate brochure which is available in many Departments or may be obtained by writing to this Department.

Atomic and Molecular Physics. Theoretical atomic and molecular structure; theoretical and experimental collision studies involving electrons, ions, positrons, atoms, and molecules; investigation of molecular gas and ionic lasers; non-linear interactions; photoabsorption studies of gases and plasmas in the millimetre and sub-millimetre regions; vacuum ultraviolet radiation interaction with gases.

Physics of the Lower Atmosphere (Troposphere). Studies of thermal convection and atmospheric electricity; vapor, heat and charge transfer in clear air and storm systems.

Physics of the Upper Atmosphere (Ionosphere). Theoretical and experimental studies of the normal and disturbed high atmosphere; ionic inhomogeneities; optical and radar observations of meteor trails; ionic and electronic concentrations and diffusion studies using signals from ground-based, and satellite-borne transmitters, and ground-based detectors; radio aurorae; airglow; radio emissions from the sun at metre wavelengths.

Solid State Physics. Theoretical studies of amorphous materials, metals, and superconductivity; theoretical and experimental studies of band structure of solids, work functions; surface physics; experimental studies of properties of ionic compounds; diffusion of positrons in solids; interaction of sub-millimetre radiation with solids.

Design and Applications of Accelerators. Racetrack microtrons as sources of electrons and millimetre and sub-millimetre waves, X-rays, and vacuum ultraviolet radiation.

Other Programs are being actively followed in Acoustics – resonances in the violin family; theoretical Nuclear Physics – nuclear models; Radiological Physics – medical applications of high energy electron and X-ray beams, and of ultrasound.

Much of the research within the Department is relevant to Astrophysics; Communications, including satellites; Meteorology; Pollution; Radiological Physics; Switching devices; Thermionic emission.

Many of the above projects are inter-disciplinary, carried out in conjunction with the Departments of Applied Mathematics, Astronomy, Biophysics, Chemistry, the London clinic of the Ontario Cancer Treatment and Research Foundation, and the Faculty of Engineering Science. Much of the above research is carried out under the auspices of the Centre for Radio Science, which maintains laboratories both on and off campus.

M.Sc. REQUIREMENTS

The *minimum* requirements for the M.Sc. degree in Physics may be met in any one of the three following ways:

(i) One course selected from courses numbered 501-520
Plus. One course selected from courses numbered 501-549
Plus. A research thesis (590)

OR

(ii) Two courses selected from courses numbered 501-520
Plus. One course selected from courses numbered 501-549
Plus. A report or review paper (591)

OR

(iii) Physics 501
Plus. Two courses selected from courses numbered 502-520
Plus. One course selected from courses numbered 502-549

Note: With permission of the candidate's advisory committee some graduate courses in other Departments may be substituted for those listed above.

With similar permission, one of the graduate courses may be replaced by
a) two undergraduate courses normally in the Undergraduate Physics Program.
b) One undergraduate course at the senior undergraduate level from outside the department.

Ph.D. REQUIREMENTS

The *minimum* requirements for the Ph.D. degree in Physics are: Physics 501, Physics 601, Physics 658.
Two courses selected from courses 502-549.
Competence in a language in addition to English Language.
Competence in digital computer programming.
A research thesis (690).

Note: Credit for a maximum number of two graduate courses may be granted to candidates who hold an M.Sc. degree.

Honors graduates of exceptional ability may be permitted to register directly into a preliminary year of a Ph.D. program. During this year the minimum requirements are: Physics 501, one course selected from courses numbered 502-549, a review paper (591) related to the area of proposed doctoral thesis.

COURSES

501. Quantum Mechanics. A first graduate course in quantum mechanics designed to follow undergraduate work in modern physics with introductory quantum mechanics.

502. Nuclear Physics. An introductory course in both experimental and theoretical aspects of modern physics, including nuclear models, nuclear reactions and particle physics.

503. Statistical Mechanics. Fundamental principles of statistical mechanics and statistical thermodynamics. Applications will be drawn from physical chemistry, solid state physics, nuclear physics, etc.

504. Solid State. A course outlining the basic experimental and theoretical concepts of modern solid state physics. Some graduate work in quantum mechanics (e.g. Physics 501) is a prerequisite.

505. Classical Electrodynamics. Advanced topics in electromagnetic theory, including radiating systems, radiation by moving charges, multipole fields, etc.

521. Ionized Media in the Terrestrial and Solar Atmospheres. (A) (One Term) An introduction to the phenomena of ionized media in the terrestrial and solar atmospheres. (B) (One Term). The use of radio waves as a diagnostic tool in the investigation of ionized media in the terrestrial and solar atmospheres.

522. Physics of the Lower Atmosphere. An introductory survey of the physical processes in the terrestrial atmosphere from the surface to the lower stratosphere. (A) (One Term) Micrometeorology – transfer of heat, moisture, momentum and pollutants, near the earth's surface. (B) (One Term) Atmospheric Dynamics, Precipitation and Electricity – Larger scale air motions, phase transitions and precipitation, and electrical phenomena associated with both fair weather and thunderstorms.

523. Electromagnetic Radiation in the Submillimetre Region. The generation of electromagnetic radiation by lasers and relativistic electron beams; quasi-optical detection techniques; intensity and wavelength measurements; interactions with media in the gaseous and solid state.

524. (A) (One Term) – Collision Theory. A discussion of topics in the quantum theory of collision processes with emphasis on applications to atomic physics.

525. Theoretical and Applied Spectroscopy. A study of the spectra of atoms and diatomic molecules, leading to a detailed insight into their structure; a selection of topics in modern spectroscopic applications.

590. M.Sc. Thesis.

591. A report or review paper for M.Sc. candidates in option (ii) or candidates in the preliminary year to a Ph.D.

601. Comprehensive Examinations. A required examination for Ph.D. candidates, normally taken in the autumn of the year in which the Ph.D. program is started. For students arriving in the autumn, it may be postponed until the following spring. Its primary purpose is to detect weaknesses in the candidate's general knowledge of physics in order that corrective study may be arranged. For that reason, those who do not receive a passing mark at the first attempt are permitted to take the examination a second time, about six months later. No more than two attempts are allowed.

658. The Graduate Seminar.

690. Ph.D. Thesis.

Note: Courses bearing the letters A or B are half courses for the purposes of credit. A candidate may register in A or B or both where applicable.

SOCIAL SCIENCES DIVISION

Business Administration

The objective of the Master of Business Administration program is to develop professionally qualified managers. The two years of the program are concerned with the analysis of business problems and decision-making in organizations. During the first year, all students are required to take an integrated set of courses in the areas of marketing, production, finance, control, administrative practices, quantitative analysis, and economics. Through the classroom discussion of cases, emphasis is placed on the development of verbal communication skills. Emphasis is also placed on written communications through a business report program, and on the development of effective interpersonal relations through group projects and study sessions. In the second year, the equivalent of five full courses is required. Of these, Business Policy is mandatory; the balance being chosen by the student from among those offered in various fields. Most of the second year courses are half-year courses, allowing up to eight half-year options.

The case method of study is the major learning vehicle in both years of the M.B.A. program. Lectures, simulation exercises, special projects, and a variety of other teaching-learning techniques are also used.

THE Ph.D. PROGRAM IN BUSINESS ADMINISTRATION

The Ph.D. Program in Business Administration at The University of Western Ontario was the first doctoral program in management offered in Canada. Its objective is to prepare those who are interested in pursuing an academic career in Business Administration.

It is a three year program. The first year with its emphasis on economics, quantitative analysis, behavioral science, and general management prepares the candidate for the general fields examination. The second year provides an opportunity to study in depth a special area like marketing, control, finance, production, organizational behavior or quantitative analysis. The third year is spent on the preparation of a thesis.

It is an objective of the program to admit a small number of students with superior qualifications and subject them to an intensive program based on a close relationship with faculty members.

The normal admission requirement to the program is an MBA degree or equivalent completed with high academic standing. Candidates are usually asked to come for a personal interview before final acceptance is granted. A standard requirement of every candidate is that he must write the Admission Test for Graduate Study in Business. Test applications must be filed with the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey 08540, at least three weeks in advance of the test.

For further information, application forms and calendar write the Director, Doctoral Program, School of Business Administration, The University of Western Ontario, London 72, Ontario.

Economics

The Department offers programs of study leading to the degrees of M.A. and Ph.D. In its graduate courses the Department emphasizes a combination of advanced theoretical and quantitative analysis.

Candidates are admitted at the discretion of the Department. The M.A. program for suitably qualified candidates normally requires one year; the Ph.D. program requires a minimum of two further years of residence.

Detailed information about these graduate programs and their admission requirements may be obtained from the Director of Graduate Studies in Economics, Department of Economics.

COURSES

Math 254. Mathematics for the Social Sciences.

505a. Introduction to Statistics.

505b. Introduction to Econometrics.

510. Mathematical Economics.

533a. Monetary Theory.

533b. Monetary Institutions.

534a. Industrial Organization.

534b. Industrial Organization Policy.

537. North American Economic History.

538. Economic Development.

540. Macro-economics.

547. European Economic History.

551a. International Trade Theory.

551b. International Trade Policy.

555. Econometrics.

560. Micro-economics.

563a. Public Finance.

563b. Fiscal Economics.

575. Economics of Human Resources.

580. Recent Developments in Economic Theory.

599. Capital and Growth Theory.

590. M.A. Thesis.

690. Ph.D. Thesis.

A full range of advanced courses (at the 600 level) and reading courses (at the 700 level) are available in the above listed subjects.

All courses will not necessarily be offered in any one year; (a) denotes first term and (b) second term, otherwise courses are for both the Fall and Winter terms.

Geography

COURSES

500. Mathematical Models in Geography. The application of various models to geographic patterns. Concepts, theories and techniques currently in use in Geography and other Social Sciences will be examined and applied to research problems./ *M.F. Goodchild*

522. Development Aspects in Industrializing Nations. The social, economic, political and spatial structure and inter-related development problems in selected countries or regions. (Offered jointly with Political Science and Sociology)/ *H.A. Hosse and Staff*

530. Advanced Climatology. Examination of selected topics in theoretical, practical and applied climatology.

531. Advanced Geomorphology. Theoretical and applied problems in geomorphology./ *V.W. Sim*

532. Cultural Geography. Discussion of a process-oriented theoretical and quantitative discipline of cultural geography with specific reference to both scientific and humanistic approaches./ *A.K. Philbrick*

533. Urban Analysis. The application of empirical and theoretical models to urban problems, including a review of the recent literature and the use of various techniques on local problems. / *D.G. Janelle*

***534a. Urban Planning.** Problems of urbanization; concepts and processes of planning for urban development; critical evaluation of current practices. /*H.A. Hossé*

***534b. Regional Planning.** Systems approach to comprehensive regional development; spatial relationship of inter-actions within a region; examination of selected regional development schemes. /*H.A. Hossé*

535a. Development and Management of Natural Resources. Analysis of water use problems with emphasis on river basin development and water quality management. (Fall term for Social Sciences; Winter term for Environmental Engineers)/ *J.C. Day*

535b. Development and Management of Natural Resources. Analysis of problems related to the use, misuse and deterioration of mineral, soil, biotic and landscape resources. (Winter Term)/ *J.D. Day*

537. Recreation Resource Analysis. The use of land and water for leisure and an analysis of factors affecting the variation in development and type of recreational activities; regional recreation resources; international aspects of the tourist industry./ *R.W. Butler*

***539a. Methods of Regional Analysis.** An examination of the nature and application of social accounts, statistics, and mathematics to spatially-oriented problems of socioeconomic development. */R. McDaniel*

***539b. Complex Spatial Systems Analysis.** An examination of the nature and implications of the global trend toward automated information systems and spatial model building. */R. McDaniel*

540. Political Geography Seminar. A study of the spatially-derived elements of political systems; models of territoriality; and selected themes and case studies./ *C.F.J. Whebell*

541. Advanced Cartography. Studies of modern map making and atlas techniques; design and execution of cartograms./ *R.W. Packer*

543. Field Methods and Practices. Departmental field camps and field trips as arranged. Mandatory for all M.A. students./ *Staff*

545. Studies of the Great Lakes Basin. (half course)/ *E.G. Pleva*

547. Studies in Historical Geography. Methods, techniques and current research with special reference to Canada and Ontario./ *W.R. Wightman*

548. The Foundations of Geography. Discussions of the fundamental background of theoretical geography and the development and philosophy of the discipline./ *Staff*

560. Canada. Current research problems of national significance with emphasis on resource survey and development./ *N.L. Nicholson*

569. Polar Lands. Recent research in the physical geography of polar lands; analysis of the cultural and economic factors involved in the development of polar areas./ *V.W. Sim, O.P. Langtvet*

570. Latin America. Discussion of the problems of Latin America with particular emphasis on emerging social patterns and resource development./ *H.W. Taylor*

580. The St. Lawrence Lowlands. The background, development and current issues in the Human Geography of southern Ontario and central Quebec./ *C.F.J. Whebell*

***581a. Biogeography.** Principles of the distributional patterns of plants and animals with special reference to southwestern Ontario. */C.F.J. Whebell*

590. M.A. Thesis/ *Staff*

*Half Course

*Half Course

643. Field Methods and Practices. Departmental field camps and field trips as arranged. Mandatory for Ph.D. students./ *Staff*

***645. Problems in Environmental Analysis.** */E.G. Pleva*

648. Current Topics in Geography. A Senior Seminar for Ph.D. Students./ *Staff*

690. Ph.D. Thesis/ *Staff*

History

ADMISSION AND DEGREE REQUIREMENTS

Candidates should read the general university regulations for the M.A. and Ph.D. degrees given elsewhere in this Announcement. Candidates are admitted at the discretion of the Department.

M.A. DEGREE

Admission requirements and period of study.

(1) Applicants with a first or second-class Honors degree or the equivalent in History may normally proceed to the M.A. degree by spending the Fall and Winter terms of one academic year in residence, if registered in the M.A. by thesis program, or one calendar year (Fall, Winter, and Summer Terms), if registered in the M.A. by course program.

(2) Applicants possessing a first or second-class General Program degree, with History as their major subject, must normally enrol in a two-year program and spend two years in residence. During the first or Prerequisite year, such candidates will take four undergraduate Honors courses to equip them for graduate work. Admission to the second year depends on a student's performance in the Prerequisite year courses, with a middle B (UWO 74%) average as minimum qualification to proceed.

For admission to the Prerequisite year, candidates require a middle B average in the five History courses already taken. Those with less than middle B averages may be admitted at the discretion of the Department, if they are recommended by at least two instructors acquainted with their work, and if their standing in related subjects is deemed satisfactory.

Degree Requirements

Candidates may proceed to the M.A. degree by either the thesis or the course program. In either case, however, they must demonstrate their reading knowledge of one language, acceptable to the Department, other than English (or French when this is their mother tongue). The language requirement will normally be met before November 30.

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*Half Course

(1) M.A. by thesis: The major requirement is a thesis, based on original research and demonstrating capacity for independent critical judgment. The student will submit to his supervisor an outline of his projected thesis research early in November of his M.A. year. When the thesis has been completed, the student will be examined orally on it and on the field in which it falls.

Candidates will take at least two graduate courses. A graduate course may be selected from among those offered in other disciplines, but in such cases the permission of the Department of History and of the other Department concerned is required. Similarly an Honors undergraduate history course may, with the permission of the Graduate Committee, be selected, but in this case the student will complete additional assignments.

Students are urged to complete their thesis before the fall of the year following that in which they enrolled; and in any case they must submit their theses not later than 15 August of the third year after completion of the course work. If a thesis is not ready for submission within this period of time, it will be necessary for the candidate to make application to the Graduate Committee for re-admission to the program and re-registration of his thesis topic.

(2) M.A. by Course: The M.A. by course program covers a full calendar year of studies (September to September) in which the student will first take four courses during the regular academic year (September to May) and then devote the summer to preparing for comprehensive examinations in three fields. The comprehensives will be held in the two weeks immediately preceding Fall registration.

At least two of the courses must be graduate courses, one in British or European History and one in Canadian or United States History. The two additional courses may be from the third and fourth year History Honors Program with the permission of the Chairman of the Graduate Committee. A student may take a graduate course or an Honors course in another discipline as a substitute for either of the Honors courses, with the permission of both the department concerned and the History Department.

In choosing the courses the student should keep in mind the fields which he has selected for examination. However, none of the graduate courses will be as broad as the field, and none of the undergraduate courses as intensive; a student will therefore find it necessary to read widely on his own. The fields are in Canadian, United States, English, European, or general history and the student may select one area from each field after consultation with the Department.

Ph.D. DEGREE

Admission requirements and period of study.

Candidates must normally hold the M.A. degree in History and they will be required to spend at least two academic years in residence.

Degree Requirements

(a) **Courses.** Two graduate History seminars are normally required. A graduate course offered in another Department may be substituted for a History seminar but in this case the permission of the Department of History and of the other Department concerned is required. Candidates must have an A in one seminar and at least a B in the other to obtain credit. Candidates may be asked to withdraw at any time if in the Department's judgment their work is unsatisfactory.

(b) **Comprehensives.** At the time of registration each student will select, in consultation with his adviser, three fields of study, one in European History, one in North American History, and one other. These may be chronological fields (for example, Tudor England or Canada since Confederation) or functional fields (for example, United States Economic History, 1850 to the present, or Social History of England, 1800 to the present). When the course work has been completed, normally at the end of the first year after the M.A., each student will take comprehensive written or oral examinations in each of the three fields he has chosen. The examinations will be held in October of the candidate's second year.

(c) **Thesis.** A thesis showing evidence of scholarly research and originality is the major requirement. The candidate will select a topic in consultation with his adviser and will present an outline of his projected thesis no later than December of the second year of his doctoral program. When the thesis is completed, there will be a faculty oral examination. Before the examination the candidate will presnet a lecture on his research.

(d) **Language Requirement.** Candidates must demonstrate their reading knowledge in one language, acceptable to the Department, other than English (or French when this is their mother tongue). The language requirement will be met by 1 May of the first year.

The Ph.D. program provides opportunities for candidates to gain experience in teaching. The Department offers a number of teaching fellowships and students holding them lecture or assist with tutorial groups in undergraduate courses.

Further information may be obtained by writing to the Chairman, Graduate Committee, Department of History.

COURSES

502. French Canadian Nationalism./ *H.M. Wade*

505. Selected Topics in the History of British North America, 1759-1867./ *F.H. Armstrong*

508. Social, Economic, and Cultural History of Ontario./ *J.J. Talman*

511. Post-Confederation Federal Elections./ *D.G.G. Kerr*

513. The Opening of the Canadian North./ *M. Zaslow*

525. Science and Society in Eighteenth Century England./ *W. Balderston*

527. British Government and Politics, 1760-1852./ *F.A. Dreyer*

531. The Medieval Monarchy: Papal and Feudal, 1050-1216./ *J.G. Rowe*

540. Selected Topics in the History of Modern Europe./ *C. Ruud*

544. French Society and Government, 1763-1852./ *J.P. McLaughlin*

553. Selected Topics in U.S. Business History, 1860-1920./ *R.C. Overton*

566. Selected topics in British Imperial History./ *G.S. Graham*

570. Historiography and the Philosophy of History./ *W.K. Ferguson*

578. Selected Topics in the History of Warfare./ *A.M.J. Hyatt*

581. Selected Topics in International Relations./ *K.H.W. Hilborn*

587. Reading Course to be undertaken in consultation with a member of the Department.

590. M.A. Thesis.

686. Directed Study.

690. Ph.D. Thesis.

Note: Facility in reading French is necessary for students wishing to take History 502 and History 544. For History 531, students should have a good reading knowledge of one of the following languages: French, German, Italian, Latin.

Library and Information Science

Application forms may be obtained from either the Faculty of Graduate Studies or the School of Library and Information Science. Students may enter the M.L.S. course of studies in the fall, winter, or summer term. An orientation period of a week is required of students in advance of the academic term which they enter. Part of the orientation consists of an introduction to computer work for those who lack such preparation; the purpose is to provide a foundation for computer applications and studies in the School.

Required courses are offered every term. Other courses may also be offered every term but in general are offered at least once in every three terms although there may be exceptions, especially in the 560 series. Each course is technically a half-course, i.e., it is completed in one term; but some courses are linked chronologically with others in the same group.

COURSES

500. Foundation Studies./ *Staff*

500. Masters Seminar./ *A.D. Osborn and Staff.* Required in the student's final term. 3 units

501. Old World Intellectual and Cultural Foundations./ *W.J. Cameron.* Either 501 or 502 is required in the first term for the 45-unit program. Both are required in the 60-unit program, 501 in the first term and 502 in the second. 2 units

502. New World Intellectual and Cultural Foundations./ *W.B. Ready.* 2 units

503. Bookcollecting and Librarianship./ *W.S. Debenham, W.B. Ready.* Required in the second or third term in the 60-unit program. 2 units

510. Professional Theory and Methodology./ *Staff*

511. Humanities./ *A.J. Jamieson, A.D. Osborn.* Required in the first term. 5 units

512. Social Sciences./ *L.C. Colvin, C.M. Hotimsky, B.J. Palmer, J.H. White.* Required in the second term. 6 units

513. Science and Technology./ *G.R. Pendrill.* Required in the third term. 5 units

514. Special Topics in the Humanities./ *Staff* 2 units

515. Special Topics in the Social Sciences./ *Staff* 2 units

516. Special Topics in Science and Technology./ *Staff.* 2 units

519. Problems in the Organization of Information./ *L.C. Colvin.* 2 units

520. Administrative Theory and Practice./ *Staff*

521. Principles and Practice./ *G.T. Alley, R.G. Prodrick.* Required in the first term. 1 unit

522. Library Architecture./ *G.T. Alley, A.W. Bowron.* Required in first term. 2 units.

523. Library Theory and Practice./ *G.T. Alley, A.W. Bowron.* Required in the second term. 3 units

524. School Theory and Practice./ *S.D. Neill.* 2 units

527. Community Services: Local, Regional, National./ *Staff.* 2 units

528. Higher Education./ *Staff.* 2 units

529. Special Libraries./ *Staff.* 2 units

530. Research Principles and Practice./ *Staff*

531. Humanities./ *W.J. Cameron.* 2 units

532. Special Topics in the Humanities./ *W.J. Cameron.* 531 is the prerequisite. 2 units

534. Social Sciences./ *R.G. Prodrick.* 511 is the prerequisite. 2 units.

537. Science and Technology./ *G.R. Pendrill.* 512 is the prerequisite. 2 units

539. Guided Research./ *Staff.* One of the 530 courses is the prerequisite. 3-6 units

540. Sepcial Topics./ *Staff*

541. Literature of French Canada (French 560). 2 units

542. Periodical Literature./ *J.H.White.* 2 units

543. Historical Development of Children's Literature./ *E.C. Donnelly.* 2 units

544. Canadiana./ *J.J. Talman.* 1 unit

545. Slavic Libraries and Librarianship./ *C.M. Hotimsky.* Required. 1 unit

547. History of Science./ *R.A. Richardson.* 2 units

550. Communication Studies./ *Staff*

551. Linguistic and Communication Studies./ *C.M. Hotimsky and Staff.* Required in the first term. 3 units.

552. Introduction to Problems in the Computer Control of Information./ *A.D. Osborn, G.R. Pendrill.* Required in the second term of the 45-unit program; in the third term of the 60-unit. 3 units

553. Problems in the Computer Control of Information./ *J. Belzer.* Required in the third term of the 45-unit program, in the fourth term of the 60-unit. 3 units.

558. Special Topics in the Computer Control of Information./ *J. Belzer.* 552 is the prerequisite. 2 units

559. Audiovisual Theory and Practice./ *S.D. Neill.* 2 units

560. Special Services./ *Staff*

561. Art Libraries and Information. 2 units

562. Business Libraries and Information. 2 units

566. Law Libraries and Information./ *B.J. Halevy.* 2 units

567. Medical Libraries and Information./ *G.R. Pendrill.* 2 units

569. Music Libraries and Information. 2 units

Nursing

PURPOSE OF THE M.Sc.N. PROGRAM

The purpose of graduate education in nursing is to prepare graduates to assume senior responsibilities in nursing and to exert wise leadership within the profession of nursing. It is anticipated that the graduates will have knowledge in depth in their selected field of specialization, i.e. either teaching or administration; an appreciation of the role

of research and in the appropriate application of research findings; the ability to discern need for change in nursing and how to effect it; human relation skills which make possible effective functioning in situations as they obtain, or their modification if indicated. The programs take into consideration studies satisfactorily completed in undergraduate programs, and are designed to build upon the individual's background of education and experience and, where possible, to prepare for individually anticipated responsibilities on graduation.

ARRANGEMENT OF COURSES WITHIN PROGRAMS

A. Major in Administration.

Year 1 200, 500, 501, 504, 505, one senior or graduate course in General Education or a graduate course in Nursing.

Year 11 600. 601 or 602 or 603, 590 or 591, one senior or graduate course in General Education or a graduate course in Nursing.

B. Major in Teaching

Prerequisite Year 200, 470, 500, 505, 3 electives in General Education, one of which must be a Natural, Biological or Medical Science.

Final Year 600, 604, 605, 606, 607, 608.

Note: In addition to above courses, a student with a major in administration or in teaching may elect to take 509, a course offered in the Faculty of Nursing, if sufficient students enrol. The student chooses all other electives noted above in consultation with the Dean, Faculty of Nursing, or with the Coordinator of the Graduate Programs.

COURSES

200. Introduction to Statistics. Basic concepts: sampling, measures of central tendency, variability, tests of probability, correlation, significance.
1 hour each week

470. Research in Nursing. Brief introduction to research methodology, skills, evaluation and utilization.
2 hours alternate weeks, First Term

500 Health Services and Their Development. An historical approach to the study of current issues in health services, especially nursing; the significance of the past in relation to problems of the present; society's concern for health; social, economic, political, legal and philosophical influences on health services.
2 hours each week, First Term

501. Administration. Nature of organized human enterprise; the administrative process, theories and skills of administration; the administrative role and implications of its assumption.
2 hours each week

504. Research in Nursing. Introduction to the nature and methodology of research; construction of a research design and tools for collection and analysis of data; critical analysis of research reports; study of means of promoting and utilizing research in nursing.
2 hours each week.

505. Theory and Practice in Nursing. An examination of the nature of nursing and the theoretical justification for its practice. Implicit in the course is the student's responsibility to define her learning and practice goals, and to evaluate the effectiveness of her planned nursing intervention. Included in the second term is a nursing practicum.
2 hours per week

509. Human Relations and the Change Process. Sensitivity training in attitudes, motives, values; opportunity for testing leadership roles through problems solving; the processes of decision-making and interpersonal relations which effect change.
2 hours each week, First Term

590. Thesis OR 591. Alternative Requirements. With permission, the student may elect to undertake, under supervision, the total conduct of a research project, including the writing of a thesis and reporting it. As an alternative, the student may elect to complete: (1) One Senior or graduate course in Arts, Social Science, Science or Medical Science or a Graduate Course in Nursing. (2) A major paper associated with the student's work in one course in nursing.

600. Current Issues in Nursing. Factors bearing on these issues, alternate courses of action; role of the professional in society; the professionalization of nursing.
2 hours each week, Second Term

601. Nursing Service Administration in Hospitals. Study of the objectives and methods of initiating, developing and evaluating the roles and functions related to the senior administrative responsibilities; analysis of trends and developments which have implication for nursing service administration.
2-3 hours each week

602. Nursing Education Administration. Role of the administrator as it relates to: the development implementation and evaluation of the school program; the recruitment, selection, organization, development and retention of faculty; the business management of the school.
2-3 hours each week.

603. Public Health Nursing Administration. Abilities, attitudes and skills for advanced administrative roles in public health nursing; current and future programs of community health organizations.
2-3 hours each week.

604. Research in Nursing with Related Laboratory. Part 1. Continued examination of the nature and methodology of research in nursing. Construction of a research design and tools for the collection

and analysis of data; Critical analysis of research reports; study of means of promoting and utilizing research in nursing.
Part 11. Consideration of those aspects of nursing practice with potential for investigation; identification of measurable variables, evaluation and reporting results of investigation.
2 hours each week

605. Education and the Teacher's Role.
Part 1. Education and Society, their reciprocal influence and trends, nursing education viewed within this context, assumptions basic to currently conceived purposes and programs in nursing education.
Part 11. The teacher's role as an individual and as a member of an educational staff with emphasis on her role in curriculum development and implementation.
2 hours each week

606. Measurement and Evaluation in Nursing Education.
Part 1. This course aims to familiarize the student with the nature of measurement and its purpose and value in teaching and learning. The course emphasizes the problems and methodology of teacher-made tests in nursing. Basic concepts for the use and interpretation of test results are explored. Next, the course examines fundamentals of performance evaluation. Laboratories are held currently.
2 hours per week, First term

Part 11. The examination and analysis of standardized tests in nursing education. Administration and analysis of individual or group testing and case writing of individual testing projects will be a requirement of the course.
2 hours per week, Second Term

607. Human Learning and Planning for Teaching.
Part 1. An introduction to the nature, conditions, and outcomes of learning. The major focus will be placed on cognitive models as explanations for phenomena of inhibition and modification of responses defined as learning. Topics discussed will be models of learning behavior, memory, concept learning, problem solving, skill learning, and K. R. and learning.
2 hours per week, First Term

Part 11. Basic concepts of teaching, course planning and lesson planning with emphasis on planning for learning experiences relevant to stated course and lesson objectives. Included in the course is provision for teaching practice and examination of a multi-media approach to planning learning experiences for students.
2 hours per week, Second Term

608. Student Personnel Services in Nursing Education.
Part 1. This part of the course emphasizes development of skills in exploration, analysis and solution of student nurse problems, academic, personal and social. The principle mode of developing these skills is through the case method. Case writing is part of this program.
2 hours per week, First Term

Part 11. This part of the course examines the most recent models used in student personnel services. Course topics include educational and vocational planning, placement and follow-up of graduate nurses. As a part of the course each student will undertake a project to examine in depth any of the above areas. Laboratory sessions are also included.
2 hours per week, Second Term

RELEVANT EXPERIENCE

Relevant experience is planned on an individual basis. Experience may be necessary to augment the student's knowledge of the area in which she wishes to specialize and/or collect data for her thesis. Because of this requirement, students should not make commitments for employment between the first and second academic years, until they have consulted with the Dean or the Coordinator of Graduate Programs, Faculty of Nursing.

Political Science

M.A. DEGREE

Admission Requirements

Candidates are admitted at the discretion of the Department. The minimum requirements for admission are as follows:

1. Graduation in Honors Political Science from The University of Western Ontario with first or second class standing or graduation from another accredited university with an equivalent degree and standing.
2. Graduation in Honors or four-year programs other than Honors Political Science from The University of Western Ontario or another accredited university, provided that the applicant achieved a first or second class standing in his program and has successfully completed six undergraduate political science courses distributed among the major fields of political science, with an average standing in these courses of at least second class honors. At the discretion of the Department, one or two closely related courses in subjects other than Political Science may be substituted for one or two of the six political science courses.

3. Graduation in ordinary General degree programs of The University of Western Ontario or other accredited universities with first or second class standing.

Period of Study

1. Applicants who meet requirement (1) or (2) above will need a minimum of one year in attendance.

2. Applicants who meet requirement (3) above will need a minimum of two years in attendance. During the first year, the candidate will be required to complete, with at least a B average, a Prerequisite Year consisting mainly of senior undergraduate honors courses.

Requirements

Three graduate courses and a thesis are required for the degree. One of the courses will be in the area of the candidate's thesis, and the students are encouraged, not required, to take Political Science 500, as one of the remaining two: The candidate must obtain at least a B grade in each of these courses to obtain credit.

The thesis, in which the candidate must exhibit his ability for research and critical judgment, must be defended orally. The Department also reserves the right to require an oral or written comprehensive examination which would cover the three courses chosen by the candidate and/or to require the student to withdraw at any time if his work is unsatisfactory.

Ph.D. DEGREE

Admission Requirements and Periods of Study

Candidates must normally hold an M.A. degree in Political Science or its equivalent, and they will be required to spend at least two years in residence.

Requirements

(a) Courses. Candidates will normally be required to take three courses in their first year of residence, one of which will be Political Science 500 (if not already taken as part of the M.A. program) and the remaining two related to his Ph.D. thesis field. A graduate course offered by another department may be substituted for one of the two non-compulsory courses; in that case, however, permission of both Departments concerned must be obtained first. Candidates must obtain a least a B grade in all courses and may be asked to withdraw at any time if in the Department's judgment their work is unsatisfactory.

(b) Candidacy Examination. At the end of his first year in residence, the candidate will be required to undergo an oral comprehensive examination which will cover mainly, though not exclusively, three fields of specialization chosen by the candidate.

(c) Statistics. The Department will require the candidate to have skill in statistics whenever necessary to his field of research.

(d) Thesis. A thesis showing evidence of scholarly research and originality is the major requirement. The candidate will select a topic in consultation with his advisor. An outline of the proposed thesis must be submitted to the Department for approval, normally at the end of his first year in residence. The thesis must be defended at a faculty oral examination.

COURSES

500. The Scope and Method of Political Science.

501. Contemporary Political Thought.

502. Research Techniques and Social Statistics.

503. History of Political Thought.

504. Selected Problems in Political Philosophy and Political Sociology.

510. *Theories of International Politics.*

511. *International Organization.*

512. *Studies in Foreign Policy.*

520. *Provincial and Local Government in Canada.*

521. Governmental Decision-Making in Urban and Regional Development.

522. Development Aspects in Industrializing Nations. (Offered jointly with Geography and Sociology).

530. Canadian Governmental Institutions.

531. Canadian Political Processes.

532. Comparative Federalism.

540. Canadian Public Administration.

541. The Policy-Making Process.

542. The Control of Administration.

550. United States Government and Politics.

560. Comparative West European Politics.

561. Comparative Communist Systems.

562. The Politics of Developing Countries.

564. *The Commonwealth.*

565. *Electoral Studies.*

570. Selected Topics.

590. M.A. Thesis.

690. Ph.D. Thesis.

All courses listed are not necessarily offered every year. For further information write to the Chairman, Graduate Committee, Department of Political Science.

Sociology

PROGRAM OF STUDIES

The Department offers work leading to the M.A. degree. Population Studies, Social Organization and Social Psychology constitute the three main areas of concentration. Within these areas, special attention is given to demography and urbanization, medical sociology, and collective behavior and communications.

To be awarded the M.A. degree, a candidate must satisfy the Department of his competence in Sociological Theory, Statistics, and Research Methods. The minimal requirement is a program of six and one-half graduate courses (thesis

option) or eight graduate courses (non-thesis option), which normally is completed in two years. Courses 500, 501, 502, 503, 504, and 505 are required for granting of the M.A. degree, unless competence in these areas can be demonstrated to the Department's satisfaction. In addition, the candidate must meet the requirements specified in either the thesis or non-thesis options which comprise the second year of the program.

ADMISSION REQUIREMENTS

Graduation from an accredited university with at least a B average (second class standing) is required for admission. Results from the Graduate Record Examination also must be submitted. Students for whom English is not their native tongue should submit evidence of proficiency in spoken and written English. Although admission to the program is possible from undergraduate fields other than Sociology, deficiencies may have to be remedied as prescribed by the Department.

PREREQUISITE YEAR (8 half courses or equivalent)

Sociology 500
Sociology 501
Sociology 504
Sociology 505
Sociology 506 or 583
Sociology 536 or 547
Sociology 540 or 541
One elective (Minimum: half course)

M.A. YEAR Thesis Option (5 half courses or equivalent)

Sociology 502
Sociology 503
One full or two half courses, chosen from the candidate's major **area of concentration***
One elective (minimum: half course)
Thesis

Non-Thesis Option (8 half courses or equivalent)

Sociology 502
Sociology 503
One full or two half courses chosen from the candidate's major **area of concentration***
One full or two half courses chosen from the remaining **areas of concentration***
Electives (2 half courses or equivalent)

*Population studies (P), Social Organization (O), and Social Psychology (SP), constitute the three areas of concentration.

COURSES

500. Introduction to Elementary Statistics. Measures of central tendency and dispersion, normal binomial distribution. Tests of significance and measures of application.

501. Advanced Statistical Analysis in Social Research with Particular Emphasis on Inference. Analysis of variance and covariance, nonparametric tests and sampling. Prerequisite: an undergraduate course in statistics, Sociology 500, or permission of Instructor.

502. Methodology in Empirical Sociology. A comprehensive study of the problems of methodology and research design. The methodology of major studies in sociology will be critically examined.

503. Methodology in Empirical Sociology. An examination of problems of measurement, data collection techniques and analysis.

504. Sociological Theory. A survey of historical and contemporary sociological theory.

505. Sociological Theory. Selected problems in theory.

506. Population and Social Structure. (P) The relevance of demographic processes to social organization and the interrelation of fertility, mortality, and migration with social psychological and structural variables.

522. Development Aspects in Industrializing Nations. (O) The social, economic, political and spatial structure and inter-related development problems in selected countries or regions. (Offered jointly with the Departments of Geography and Political Science). Two-term, full-credit course.

523. Techniques of Demographic Analysis. (P) Procedures in the measurement of fertility, mortality, natural increase, and migration. Evaluation of sources of demographic data including census and vital registration systems.

533. Demographic Simulation. (P) A computer laboratory course involving projections, fertility models.

534. Human Ecology. (P) The consideration of the concepts of human ecology as applicable to the interrelationships of population, environment, technology and organization in society.

535. Community. (O) A systematic analysis of the ecological and social dimensions of communal life in both folk and urban-metropolitan settings.

536. Social Organization. (O) A study of contemporary theories of social organization and their applications to analyses of existing organizations.

537. Deviant Behavior. (O) A study of basic theories of deviant behavior with emphasis on methods for determining the occurrence and distribution of norm violating behavior and on social and psychological correlates of deviant behavior.

539. Social Movements and Revolutions. (SP) An examination of conditions which produce social movements and revolutions, processes of development, leadership, and processes of affiliation and dissaffiliation. Relevant sociological and social psychological theories will be examined.

540. Social Psychology. (SP) An analysis of the contributions of culture and social interaction to the development of personality. Socialization, attitude change, and motivation will be emphasized.

541. Small Groups. (SP) Empirical study of social psychological phenomena with an introduction to empirical laboratory and field methods used in social psychology.

542. Communication. (SP) An analysis of the nature, diffusion, and control of information within social systems and sub-systems.

543. Collective Behavior. (SP) An analysis of theories dealing with fads, riots, propaganda and public opinion.

544. Theories of Social Psychology. (SP) Critical analysis of the major current theories in social psychology.

545. Sociology of Mental Health. (O) A study of the incidence and prevalence of mental disorders, their interrelationship with sociocultural factors and emotional disorders, and an evaluation of selected mental health program and services.

546. Medical Sociology. (O) An application of sociological concepts to the analysis of hospital organization, medical professions and roles, and socio-cultural factors related to health and illness.

547. Social Stratification. (O) An examination of the forms and functions of inequality and ranking systems in society. Consideration will be given to contemporary problems of social class and mobility.

548. Social Change. (O) Examination of theories of socio-cultural, economic, demographic and ecological change and their relevance to planning in developing nations.

551-560. Selected Social Institutions. (O) The examination of selected social institutions in terms of the problems of stability and change in society. Specific institutional areas include law, military, education, religion, family, science, industry, and polity.

570. Special Topics in Demography. (P) Intensive study of specific issues in demographic analysis.

580. Population and Economic Development. (P)* The interdependence between population characteristics, natural resources, and economic organization under varying conditions of natural development.

583. International Urbanization. (P) Demographic, social and economic analysis of urban communities in developing nations. Comparisons are made with similar phenomena in the western world.

588. Computer Applications in Social Research. (P) Electronic data processing and computer programming as relevant to social and demographic data and research.

590. M.A. Thesis. Two-term, full-credit course.

599. Selected Topics in Sociology.

Note: All courses signify half-credit, one-term courses unless otherwise noted.

MEMBERS OF FACULTY OF GRADUATE STUDIES

Arts Division

CLASSICS

Professors

Gerber, D. E., BA, MA; PhD *Toronto.* Chairman of Department

Lambert, G. R., BA, MA *Toronto* (Althouse College of Education).

Raymond, A. E., BA; MA *Toronto;* PhD *Chicago*

Associate Professors

Avotins, I., BA *Toronto;* AM, PhD *Harvard*

Murison, C. L., MA *Edinburgh;* MA *Cantab*

Timothy, H. B., MA, BD *Glasgow;* BA *London;* PhD *Edinburgh*

Assistant Professors

Broege, Valerie A., AB *Vassar;* MA, PhD *Bryn Mawr*

Crowther, N. B., BA *Leeds;* MA *McMaster;* PhD *Sheffield*

Littlewood, A. R., BA *Leeds;* BLitt *Oxon*

Stanley-Porter, D. P., BA *Toronto;* PhD *London*

ENGLISH

Professors

Atkinson, W. E. D., BA *Cantab;* PhD *Chicago*

Barker, A.E., BA, MA *Toronto;* PhD *London,* Professor of Renaissance Literature

Bates, R. G. N., BA, MA, PhD *Toronto*

Conron, A. B., BA, MA; AM, PhD *Harvard*

Graham, J. W., BA *Manitoba;* MA, PhD *Toronto*

Hieatt, A. K., AB *Louisville;* PhD *Columbia*

Hieatt, Constance B., BA, MA *Hunter College;* PhD *Yale*

Klinck, C. F., BA, MA; PhD *Columbia;* FRSC *Senior Professor*

Priestley, F. E. L., BA, MA *Alberta;* PhD *Toronto;* Visiting Professor (part-time)

Rajan, B., BA, MA, PhD *Cantab.;* Senior Professor

Reaney, J., BA, MA, PhD *Toronto*

Woodman, R. G., BA *British Columbia;* MA *Manitoba;* PhD *Toronto*

Associate Professors

Bandeen, Betty I., BA; AM, PhD *Radcliffe*

Bolgan, Anne C., BA *D'Youville;* MA, PhD *Toronto*

Chapin, D. F., BA, MA, PhD *Toronto*

Collins, T. J., BA, MA; PhD *Indiana*

Sister Corona Sharp, BA; MA, PhD *Notre Dame*

Devereux, E. J., BA, MA *Newfoundland;* DPhil *Oxon*

Fleck, P. D., BA, MA; PhD *Belfast.* Chairman of Department

Hair, D. S., BA; MA, PhD *Toronto*

Kaula, D. C., B.A. *Cornell;* PhD *Indiana*

Rans, G., BA, MA *Cantab.;* PhD *Leeds*

Sanborn, C. E., BA, MA, PhD *Toronto*

Stingle, R. M., BA, MA *Toronto.* Chairman of Department Committee on Graduate Studies

Wilson, H. R., BA, MA *Toronto;* PhD *Michigan*

Assistant Professors

Hensley, D. H., BA, MA *Oregon;* PhD *Wisconsin*

Parker, G. D., BA *Acadia;* MA *Dalhousie;* PhD *Toronto*

Peyroux, E. A., AB, MA *Stanford;* PhD *Carnegie Tech.*

Somerset, J. A. B., BA *Toronto;* MA, PhD *Birmingham*

Straulman, Ann T., BA *Wellesley;* MA *Kansas City;* PhD *Wisconsin*

FRENCH

Professors

Barbier, C. P., BA, MA *Leeds.* Chairman of Department

Bush, W. S., BA *John B. Stetson;* MA *South Dakota;* DU *Paris*

Lenardon, D., BA, BEd. *Alta.;* MA, PhD *Toronto*

Metford, L. J. S., BA, MA *British Columbia;* DU *Paris*

Sanders, J. B., BA, MA *Manitoba,* DU *Paris*

Sister Marie, BA, MA; PhD *Toronto*

Tuchmaier, H., DU *Laval*

Venesoen, C., DèsL *Laval*

Associate Professors

Balse, M. L., BA, MA, PhD *Bombay;* DU *Paris*

Creighton, D. G., BA, MA *Toronto;* PhD *Columbia*

Heller, L. M., BA, MA, PhD *Wisconsin*

Jones, Dorothy F., BA *Smith;* MA *Columbia;* PhD *Brown.* Acting Chairman 1969-70.

Walters, R. L., BA *Oberlin;* MA, PhD *Princeton*

Assistant Professors

Forsyth, Louise H., BA *Saskatchewan;* MA, PhD

Saraydar, Alma C., BA *California (Los Angeles);* MA *Chicago;* PhD *California (Berkeley)*

Westgate, D. E., BA *Nottingham;* MA *McMaster;* PhD

GERMAN

Professors

Kalbfleisch, H.K., BA; MA *New York;* MA, PhD *Michigan*

Tracy, G. L., BA *Queen's;* MA, PhD *Wisconsin*

Associate Professors

Anderson, A. R., BA *Toronto;* PhD *Brown*

Schlütter, H. J. PhD *Kiel*

Assistant Professors

Seufert, G. H., Staatsexamen *Tubingen*

Hanna Spencer, PhD *Prague*

MUSIC

Professors

McKellar, D. A., AMus, MusBac *Toronto;* MMus *Eastman.* Associate Dean of Faculty, Chairman, MMus Prof. Degree Committee

von Kuster, C., MusBac *Toronto.* Dean of Faculty

Visiting Professor

Tsutsumi, T., *To Ho Conservatory, Tokyo;* Artist Diploma in 'cello, *Indiana*

Associate Professors

Bray, K., MusBac *Toronto;* MM *Eastman*

Downs, P. G., BA *Leeds;* MusM, PhD *Toronto*

Green, J. P., MusBac *Toronto;* MMus *Eastman.* Chairman, Music Education

Greene, G. K., AMus, BA, BEd, MA *Alberta.* Chairman, Music History

Haenselman, C. F., BMusEd, MMus *Colorado;* PhD *Indiana.* Chairman, Theory

Johnson, D. J., BA *Sterling;* MA *Colorado*

McIntosh, J. S., MusBac *Toronto;* MMus *Eastman.* Chairman, Applied Music

Assistant Professors

Aldrich, R., MusBac *Victoria, Wellington*

Boos, Elizabeth L., BA *American, Washington;* SMM *Union Seminary*

Bratuz, Damiana, MDipl *Trieste;* MM *St. Louis;* MusDoc *Indiana*

Clements, P. J., MusBac, MM *Michigan*

Giron, A., BMus *Oberlin;* MA *Tulane*

Skelton, R., MusBac *Toronto;* MM *Indiana*

Stark, J. A., BA *Minnesota;* MusM *Toronto*

VanOstrand, G., BSc, *New York State;* MM *Eastman*

PHILOSOPHY

Professors

Binkley, R. W., BA *Colorado;* PhD *Minnesota*

Butts, R. E., BA, MA *Syracuse;* PhD *Pennsylvania.* Chairman of Department

Davis, J. W., BA, MA, PhD *Boston*

Johnson, A. H., BA *Mt. Allison;* MA, PhD *Toronto;* FRSC. Senior Professor

Leach, J. J., BA *Heidelberg;* MA *Trinity;* PhD *Michigan State*

Associate Professors

Angeles, P. A., BA, MA, PhD *Columbia*

Block, I., BA *Vanderbilt;* MA, PhD *Harvard*

Bronaugh, R. N., BA *Oregon;* MS, PhD *Wisconsin*

Henry, W. C., BA; MA, PhD. *Toronto*

Hockney, D. J., BA *McMaster;* PhD *Cornell*

Hooker, C. A., BSc, PhD *Sydney*

Johnson, H. J., BA *Alfred;* PhD *Chicago*

Assistant Professors

Howard, V. A., BA *Maine;* PhD *Indiana*

Marras, A., BA *Colgate;* PhD *Duke*

Schrecker, Anne M. BA *Kalamazoo;* MA *Wellesley;* PhD *Bryn Mawr*

Williams, Martha E., BS *William and Mary;* MA, PhD *Bryn Mawr*

Wilson, W. K., MA *Marietta;* MA, PhD *Pittsburgh*

Visiting Professors

Braithwaite, R. B., BA, MA *Cantab*

Caton, C. E., BA *Oberlin;* MA, PhD *Michigan*

Kyburg, H. E., BE *Yale;* MA, PhD *Columbia*

SPANISH AND ITALIAN

Professors

Flint, W., BA *Harvard;* MA, PhD *North Carolina.* Chairman of Department

Shervill, R. N., BA; MA, PhD *North Carolina.* Executive Assistant to the President

Smieja, F. L., BA *National, Ireland;* MA, PhD *London*

Associate Professors

Asensio, J., PhB, STB *Ordo de Mercede;* Lic., Dr en Fil. y Letras, *Madrid*

Martí, A., ECI., *Madrid;* BSc *Jochi, Tokyo;* Lic., Dr en Fil. y Letras, *Barcelona*

Assistant Professors

Burghardt, W., BA, MA *Toronto*

López Pacheco, J., Lic en Fil y Letras, *Madrid*

Biosciences Division

ANAESTHESIA

Professor

Spoerel, W. E., MD *Frankfurt-on-Main.* Head of Department

Clinical Associate Professors

Keeri-Szanto, M., MD *Budapest*

Webster, A. C., BSc, MB, ChB *Leeds*

ANATOMY

Professors

Barr, M. L., SM; BA, MSc, MD; Hon. LLD *Queen's, Toronto, Alberta* and *Dalhousie;* Dr med h c *Basel;* FRSC

Buck, R. C., MD, MSc, PhD *London.* Chairman of Department

Associate Professors

Gwinnett, A. J., BDS *Birmingham;* PhD *Bristol*

Hollenberg, M. J., BSc(Med), MD *Manitoba;* MSc, PhD *Wayne State*

Hoshino, K., MD, DMedSc *Tokyo*

Montemurro, D. G., BA, MSc, PhD

Wilson, A. S., MB, ChB, MD *Glasgow*

Associate Professor of Human Genetics

Soltan, H.C., BA, PhD *Toronto*

Assistant Professors

Altmann, G. G., BSc *Dalhousie;* MSc, PhD *McGill*

Donisch, E. W. K. F., MD *Bonn;* MSc

Gammal, E. B., MB, BCh *Cairo;* PhD

Gwyn, D. G., MB, BS *London;* PhD *Birmingham*

Sergovich, F. R., BA *McMaster;* PhD

Shaver, Evelyn L. BSc, MSc, PhD

Singh, R. P., BA, MSc, PhD

Honorary Lecturers

Robinow, C. F., MD *Hamburg;* FRSC

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

BACTERIOLOGY AND IMMUNOLOGY

Professors

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

Murray, R. G. E., BA, MA, *Cantab;* MDCM *McGill;* FRSC. Head of Department

Robinow, C. F., MD *Hamburg;* FRSC

Clinical Professor

Hatch, L. A., MBBS *London*

Associate Professors

Ebisuzaki, K., BSc, MS, PhD *Wisconsin*

Medzon, E. L., BSc, MSc *Manitoba;* PhD *McGill*

Robinson, J., BSA *British Columbia;* MSc, PhD *McGill*

Zajic, J. E., BA *Kansas;* MS *Wisconsin,* PhD *California*

Clinical Associate Professor

Bakerspigel, A., BA, MA, *McMaster;* PhD

Assistant Professors

Rozanis, J., MSc *Hebrew University;* PhD *McGill*

Sinclair, N. R., BSc, MD, PhD *Dalhousie*

Strejan, G. H., MS *Bucharest;* PhD *Hebrew University*

Wilkins, P. O. B., MS *Hawaii;* PhD *Pennsylvania*

Clinical Assistant Professor

Campsall, E. W. R., BA *Queen's;* MD, CM *McGill*

Honorary Lectures

Chodirker, W. B., BSc (Med), MD *Manitoba*

Hannay, C. L., BSA *Toronto;* DIC, PhD *London*

Patterson, J. C., BSc, MD *Toronto*

Roslycky, E. B., BSc, MSc *Manitoba;* PhD *Wisconsin*

Toogood, J. H., MD *Toronto*

BIOCHEMISTRY

Professors

Bigelow, C. C., BASc *Toronto;* MSc, PhD *McMaster*

Carroll, K. K., BSc, MSc *New Brunswick;* MA *Toronto;* PhD

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

McCarter, J. A., BA, MA *British Columbia;* PhD *Toronto,* FRSC

Rossiter, R. J., BSc *Western Australia;* BA, MA, DPhil, BMBCh, DM *Oxon;* FRSC. Vice-President (Academic) and Provost

Smith, D. B., BA, MA *British Columbia;* PhD *Toronto*

Stewart, H. B., MD, PhD *Toronto;* PhD *Cantab,* Head of Department

Strickland, K. P., BSc, MSc, PhD

Associate Professors

Heagy, F. C., MD, MSc, PhD

Magee, W. L., BSc, MSc, PhD

McMurray, W. C., BSc, PhD

Walker, I. G., BA *Saskatchewan;* MA, PhD *Toronto*

Webling, D. D'A., BSc, MB, BS, PhD *Adelaide*

Assistant Professors

Ball, Judith K., BSc *Mount Allison;* MSc, PhD *Dalhousie*

Cook, R. A., BSc, MSc, PhD *Manitoba*

Donisch, Valentine,MD *Bonn;* PhD

Guthrie, J. P., BSc, PhD *Harvard*

Trevithick, J. R., BSc *Queen's;* PhD *Wisconsin*

Lecturers

Gatfield, P. D., MD *Queen's*

Gordon, B. A., MDCM, MSc, PhD *Queen's*

Haines, D. S. M., BA, MD; PhD *Toronto*

Honorary Lecturers

Chefurka, W., BSc *Manitoba;* M.Sc. *Montana State;* PhD *Harvard*

Hudson, A. J., BSc, MD, *Toronto*

Krupka, R. M., MA *Saskatchewan;* PhD *McGill*

Spencer, E. Y., BSc, MSc, *Alberta;* PhD *Toronto*

BIOPHYSICS

Professor

Burton, A. C., BSc *London;* MA, PhD *Toronto;* LLD *Alberta;* FRSC. Chairman of Department

Associate Professors

Groom, A. C., BSc, PhD *London*

Inch, W. R., BSc *Queen's;* PhD

Roach, Margot R., BSc *New Brunswick;* MD, CM *McGill;* PhD

Taylor, C. P. S., BA *British Columbia;* BA, MA *Oxon;* PhD *Pennsylvania*

Assistant Professors

Canham, P. B., BASc *Toronto;* MSc *Waterloo* PhD

Duncan, R. I., BS, MS, PhD *Oklahoma*

Sherebrin, M. H., BSc *Manitoba;* MSc, PhD

Sutherland, R. M., BSc *Acadia;* PhD *Rochester*

Honorary Lecturer

Miller, D. M., BSc *Alberta;* PhD *McGill*

BOTANY

Professors

Cook, F. S., BA, PhD *Toronto*

Cumming, B. G., BSc *Reading;* PhD *McGill*

Hickman, C. J., BSc, PhD *Birmingham.* Head of Department

McKeen, W. E., BSc, MSc; PhD *Toronto*

McLarty, D. A., BA; PhD *Columbia*

Wilson, D. G., BA *Toronto;* BA, MA *Queen's;* PhD *Wisconsin*

Associate Professors

Cavers, P. B., BSA *Toronto;* PhD *Wales*

Greyson, R. I., BA *British Columbia;* MSc, PhD *Oregon*

Orloci, L., BSF *Sopron;* MSc, PhD *British Columbia*

Phipps, J. B., BSc *Birmingham;* PhD

van Huystee, R. B., BA, MA *Saskatchewan;* PhD *Minnesota*

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

Wellman, Angela M., BSc, PhD *Bristol*

Assistant Professors

Day, A. W., BSc, PhD *Reading*

Fahselt, M. D., BA *Saskatchewan;* PhD *Washington*

Hopkins, W. G., BA *Wesleyan;* PhD *Indiana*

Jancey, R. C., BSc, MSc *Southampton;* PhD *Sydney*

Honorary Lecturers

Minshall, W. H., BSA *Toronto;* MSc, PhD *McGill*

Richardson, L. T., BA *McMaster;* MA, PhD *Toronto*

Venis, M. A., BSc *Reading;* D. Phil *Oxon*

Ward, E. W. B., BSc *Wales;* MSc, PhD *Alberta*

DIAGNOSTIC RADIOLOGY

Clinical Associate Professors

Hill, M. B., MD, CM *Queen's*

Johnston, E. E., MD, CM *Queen's*

Wilkins, W. W. J. MD, CM *Queen's.* Acting Chairman of Department

Clinical Assistant Professors

Alcock, J. M., MB, BS *London*

MacDonald, A. C., MD; DS *Rajic;* MD *Graz*

Clinical Lecturers

Nichol, D. A., BA *Saskatchewan;* MD *Toronto*

Teskey, W. L., MD, CM *Queen's*

Treleaven, R. B., MD

Honorary Lecturer

Hauch, P. P., MD

Instructors

Agnos, J. W., MD

Brown, T. C., MD

Coates, R. K., MD

Edgar, H. W., MD

Greenhow, P. MD *Toronto*

Linsdell, F. J. BA, MD

Reid-Smith, E. A. M., BA, MB, BCh *Dublin*

EPIDEMIOLOGY

Professors

Buck, Carol W., MD, PhD. Chairman of Department

McWhinney, I. R., MB, BCh, MD *Cambridge*

Associate Professors

Rand, C. G., BA *Mt. Allison;* MD, CM *McGill;* MPH *Harvard*

Wanklin, J. M., BA, PhD

Assistant Professors

Love, E. J., MD, PhD

Stavraky, Kathleen M., MD, PhD

Thurlow, H. J. A., BA, MA, MD

Williams, J. I., BA *Nebraska Wesleyan;* MA *New Hampshire;* PhD *Florida State*

MEDICAL HISTORY

Assistant Professor

Richardson, R. A., BA *Sir George Williams;* MA *McGill;* PhD *Wisconsin*

MEDICINE

Professors

Brien, F. S., BA, MB *Toronto*

Gunton, R. W., MD; DPhil *Oxon.* Head of Department

Hession, B. L., MD, MSc

Lewis, J. A., MD

Manning, G. W., MA, MD, PhD *Toronto*

Associate Professors

Bocking, D., MD. Dean of Medicine

Bondy, D. C., MD

Clarke, O., BA, MA, MB, ChB, MD *Cantab*

Lefcoe, N. M., BSc *McGill;* MD *Vanderbilt*

Toogood, J. H., MD *Toronto*

Watson, W. C., MB,ChB, PhD *Glasgow*

Assistant Professors

Ahuja, S. P., MB, BS *Nagpur, India*

Borda, I. T., MD *Budapest*

Chodirker, W. B., B. Sc., MD *Manitoba*

Harth, M., MD *Toronto*

Kimber, R. W., BA *McMaster;* MD

Loudon, J. L., MD *Toronto*

Roach, Margot, R., BSc *New Brunswick;* MD, CM *McGill;* PhD

Rodger, N. W., BSc, MD *Manitoba*

Shaw, D. B., BSc *St. Francis Xavier;* MD, CM, PhD *McGill*

Stuart, R. K., MD

Thompson, J.M., BA *Amherst;* MD

Wood, T. E., BA, MD; MSc *McGill*

OBSTETRICS AND GYNAECOLOGY

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Plunkett, E. R., MD, PhD. Chairman of Department

Walters, J. H., BA, MD

Assistant Professors

Collins, J. A., MD

Harding, P. G. R., MD, MSc

Yuzpe, A. A., MD, MSc

OPHTHALMOLOGY

Clinical Professor

Dyson, C., MD. Head of Department

Clinical Associate Professors

Ballantyne, J. F., MD *Toronto*

Thompson, C. A., BA, MD, CM *McGill*

Clinical Lecturers

Collyer, R. T., BA, MD

McFarlane, D. C., MD

Mills, D. W., BA, BSc *Carleton;* MD, MSc *Queen's*

Oliver, G., MD

OTOLARYNGOLOGY

Professor

Rounthwaite, F. J., BSc, MD, CM *McGill.* Head of Department

Clinical Professor

Greenway, R. E., MD

Clinical Associate Professor

Babb, J. W., BA, MD

Clinical Assistant Professor

Burnett, W. H., MD *Toronto*

Leboldus, G. M., MD

Ruby, R.R., MD

PAEDIATRICS

Professors

Rathbun, J. C., MD *Toronto.* Head of Department

Valentine, G. H., MB, ChB *Bristol*

Associate Professors

de Veber L. L., MD *Toronto*

Hinton, G. G., BSc, MD, CM, *McGill*

Jaco, N. T., BA, BSc, MA, BM, BCh *Oxon*

Assistant Professors

Ecclestone, E. R., MD

Li, M. D., MB *Taiwan*

Sutton, Marilyn D., MD

PATHOLOGY

Professors

Haust, D. Daria, MD *Heidelberg;* MSc *Queen's*

Paterson, J. C., BSc, MD *Toronto*

Wallace, A. C., BA, MD. Head of Department

Clinical Professors

Mills, D. M., BA, MD

Smout, M. S., MD

Associate Professors

Gardner, D. G., DDS *Toronto;* MSD *Indiana*

Warren, B. A., BSc, MB, BS *Sydney;* DPhil *Oxford*

Assistant Professors

Frei, J. V., MD, CM, *Queen's;* MSc, PhD *McGill*

Jones, D. S., BA *Albion;* MSc *Lansing;* PhD

Lewis, F. N., BA, MD

Clinical Assistant Professors

Abdelnour, G. M., MB, ChB *Alexandria, Egypt*

Davies, Eleanor M., MD *Toronto*

Slinger, R. P., BA, MD *Toronto*

PATHOLOGICAL CHEMISTRY

Professors

Barton, W. B., MD

Brownstone, Y. S., BScA, MSc *Manitoba;* PhD *McGill*

Neufeld, A. H., BSc, MSc, PhD *Manitoba;* MD, CM *McGill.* Head of Department

Associate Professors

de Veber, L. L., MD *Toronto*

Tustanoff, E. R., BA; MS *Detroit,* PhD

Zaharia, W., BSc *Manitoba;* PhD *McGill*

Clinical Associate Professors

Binns Smith, M., MB, ChB, PhD *Edinburgh*

Haust, H. L., MD *Heidelberg;* MSc, PhD *Queen's*

Meltzer, D. B., BSc *Manitoba;* MD

Assistant Professor

Kimber, R. W., BA *McMaster;* MD

PHARMACOLOGY

Professors

Gowdey, C. W., BA, MSc, DPhil *Oxon.* Head of Department

Parker, J. M., MD *Manitoba;* PhD *Toronto*

Associate Professors

Colhoun, E.H., BSA *Toronto;* PhD *Cantab*

Hamilton, J. T., BSc, PhD *Edinburgh*

Philp, R. B., DVM *Toronto;* PhD

Assistant Professor

Hersey, M.L.W., BSc *McGill;* MD, PhD

Hirst, M., BSc, PhD *Liverpool*

PHYSICAL AND HEALTH EDUCATION

Professors

L'Heureux, W. J., BA; MA *Michigan;* LLD *New Brunswick.* Chairman of Department

Fairs, J. R., BSc, MA *Columbia*

Yuhasz, M. S., BA, MSc, PhD *Illinois*

Associate Professors

Eynon, R. B., BA, MS *Illinois*

Wearring, G. A., BA, MS *Southern California*

Assistant Professors

Cunningham, O. A., BA, MSc, PhD *Michigan*

Paton, G. A., BA, MA *Michigan*

Petrie, B.M., BPE, MSc, MA *Michigan State*

Richardson, J. R., BPHE, MSc *Alberta*

PHYSIOLOGY

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Stevenson, J. A. F., BA, MA, MD, CM *McGill;* FRSC. Head of Department, Dean of Graduate Studies

Associate Professors

Bondy, D. C., MD

Calaresu, F. R., BA *Pavia;* MD *Milian;* PhD *Alberta*

Critz, J. B., BS(Ed), MA, PhD *Missouri*

Dellow, P. G., BDS, MBBS *Adelaide*

Seguin, J. J., BSc, MSc, PhD

Vanderwolf, C. H. BSc *Alberta;* MSc, PhD *McGill*

Assistant Professors

Girvin, J. P., MD; PhD *McGill*

Harding, P. G. R., MD, MSc

Hinton, G. G., BSc, MD, CM *McGill*

Mercer, P. F., DVM *Toronto;* PhD *Cornell*

Squires, B. P., BA, MD, PhD

Stewart, D. J., BSc *British Columbia;* PhD *California*

Honorary Lecturers

Chess, G. F., BASc *Toronto;* MEng *McGill*

Hart, J. S., BA, MA, PhD *Toronto*

Manning, G. W., MA, MD, PhD *Toronto*

Rounthwaite, F. J. BSc, MD, CM *McGill*

Steele, J. E., BSc *Dalhousie;* MSc; PhD *Saskatchewan*

PSYCHIATRY

Professor

Hobbs, G. E., BA, MD *Toronto.* Head of Department

Associate Professors

Keil, W. E., MD

Tillmann, W. A., MD, MSc

Assistant Professors

Boyce, R. M., MD; DPsych *Toronto*

Johnson, F. G., MB, BS *London*

Jurgans, B., MD *Tuebingen*

McLeish, J. C., MD

Max, P., BA, MD

Clinical Associate Professors

Metcalfe, E. V., MD, DPsych *Toronto*

Wickware, D. M., MD, CM *Queen's*

Clinical Assistant Professors

Goldberg, B., BSc *New Brunswick;* MD, CM *Dalhousie*

McGregor, K. M., BA, MD; DPsych *Toronto*

PSYCHOLOGY

Professors

Bartoshuk, A. K., BSc *Sir George Williams;* MSc, PhD *McGill*

Jackson, D. N., BSc *Cornell;* MS, PhD *Purdue*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Neal, Leola E., BA, MA, PhD *Toronto,* Dean of Women

Paivio, A. U. BSc, MSc, PhD *McGill*

Turner, G. H., BA, MA, PhD *Toronto*

Williams, D. C., BA *Manitoba;* MA, PhD *Toronto,* President and Vice-Chancellor

Wright, Mary J., BA; MA, PhD *Toronto,* Chairman of Department

Associate Professors

Chambers, D. A. T., BA *British Columbia;* MSc, PhD *McGill,* Assistant Dean of Social Sciences

Denny, J. P., BA *Toronto;* PhD *Duke*

Gardner, R. C., BSc *Alberta;* M.Sc, PhD *McGill*

Irvine, S.H., MA, MEd *Arberdeen;* PhD *London* (part time)

Kendall, S. B., AB *Indiana;* PhD *Emory*

Kimura, Doreen, BA, MA, PhD *McGill*

Lobb, H. O., BA, BEd, MEd *Saskatchewan;* PhD *Toronto*

McClelland, W. J., BA, MA *Toronto;* PhD *London,* Associate Dean of Graduate Studies

Schnore, M. M., BA, MA; PhD *McGill*

Stennett, R. G., BA, MA; PhD *McGill* (part time)

Stretch, R. G. A., BA *Nottingham;* PhD *Sheffield*

Taylor, F. W. R., BA, MA, PhD *Toronto*

Vanderwolf, C. H., BSc *Alberta;* MSc, PhD *McGill*

Wilkinson, F. R., BA *Utah;* MA *Hawaii;* PhD *Michigan State*

Assistant Professors

Baran, D., BA *McGill;* MA *Columbia;* PhD *Michigan*

Chamberlain, L. W., BSc; PhD *Keele*

Conger, A. J. AB *Trenton;* PhD *Illinois*

Goodstadt, M. S., BA *Manchester;* PhD *Stanford*

Murray, H. G., BA, MA; PhD *Illinois*

Pederson, D. R., BA *Minnesota;* MA, PhD *Iowa*

Prytulak, L. S., BA *Toronto;* PhD *Stanford*

Pylyshyn Z. W., BEng *McGill;* MSc, PhD *Saskatchewan*

Reitz, W. E., BS *Pennsylvania State;* MA *Illinois;* PhD *Pennsylvania State*

School of Library and Information Science

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History of the School of Library and Information Science

The School was established by the Board of Governors and the Senate of the University in response to a proposal from the Ontario Provincial Government. The Senate asked the Faculty of Graduate Studies to appoint a Committee to formulate a broad program for the new School. Professor J.A.F. Stevenson of the School of Medicine was nominated Chairman of this Committee. The advice of three specialists was sought. They were: Dr. George Bonn who was Chief of the Science and Technology Division of the New York Public Library and author of *Science and Technology Literature Resources in Canada;* Professor Leon Carnovsky of the Graduate Library School at the University of Chicago and, at the time, Chairman of the American Library Association's Committee on Accreditation; and Dr. Neal Harlow, Dean of the Graduate School of Library Science at Rutgers University and formerly librarian of the University of British Columbia. On the advice of these experts, Dr. Stevenson's Committee recommended a Master's program for the new School. Also on this Committee's recommendation Dr. Andrew D. Osborn was appointed Dean, and took up the position in July, 1966.

The Province provided funds for a well-equipped temporary building of 18,000 square feet which was designed to meet the special needs of the School. Studies began in September 1967; and the first students finished their M.L.S. work the following August. In October 1968 the School was visited for accreditation purposes by a Committee of the American Library Association. The Committee on Accreditation of the American Library Association is the accrediting agency for both Canada and the United States. In January 1969 it accepted the visiting Committee's report and accredited the School which thus became the fourth accredited library school in Canada.

The building was expanded by 3,072 square feet at the beginning of 1970. The School also has space in two buildings on Western Road opposite Althouse College of Education.

Admission

A candidate for the degree of Master of Library Science must be a graduate of a recognized university or hold equivalent qualifications and must have demonstrated ability to succeed in graduate work.

Application forms may be obtained from either the Faculty of Graduate Studies or SLIS. They should be returned for initial processing to the School, together with the required transcripts and the letters of recommendation; however, it is the Faculty of Graduate Studies which issues letters of acceptance as well as Permits to Register for both M.L.S. and any possible prerequisite-year courses.

There are seven ways in which a person can be admitted to the School.

1. Candidates who have an honors degree with at least second-class standing, and those who have a graduate degree with at least B standing, will be admitted to the School's three-term program of 45 units; they may commence their studies in any term they wish. Some students elect to spread 45 units over four terms; and candidates from non-English-speaking countries will in many cases be required to follow that pattern.

2. Candidates who have a three-year Bachelor's degree with at least B standing will be admitted to a 60-unit program which runs through four terms. They may not begin their M.L.S. studies in the summer term immediately following graduation unless they take another term off during the course.

3. The alternate to (2) is completion of a prerequisite year of university studies. Those who take this option are then eligible for the three-term, 45-unit program. For the most part candidates prefer the course of action described in (2) because it saves a term; but some people take the prerequisite year intending to go into another academic field and then switch to library science; so this avenue remains open.

4. By agreement among Canadian library schools, a student who has completed two terms of study at one school may transfer to another at the end of the second term and receive full credit for work done in the school of first choice. Such a transfer student will be admitted to the third and fourth terms of work at SLIS.

5. Candidates with a B.L.S. from an accredited school or its equivalent will be admitted to the third and fourth terms of study.

6. A candidate whose undergraduate preparation falls below B standing may undertake a year of university study as a special student and must obtain at least a B in each of the five subjects taken. On the satisfactory completion of this year of study, application may then be made for admission to the three-term program. By following this plan a candidate can earn the M.L.S. in five consecutive terms.

7. Applicants who do not have a degree can be admitted to the School as special students. In unusual circumstances they may be admitted as degree candidates on the recommendation of an *ad hoc* University committee.

In either (3) or (6) the courses taken should in general include: additional work in the area of undergraduate specialization, particularly in the form of 20th century studies; additional language studies because of the value of language competence in the library and information field; and, possibly, a general introduction to the computer.

Since languages are important in the School's professional field, a reading knowledge of at least one language other than English is expected. The second language must be one useful in study and research in library and information work.

Fees

The minimum total fee for the three-term, 45-unit M.L.S. program is $400.50, an amount which includes tuition and a student activity fee of $40 a year. For students who are converting a B.L.S. into an M.L.S., the fee is $267. In both cases full-time students pay $133.50 a term. For four-term, 45-unit students, the fees are $133.50 for each of the first three terms and $33.50 for the fourth term.
The minimum total fee for the four-term, 60-unit M.L.S. program is $799.50. In each of the first two terms full-time students pay $266.25; in each of the third and fourth terms they pay $133.50.

Part-time students pay $50 for each half course. Special students, who audit one or more courses, come under the ruling for part-time students.

The late fee is $10 after a designated registration date and $25 thereafter. Fees are payable on the registration dates as set out in the academic calendar. The Board of Governors reserve the right to amend fees at any time.

Courses of Study

Seminar courses are grouped within seven areas of common concern, and each group reflects a special aspect of the School's philosophy of education for librarianship. Three basic series of courses in the 510's, 520's and 550's are intimately related and form the foundations of the curriculum. Others in the 500's provide background and summing-up of the essential elements in these series. Individual courses in other groups and within the same groups provide enrichment, some degree of specialization, or some specialized approach to the general body of knowledge and theory upon which the profession of librarianship is based.

For three-term students, 501 or 502, 511, 512, 513, 521, 522, 523, 551, 552, 553 and 500 are required.

For four-term students, 501, 502, 503, 511, 512, 513, 521, 522, 523, 551, 552, 553, and 500 are required.

For two-term students, 552, 553, and 500 are required, and others may be required in individual cases.

All courses are half courses. Every elective is not necessarily offered in any one term.

500-503. FOUNDATION STUDIES/STAFF

A group of courses designed to give historical and philosophic perspective to the central concerns of library and information science. The Master's Seminar is required for all students in their final term, and is intended to encourage students to develop a philosophy of librarianship that will provide a broad base for professional life after graduation. Other courses are enrichment courses to help prospective librarians to place current theories and practice into broad intellectual and cultural patterns of the past and the present.

500. Master's Seminar/ G.T. Alley, A.D. Osborn. Required for all students in their final term. 3 units for 3-term students; 6 units for 4-term students.

501. Old World Intellectual and Cultural Foundations/ W.J.Cameron. Required for 4-term students; either 501 or 502 is required for 3-term students. 2 units.

502. New World Intellectual and Cultural Foundations/ S.D. Neill, W.B. Ready. Required for 4-term students; either 501 or 502 is required for 3-term students. 2 units.

503. Bookcollecting and Librarianship/ W.S. Debenham, B.J. Palmer, W.B. Ready. Required for 4-term students. 2 units.

510-519. PROFESSIONAL THEORY AND METHODOLOGY/STAFF

A group of courses that includes the series 511, 512, 513. This series is normally taken in successive terms in the order given. In accordance with the philosophy of the School, it is organized from the point of view of the user of libraries, and not from the point of view of the librarian. Therefore, professional theory and methodology is not taught by traditionally dividing the subject into courses devoted to book selection, cataloguing, classification, and reference. This technical approach is rejected in favor of the user's normal subject approach. Thus, fundamental aspects of the acquisition, organization, and use of resources in each subject are treated simultaneously while considering the needs of users. The other courses in this group allow for further study in depth, or for special attention to specific problems.

511. Humanities/ A.J. Jamieson, A.D. Osborn. Required for all 3-term and 4-term students. 5 units.

512. Social Sciences/ L.C. Colvin, C.M. Hotimsky, A.J. Jamieson, B.J. Palmer, J.H. White. Required for all 3-term and 4-term students. 6 units.

513. Science and Technology/ G.R. Pendrill. Required for all 3-term and 4-term students. 5 units.

514. Special Topics in the Humanities/ Staff. 3 units.

515. Special Topics in the Social Sciences/Staff. 3 units.

516. Special Topics in Science and Technology/ Staff. 3 units.

519. Problems in the Organization of Information/ L.C. Colvin. 2 units.

520-529. ADMINISTRATIVE THEORY AND PRACTICE/ STAFF

Because professional librarianship implies eventual involvement in administrative roles, courses 521, 522 and 523 are required for all three-term and four-term students. Courses 521 and 522 may be taken in a beginning term, and 523 in a subsequent term. Other courses in the group allow students to compare specific applications of general principles of administration in specialized circumstances.

521. Principles of Administration/ G.T. Alley, A.W. Bowron, R.G. Prodrick. Required for all 3-term and 4-term students. 1 unit.

522. Library Architecture/ G.T. Alley, A.W. Bowron. Required for all 3-term and 4-term students. 2 units.

523. Library Theory and Practice/ G.T. Alley, R.G. Prodrick. Required for all 3-term and 4-term students. 3 units.

524. School Theory and Practice/ S.D. Neill. 2 units.

527. Community Services: Local, Regional, National/ J.T. Parkhill. 2 units.

528. Higher Education/ A.D. Osborn, R.G. Prodrick. 2 units.

529. Special Libraries/ G.R. Pendrill, J.H. White. 2 units.

530-539. RESEARCH PRINCIPLES AND PRACTICE/ STAFF

This group of elective courses is intended both to draw attention to the specialized needs of users with research interests and to introduce prospective librarians to the principles and practice of research. As with the 510 series a broad subject approach emphasizes the essential relationship of acquisition, organization, and use of the special resources to the particular needs of such users.

531. Humanities/ W.J. Cameron. 2 units.

532. Special Topics in the Humanities/ W.J. Cameron. 2 units.

534. Social Sciences/ R.G. Prodrick. 2 units.

537. Science and Technology/ G.R. Pendrill. 2 units.

539. Guided Research/ Staff. Unit weight varies with each project. Application to take this course must be made in writing a month before the end of the term preceding the one in which the work will be done.

540-547. SPECIAL TOPICS/ STAFF

This group of elective courses is primarily concerned with problems posed by special bodies of knowledge, and the acquisition, organization, and use of materials relevant to them.

541. Literature of French Canada. Given in the French Department as French 560. Full course. 2 units.

542. Periodical Literature/ J.H. White. 2 units.

543. Historical Development of Children's Literature/ E.C. Donnelly. 2 units.

544. Canadiana/ J.L.H. Henderson, J.J. Talman. 1 unit.

545. Slavic Libraries and Librarianship/ C.M. Hotimsky. 1 unit.

547. History of Science/ R.A. Richardson. 1 unit.

550-559COMMUNICATION STUDIES/ STAFF

Courses 551, 552, and 553 form a series taken in three different terms. They are concerned fundamentally with the knowledge and theory necessary for insight into the newly conceived discipline of information science. The courses attempt to transcend technological preoccupation with both manual and computer systems: (1) by focussing on the problems and principles underlying current concern with gathering, storing and retrieving information; and (2) by a searching enquiry into the nature of communication. Other courses in the group are centered upon the creation of resources for use in experimental work in the subject, and in exploring special aspects.

551. Linguistic and Communication Studies/ C.M. Hotimsky, J.H. White, Staff. Required for all 3-term and 4-term students. 3 units.

552. Problems in the Computer Control of Information/ J. Belzer, A.D. Osborn, G.R. Pendrill. Required for all students. 3 units.

553. Advanced Problems in the Computer Control of Information/ J. Belzer. Required for all students. 3 units.

558. Special Topics in the Computer Control of Information/ J. Belzer. 3 units.

559. Audiovisual Theory and Practice/ S.D. Neill. 2 units.

550-559. COMMUNICATION STUDIES/ STAFF

This group of elective courses is primarily concerned with users of libraries (usually members of a profession or followers of a discipline) whose special needs require special services.

561. Art Libraries and Information.

562. Business Libraries and Information.

566. Law Libraries and Information/ B.J. Halevy. 2 units.

567. Medical Libraries and Information/ G.R. Pendrill. 2 units.

569. Music Libraries and Information.

The unit weight of each course may be varied from time to time by decision of the SLIS Faculty Council.

Members of Faculty of the School of Library and Information Science

Professors

Alley, G. T., BA, MA *Canterbury, NZ*

Cameron, W. J., BA, MA *Victoria, NZ;* PhD *Reading*

Colvin, Laura C., AB *William and Mary;* ABLS, AMLS *Michigan*

Osborn, A. D., BA, MA *Melbourne;* AMLS *Michigan;* PhD *Columbia.* Dean of School

Prodrick, R. G., BA *Toronto;* MS *Columbia;* MA *Toronto*

Associate Professors

Jamieson, Alexis, J., BA, BLS *McGill;* MA *McMaster*

Neill, S. D., BA, BLS *Toronto*

Pendrill, G. R., BA, MA *Cantab*

White, Janette H., BA *Toronto;* MS *Columbia*

Assistant Professor

Palmer, Barbara J., BA *Sydney;* MLS

Richardson, R. A., BA *Sir George Williams;* MA *McGill;* PhD *Wisconsin*

Lecturer

Hotimsky, C. M., ACIA *Shanghai*

Honorary Lecturer

Talman, J. J., BA, MA; PhD *Toronto;* DLitt *Waterloo.* Chief Librarian

Visting Lecturers

Adelman, Jean S., BA *Pennsylvania;* MLS *Pittsburgh*

Belzer, J., BA, BSEE *Cooper Union*

Bowron, A. W., BA, BLS *Toronto*

Debenham, W. S., AB, MLS *Pittsburgh*

Donnelly, Eleanore C., BA; BLS *Toronto;* MA

Halevy, B. J., LLB *King's College, London;* MCL *Tulane;* MS *Columbia*

Henderson, J. L. H., BA, BD, DD

Kent, C. D., BA *McMaster;* BLS *McGill*

Ready, W. B., BA *Wales;* MA *Manitoba*

Smith, Barbara J., BA, BLS, MEd *Toronto*

Faculty of Law

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LAW

The principal object of the Faculty of Law in The University of Western Ontario is to offer students a liberal education through the critical study of legal and related materials, in preparation for the private practice of law, for government service, and for kindred vocations.

FACULTY OF LAW

Dean

Mackay, R.S., QC; LLM *Columbia; of Osgoode Hall* (Barrister-at-Law)

Administrative Officer and Assistant to the Dean

McNulty, Margaret

Librarian

Banks, Margaret, MA, PhD

ADMISSION TO THE LAW SCHOOL

1. Preliminary Education

The Faculty of Law does not prescribe a course of pre-legal studies, nor does the Faculty recommend specific undergraduate courses for those intending to enter law school. For those students planning university courses with a view to satisfying admission requirements of the Law School, the Faculty recommends that a broad background is advantageous and that a student should select a program of studies which will challenge him and assist him in developing good study habits.

2. Admission Requirements

A person desiring admission to the first year of the LLB program must have successfully completed not less than two full years of academic work at a recognized university following Grade Thirteen in Ontario, or its equivalent.

3. Application Procedure

Application for admission must be on the prescribed form which may be obtained from the Admissions Officer, Faculty of Law, The University of Western Ontario, London 72, Ontario. The form should be returned to the Registrar, Stevenson Hall, The University of Western Ontario. Because of the limited number of spaces available, applications should be made well in advance of the date of intended enrolment and, so far as may be possible before July 1st.

4. Admission Procedure

Admission to the Law School in every case is by decision of the Admissions Committee of the Faculty of Law. Selection is based upon the applicant's prior academic record, including grades obtained in undergraduate courses, Law School Admission Test scores, letters of reference and student participation in extra-curricular activities and the Committee's assessment of the applicant's promise for professional distinction.

5. Law School Admission Test

Every applicant for the class entering in the fall of 1970 is required to take the Law School Admission Test to enable the Admissions Committee to make a more informed decision in their case. Test scores are used to supplement academic grades and other admission criteria. For the convenience of applicants, test centers have been established in major cities in Canada. The test is given five times a year, in February, April, June, August and November. The Faculty of Law suggests that applicants arrange to take the test early in the academic year preceding admission. An application for the test and further details can be obtained from the Admissions Officer, Faculty of Law, The University of Western Ontario or by writing to the Educational Testing Service, Box 944, Princeton, New Jersey 08540.

6. Advance Standing

Applications from students successfully completing a part or all of their legal education in another Law School may be considered for admission with advance standing, but all students taking the LLB should take not less than a full two-year program.

7. Canadidates for the LLB degree are admitted only at the opening of the first term of a regular session, and for the whole session and the full course of work.

A Faculty of Law Calendar may be obtained from the Admissions Officer, Faculty of Law, The University of Western Ontario, London 72, Ontario.

Members of the Faculty of Law

Professors

Hickling, M. A., LLB, PhD *London*

Krever, H., QC; BA, LLB *Toronto; of Osgoode Hall* (Barrister-at-Law)

Mackay, R. S., QC; LLM *Columbia; of Osgoode Hall* (Barrister-at-Law)

Palmer, E. E., BA *William and Mary;* MA *Yale;* LLB, LLM *Toronto; of Osgoode Hall* (Barrister-at-Law)

Associate Professors

Brandt, G. J., BA, LLB *Saskatchewan;* MA *Oxon; of Osgoode Hall* (Barrister-at-Law)

Priestly, Diana M., BA, LLB *British Columbia;* MLL *Washington; of the Bar of British Columbia*

Rendall, J. A., BA *Toronto;* LLB *Osgoode Hall;* LLM *Michigan; of Osggode Hall* (Barrister-at-Law)

Sinha, S. P., BComm *Poona,* MBA *Arizona;* LLB *Bombay;* LLM, JSD *Illinois*

Assistant Professors

Anisman, P., BA, LLB *Toronto;* LLM *California, Berkeley*

Arnold, B. J., BA; JD *Harvard*

Atkey, R. G., BA, LLB; LLM *Yale; of Osgoode Hall* (Barrister-at-Law)

Balogh, L. V., BA, LLB *Saskatchewan;* LLM *Toronto*

Bushnell, S. I., BSA *Toronto;* LLB *Dalhousie;* LLM *Osgoode*

Elder, P. S., BA *Queen's;* LLB *British Columbia;* LLM *London; of the Bar of British Columbia*

Farquhar, K. B., LLB, LLM *Hons Victoria;* LLM *Michigan* (Barrister and Solicitor of the Supreme Court of New Zealand)

Janisch, H., BA *Rhodes;* BA, MA, LLB *Cantab;* MCL, LLM, JSD *Chicago*

McRae, D. M., LLB, LLM *Hons Otago;* JSD *Columbia* (Barrister and Solicitor of the Supreme Court of New Zealand)

Rayner, W. B., BA, LLB; LLM *Yale; of Osgoode Hall* (Barrister-at-Law)

Samuels, J. W., BA, LLB *Queen's;* LLM *London*

Thomson, G., BA, LLB *Queen's;* LLM *California, Berkeley; of Osgoode Hall* (Barrister-at-Law) (Assistant Dean)

Usprich, S. J., LLB *Toronto*

Sessional Professors

Carson, His Honor Judge E. H. A., MA *Toronto; of Osgoode Hall* (Barrister-at-Law)

Cherniak, E. A., BA; *of Osgoode Hall* (Barrister-at-Law)

McKenzie, A. L., QC, BA; *of Osgoode Hall* (Barrister-at-Law)

Pollock, E. M., BA, LLB *Saskatchewan, of Osgoode Hall* (Barrister-at-Law)

Faculty of Medicine

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OFFICERS OF ADMINISTRATION

Dean: Douglas Bocking, MD
Assistant to the Dean - Continuing Education: A. T. Hunter, BA, MD
Assistant to the Dean - Postgraduate Education: J. M. Thompson, BA, MD
Assistant to the Dean: J. H. Watson, MDc, CM
Health Sciences Librarian: M. Anne Seheult, BA, BLS
Administrative Officer: W. S. McBean
Administrative Assistants: Lorraine Evans, BA; Helen McCrady, BA

HEALTH SCIENCES COMMITTEE OF THE BOARD OF GOVERNORS

Captain Joseph Jeffery, Chairman
M. L. Barr
W. J. Blackburn
R. M. Ivey
Dr. O. H. Warwick, Vice President (Health Sciences)
Dr. J. B. Neilson, Executive Director, University Hospital
Dean R. Catherine Aikin, Faculty of Nursing
Dean W. J. Dunn, Faculty of Dentistry
Dean D. Bocking, Faculty of Medicine (Secretary)

Ex officio members: The Chairman of the Board of Governors, The Vice Chairman of the Board of Governors, The President of the University, The Vice President, Administration and Finance, and The Secretary of the Board of Governors.

ORGANIZATION OF THE FACULTY

The Senate of the University is responsible for the academic policy of the Faculty. The Senate vests in the Council of the Faculty of Medicine executive powers in respect of details of admission of students, curricula and examinations. The administration of the affairs of the Faculty is the responsibility of the Board of Governors of the University, through its Health Sciences Committee and the Vice President (Health Sciences).

The Council of the Faculty is composed of all full-time members of staff of the rank of Lecturer to Professor, part-time members of staff of professorial rank, the Vice President (Academic), the Vice President (Health Sciences), the Dean of Medicine, Assistants to the Dean, the Deans of the other Health Sciences Faculties, the administrators of the major teaching hospitals, respresentatives of the Faculties of Arts, Social Sciences and Science, the President of the Hippocratic Society, and one student representative from each of the four years. The Vice Chancellor of the University is a member of the Council of the Faculty and its Committees. The Council of the Faculty meets quarterly. All business during the intervening months is conducted by the Executive Committee of the Council of the Faculty, consisting of Chairmen and Heads of Departments, the Vice President (Health Sciences), the Dean, and the President of the Hippocratic Council.

The Council of the Faculty divides its detail work related to undergraduate instruction among standing Committees which, being non-executive, are responsible to the Council of the Faculty.

Joint Relations Committees have been established with representatives from the University and the following affiliated teaching institutions and organizations: London Psychiatric, St. Joseph's, Victoria and Westminster Hospitals, The Children's Psychiatric Research Institute and the London Health Association.

HISTORY OF THE FACULTY OF MEDICINE

"The Western University of London, Ontario" received its charter from the Legislature of the Province of Ontario in 1878, The first classes graduated in Arts and Medicine in 1883. Although the Faculty of Arts was closed from 1885 to 1895, the Faculty of Medicine has maintained an unbroken existence since its founding. In 1912 control of the Medical School by a joint stock company ended and it came under the direct control of the Board of Governors of the University. At that time the Medical School was situated at the north-east corner of York and Waterloo Streets. In 1921, the Faculty of Medicine moved its Basic Science Departments to a new school on the north-east corner of South and Waterloo Streets, adjacent to Victoria Hospital. In the summer of 1965, the administrative offices, the medical library, the Basic Science Departments and the Department of Psychiatry and Preventive Medicine, with ancillary services, moved into the new Medical Sciences Building, which is directly contiguous with the Cancer Research Laboratory, the Dental Sciences Building and the School of Nursing – the initial phase of the planned Health Sciences Centre on the main university campus. The Department of Pathological Chemistry is situated at Victoria Hospital. The administrative offices of the Departments of Clinical Neurological Sciences, Medicine, Obstetrics and Gynaecology, Ophthalmology, Physical Medicine and Rehabilitation, Therapeutic Radiology and Surgery are located at Victoria Hospital, the Departments of Otolaryngology and Diagnostic Radiology at St. Joseph's Hospital, the Department of Paediatrics at the War Memorial Children's Hospital, and the Department of Anaesthesia at Westminster Hospital. The new Department of Community Medicine is based at the Medical Sciences Building.

The associated teaching hospitals, through their respective administrations, provide clinical facilities for the Faculty of Medicine.

LIBRARIES

The Health Sciences Library, located on the first floor of the Medical Sciences Building, serves the Faculties of Medicine, Dentistry and Nursing. It contains over 89,000 volumes and regularly receives the leading medical and dental periodicals. The library has an interesting collection of several thousand volumes dealing with the history of the medical sciences.

Medical students are also permitted to use the library facilities in Victoria Hospital, St. Joseph's Hospital, Westminster Hospital and the Children's Psychiatric Research Institute.

CLINICAL FACILITIES

Victoria Hospital: Victoria Hospital has a total of 922 beds and 80 bassinets, of which the majority are available for teaching, 402 being in clinical teaching units and under the jurisdiction of Clinical Chiefs of Departments. There are also 329 "modified" teaching beds which are available to the Clinical Teachers, making a total of 731 teaching beds and bassinets.

The Hospital is approved by the Canadian Council on Hospital Accreditation, by the Canadian Medical Association and by the Royal College of Physicians and Surgeons of Canada for Interne and Resident training.

There are special facilities for the investigation and treatment of Cardiac and Pulmonary disorders, malignancy and other diseases.

Thirty-six Out-Patient Clinics are held, in addition to those under the direction of the Ontario Cancer Treatment and Research Foundation and the Crippled Children's Treatment Centre.

Victoria Hospital supports a Regional School for Nursing Education and is the site for the Regional School for Medical Laboratory Technologists for South Western Ontario. The Hospital also participates in other training programs, such as a Centralized School for X-ray Technicians, Dietetic Internes, Physiotherapy Internes, training of Registered Nursing Assistants, training of Food Supervisors, and others.

The War Memorial Children's Hospital: The War Memorial Children's Hospital, the Paediatric Department of Victoria Hospital, is situated directly opposite the main Hospital. Of the total beds listed above, there is accommodation for 174 Paediatric patients. Over half of the patients are defined as teaching patients. The London and District Crippled Children's Centre has a two-floor clinic attached to the Hospital for the care of handicapped. A Child Guidance Clinic adjacent to the Hospital provides psychiatric out-patient services for children.

St. Joseph's Hospital: St. Joseph's is a general active treatment hospital owned and operated by the Sisters of St. Joseph. Its capacity is 592 beds with 110 bassinets. All patients are available for demonstration teaching and 250 beds are in Clinical Teaching Units under the supervision of 19 full-time teachers.

The hospital is approved by the Canadian Council on Hospital Accreditation and by the Royal College of Physicians and Surgeons of Canada for graduate training as part of the University affiliated programs.

Included in the Obstetrical Service is a 14-bed ante-natal unit with obstetrical neonatal intensive care units for supervision and delivery of patients with high risk pregnancies.

The paediatric department has 85 beds. The psychiatric department includes facilities for out-patient treatment of emotional disorder.

Recent areas of development are in Endocrinology, Chemical Pathology, Pulmonary Function, Neurology, Clinical Pharmacology and Rheumatology.

An advanced Training Program in Family Medicine is based at the Family Medical Centre located on Oxford Street.

Other educational programs include Nursing Education and participation in training of Laboratory Technicians and X-ray Technicians as well as Registered Nursing Assistants.

Westminster Hospital: This hospital is situated at 777 Base Line Road and is operated by the Department of Veterans' Affairs. It is a hospital of 1,250 beds with three principal services—Medicine, Surgery and Psychiatry. It is approved by The Royal College of Physicians and Surgeons of Canada for graduate training and accredited by The Canadian Council on Hospital Accreditation. Over 25,000 patients are seen in the out-patient clinics annually. There is a Clinical Investigation Unit, which is available to the many research projects conducted in the hospital.

London Psychiatric Hospital: This Hospital is operated by the Ontario Department of Health for the treatment of mental illness. Approximately 600 beds provide both in-patient day care and out-patient services. The Hospital is used for clinical instruction in Psychiatry as part of the training within the disciplines of Medicine, Psychology, Social Work, Nursing, Occupational Therapy and other allied health professions. The Hospital is recognized by the Royal College of Physicians and Surgeons of Canada for graduate training in Psychiatry.

St. Thomas Psychiatric Hospital: This modern mental hospital situated on No. 4 Highway one and a half miles south of St. Thomas, has a bed capacity of 1,700. The annual admission rate is approximately 1,000, consisting of all types of psychiatric disorders, mainly the major psychoses. In addition, the Hospital has an active Out-Patient service. The Hospital is recognized by The Royal College of Physicians and Surgeons of Canada for graduate training.

Sir Adam Beck Memorial Sanatorium: This hospital has a complement of 115 beds under the control of the London Health Association and the Ontario Hospital Services Commission for the diagnosis and treatment of chest diseases and of both pulmonary and non-pulmonary tuberculosis. The hospital is under direction of the Executive Director of the University Hospital. The hospital is accredited by the Canadian Council on Hospital Accreditation.

St. Mary's Hospital: St. Mary's Hospital of 207 beds, owned and operated by the Sisters of St.

Joseph of London, is for the care of long term illness. It operates an active department of Physical Medicine and Rehabilitation.

Bethesda Home and Hospital: Patients in Bethesda Home and Hospital are available for teaching purposes in Obstetrics. In addition to the usual confirement cases, two pre-natal clinics are held weekly.

Parkwood Hospital: This hospital, owned and operated by The Women's Christian Association of London, has 186 beds for patients suffering from chronic illness. Active medical rehabilitation services are part of the treatment facilities provided.

The Children's Psychiatric Research Institute: This is a regional children's centre owned and operated by the Mental Health Branch of the Ontario Department of Health. There is an out-patient facility for children suspected of being mentally retarded, perceptually handicapped or emotionally disturbed. An inpatient facility accommodates 110 children. The Institute offers clinical diagnosis, assessment, treatment and counselling, using a multi-discipline model, in addition to a broad range of research studies by C.P.R.I. staff, there is also collaboration with The University of Western Ontario. Clinical teaching is conducted for undergraduate and postgraduate medical students in Psychiatry, Paediatrics and Family Medicine. Special training programs for other professions are also available.

Occasional use is made of the McCormick Home for Aged People and the various Orphanages, for clinical instruction.

ADMISSION REQUIREMENTS

Students in the following categories are eligible to apply for admission to the first year of the four-year program in the Faculty of Medicine:

1. Students who have successfully completed the Second Year of an Honors Program at The University of Western Ontario provided that the Program has included at least one course in each of Biology, Chemistry, Physics and Organic Chemistry.

(The Admissions Committee will consider applications from candidates who have achieved exceptional standing in First Year Programs in the Faculty of Science provided that the Programs have included Biology, Chemistry and Physics. Applicants who are granted admission under this rule will be required to obtain credit in Organic Chemistry before registration.)

2. Students who have been granted the BA or BSc degree at The University of Western Ontario after completing successfully a four-year Honors Program or a three-year General Program;

3. Students who have been granted the BA or BSc degree at a university other than The University of Western Ontario, provided it is approved by The College of Physicians and Surgeons of Ontario.

All applicants must have demonstrated the ability to succeed in Natural Science subjects, and obtained credit for a one-year course in Organic Chemistry.

ADVANCED STANDING

Unless circumstances are exceptional applications from other than Canadian citizens or landed immigrants will not be considered; similarly applications will not be considered from students who have failed a year at another medical school.

Students registered at another medical school will not generally be considered for admission with advanced standing to the Faculty of Medicine unless they can provide evidence, acceptable to the Committee on Admission with Advanced Standing, of compassionate or other reasons for wishing to transfer. A letter of support from the Dean of the medical school at which such students are studying should accompany the application.

All students applying for admission with advanced standing may be required by the Committee on Admission with Advanced Standing to submit the results of the Medical College Admission Test. In addition, they may be required to attend for interviews with members of the Committee.

Applicants from universities accredited by the Association of Canadian Medical Colleges or the Association of American Medical Colleges may be considered for admission with advanced standing without having to write examinations. However, the Committee on Admission with Advanced Standing reserves the right to review an individual application and to impose any conditions which it considers appropriate before admission will be granted.

Applications from students or graduates of universities which are not accredited by the Association of Canadian Medical Colleges or the Association of American Medical Colleges may be considered for admission with advanced standing if they successfully pass examinations required by the Committee.

Admission may be granted with advanced standing for the work of the First and Second Years, but advanced standing shall not be granted towards the work of the Third or Fourth Years.

APPLICATION FOR ADMISSION

1. First Year

Application for admission to the Faculty of Medicine must be made upon the regular application form which may be obtained from the Registrar's Office, The University of Western Ontario, London 72, Canada. The completed application forms and the supporting documents (originals) are to be mailed to the Director of Admissions, The University of Western Ontario, London 72, Canada, NOT LATER THAN FEBRUARY 1st of the year in which application is made.

A student registered at The University of Western Ontario must:

(a) submit a completed application for admission form;

(b) write the Medical College Admission Test in October 1970 or May 1971 and request that his test scores be MAILED directly to the Director of Admissions. Students must make their own arrangements for the administration of this test by writing to the Psychological Corporation, 304 East 45th Street, New York 17, N. Y., U.S.A.

A student who has never registered at The University of Western Ontario must:

(a) attach to his completed application form all his Ontario Grade 13 certificates (originals) or certified transcript of his completed secondary or high school record;

(b) request the Registrars of all universities, colleges and other institutions of post-secondary education which he has attended or is attending, to mail directly to the Director of Admissions certified transcripts of his record;

(c) request the Registrar of the University, which he is attending in 1970-1971, to mail directly to the Director of Admissions a second transcript of his record at the end of his current registration;

(d) write the Medical College Admission Test in October 1970 or May 1971 and request that his test scores be MAILED directly to the Director of Admissions. A student must make his own arrangements for the administration of this test by writing to the Psychological Corporation, 304 East 45th Street, New York 17, N.Y., U.S.A.

When the initial documentation has been processed, the Committee on Admissions, meeting in February or March, may recommend Early Provisional Admission. On the other hand, in some instances an applicant may be advised that it will not be possible to gain admission in September, 1971. This will provide more time to make a decision regarding alternative plans for the forthcoming year. Final determination on many applications, however, will be deferred until the marks on final examinations are available.

2. Advanced Standing

A student of another Medical School who applies for admission to the Faculty of Medicine of this University with advanced standing must submit the following:

(a) the completed application form;

(b) certified transcripts of his secondary or high school record;

(c) certified transcripts of his record at all colleges, universities and medical schools attended;

(d) a Calendar of the Medical School in which he has studied.

REGISTRATION

Students in the Faculty of Medicine will register in Thames Hall from 9:00 a.m. to 12:00 noon on Monday, September 14th, 1970.

No student will be registered after September 15th except by special permission of the Dean. Those who register late will pay a late registration fee (see FEES below).

FEES

Fees are payable in full on Registration Day, September 14th, 1970, but if necessary they may be divided into two instalments—$400.00 payable on Registration Day and $332.50 payable on the first day of the Second Semester, January 18th, 1971. Students may not attend lectures or examinations, nor be recommended for any degree or diploma until their tuition fees, fines and other accounts owed to the University are paid, except by permission of the Dean and the Comptroller.

Undergraduate Students

For full-time intramural students $727.50*

The above amount includes, for full-time students, Student Activity and Health Insurance fees totalling 54.00

Note: A student who, by reason of sickness or other cause, is in attendance one-half a year or less will be charged 400.00

For part-time or special students, fees are set by the Registrar.

Other Charges

Evaluation of non-Ontario certificates for admission 2.00

Transcript of record, each copy 1.00

Late registration: Designated days 10.00
After designated days. 25.00

Examination for the removal of conditions, each paper 15.00

The above-mentioned fees represent within the University as a whole less than 16% of the cost of your medical education. The balance is provided by Federal, Provincial and Municipal grants, endownment income and other grants and gifts.

NOTE: The Board of Governors reserves the right to amend the above-mentioned fee structure after the printing of this Announcement.

STUDENTS' EXPENSES

The following statement of expenses is given for the guidance of students who are not familiar with the cost of board, room, etc. These items vary from year to year, and depend also on the individual taste of students:

Room and Board—Appr. $28.00 per week
. . . . . $950.00 to $1,150.00**

*The sum is increased by $5.00 if payment is not made in one instalment.

**Approximate figure based on 34 weeks in residence.

Tuition and Prescribed Accessory Fees. . . . 727.50

Books. . . . . Appr. 200.00

Microscope (First Year Only). 150.00

Instruments . . . . . .10.00 to 30.00

Registration with The College of Physicians and Surgeons of Ontario, if qualifications obtained outside Canada. 15.00

Fees in connection with Medical Council of Canada Examinations (Final Year only). 175.00

The College of Physicians and Surgeons of Ontario fee for Enabling Certificate (Final Year only) 10.00

RESTRICTED BURSARIES

These bursaries are generally awarded to students having an average of B (70%) or better in their previous year's work. In every case it is absolutely essential that the applicant demonstrate genuine financial need. Completion of an application form for the Ontario Student Awards automatically gains consideration for all the restricted and unrestricted bursaries except where otherwise stated.

The following bursaries are restricted by residence, sex, course, year, as indicated:

The American Medical Association Education and Research Foundation Bursary: Up to $200 each. Available to students in any year of Medicine.

Dr. James L. Anderson Memorial Bursaries: Up to $250 each. Available to students in any year in the Faculty of Medicine. The fund for these bursaries was established by a bequest of the late Mrs. Clare Leland Anderson as a memorial to her husband, Dr. James L. Anderson, Meds '09.

Bradshaw-Errington Fund: Up to $250 each. Available to students in any year of Medicine who reside twenty-five miles or more beyond the corporation limits of the city of London.

The Dr. Frank M. Cole and Dr. John M. Cole Memorial Awards: $200 each. These bursaries are available to students entering the third year of Medicine.

Co-operative Medical Association of Ontario Bursary: Value: $500 a year to a maximum of $2,000. Available to students in any year of Medicine who are members, or the sons or daughters of members, of one of the Medical Co-operatives of the Co-operative Medical Services Federation of Ontario. Apply by October 10th.

Defries Medical Student-Aid Bursaries: Up to $250 each. Available to students in any year of Medicine.

The Meds '50 Bursary Fund: Up to $300 each. Available to students in any year of Medicine.

The M. C. Mowry Memorial Bursary: $75. Available to students in the fourth year of Medicine.

Ontario Medical Association Bursary and Loan Fund: Up to $350 each. Available to students in the first and second years of Medicine.

Dr. Arthur F. Haasz Medical Student-Aid Bursaries: Up to $250 each. Available to students in any year of Medicine.

I.O.D.E. Bursaries: Students entering Medicine are eligible for the following continuing I.O.D.E. Bursaries, valued at $100 each:

Grace Blackburn Chapter
The Colonel William Gartshore Chapter
Bishop Hellmuth Chapter
7th Regiment and London Garrison Chapter
William E. Saunders Chapter
Dr. W. J. Stevenson Chapter
Nicholas Wilson Chapter

The Bill McKibbon Bursary: $500 each year throughout Pre-medicine and Medicine. A male student, preferably from South-western Ontario, is to be selected by the Secretary of the Loans and Bursaries Committee and the donor. Academic standing and personality will count equally in the selection. This bursary was endowed by the late Dr. Walton McKibbon of Wingham, a medical graduate of this university, in memory of his son.

Medical Students Bursary Plan, Ontario Department of Health: $3,000 each. A number of bursaries are available to students who have completed their first year in Medicine. Maximum assistance will no exceed three years for any one student. Every recipient of this bursary has an obligation to practise general Medicine in a location acceptable to the Minister of Health, one year for each year of bursary assistance given. Apply at end of first year or later.

Roche Bursary: $1500 annually from Hoffman-La Roche Limited for deserving undergraduate medical students. Up to three $500 bursaries may be awarded at the discretion of the University Awards Officer.

Maud H. Smallman Awards: Two of $500 each. Available to students in any year of Medicine. The fund for these Awards was established by a bequest of the late Mrs. Maud H. Smallman of London, Ontario.

LOANS

To be eligible for a loan, a student must have a satisfactory academic record and be able to show that he cannot continue his studies without financial assistance. Application should be made to the Awards Officer.

Ontario Medical Association Grant-In-Aid Fund: Loans from this fund are interest-free and are on the honor system requiring no formal contact to repay. Available to students in the third and fourth years of Medicine.

The Dean Russell Medical Student-Aid Fund: Up to $400 each. Available to students in any year of Medicine. This fund was established by the late Mr. Dean Russell of Dean Russell Drugs Ltd. to provide small grants or interest-free loans.

Maude Abbott Memorial Scholarship Loan Fund: This fund has been established by the Federation of Medical Women of Canada. Loans of up to $350 per year are available to any woman medical student or first year interne. A second loan up to $350 may be granted to a previous recipient. In special cases, a loan up to $1,000 may be granted to a medical woman for postgraduate training. Loans are payable within seven years of date of issue, after which time interest will be charged at the rate of 5% compounded annually. Information regarding these loans may be obtained from Dr. Alice E. Gray, Director of Laboratories, Women's College Hospital, 76 Grenville Street, Toronto, Ontario.

STUDENT REGULATIONS

Any statement in this Announcement applies only to the session 1970-1971. Students registering in the Faculty of Medicine are subject to any decisions which may be made by the Council of the Faculty of Medicine and by the Senate or Board of Governors of the University.

FINANCIAL RESPONSIBILITY

No senior student having an unsound financial record, either in the School or in his dealings with others, will be recommended for graduation. All other students who are reported as having an unsound financial record will be subject to special review by the Council of the Faculty of Medicine before being recommended for promotion.

A student or students will be held financially responsible for any actions of a negligent or wantonly destructive nature which result in the damage of University property. Such charges will form part of the amount due to the University. Nonpayment will result in disciplinary action by the Dean's Office.

ATTENDANCE

(a) Students registered in any year are required to attend the courses of instruction and the examinations in all subjects prescribed for that year.

(b) The attendance at not less than eighty per cent of the lectures and the laboratory and clinical work given in any required course shall be prerequisite to admission to sessional or final examinations in such a course. Absence from lectures, laboratories, or clinical work is excused only on account of illness or by expressed permission of the Instructor and the Dean.

(c) Classes desiring postponement of any lecture, clinic or laboratory periods shall be required to secure permission for such postponement from the Dean, who shall thereupon notify the Head of the Department concerned.

ACADEMIC REQUIREMENTS

1. To complete each year's work and be permitted to register in the succeeding year of the medical course a student must:

(a) Meet the attendance and conduct requirements described in the announcement;

(b) Complete the prescribed assignments;

(c) Obtain at least 50% in each subject in which a final examination is held;

(d) Obtain a general average of 60% in each of the first, second and third years;

(e) In the fourth year only, for a pass in any subject, obtain a minimum mark of 50% in both the oral and written examinations. The final mark obtained in each subject must be 60% or over.

2. A student may be given permission by the Council of the Faculty of Medicine to write no more than two supplemental examinations, provided:

(a) His general average is above 55% and below 60%;

(b) His grades are below 50% in no more than two subjects.

3. A student will be considered to have failed to complete a year's work if:

(a) His general average (in all subjects of that year) falls below 55%;

(b) He has failed in more than two subjects;

(c) He has been given permission to write supplemental examinations and has failed to meet the requirements under section 1 (c) or 1 (d) above.

4. A student who fails to complete a year may be permitted by the Council of the Faculty of Medicine to repeat that year. Permission is given only under exceptional circumstances, and then only when a vacancy is available in that year. When a student is allowed to repeat a year he must pass that year without conditions to be allowed to continue in the course. Permission to repeat a year has been seldom given.

5. A student who obtains an average of 80% or over, in a year's work, is considered to have passed that year with honors. A student who passes with honors in each year in the Faculty of Medicine will be graduated *cum laude.*

6. In each subject the ratio of term grades to final examination grades is determined by the teaching staff of the Department concerned. Weighted grades, based on the teaching time in each subject, are used in computing the general average in each year of the course.

7. In the case of Combined Examinations, as in Second and Third years, a student failing to obtain 50% of the marks assigned for any section will be required to rewrite the entire Combined Examination unless he has obtained at least 60% on the overall paper.

8. At the end of each academic year, a report will be mailed to each student, showing his grade in each subject and his general average grade for the year.

Key to Grades is as follows:

A–80-100
B–70-79
C–60-69
D–50-59
E–40-49
F–Below 40

REQUIREMENTS FOR DEGREE OF DOCTOR OF MEDICINE

Every candidate for graduation in Medicine must give satisfactory evidence:

I. That the entrance requirements of the Faculty of Medicine of The University of Western Ontario have been fully satisfied;

II. That he is at least twenty-one years of age, and has been engaged in the study of medicine for the period prescribed by the Senate of the University, during which he has completed the course of required instruction in this or some other recognized University, College or School of Medicine, at least two sessions of which must have been spent at this Faculty of Medicine;

III. That he has a minimum attendance at eighty per cent of the lectures and the clinical and laboratory courses as prescribed for the different years, such attendance to be attested by the Dean before admission to examinations;

IV. That he has attended the prescribed clinical services at the teaching hospitals of this University.

REQUIREMENTS FOR LICENCE TO PRACTISE MEDICINE

A university degree in medicine does not give the right to practise the profession of medicine. It is necessary to conform to the laws pertaining to the practice of medicine in the province, state or country in which it is proposed to begin paractise. Each Province in Canada has its special requirements for licence. A licence to practise in any part of the Dominion may be obtained by passing the examination of The Medical Council of Canada; a certificate from one of the provincial medical councils is necessary for eligibility for this examination. To obtain such a certificate requires compliance with the regulations of the medical council of the province issuing the certificate, regarding: (1) Preliminary education, (2) Matriculation; (3) Medical Curriculum; (4) Graduation. Information relative to licences to practise in any one province may be obtained from the Registrar of that province. All questions relating to the requirements for the provincial certificate necessary as a preliminary to taking examination of The Medical Council of Canada should be similarly addressed.

Applicants (or students) who have received their premedical or any previous medical education in foreign medical schools must have their credentials confirmed by The College of Physicians and Surgeons of Ontario.

MEDICAL LICENSING BODIES

The Provincial Medical Licensing Bodies are as follows:

The College of Physicians & Surgeons of British Columbia, Vancouver, B. C.

The College of Physicians & Surgeons of Alberta, Edmonton, Alberta.

The College of Physicians & Surgeons of Saskatchewan, Saskatoon, Sask.

The College of Physicians & Surgeon of Manitoba, Winnipeg, Manitoba.

The College of Physicians & Surgeons of Ontario, Toronto, Ontario.

The College of Physicians & Surgeons of Quebec, Montreal, Quebec.

The Medical Council of New Brunswick, Saint John, New Brunswick.

The Provincial Medical Board of Nova Scotia, Halifax, Nova Scotia.

The Medical Council of Prince Edward Island, Charlottetown, P.E.I.

The Newfoundland Medical Board, St. John's, Newfoundland.

N.B.: When writing to any of the above, address the letter to "The Registrar".

Information concerning The Medical Council of Canada, its licence, examinations, fees, etc., may be obtained from the Registrar, 1867 Alta Vista Drive, Ottawa 8, Canada.

HONORS PROGRAMS LEADING TO THE BSc IN ONE OF THE BASIC HEALTH SCIENCES

The Departments of Anatomy, Bacteriology and Immunology, Biochemistry, Biophysics and Physiology offer programs in the Faculty of Science leading to the degree of BSc with Honors in their respective disciplines. The Department of Physiology in collaboration with the Department of Pharmacology also offers an honors program in Physiology with a Pharmacology Option as well as a Physiology-Psychology program in collaboration with the Department of Psychology. These programs begin in the Third Year and admission is from the Second Year of the Honors Programs in Biology, Chemistry or, in general, in such other disciplines that require General Program (Natural Sciences) in First Year and permit inclusion of a course in Organic Chemistry. The Announcement of the Faculty of Science and the Department concerned should be consulted for the details of the Programs and their prerequisites.

GRADUATE STUDIES

The Basic Health Sciences–Information concerning graduate studies in the basic health sciences may be obtained from the Announcement of the Faculty of Graduate Studies. Studies leading to the degrees of MSc and PhD may be carried out in the following Departments: Anatomy, Bacteriology and Immunology, Biochemistry, Biophysics, Pathology, Pathological Chemistry, Pharmacology, Physiology, and Epidemiology and Preventive Medicine.

The Clinical Sciences–Graduates in Medicine, who have completed the required graduate and postgraduate training in a clinical department of the Faculty of Medicine, are eligible for the Degree of Master of Clinical Science (MClSc). The Announcement of the Faculty of Graduate Studies contains further details.

PhD-MD and MSc-MD Combined Programs–The Faculties of Medicine and Graduate Studies have established combined PhD-MD and MSc-MD programs, in which the research curriculum of the Graduate Program is integrated into the program leading to a medical degree.

The aim of such programs is the development of future medical teacher-scientists, within an investigative discipline while contact still exists between the medical student and the basic medical sciences.

Candidates must be accepted by the Committee on Admissions of the Faculty of Medicine prior to commencing the combined program and must be accepted by the relevant basic health science department and the Faculty of Graduate Studies prior to commencing the graduate research program. The prerequisite training and academic standing required for admission to these programs are:

(a) A Bachelor's degree (Honors), with at least a "B" average in a science related to the proposed research program, or

(b) A Bachelor's degree (General) plus the successful completion of one year of the medical curriculum with at least a "B" average, plus an "A" average in courses of the chosen discipline, or

(c) The successful completion of two years of the medical curriculum, with at least a "B" average for those who have been accepted into Medicine following the two-year premedical program, plus an "A" average in courses of the chosen discipline.

A candidate with a Bachelor's degree (Honors) who elects to complete one or two years of the medical curriculum prior to entering the PhD or MSc portion of the program, will require a "B" average with an "A" average in courses of the chosen discipline, during the medical curriculum.

The minimum residence requirement for the PhD degree in this program consists of six consecutive terms plus at least one additional summer term; the minimum residence requirement for the MSc degree in this program, consists of at least three consecutive terms. This minimum residence requirement will apply whether or not the candidate possesses a previous undergraduate degree.

The student will be re-admitted to the appropriate year of the undergraduate medical course when he has completed the MSc or PhD program.

Inquiries should be directed to the offices of the Deans of the Faculties of Graduate Studies and of Medicine.

POSTGRADUATE PROGRAMS

Postgraduate training at the University is offered by the Departments of Anaesthesia, Family Medicine, Medicine, Microbiology, Clinical Neurological Sciences (Divisions of Neurology and Neurosurgery), Obstetrics and Gynaecology, Ophthalmology, Otolaryngology, Paediatrics, Pathology, Pathological Chemistry (Divisions of Clinical Pathology, Medical Biochemistry, and Haematologic Pathology), Physical Medicine and Rehabilitation, Psychiatry, Surgery (Divisions of Cardiovascular and Thoracic Surgery, Orthopaedic Surgery, Plastic and Reconstructive Surgery, and Urology), Diagnostic Radiology and Therapeutic Radiology.

All programs, with the exception of Physical Medicine and Rehabilitation (one year), are accredited by The Royal College of Physicians and Surgeons of Canada for full training. The training program in Family Medicine leads to the Certification examination of the College of Family Physicians of Canada. The Committee on Postgraduate Education, the Assistant to the Dean-Postgraduate Education, and the Directors of Medical Education at each of the major teaching hospitals co-operate in the coordination of clinical postgraduate education.

Appointments are usually made 6 to 8 months prior to the July 1st beginning of the academic year.

CONTINUING EDUCATION

All the basic science and clinical departments participate in an active program of continuing education for family practitioners and specialists. Special lectureships, seminars, refresher days and short courses are arranged in conjunction with the Committee on Continuing Medical Education. Inquiries should be made to the Assistant to the Dean - Continuing Education. The Committee also sponsors a series of videotaped medical educational TV programs over CFPL-TV during the winter and spring months. A concerted effort is now being made to assist with the development of ongoing programs of continuing medical education in several centres in Southwestern Ontario. The program of continuing medical education will participate in the organization and administration of these programs, and members of the Faculty of Medicine will be involved in regular visits to these communities, where they will take part in ward rounds, lectures, case demonstrations and other forms of instruction.

LECTURESHIPS

The Dr. F.R. Eccles Memorial Medical Alumni Lectureship

This Lectureship in the Faculty of Medicine was inaugurated through the support of the Medical Alumni and a fund established by the will of the late Dr. F.R. Eccles. An outstanding clinician is invited to deliver the memorial lecture and participate in a clinical program presented annually in rotation by one of the clinical departments.

The John A. Macgregor Memorial Lectureship

The Lecturship was initiated in 1946 by friends of the late Dr. Macgregor, former Professor Medicine, and by medical alumni, and is now supported by the Continuing Education funds of the Faculty. The lecture is given annually by an eminent pathologist and is open to all medical students and members of the medical profession.

The Dr. William Banghart Memorial Lectureship

This Lectureship was established in 1965 with funds transferred to The University of Western Ontario from the London Academy of Medicine and contributed by friends of the late Dr. Banghart. The lecture is arranged by the Department of Paediatrics in conjunction with the Continuing Education program.

The F.J.H. Campbell Lectureship

This Lectureship was established by Dr. Georges Lachapelle, Meds '45. The income from this fund is to be used to bring outstanding physicians, chosen by the Department of Medicine, to lecture to the Faculty, students and members of the medical profession; or on occasion to provide travel funds for a member of the Department of Medicine to attend a meeting in another Medical Centre, or with a medical group, to bring back to his colleagues the benefit of his findings.

RESEARCH

An active research program in the various departments is supported by grants from the Medical Research Council, the Department of National Health and Welfare, the Defence Research Board, the Department of Health of Ontario and voluntary organizations. A limited number of Medical Research Council Summer Undergraduate Medical Scholarships are available for undergraduate students annually.

Within the Faculty of Medicine three research funds have been established.
(a) The John McClary Memorial Fund for research in Industrial Medicine.
(b) The George Routledge Fellowship for research in Heart Disease.
(c) The Ruth Knox Herman Fellowship for research in the general field of Cardiovascular Disease.
Information about any of the above may be obtained from the office of the Dean.

SCHOLARSHIPS AND PRIZES

1970-1971 Session

Monetary prizes in each year are arranged in descending order of dollar value and are awarded in this order. No one student in any year will be awarded more than one prize of monetary value, excluding competitive essay prizes and certain other prizes awarded by selection. Should a student qualify for more than one prize, he will be awarded the prize of greatest monetary value and any lesser prizes will then revert to the next eligible students.

The Verda Taylor Vincent Scholarship

This Scholarship, value $1,000, was established by the late Miss Verda Taylor Vincent, a graduate of The University of Western Ontario. It is to be awarded annually to the student achieving the highest standing in the examinations at the conclusion of the first year.

The J.B. Campbell Memorial Scholarship in Physiology

The J.B. Campbell Memorial Scholarship in Physiology, value $100, will be given to the student obtaining the highest marks in the examination in Physiology.

The late Dr. J.B. Campbell was Professor of Physiology from 1910 to 1913.

Hippocratic Society Award in Anatomy

The Hippocratic Society has provided a sum of $50. to be awarded annually as a prize to the student doing the best work in Gross Anatomy in the first year.

C.V. Mosby Company Scholarship Awards, First Year

A book to the value of $30 will be given to the student obtaining the highest standing in each of the following first year subjects: Biochemistry, Histology.

The Rowntree Prizes in Medical History

The sum of $150 is given annually in memory of the late Dr. L.G. Rowntree, for essays in Medical History. Essays may be submitted by students in any year, and students in the first year class are particularly encouraged to do so. The students writing the three best essays will be awarded prizes of $75, $50 and $25, respectively. These essays will be judged on the basis of historical content, style, accuracy and originality. The essays are to be submitted to the Department of Medical History on or before March 31st of each year.

The Rachel Slobasky Kaplan Scholarship

This Scholarship of $300 has been established by Mrs. Kaplan of Windsor, Ontario. It is to be awarded annually to the student achieving the

highest standing in the examinations at the conclusion of the second year of the medical course.

Will Pharmaceuticals Prizes

In order to promote interest in Pharmacology a Fund has been established by Will Pharmaceuticals, which is made available for student competition. The Fund is to be used in the following manner:
(1) Will Pharmaceuticals First Prize in Pharmacology, valued at $100. to be awarded to the student obtaining the highest marks in Pharmacology.

(2) Will Pharmaceuticals Second Prize in Pharmacology, valued at $75. to be awarded to the student obtaining the second highest marks in Pharmacology.

(3) The First Will Pharmaceuticals Prize for an Essay in Pharmacology, valued at $75.

(4) The Second Will Pharmaceuticals Prize for an Essay in Pharmacology, valued at $50.

Undergraduate students standing in the upper third of the class will be eligible for the essay competition, the subjects to be chosen by the students competing for the prizes. Essays in duplicate are to be submitted to the Dean's office on or about February 15 of each year. The first and second prize winners (3 and 4) will be decided by a special committee, which shall include the Professor of Pharmacology and the Professor of Medicine. The quality of the essays must be such that they will warrant publication in a recognized journal or review.

The Ciba Prize

This Prize, consisting of a set of the Ciba Collection of Medical Illustrations, is awarded to a student in the second year, at the discretion of the Council of the Faculty.

The B'Nai Brith Scholarship in Pathology

The sum of $50. is to be awarded annually by the London Lodge of the B'Nai Brith Society to the second year student with the highest standing in Pathology.

The Dean Russell Prizes in Neurological Science.

Combination Ophthalmoscope and Otoscope sets are to be given annually to the two second year students obtaining the highest standings in Neurological Science.

C.V. Mosby Company Scholarship Awards, Second Year

A book to the value of $30 will be given to the student obtaining the highest standing in each of the following second year subjects: Bacteriology and Immunology, Psychiatry.

The Charles E. Frosst Medical Scholarship

Charles E. Frosst and Company will award a Scholarship of $500 and a bronze Medal at the end of the Third Year to a medical student who has shown most promise in the field of Therapeutics.

The Leonard Sutclifffe Memorial Scholarship

This Scholarship of $150. is to be awarded to the student with the highest academic standing in the third year of the medical course.

The *Carleton C.* Whittaker Memorial Scholarship in Psychiatry

This Scholarship, value $125, established by the late Miss Edith M. Whittaker, will be awarded to a student in the third year with high standing in Psychiatry and other evidence of interest in the subject.

The Bristol Prize in Medicine

Medical Texts in Therapy and/or Pharmacology to the value of $125. will be awarded annually by Bristol Laboratories to the Third Year student selected on the basis of meritorious performance in Clinical Medicine.

The Ontario Medical Association Prize in Community Medicine

This prize, value $100. is awarded by the Ontario Medical Association to the student obtaining the highest aggregate marks (first and third years combined) in the course in Community Medicine.

The Borden Award in Paediatrics

This Award, value $100. is grantee by the Borden Company, Limited, to the student showing the greatest merit in Paediatrics in the third year.

The Ciba Prize in Medicine

This is a prize of $75.00 to be awarded to the third year student in the Faculty of Medicine who shows the greatest proficiency in Medicine.

C.V. Mosby Company Scholarship Award, Third Year

A book to the value of $30 will be given to the student obtaining the highest standing in Pathological Chemistry.

The W. H. McGuffin Scholarships in Radiology

Two Scholarships, consisting of awards of $60. and $40. will be given to the students of either of the two final years presenting the best essays on a subject pertaining to Radiology. The essays are to be in the Dean's Office on or before February 15 of each year.

The Medical Alumni Gold Medal

A medal is to be given annually to the student graduating in Medicine with the highest aggregate marks during his full course taken exclusively at The University of Western Ontario.

The Alpha Kappa Kappa Gold Medal

A medal provided for in Alpha Kappa Kappa's con-

tribution to the University Endowment Fund will be awarded to the student taking the highest standing in the final year.

The Dr. F.R. Eccles Scholarship

The late Dr. Eccles established a Scholarship fund to enable students of medicine to study abroad following graduation. An award of $1,200 is to be made annually to the student obtaining the highest standing in the final year of the medical course.

The Dr. Glen S. Wither Memorial Award

This Award, established by the family, classmates and friends of the late Dr. Glen S. Wither, is awarded to the final year medical student who, in the opinion of his peers and associates, demonstrates the highest attributes of the physician—integrity, concern for his patients, compassion, and a devotion to his profession. The amount of the Award will be $250.

Poulenc Award

The sum of $250 is donated annually, along with a suitably inscribed gold medal, to the student obtaining the highest marks for the two final years in the following clinical subjects: Medicine, Obstetrics and Gynaecology, Paediatrics, Physical Medicine, Psychiatry and Surgery.

The Class of '55 Prize

An annual Prize of $200 is provided by the Class of Meds '55 to be awarded at the discretion of the Dean and Faculty to a student in the final year showing outstanding promise in the practice of Clinical Medicine.

The Dr. R.A.H. Kinch Prize in Community Medicine

This Prize of $150 established by Dr. R.A.H. Kinch will be awarded annually to the final year medical student who demonstrates the greatest competence in the clinical and research aspects of Community Medicine.

The Abbott Prize in Anaesthesia

This Prize of $150., awarded by the Abbott Laboratories Limited, will be given to the fourth year student who has shown outstanding interest in the Specialty of Anaesthesia. For the Prize the marks in the third year examination and the performance during the fourth year clerkship as judged by the Clinical Instructors shall be taken into consideration.

The Dr. Fred N. Hagerman Memorial Prize in Surgery

This Prize, of $100, established by the family and friends of the late Dr. Fred N. Hagerman, Meds '63, is awarded to the final year student showing the greatest merit in Surgery during the third and fourth years as assessed both by marks in written examinations and performance in clinics.

The Pearl Devenow Fox Memorial Prize in Obstetrics and Gynaecology

The prize of $100 will be awarded by the London Section of the National Council of Jewish Women of Canada to the final year student showing the greatest merit in Obstetrics and Gynaecology during the third and fourth years as assessed by both marks in written examinations and performance in clinics.

The J.B. Campbell Memorial Scholarship in Medicine

The J.B. Campbell Memorial Scholarship in Medicine value $100, will be given to the student obtaining the highest marks in the combined examinations in Medicine and Clinical Medicine in the final year.

The late Dr. J.B. Campbell was Associate Professor of Medicine from 1913 to 1919.

The Kingswood Scholarship

A Scholarship of $100. is awarded annually to such student in the graduating year in medicine as the authorities of the University consider most proficient. The fund was established by a bequest of the late Mr. Isaac William Kingswood.

The Class of 1917 Prize

An Award of $50 will be given to the student in the final year keeping the best case records on patients on the wards and in the out-patient departments.

The Roche Scholarship

This scholarship, value $50. is to be awarded to a final year student at graduation, on the work of the two final years of the course. It will be based on the general lines of the Rhodes Scholarship, in which proficiency, progress and leadership will be evaluated by a board of assessors.

The Dr. T.H. Coffey Memorial Prize in Physical Medicine and Rehabilitation

This Prize of $50 and a book has been established by Dr. M.G.P. Cameron in memory of the late Dr. T.H. Coffey. It will be awarded to a third or fourth year medical student for the best essay in the field of clinical investigation or research related to Physical Medicine and Rehabilitation. Essays are to be submitted to the office of the Dean of Medicine on or before March 31st of each year.

The Ivan Hamilton Smith Memorial Prize

This prize of $25. for books, donated by the friends of the late Dr. Ivan Hamilton Smith, is awarded to the final year student obtaining the highest mark in Therapeutic Radiology.

The Horner Gold Medal Awards in Ophthalmology and Otolaryngology

Frank W. Horner Limited will award gold medals to the final year medical students showing the highest proficiency in Ophthalmology and Otolaryngology in all years of the medical course.

The Khaki University and Y.M.C.A. Scholarship

Applications for this Scholarship, value $60. will be received by the Dean from ex-service students, or from the sons or daughters of ex-servicemen. The Scholarship will be awarded at the discretion of the Council of the Faculty of Medicine.

Wilhelmina and J. Gordon McIntosh Prizes in Public Speaking

Medical students are eligible to compete for certain of the McIntosh awards under terms specified by the Scholarship Committee.

The Howard Ferguson Award

The Howard Ferguson Award is available to a senior student in any Faculty of the University who is considered to have attained the highest achievement during his University career in athletics, scholarship and college life.

Nellie L. Farthing Memorial Fellowship

This Fellowship in the Medical Sciences, value $1,500 per academic year, is available to students engaged in postgraduate work or medical research. Applications should be submitted to the Dean of Medicine no later than March 15.

Advanced Graduate Scholarships

There are a number of scholarships tenable abroad for highly qualified students to do further post-graduate work. Information concerning these scholarships can be obtained from the Dean's Office.

MEDICAL SOCIETIES

The Hippocratic Society

The Hippocratic Society is the official undergraduate Medical Society of the University. The membership consists of all medical students in the first, second, third and fourth years. It is governed by the Hippocratic Council which is elected annually from the members of the Society. This Council consists of an executive and the year presidents, and handles all student affairs. It sponsors the U.W.O. Medical Journal, the Osler Society, the Med's Merrymakers, and "Tachycardia", the annual variety show. The social program of the Hippocratic Society includes the annual Med's picnic, the Annual Hippocratic Banquet, and the Med's At Home. The Council provides certain services for the student, including current newspapers and magazines, a telephone, and current non-medical books. The University of Western Ontario Undergraduate Medical Journal is published, edited and controlled by the student body through the Hippocratic Council. A consulting editorial staff is appointed each year by the Council of the Faculty to assist the students in this publication.

The Society takes an active part in the Canadian Association of Medical Students and its program, including the Summer School, the Drug Appeal, Interne Placement and the National Convention.

A Staff-Student Liaison Committee and a Mentor System provide lines of communication between students and faculty.

A two-dollar fee for membership in the Society and two dollars for membership in the Canadian Association of Medical Students are payable on registration day.

Osler Society

The Osler Society is an organization open to all medical students, academic staff and local physicians. The aims of the society are to perpetuate the name of the great Canadian physician, Sir William Osler, and to provide an opportunity for the presentation and discussion of papers on medical history and various aspects of medicine.

Alpha Omega Alpha

This is an Honor Society for medical students, membership in which is based on scholarship and character. It was first organized at the College of Medicine, University of Illinois, in 1902. The Beta Chapter of The University of Western Ontario was organized in 1942.

The aim of the Society is to encourage the spirit of medical research. Chapter meetings are devoted to the presentation of scientific papers.

PLAN OF INSTRUCTION

The curriculum provided by the Faculty of Medicine is designed to provide the core of fundamental knowledge and technical skill which forms a basis for further graduate study leading to family practice, specialization or research, The correlation of basic and clinical sciences is stressed in all departments and exemplified by Interdisciplinary Conferences throughout each of the four years.

Several basic and clinical science departments cooperate in the Neurological Science course. An introduction to the Clinical Sciences including physical diagnosis is presented in the Second Year by the Departments of Medicine, Surgery, Obstetrics and Gynaecology, and Paediatrics.

In the second semester of the Third Year, considerable time is allotted for students to rotate through major clinical services on which case-work is assigned. Time is allotted for electives in the Third year. Elective opportunities are provided with individual departments, or a student may elect to take the Business of Practice course, a family practice preceptorship, or other courses approved by the Dean's office.

The Fourth Year is a forty-eight week clinical clerkship providing opportunity for rotation through the various clinical services in the teaching hospitals and including a nine-week elective period. The clinical clerk, as the junior member of the clinical team, is involved in the diagnosis, investigation and treatment of patients under the care of the team. The clerkship will provide the student an opportunity to relate the knowledge, skills and attitudes already acquired to the solution and management of clinical problems. The elective period permits the student to pursue further basic science or clinical studies and to explore future career choices. The 48-week clinical clerkship comprises five nine-week terms and three weeks for study, examinations, etc.

DEPARTMENTS OF THE FACULTY

Department of Anaesthesia

Professor and Head of the Department:

W.E.G.A. Spoerel

THIRD YEAR

Together with the Department of Pharmacology, twelve lectures are given in clinical pharmacology, with particular emphasis on aspects of acute medical conditions and anaesthesia. Another eight hours of lectures and demonstrations cover clinical anaesthesia and special patient care associated with it, including respirator care, inhalation therapy, and cardio-pulmonary resuscitation.

FOURTH YEAR

During their Clinical Clerkship, students are assigned for one week to Anaesthesia. Instructions are given in practical anaesthesia, care of the airway and artificial ventilation, management of the unconscious patient and respirator treatment in the Intensive Care Unit.

Students interested in anaesthesia and intensive patient care are invited to use their elective time for further studies in this specialty.

Department of Anatomy

Professor and Chairman of the Department:

R.C. Buck

FIRST YEAR

1. **Developmental and Definitive Anatomy**

Definitive human anatomy is taught as a series of concepts each of which has developmentals topographical and radiological aspects. While the amount of detailed memory work has been drastically reduced the class members are required to develop perspective regarding factual highlights which are considered relevant to their future clinical training.

Wherever possible classical lecturing techniques have been abandoned in favour of the more educative pursuits of lecture-demonstration and group discussion. Each practical session is introduced by a senior staff member who presents the main points at issue in a short introductory talk. Class members are encouraged to use departmental teaching aids as they see fit; this includes prosections, three-dimensional illustrations, charts, radiographs, models and mounted specimens. The extent to which particular parts are dissected in the cadaver may also be a matter of personal preference.

During the study of special parts the appropriate clinical department participates; for example in the period devoted to head and neck region otorhinolaryngologists attend; and when the pelvis is the topic obstetrical aid is available. The department of radiology provides the assistance of trained specialists to elucidate the radiological aspects of anatomical problems during the entire course. Attempts are made to provide special sessions at which subjects of topical interest such as "tissue transplanation" are presented by experts.

Throughout the course strenuous efforts are made to correlate structure with function and, as far as possible, to coordinate anatomical studies with the other basic sciences.
312 hours

2. **Histology.** A lecture course on the structure of human cells, tissues and organs, in terms of light and electron microscopy. The correlation of structure and ultrastructure with function is emphasized.
46 hours

3. **Histology.** A practical laboratory course in the structure of normal human tissue and organs, with demonstrations of special preparations with both light and electron microscopy.
92 hours

SECOND YEAR

4. **Neuroanatomy.** A series of lectures dealing with

the microscopic and gross features, internal structure and major fibre tracts of the human central nervous system. The dynamic approach is emphasized. This is part of a course in Neurological Science, in which the Departments of Anatomy, Biochemistry, Pathology, Pharmacology, Physiology and Clinical Neurological Sciences collaborate.
39 hours

5. **Neuroanatomy.** A practical course in the dissection of the human brain, together with the study of sections of the brain stem and a review of the main aspects of Neurohistology. This is also part of the course in Neurological Science.
30 hours

6. **Medical Genetics.** A short course stressing the application of several genetic principles to medicine and acquainting the student with the basic terminology of the various branches of human genetics.
16 hours

THIRD YEAR

7. **Elective.** An elective course in Applied Gross Anatomy will be offered by the Department of Anatomy for third year medical students and fourth year medical rehabilitation students. The objective of the course is to recall anatomical features pertinent to the clinical sciences and to present details of relevant structures previously not covered.
78 hours

The Department of Anatomy also participates in a series of Interdisciplinary Conferences based on the various aspects of the Anatomical Sciences taught in the Department.

MEDICAL REHABILITATION

1. **Gross Anatomy.** A series of tutorials and demonstrations is offered in regional gross anatomy and related disciplines. The teaching is supplemented by a course in the dissection of parts of the human body. The aspects of anatomy applied to the living human body are emphasized.
243 hours.

2. **Neuroanatomy.** A summary of the gross, microscopic and functional anatomy of the brain and spinal cord of the human. A two-hour television demonstration is provided in lieu of laboratory periods.
26 hours

3. **Elective.** An Elective course in Applied Gross Anatomy for fourth year medical rehabilitation students will be taken with third year medical students.
78 hours

NURSING

1. **Human Anatomy.** A course of lectures and lecture demonstrations which commences with the principal ultrastructural features of cells. Subsequent histological classification leads through developmental phenomena to major concepts of functional, topographic and systemic anatomy. Participation of students is encouraged during all meetings of the class and emphasis is given to the 'living' state rather than to cadaveric anatomy.
63 hours

Department of Bacteriology and Immunology

Professor and Head of the Department:
R.G.E. Murray

SECOND YEAR

1. **Medical Microbiology and Immunology.** A course of lectures dealing with the nature and morphology of bacteria; host-parasite relationships; disinfection and sterilization; a survey of bacteria of medical and dental importance; the nature of viruses and virus infections; serological diagnostic methods; immunization, hypersensitivity; antibiotics and chemotherapy; and major topics in mycology and parasitology. A special section of the course will be concerned with Immunobiology.
80 hours

2. A course of laboratory exercises, demonstrations and tutorials integrated with the lecture course and illustrating the application of bacteriology, virology, mycology, parasitology, and immunology to the practice of medicine.
70 hours

NURSING

1. **Microbiology for Nurses.** A course of lectures, practical classes and demonstrations to illustrate the scope and principles of Microbiology and Immunology, and the application to Nursing and to Public Health. The course involves: A survey of microbial life; sterilization, disinfection and antibiosis; the host-parasite relationship; immunity mechanisms and hypersensitivity; serological diagnosis; specific bacterial, viral and fungal infective processes and their prevention; sanitary and food microbiology; protozoan and animal parasites; the practice of immunization; the services and responsibilities of hospital, regional, provincial and government laboratories.
60 hours

Department of Biochemistry

Professor and Head of the Department:

H.B. Stewart

FIRST YEAR

1. **A course of lectures in general biochemistry.** Chemistry of carbohydrates, lipids and proteins; protein structure; chemistry of animal tissues; chemistry of the cell; blood; enzymes; cellular metabolism; structure and function of nucleic acids; biochemical genetics; lipid metabolism; protein metabolism and protein synthesis; minerals, chemistry and function of vitamins and hormones.
96 hours

2. **A laboratory course illustrating the material covered in the lectures.** During a portion of the course the class is broken down into small groups for exercises of the "project" type.
96 hours

SECOND YEAR

1. **Neurochemistry.** Lectures in Neurochemistry are given as part of the Second Year course in Neurological Science.

2. **Integrative Biochemistry.** A course of lectures and seminars devoted to a consideration of control mechanisms in biological processes including genetic, hormonal and chemical mechanisms.
40 hours

NURSING

1. An introductory course of lectures in general biochemistry is presented to students enrolled in the second year of the nursing baccalaureate program.
25 hours

Department of Biophysics

Chairman to be named

The Department applies the fundamental laws of physics to cells and organisms.

Electives are available for Medical Students and may involve guided reading, research, or clinical teaching (physical diagnosis).

First and Second Year Electives: A seminar course on the fundamentals of Biophysics as applied to human biology in health and disease. Research projects can be arranged if the student desires.

Third Year Elective: The Biophysical Basis of Physical Diagnosis' conducted at Victoria Hospital throughout the year so that patients can be used as examples. The fundamental laws of physics (sound, elasticity, etc.) are applied to examination of the chest, heart, abdomen, musculoskeletal and nervous systems. The emphasis is on how altered physical states produce altered physical findings.

Fourth Year Elective: As for third year, except in a block, or else a research project tailored to the student's interests.

Graduate Program: MSc and PhD programs are described in the Graduate Calendar. A wide variety of medically-oriented research projects are underway at present. Details can be obtained from the Department.

Cancer Research Laboratory

(A Unit of the National Cancer Institute of Canada)

Director and Professor of Biochemistry:

J.A. McCarter

The Cancer Research Laboratory was established by a grant from the Ontario Division of the Canadian Cancer Society, and is maintained chiefly by annual grants from the National Cancer Institute of Canada. It is housed on the main University campus. Activities are centred on a variety of problems in basic cancer research. Senior members of the laboratory hold joint appointments in appropriate Departments of the Faculty of Medicine, and participate in teaching of undergraduate and graduate students.

Graduate students may proceed to MSc and PhD degrees in the Laboratory, receiving their advanced degrees in whatever discipline their supervisor has his joint university appointment. These include at the present time, Bacteriology and Immunology and Biochemistry. Application should be made, in the first instance; to the Director of the Laboratory.

Department of Clinical Neurological Science

Professor and Chairman of the Department:

C.G. Drake

Division of Neurology

Professor and Chairman of the Division:

H.J.M. Barnett

Division of Neurosurgery

Professor and Chairman of the Division:

C.G. Drake

SECOND YEAR

Neurological Sciences. A combined course is given in conjunction with the Departments of Anatomy, Physiology, Biochemistry, Pathology and Pharmacology. The course provides an integrated basic science and clinical study of the different regions of the nervous system in lectures, laboratories and clinical demonstrations.
160 hours.

DIVISION OF NEUROLOGY

1. **Clinical Sciences.** An introductory clincial course is given in the teaching hospitals, in conjunction with the Departments of Medicine, Obstetrics and Gynaecology, Paediatrics and Surgery. Emphasis is placed upon the physical examination.

THIRD YEAR

2. **Clinical Neurology.** Students will be assigned to the Neurological service of the teaching hospitals for a period of four weeks. Emphasis will be placed on the elicitation of signs in the localization of neurological disease.

3. **Applied Therapeutics.** In the course of "Principles of Medicine and Applied Therapeutics" in the Department of Medicine, lectures and case assignment essays will be given in neurology as part of the general course.

FOURTH YEAR

4. **Clinical Clerkship.** Students will be assigned patients that are admitted or referred to the neurological service in the teaching hospitals and will assume responsibility for their care under the supervision of the attending staff. A complete history, physical examination, course of investigation and treatment will be required on all of the cases that have been assigned.

5. **Clinical Neurological Sciences Rounds.** The students are expected to attend the weekly combined rounds of the Division of Neurology and Neurosurgery, as well as Neurology, Neurorodiology, Neuropathology and basic science teaching sessions.

DIVISION OF NEUROSURGERY

SECOND YEAR

1. **Clinical Science.** The Division of Neurosurgery participates in an introductory course in clinical neurological examination and basic neurosurgical principles.
5 hours

FOURTH YEAR

2. **Clinical Clerkship.** Students are assigned to the neurosurgical service for one week Patients are assigned for examination and subsequent clinical study at the bedside. In addition the student is attached to the resident staff for daily rounds, investigation of cases and appropriately in the operating room as an observer or assistant.

3. **Seminars.** Students participate in each of the four neurosurgical seminars at Victoria Hospital and at St. Joseph's Hospital.

4. ***Clinical* Neurological Sciences Rounds.** Students are expected to attend the weekly combined rounds of the Divisions of Neurology and Neurosurgery as well as Neuroradiology, Neuropathology and basic science rounds.

Department of Community Medicine

Professor and Chairman of the Department:

Carol W. Buck

Division of Epidemiology and Prevention Medicine

M.F. Fallon Memorial Professor of Preventive Medicine and Chairman of the Division:

Carol W. Buck

Division of Family Medicine

Professor and Chairman of the Division:

I.R. McWhinney

FIRST YEAR

1. **Epidemiology**. An introduction to the uses and methods of epidemiology by lectures and practical exercises.

2. **Introduction to Family Medicine.** With special emphasis on the behavioral aspects of medical care.
32 weeks - 2 hours per week

THIRD YEAR

1. **Community Medicine.** A course given mainly by seminar discussions of assigned reading on the comprehensive approach to the prevention, detection and control of health problems.
32 weeks - 2 hours per week

2. **Family Medicine.** Clinical instruction based upon preceptorship teaching in the offices of family physicians, training in interviewing and a program of family visiting.
First Semester - 1½ hours per week for 8 weeks
Second Semester - 2 hours per week for 16 weeks

FOURTH YEAR

1. **Community Medicine Clerkship.** A block rotation providing direct experience in Family Medicine

and in Health Department programs.
3½ weeks per student

Department of History of Medicine and Science

FIRST YEAR

History of Medicine. An introductory course of sixteen lectures dealing with the historical growth and expansion of medical and scientific ideas from antiquity to modern times.

The responsibilities of this Department include programs in the history of scientific ideas available to honors students in the Health Sciences and Faculty of Science, and to graduate students in the Biosciences Division and the School of Library and Information Science.

Department of Medicine

The Richard Ivey Professor of Medicine and Head of the Department:

R.W. Gunton

SECOND YEAR

1. Clinical Science. An introductory course in Clinical Science is given in conjunction with the Departments of Surgery, Obstetrics and Gynaecology, Paediatrics and Clinical Neurological Sciences. Emphasis is placed upon physical examination.
60 hours

THIRD YEAR

2. **Clinical Science.** Continuing instruction and experience in physical diagnosis and history taking.
32 hours (First semester)

3. **Principles of Medicine and Applied Therapeutics.** A course of systematic lectures and case assignment essays on the principles of Medicine and Therapeutics.
78 hours

4. **Clinical Medicine.** For a four-week period students will be assigned supervised hospital ward duties, three half-days per week. Patients will be assigned to each student, and bedside teaching by members of the staff will occur at each session.
48 hours (Second semester)

5. **Tuberculosis Clinics.** The class will be divided into groups, and each student will devote three mornings a week, for one week, to attandance at Clinics at the Beck Memorial Sanatorium.
12 hours

6. **Noon Rounds.** Students are expected to attend noon-hour and other Staff Conferences in the various hospitals when the scheduled time of the Conference and the timetable permit.

FOURTH YEAR

7. **Clinical Medicine**

1. **Clinical Clerkship.** Students will be assigned patients in one of the three major teaching hospitals, with increasing responsibility, with advice and supervision from staff members in attendance on the ward and at the bedside. They will have the opportunity of performing histories and physical examinations, and discussing diagnostic and therapeutic techniques with Residents and Staff on a formal as well as informal basis. Seminars are conducted by staff members in sub-specialities, on both formal and informal bases.
366 hours.

2. **Out-Patient Department.** Students attend clinics one half-day per week.
36 hours.

3. **Noon Rounds.** Students are expected to attend the noon-hour and other staff Conferences in the various hospitals when the scheduled time of the Conferences and the timetable permit.

8. **Interdisciplinary Conferences (Third and Fourth Years).** Interdisciplinary Conferences are held on alternate weeks, one morning per week, all year, and may involve several Departments at one session. All students are expected to attend.

Department of Obstetrics and Gynaecology

Professor and Chairman of the Department

E.R. Plunkett

SECOND YEAR

Clinical Science. With the advent of the new curriculum, 9 hours are devoted to clinical science as applied to Obstetrics and Gynaecology. During this time the class will be split up in small groups and a tutorial approach will be carried out. The emphasis will be on the correct methods of obstetrical and gynaecological history taking and examination of the obstetrical and gynaecological patient. This will be the medical student's first introduction to the obstetrical and gynaecological

patient and it is hoped that this earlier introduction will be beneficial as it places the emphasis on patient care earlier in his course.

THE CLINICAL YEARS

THIRD AND FOURTH YEARS

During this time clinical teaching dominates with only twenty-three didactic lectures scheduled for third year and none in the fourth. The third year, divided into small groups, spends two weeks on the service during the first semester and three weeks during the last. Selected seminar topics, in part prepared by the student, are used to augment the clinical experience. The remainder of the time is devoted to clinical clerking. Accommodation is available in both St. Joseph's and Victoria Hospitals for the students to "live in" and permit the close follow-up of patients in labour. Outpatient clinics in both hospitals provide additional opportunity for learning.

The intention is to have the student see the patients on the private teaching service and follow their progress while in hospital. Special aspects of the subject will be covered by seminars and discussion groups.

During the Fourth Year, students may increase their experience by initiating a research project or working within one of the clinical units. Such electives are arranged on an individual basis.

Department of Ophthalmology

Clinical Professor and Head of the Department:

C. Dyson

THIRD YEAR

1. A course of lectures dealing with the anatomy, physiology, methods of examination, and the commoner diseases of the eye.
12 hours

FOURTH YEAR

2. Each student will be attached to the Ophthalmology service of one of the teaching hospitals for one week.

During this period, he will participate in daily dressing rounds, observe in the clinics and operating room, and be present at the examination of inpatients by the residents and staff. He will be given the opportunity to acquire some of the basic skills of ophthalmic examinations, particularly fundoscopy, tonometry, analysis of strabismus, and the treatment of the commoner ophthalmic emergencies.

Department of Otolaryngology

Professor and Head of the Department:

F.J. Rounthwaite

THIRD YEAR

1. Otology, Rhinology and Laryngology. A course of lectures dealing with the anatomy, physiology, methods of examination, and the commoner diseases of the ear, nose and throat.
12 hours

FOURTH YEAR

2. Each student will spend one week taking part in the day-to-day activities of the Department.

Department of Paediatrics

Professor and Head of the Department:

J.C. Rathbun

SECOND YEAR

1. An introductory lecture and demonstration course on the examination of the infant and young child, including growth and development, is given as part of the Clinical Science program, at St. Joseph's Hospital.
9 hours

THIRD YEAR

2. A series of twenty-three lectures is given covering Nutrition, Diseases of the Newborn, infancy and Childhood. The differences between the infant and child's response to disease when compared with the adult are pointed out. Electives are available.
23 hours

3. Bedside Teaching. Each clinic group is given a block of beside teaching in Paediatrics, mainly in the second semester. Some further demonstrations are given in clinical science. Students are given the opportunity to examine sick children, noting the effect of disease on the young patient. Signs and symptoms of disease are demonstrated by members of the paediatric staff and discussion held with the groups on management.
30 hours

FOURTH YEAR

4. Final year students are expected to attend and participate at thirty weekly Paediatric Rounds held in the Busby Room, Victoria Hospital, and thirty weekly Staff Rounds held in the Classroom of War Memorial Children's Hospital. Interesting

cases presently undergoing treatment in Children's Hospital are discussed.
60 hours

5. **Clinical Clerking.** Each student is required to act as a clinical clerk for one 5-week period, writing histories, examining patients, making physical diagnosis and doing laboratory tests under the direction of the teaching Fellow or Chief Resident and members of the staff. He also devotes a portion of his time to clinics given by members of the staff in the Out-Patient Department at War Memorial Children's Hospital. Students are on call in the evenings in order to see acute admissions. The student is required to present the findings in these cases to attending physicians on ward rounds twice weekly. Four-week or eight-week electives are available along with an opportunity for each student to attend and participate in clinics held at the Muncey Indian Reservation. While on paediatrics, students are expected to prepare and present a weekly seminar on an assigned topic of current paediatric interest.

6. The Department of Paediatrics participates in interdisciplinary teaching throughout all years.

7. Bio-chemical research laboratory is situated in the War Memorial Children's Hospital. This provides an outline for those interested in clinical research. A paediatric x-ray unit, situated in the War Memorial Children's Hospital, allows for instruction of the student in Paediatric Radiology. Students are expected to attend and participate in a weekly paediatric radiology round. A Paediatric Immunohaematology Research Laboratory is situated in an annex to the Children's Hospital. This permits research in this growing field.

Department of Pathological Chemistry

Professor and Head of the Department:

A.H. Neufeld

THIRD YEAR

As a necessary complement to the acquisition of clinical skills, the student must become acquainted with laboratory medicine by exposure to Medical Biochemistry, Haematology, Blood Banking and other areas of laboratory medicine. This is accomplished as follows:

(1) Introductory sessions with the entire class will serve the purpose of scrutinizing the major principles of methodology currently available in the foregoing fields and surveying their wide range of clinical applicability.

(2) Students in small groups will then participate in the critical evaluation of laboratory data for diagnosis and management of disease.

Department of Pathology

Professor and Head of the Department:

A.C. Wallace

SECOND YEAR

1. **General Pathology.** A course of lectures, demonstrations and laboratory periods dealing with fundamental aspects of disease processes. Subjects include inflammation and repair, regressive changes, vascular diseases, disorders of growth and neoplasia, specific examples of inflammation.
66 hours

2. **Special Pathology.** A comprehensive course in human pathology, taught on a regional and systemic basis. The course is taught by means of formal lectures, gross and microscopic demonstrations, and informal teaching to small groups. In addition to museum specimens and microscopic loan collections, there is extensive use of current postmortem and surgical material from participating hospitals.
180 hours

THIRD YEAR

3. Medical Jurisprudence. Nine lectures dealing with law as related to the practice of medicine, duties of a coroner, the coroner's autopsy, matters of medico-legal importance.

FOURTH YEAR

4. **Clinical Pathological Conferences.** In co-operation with the clinical departments, conferences are held throughout the academic year for the discussion of selected autopsies in each of the teaching hospitals. Students present the clinical history, physical findings, laboratory and radiological investigation, the differential diagnosis and preferred diagnosis. The professor in the clinical department concerned discusses and comments upon the case. The pathologist discusses the pathological findings particularly from the standpoint of cause of death, the mode of death and clinical pathological correlations.
16 hours

PATHOLOGY FOR NURSES

A course of lectures and demonstrations designed to present basic disease processes and examples of specific diseases. The Department of Pathological Chemistry co-operates in this course in presenting some aspects of diagnostic laboratory medicine.
46 hours

PATHOLOGY FOR STUDENTS OF PHYSICAL MEDICINE

A series of lectures and demonstrations mainly in

general pathology to acquaint the students with such topics as inflammation, repair and vascular changes.
16 hours

SURVEY COURSE IN PATHOLOGY

A course designed primarily for non-medical graduates who desire some understanding of disease processes. Subjects dealt with include inflammation and repair, regressive changes, vascular diseases, disorders of growth and neoplasia. Some previous knowledge of pathology is desirable. This course is designed mainly for honors and graduate students in the Medical Sciences, but it may be amalgamated with those given to nurses and physical medicine students, if this can be arranged.
2 hours per week for 1 term
32 hours

Department of Pharmacology

Professor and Head of the Department:

C.W. Gowdey

SECOND YEAR

1. **Medical Pharmacology.** The course of lectures deals with the absorption, distribution, metabolism and excretion of drugs, the relation between chemical structures and pharmacological activity, the mechanism of action, therapeutic uses, contraindications and toxic effects of the clinically important drugs.

In the laboratory periods experiments are performed to demonstrate the principles of biological assay and the effects of drugs on isolated organs and intact animals. Human trials to introduce concepts of clinical pharmacology are also performed.
120 hours

2. **Neuropharmacology–Pharmacology Section of Neurological Science.** Lectures and laboratory exercises devoted to a study of the effects of both endogenous chemical substances and drugs on neuromuscular transmission and on the central nervous system in both healthy and diseased states, including drugs used in anaesthesia, and anaesthetic agents.
35 hours

THIRD YEAR

3. **Toxicology.** A series of five lectures dealing with the general problem of toxic substances in the air, in agriculture (pesticides, weedkillers, etc.), in food, in cosmetics and in household chemical products, as well as the toxic effect of drugs, both from their use and misuse. Prevention, antidotes and treatment are discussed.

4. **Clinical Pharmacology.** A series of colloquia given in collaboration with the Department of Anaesthesia. Subjects include: clinical trials, placebos, general sedation, autonomic blockade, muscle relaxants, therapeutic gases, electrolyte balance, and the management of pain, hypotension, shock, convulsions and drug intoxication.
13 hours

NURSES

5. **Survey of Pharmacology and Drug Therapy.** A course of lectures, demonstrations and tutorials dealing with the properties of drugs, their mechanisms of action, therapeutic uses, limitations and toxicity.
52 hours

Department of Physical Medicine and Rehabilitation

Professor and Head of the Department:

M.G.P. Cameron

THIRD YEAR

Clinics will be given on Medical, Surgical and Paediatric problems in Rehabilitation. Techniques of electrodiagnosis, physical therapy and the use of braces and prostheses will be demonstrated. Physical therapy prescription writing will be stressed. The social, economic and psychological effects of chronic disability will be discussed with various members of the rehabilitation team.
16 hours

FOURTH YEAR

During the period assigned to Community Medicine, the students will have the opportunity of spending time in the physical, occupational and speech therapy departments and will discuss one or more rehabilitation problems in detail.
9 hours

PROGRAM IN MEDICAL REHABILITATION

This three-year program, leading to the Degree of Bachelor of Science in Medical Rehabilitation (Physical Therapy), includes basic instruction in Anatomy, Physiology, Human Diseases and the techniques of Physical Therapy. Applications for admission will be received from students who have completed the First Year in Natural Sciences at The University of Western Ontario or its equivalent. More detailed information can be found in the Brochure of the Faculty of Medicine entitled "Program in Medical Rehabilitation".

Department of Physiology

Chairman to be named

FIRST YEAR

1. A course of lectures, tutorials, demonstrations and laboratories designed to enable the student to acquire a basic knowledge of the principles of Human Physiology. Emphasis is placed on the development by the student of individualized learning and self evaluation, and he is expected to be able to evaluate physiological data in terms of changes in the homeostatic processes in response to alterations in the internal and external environment. The content includes: the general properties of the living cell and tissue, excitable tissue and muscle, blood, metabolism and nutrition, digestion, circulation, respiration, kidney and body fluids, acid-base balance, endocrinology, reproduction, growth and development.
160 hours

SECOND YEAR

1. **Neurophysiology.** This course, which covers the physiology of the nervous system, particularly in man, is given as part of the general Second Year course in Neurological Science. It consists of lectures, and both human and animal demonstrations and experiments.
40 hours

2. **Integrative Physiology.** This course is designed to integrate the various physiological principles discussed in the first year with particular emphasis on physiological responses to the environment and to disease processes.
40 hours.

NURSING

1. A course of lectures covering the principles of Physiology; general properties of the living cell and tissue, peripheral nerve and muscle, blood, metabolism and nutrition, digestion, circulation, respiration, kidney and body fluids, and endocrine glands and reproduction.
52 hours

2. A course of laboratory exercises and conferences to demonstrate and analyse the function of the various physiological systems.
78 hours

MEDICAL REHABILITATION (PHYSICAL THERAPY)

SECOND YEAR

1. A course of lectures covering the principles of Physiology: general properties of the living cell and tissue, peripheral nerve and muscle blood metabolism and nutrition, digestion, circulation, respiration, kidney and body fluids, the endocrine glands and reproduction.
52 hours

2. A course of laboratory exercises and conferences to demonstrate and analyse the functions of the various physiological systems.
78 hours

FOURTH YEAR

Advanced course in neurophysiology and in neuromuscular and exercise physiology.

Department of Psychiatry

Professor and Head of the Department:

G.E. Hobbs

SECOND YEAR

1. A lecture course with demonstration clinics covering the clinical syndromes of Psychiatry. Emphasis is on the syndromes encountered in the practice of Medicine.
48 hours

THIRD YEAR

2. A series of lectures emphasizing the background knowledge essential in the understanding of the psychiatric case in the first term and the various therapies in the second term.

3. During the first term, there is one clinic on the psychiatric examination. During the second term there are twelve three-hour clinics in the various psychiatric facilities associated with the Department.

FOURTH YEAR

4. For a three-week period students will act as clinical clerks in the psychiatric wards of the general hospitals.

5. Clinical experience with psychiatric disorders of children will be provided during the clerkship in Paediatrics.

Department of Diagnostic Radiology

Clinical Associate Professor, Acting Chairman of the Department:

W.W.J. Wilkins

A course in Diagnostic Radiology is given in the Third Year. This consists of sixteen hours of instruction in weekly sessions, the first few of which are devoted to didactic lectures. In the remaining sessions the class is divided into small groups, each assigned to an instructor with whom current Rad-

iological cases are studied in detail and in which System Study is accentuated.

In the Fourth Year, each student spends one week in the Department of Diagnostic Radiology at Victoria or St. Joseph's Hospital.

The staff of the Department contributes to interdisciplinary conferences, mainly in the Third and Fourth Years. There is as well active participation on the part of the departmental staff within the Department of Anatomy.

Department of Therapeutic Radiology

Clinical Professor and Head of the Department:

T.A. Watson

Instruction for the most part is built up around clinical material which is available through The Ontario Cancer Foundation's London Clinic at Victoria Hospital. Aspects of radiation physics, radiobiology, radiotherapy and nuclear medicine are covered from the practical standpoint, in their application to the patient suffering either from cancer or benign lesions amenable to ionizing radiation. Joint teaching sessions in conjunction with the clinical departments are arranged. Each Fourth Year student rotates through this Department for five half-days for instruction in radiation therapy, the medical uses of radioisotopes and general experience in cancer.

Department of Surgery

Professor and Head of the Department:

A.D. McLachlin

DIVISION OF CARDIOVASCULAR AND THORACIC SURGERY

Clinical Professor and Chairman of the Division:

J.C.G. Coles

DIVISION OF NEUROSURGERY

(See Department of Clinical Neurological Sciences).

DIVISION OF ORTHOPAEDIC SURGERY

Clinical Professor and Chairman of the Division:

J.C. Kennedy

DIVISION OF PLASTIC AND RECONSTRUCTIVE SURGERY

Clinical Professor and Chairman of the Division:

R.M. McFarlane

DIVISION OF UROLOGY

Clinical Professor and Chairman of the Division:

L.N. McAninch

The course content and method of teaching have been changed extensively. Greater emphasis is placed on the principles of surgery and the contribution by the Basic Sciences. The anatomical and technical aspects play a much smaller role. Acquiring knowledge from clinical contact and discussions is encouraged. Few didactic lectures are given.

SECOND YEAR

An introductory course in Clinical Science is given in conjunction with the Departments of Medicine, Obstetrics and Gynaecology, and Paediatrics. Major emphasis is placed on history-taking and physical examination.
63 hours

THIRD YEAR

Lectures. The principles of surgery and course content are presented.
46 hours

Clinical Teaching. This is mainly accomplished by ward rounds, clinical demonstrations and seminars. The ability to take a good history and perform an adequate physical examination are regularly checked.
96 hours

FOURTH YEAR

Clinical Clerkship. Each student rotates through all the surgical specialties. Students are required to take the history, make physical examination, and write orders under supervision on patients assigned to them. Two-hour seminars are held each afternoon on topics covering the major topics in surgery.
140 hours

Interdisciplinary and Clinical Pathological Conferences. These are presented weekly. There are no formal lectures.
38 hours

Special Lectures

LEGAL MEDICINE

Special Lecturer: H. Krever

A course of lectures to the students of the Third Year on law and its relation to the practice of medicine.
5 hours

MEDICAL ETHICS

Special Lecturer: J.B.C. Robinson

A series of 9 lectures is given by Dr. J.B.C. Robinson on medical ethics and problems of practice to the Third Year.
9 hours.

INFORMATION AND COMPUTER SCIENCE

A series of four lectures introducing students to the field of Information and Computer Science will be given in the third year with the co-operation of the Department of Computer Science.

REGISTERED STUDENTS – 1969-70 SESSION

FOURTH YEAR

Baxter, Joyann – Dundas
Beecroft, John – Otterville
Bergen, Harry – Brantford
Blackshaw, Patricia – London
Blackshaw, Roy – London
Bloomfield, Brian – London
Boutros, George – Don Mills
Brown, Gerald – London
Bryans, Franklin – London
Carswell, David – London
Chaudry, Aziz – Nairobi, Kenya
Clark, William – London
Clysdale, Marilyn – North Bay
Cox, John – Brantford
Debreceni, Andrew – London
De Jong, Teresa – Newcastle
Dillon, Wilson – London
Dunn, Larry – London
Dzioba, Bob – Toronto
Evans, John – London
Ferlisi, Anthony – Concord
Gair, Graeme – London
Gannon, Michael – Windsor
Ghent, Cameron – London
Gibson, Glenn – London
Gregg, John – Stoney Creek
Hall, Dennis – London
Helmer, Wayne – London
Hogg, Eleanor – Sault Ste. Marie
Holmes, John – Agincourt
Hunter, Bob – London
Judd, Michael – London
Kelly, Brian – Renfrew
Krepp, Juho – London
Kuntz, Michael – Kitchener
Kushner, Arthur – London
Lanktree, Bruce – Galt
Lawford, Grant – Toronto
Leal, Nancy – London
Leask, Barbara – Springfield, Ohio
McCuaig, Dorothy – London
MacKay, Thomas – London
McKeen, Jock – Hamilton
Margesson, Lynette – Toronto
Mathé, Thomas – Toronto
Mossing, Morley – Port Dover
Musgrove, Roy – Toronto
Nagle, William – London
Nichol, Peter – London
Olsson, Larry – London
Parks, Donald – Newmarket
Parry, Park – Paincourt
Pearl, Stephen – Toronto
Pearson, John – London
Porter, Bud – Windsor
Porzecanski, Ana – London
Ralph, Edward – London
Rossi, Susan – Windsor
Rubinstein, Henry – London
Schulz, Jan – Bratislava, Czechoslovakia
Shonk, Kenneth – London
Sibbald, William – Guelph
Simmons, Michael – London
Soltan, Hubert – London
Spence, Ann – London
Spence, David – London
Stuart, Bevan – London
Taylor, David – Dundas
Thoburn, Michael – London
Traviss, Brian – Walton
Vasovich, Inge – Alliston
Wall, William – Tecumseh
Wassenaar, Willem – London

Waters, David – Brantford
Waugh, Rachel – Hamilton
Wexler, Ronald – London
Yovanovich, Robert – Windsor

THIRD YEAR

Baryshnik, Sheldon – Sarnia
Bauman, Wayne – London
Bocking, Bruce – London
Bourne, Bob – Elliot Lake
Brock, Bob – Hamilton
Buma, Nick – St. Thomas
Byrick, Bob – London
Callcott-Stevens, Vic – Kitwe, Zambia
Cameron, Doug – London
Campbell, Ronald – Sudbury
Carruthers, Dan – London
Chapman, Dennis – Agincourt
Chapman, Mark – Burlington
Chow, Robert - Lane Cove, N.S.W.
Clement, Robert – Wallaceburg
Eberhard, Tom – London
Elliot, David – Galt
Emrich, Georg – Tillsonburg
Everett, Wayne – Richmond Hill
Fedyna, Roman – Toronto
Feightner, John – London
Finkelstein, Lorne – Hamilton
Finley, Richard – Meaford
Fisher, David – London
Flowers, David – Woodstock
Gatrall, Jim – Windsor
Harrison, Warren – London
Henderson, Bob – London
Heyes, Bob – Windsor
Hicks, Jim – London
Hoag, Roger – Lindsay
Humphrey, Jean – Aylmer
Hunsberger, Don – Owen Sound
Kassel, Ted – London
Kiraly, Stephen – London
Kizis, Sal – Tecumseh
Leach, Alan – Ottawa
McCready, John – Tillsonburg
McGregor, Gregor – London
May, Norman – London
Mitchell, Peter – London
Mitchell, Susan – London
Ndiyob, Joseph – Cameroons, West Africa
Nelles, Ruth – London
Page, Bob – Leamington
Payne, Bill – London
Peachey, David – London
Polack, Stan – Sudbury
Powell, Joseph – Windsor
Puodziukas, Edward – Toronto
Rathbun, Flora – London
Reason, John – London
Rogers, Bryson – London
Rose, Clive – London
Rose, Keith – London
Sawer, Ben – Sault Ste. Marie
Schulman, Susan – Willowdale
Schulze, Richard – Windsor
Sheldrick, Peter – Orillia
Slipacoff, Dan – Sarnia
Southcott, Bob – London
Stapleton, Kelly – Burlington
Sun, Charles – Willowdale
Swanson, Graham – Toronto
Tiegs, Richard – Kitchener
Tokarewicz, Alex – Marmora
Turner, John – Orangeville
Tusz, Louis – London
Vanderkooy, John – London
Veenstra, Jack – London
Wachsmuth, Jane – Toronto
Webster, Peter – Toronto
Willis, Baxter – London
Willoughby, Paul – Woodstock

SECOND YEAR

Allotey-Pappoe, Victoria – Accra, Ghana
Anawati, John – Edmunston, N.B.
Armour, Paul – Kitchener
Armstrong, Peter – Owen Sound
Bains, Margaret – Port Alberni, B.C.
Balinson, Alex – Toronto
Balogh, Louis – London
Boekhoud, John – Chatham
Bowman, John – London
Boyd, David – Penetang
Bromberg, Evelyn – London
Bruce, Barry – Guelph
Bruce, Carol – London
Cameron, Ross – London
Clark, Ted – London
Colthart, Carol – Rochester, N.Y.
Cooper, James – Midland
Cripps, Christine – London
Devitt, Neil – Yellowknife, N.W.T.
Dunkerley, Robert – Stoney Creek
Esseltine, Dixie-Lee – Tillsonburg
Fraser, Blair – London
Garrett, Rex – Sarnia
Gerace, Rocco –Windsor
Gordon, Earl – Woodlawn
Green, Larry – Sioux Lookout
Hammerich, Paul – Toronto
Harper, Mary – London
Hartwick, Karl – Fisherville
Hartzell, Walter – London
Hay, Robert – Manitock
Hellens, Ralph – Sudbury
Henry, Paul – Thornhill
Hopp, Marilyn – Toronto
Hyatt Williams, Geraldine – Bishops Cleeve, England
Inkster, Robin – Sudbury
Irvine, Richard – London
Jones, Robert – Tillsonburg
Kadrie, Hytham – London
Kellerman, Barbara – Waterloo
Lacy, Richard – Windsor
Lang, Robert – West Hill
Lauge, Sarma – Islington
Little, Albert – Glencoe
Luton, Robert – London
McLachlan, Richard – Lambeth
McLeod, Ian – Windsor

Marchuk, Blair – London
Marsden, Robert – London
Mayberry, Thomas – Ingersoll
Miller, Robert – Timmins
Mok, Lawrence – Hong Kong
Moore, James – Windsor
Noble, Michael – London
Odegard, Paul – London
Patterson, James – Windsor
Peek, Grant – London
Piche, Lawrence – Windsor
Pigeon, Michel – Blind River
Potter, Peter – London
Quigley, Ted – London
Rieger, John – Toronto
Sfreddo, Louis – Dryden
Shier, John – Toronto
Stewart, John – Peterborough
Taylor, John – Sarnia
Turner, Timothy – London
Usher, Kathryn – Belize, British Honduras
Vaisler, Barry – London
Vallely, John – Guelph
Walton, John – Manitouwadge
Warren, Kenneth – London
Webster, Randy – Burlington
Witherspoon, Sandra – London
Wong, Norman – Toronto
Wyatt, Judith – Elmira
Zickler, Paul – Fort William
Zurbrigg, Sheila – Toronto

FIRST YEAR

Abbas, Dennis – Toronto
Anderson, Ray – Windsor
Awde, Murray – London
Barcza, Larry – Toronto
Beattie, Beverly – Windsor
Bell, Thomas – St. Thomas
Birss, John – Brampton
Bogner, Thomas – Fenwick
Brown, Stan – London
Casper, Robert – Leamington
Chute, Terence – Toronto
Clark, Barry – Streetsville
Columbus, Donald – London
Connell, Douglas – Waterloo
Cooper, Paul – Windsor
Copeland, Karen – Waterloo
Copeland, Larry – Meadowvale
Corrin, Ray – London
Crackower, Sydney – Toronto
Craig, Catherine – Victoria, B.C.
Crosby, John – Sarnia
Dattilo, Joseph – Windsor
Del Maestro, Rolando – Petrolia
Devall, Bruce – London
Downing, Glenn – Ottawa
Eitel, David – Harley
English, Robert – Plattsville
Finnie, Robert – Scarborough
Forrest, James – Sioux Lookout
Foxen, John – London
Gall, James – Windsor
Geddes, Scott – Hanover
Gutmanis, Peter – London
Haylock, Brian – Windham Centre
Heersink, Marnix – Burlington
Hillyard, David – Dundas
Irvine, Thomas – Niagara Falls
Iwasutiak, Ray – Niagara Falls
Jackson, Jeffrey – London
Jakibchuk, Jaroslaw – Sault Ste. Marie
Kalman, Eva – Windsor
Kelton, John – Windsor
Kerr, Larry – Wardsville
Kerr, Ronald – Islington
King, Delf – London
Kolkka, Ronald – London
Kosick, Kevin – Timmins
Kramer, Larry – Otterville
Laslo, Elizabeth – Niagara Falls
Lee, Eng Hin – Penang, Malaysia
Lopacki, Walter – Toronto
Luck, Mary Jane – Copper Cliff
Maciver, Angus – St. Marys
Malone, William – Huron Park
Milne, William – Toronto
Moulin, Dwight – Elliot Lake
Munro, David – Listowel
Natale, Renato – Toronto
Newton, Arnold – Toronto
Nolan, John – London
Paterson, James – London
Paul, Margaret – Fergus
Phillips, Randall – Georgetown
Powe, John – London
Pullen, Brock – Toronto
Reddoch, Allon – Oil Springs
Rohrer, John – London
Saunders, Ann – Waterloo
Schmidt, Karen – Waterloo
Shore, Thomas – Ottawa
Simpson, David – London
Slinger, Peter – Guelph
Smith, Donald – Grimsby
Tan, Yeow – Penang, Malaysia
Tilsworth, Richard – Islington
Van Hooydonk, Vincent – London
Van Rosendaal, Guido – London
Vezina, William – Windsor
Viidik, Anthony – Deep River
Walker, Paul – London
Watson, David – London
Watson, Keith – Newmarket
Westmacott, Clare – London
Willoughby, Brian – Woodstock
Youngash, Ronald – White Rock, B.C.

TIMETABLE

FIRST AND SECOND YEARS – 1970-1971

First Quarter - September 14 – November 6
Second Quarter – November 9 – January 15
Third Quarter – January 18 – March 12
Fourth Quarter – March 15 – May 7

THIRD YEAR – 1970-1971

First Semester – 16 weeks – September 14 – January 15
Second Semester – 16 weeks – January 18 – May 7

Detailed Timetables will be circulated when finalized.

FOURTH YEAR

FOURTH YEAR – 1970-71

The Fourth Year will be a 48-week Clinical Clerkship, broken into five nine-week Terms as follows:

First Term – Monday, June 8th, to Sunday, August 9th, inclusive;
Second Term – Monday, August 10th, to Sunday, October 11th, inclusive;
Third Term – Monday, October 12th, to Sunday, December 13th, inclusive;
Fourth Term – Monday, December 14th, to Sunday, February 21st, inclusive;*
Fifth Term – Monday, February 22nd, to Sunday, April 25th, inclusive.

**This Term is 10 weeks to allow one week's leave during the Christmas holiday period.*

The students will rotate through the various Departments so that each student will be on the various Services for the length of time specified below:

SERVICE	NUMBER OF WEEKS
Anaesthesia	1
Community Medicine	3½
Medicine	9
Obstetrics and Gynaecology	4½
Ophthalmology	1
Otolaryngology	1
Paediatrics	4½
Psychiatry	3
Diagnostic Radiology	1
Therapeutic Radiology	½
Surgery	7

The remaining twelve weeks will be utilized as follows:

Elective	8
Travel Time with Elective	1
Examinations and Study Time	2
Christmas Leave**	1

***To be arranged by the Head of the Department concerned in each case.*

Interdisciplinary Conferences will be held, jointly with Third Year, at 0800 hours. Thursday morning, at Victoria Hospital, on alternate weeks throughout the year, beginning Thursday, September 17th. Clinical Pathological Conferences will be held on the intervening weeks at the various hospitals, students being expected to attend at the hospital where they are working at the time.

All students will be provided with detailed schedules and instructions for each term before the beginning of the session.

EXAMINATION TIMETABLE

FIRST, SECOND AND THIRD YEARS

1970-1971

The following examinations are written at the termination of the courses: Biochemistry, Clinical Science, Genetics in the Second Year; Eye, E.N.T. and Physical Medicine in the Third Year.

Final examinations in remaining subjects in First, second and Third Years will be written May 17th to 27th, approximately.

FINAL YEAR EXAMINATION TIMETABLE

***University Examinations* – 1970-71**

Medicine, Obstetrics and Gynaecology, Surgery, Public Health and Preventive Medicine, Paediatrics and Psychiatry – concurrent with Medical Council of Canada examinations.

Examinations in the remaining disciplines will be held at the end of each clinical block.

Medical Council of Canada Examinations

Spring of 1971

The dates for the Medical Council of Canada Examinations in the above subjects will not be set until September. They normally are written early in May.

MEMBERS OF THE FACULTY OF MEDICINE

Department of Anaesthesia

Professor

Spoerel, W. E. G. A., MD *Frankfurt-on-Main;* FRCP(C) Head of the Department

Clinical Associate Professors

Aitken, R. R., MD, CRCP(C)

Keeri-Szanto, M., MD, *Budapest;* CRCP(C)

Webster, A. C., BSc; MB, ChB *Leeds;* FFARCS(Eng), FRCP(C)

Clinical Assistant Professors

Bain, J. A., MD, CRCP(C)

Cameron, Harold, MB, ChB *Edin;* CRCP(C)

Clancy, P. R., BA, MD, CRCP(C)

Russell, E. S., BA; DiplMed *Saskatchewan;* MD, CRCP(C), FACA

Sellery. G. R., MD *Toronto;* DA *England;* DA *Toronto;* FRCP(C)

Clinical Lecturers

Adamson, D. H., MB ChB *Edin;* FRCP(C)

Butlin, G. R., MD *Del Litoral;* CRCP(C)

Glennie, G. D., MB BS *London;* DA *McGill;* MRCS(Eng), LRCP(London), CRCP(C)

Hersey, M. L. W., BSc *McGill;* MD, PhD,CRCP(C), FACA

Nielsen, J. S., LRCP(London), MRCS(Eng), CRCP(C)

Norry, H. T., MD, CRCP(C)

Slater, P. E., MD, CRCP(C)

Squire, G. W., BA, MD, FRCP(C)

Walker, F. W., DVM *Toronto,* MD, CRCP(C)

Honorary Lecturers

Growse, J. M., MDCM *Queen's;* CRCP(C)

Richardson, K. R., MD, CRCP(C)

Stewart, C. A., MD, CRCP(C)

Instructors

Kandel, Patricia F., MD *Ottawa;* CRCP(C)

Rossiter, Helen M., MB ChB *Edin;* DA *London;* FFARCS

Stewart, J. M., MD, CRCP(C)

Department of Anatomy

Professors

Barr, M. L., SM, BA, MSc, MD; LLD *Queen's; Toronto, Alberta, Dalhousie;* DR med h c *Basel;* FRSC, FRCP(C), FACP

Buck, R. C., MD, MSc; PhD *London.* Chairman of the Department

Associate Professors

Gwinnett, A. J., BDS *Birmingham;* LDSRCS(Eng), PhD *Bristol*

Gwyn, D. G., MRCS, LRCP(Eng), MB BS *London;* PhD *Birmingham*

Hollenberg, M. J., BSc(Med), MD *Manitoba;* MSc, PhD *Wayne State*

Hoshino, K., MD, DMedSc *Tokyo*

Montemurro, D. G., BA, MSc, PhD

Wilson, A. S., MB, ChB, MD *Glasgow*

Associate Professor of Human Genetics

Soltan, H. C., BA, PhD *Toronto*

Assistant Professors

Altmann, G. G., BSc *Dalhousie;* MSc, PhD *McGill*

Donisch, E. W. K. F., MD *Bonn;* MSc

Gammal, E. B., MB, BCh *Cairo;* PhD

Sergovich, F. R., BA *McMaster;* PhD

Shaver, Evelyn L., BSc, MSc, PhD

Singh, R. P., BA, MSc, PhD

Lecturers

Clattenburg, R., BSc, MSc *Acadia*

Cline, Aileen, MD

Honorary Lecturers

Robinow, C. F., MD *Hamburg;* FRSC

Walden, D. B., BA *Wesleyan;* MSc, PhD *Cornell*

Instructors

Goldberg, A. H., MBBS *Dublin;* LRCPI, LRCSI

Jory, T. A., MD, FRCS(C), FACS

Leyshon, G. A., BA; MS *Illinois*

Warma, S. K., MBBS *Calcutta;* FRCS(Eng), CRCS(C), FACS

Department of Bacteriology and Immunology

Professors

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

Murray, R. G. E., BA, MA *Cantab;* MDCM *McGill;* FRSC Head of the Department

Robinow, C. F., MD *Hamburg;* FRSC

Clinical Professor

Hatch, L. A., MBBS *London;* DipBact&Immun *London;* FCPath

Associate Professors

Ebisuzaki, K., BSc; MS, PhD *Wisconsin*

Medzon, E. L., BSc, MSc *Manitoba;* PhD *McGill*

Robinson, John, BSA *British Columbia;* MSc, PhD *McGill*

Zajic, J. E., BA *Kansas;* MS *Wisconsin;* PhD *California;* JD *Oklahoma City*

Clinical Associate Professor

Bakerspigel, A., BA, MA *McMaster;* PhD

Assistant Professors

Cheevers, W. P., BA *Colorado;* PhD *Mississippi*

Rozanis, J., MSc *Hebrew University, Jerusalem;* PhD *McGill*

Sinclair, N. R. S., BSc, MD, PhD *Dalhousie*

Singhal, S. K., BSc *Agra, India;* PhD *McGill*

Strejan, G. H. MS *Bucharest;* PhD *Hebrew University, Jerusalem*

Wilkins, P. O. B., MS *Hawaii;* PhD *Pennsylvania*

Clinical Assistant Professor

Campsall, E. W. R., BA *Queen's;* MDCM *McGill*

Honorary Lecturers

Chodirker, W. B., BSc(Med), MD *Manitoba*

Hannay, C. L., BSA *Toronto;* DIC, PhD *London*

Paterson, J. C., OBE, MD, BSc(Med) *Toronto*

Roslycky, E. B., BSc, MSc *Manitoba;* PhD *Wisconsin*

Toogood, J. H., MD *Toronto;* DipIntMed *McGill;* FRCP(C)

Carroll, K. K., BSc, MSc *New Brunswick;* MA *Toronto;* PhD

Fitz-James, P. C., BSA *British Columbia;* MSA *Toronto;* MD, PhD

McCarter, J. A., BA, MA *British Columbia;* PhD *Toronto;* FRSC

McMurray, W. C., BSc, PhD

Rossiter, R. J., BSc *Western Australia;* BA, MA, DPhil, BM, BCh, DM *Oxon;* FRIC(Eng), FRSC

Smith, D. B., BA, MA *British Columbia;* PhD *Toronto*

Stewart, H. B., MD, PhD *Toronto;* PhD *Cantab* Head of the Department

Strickland, K. P., BSc, MSc, PhD On leave of Absence

Associate Professors

Ball, Judith K., BSc *Mount Allison;* MSc, PhD *Dalhousie*

Heagy, F. C., MD, MSc, PhD

Magee, W. L., BSc, MSc, PhD

Walker, I. G., BA *Saskatchewan;* MA, PhD *Toronto*

Webling, D. D., BSc, MB BS, PhD *Adelaide;* DTM&H *Sydney*

Assistant Professors

Cook, R. A., BSc, MSc, PhD *Manitoba*

Donisch, Valentine, MD *Bonn;* PhD

Galsworthy, P. R., BSc *Queen's;* PhD *Wisconsin*

Gatfield, P. D., MD *Queen's*

Gordon, B. A., MDCM, MSc, PhD *Queen's*

Guthrie, J. P., BSc, PhD *Harvard*

Haines, D. S. M., BA, MD; PhD *Toronto*

Trevithick, J. R., BSc *Queen's;* PhD *Wisconsin*

Honorary Lecturers

Chefurka, W., BSc *Manitoba;* MSc *Montana State;* PhD *Harvard*

Hudson, A. J., MD, BSc *Toronto;* FRCP(C)

Krupka, R. M., MA *Saskatchewan;* PhD *McGill*

Spencer, E. Y., BSc, MSc *Alberta;* PhD *Toronto;* FCIC

Department of Biochemistry

Professors

Bigelow, C. C., BASc *Toronto;* MSc, PhD, *McMaster*

Department of Biophysics

Professor

Burton, A. C., MBE, BSc *London;* MA, PhD *Toronto;* LLD *Alberta;* FRSC

Assistant Professors

Groom, A. C., BSc, PhD *London;* FInstP

Inch, W. R., BSc *Queen's;* PhD

Roach, Margot R., BSc *New Brunswick;* MD, CM *McGill;* PhD, FRCP(C)

Taylor, C. P. S., BA *British Columbia;* BA, MA *Oxon;* PhD *Pennsylvania*

Assistant Professors

Canham, P. B., BASc *Toronto;* MSc *Waterloo;* PhD

Duncan, R. I., BSc, MSc, PhD *Oklahoma*

Sherebrin, M. H., BSc(EP) *Manitoba;* MSc, PhD

Sutherland, R. M., BSc *Acadia;* PhD *Rochester*

Honorary Lecturer

Miller, D. M., BSc, MSc *Alberta;* PhD *McGill*

Cancer Research Laboratory

(A Unit of the National Cancer Institute of Canada)

Director, and Professor of Biochemistry

McCarter, J. A., BA, MA *British Columbia;* PhD *Toronto;* FRSC

Associate Professors

Ball, Judith K., (Biochemistry), BSc *Mount Allison;* MSc, PhD *Dalhousie*

Ebisuzaki, K., (Bacteriology and Immunology), BSc; MS, PhD *Wisconsin*

Walker, I. G., (Biochemistry), BA *Saskatchewan;* MA, PhD *Toronto*

Assistant Professors

Cheevers, W. P., (Bacteriology and Immunology), BA *Colorado;* PhD *Mississippi*

Sinclair, N. R. S., (Bacteriology and Immunology), BSc, MD, PhD *Dalhousie*

Department of Clinical Neurological Sciences

Professor

Drake, C. G., MD, MSc, FRCS(C), MS *Toronto* Chairman of the Department

Clinical Assistant Professor

Allcock, J. M., MRCS, LRCP(Eng), MBBS *London;* DMRD(Eng), FFR

Honorary Lecturers

Haust, M. Daria, MD *Heidelberg;* MSc *Queen's;* CRCP(C)

Hinton, G. G., BSc, MDCM *McGill;* DCH, FRCP(C)

DIVISION OF NEUROLOGY

Professor

Barnett, H. J. M., MD *Toronto;* FRCP(C). Chairman of the Division

Associate Professor

Hudson, A. J., MD, BSc *Toronto;* FRCP(C)

Assistant Professor

Kertesz, A, MDCM *Queen's;* BSc(Med), *Toronto;* FRCP(C)

Clinical Lecturer

McInnis, W. P., BA, MD

DIVISION OF NEUROSURGERY

Drake, C. G., MD, MSc, FRCS(C), MS *Toronto* Chairman of the Division

Assistant Professor

Girvin, J. P., MD; PhD *McGill;* FRCS(C)

Clinical Assistant Professor

Barr, H. W. K., BSc(Med) *Toronto;* MD, FRCS(C)

Department of Community Medicine

Professor

Buck, Carol W., MD, PhD; DPH *London* Chairman of the Department

DIVISION OF EPIDEMIOLOGY AND PREVENTIVE MEDICINE

Fallon, M. F., Memorial Professor of Preventive Medicine and Chairman of the Division: Buck, Carol W.

Associate Professors

Rand, C. G., BA *Mt. Allison;* MDCM, DipIntMed *McGill;* CRCP(C), MPH *Harvard*

Wanklin, J. M., BA, PhD

Clinical Associate Professor

Hutchison, D. A., MD, DPH *Toronto*

Assistant Professors

Stavraky, Kathleen M., MD, PhD

Thurlow, H. J. A., BA, MA, MD

Watson, J. H., MDCM *Dalhousie;* DPH *Toronto*

Williams, J. I., BA *Nebraska Wesleyan;* MA *New Hampshire;* PhD *Florida State*

Clinical Lecturers

Aldis, R. M., MD; DPH *Toronto*

Appleford, R. D., BA, MD, DPH *Toronto*

Cram, D. M., MD, MSc, CRCP(C)

Harris, A. J., DDS *Toronto*

Neilson, J. B., MBE, MD *Toronto;* FACHA

Scoffield, Mary E., MD *Toronto*

Stewart, Olive J., BA; MD, CRCP(C)

Swanson, A. L. BA *British Columbia;* MD, CM

McGill, MHA *North Western;* FACHA

Honorary Lecturer

Martinello, B. P., DDS, DDPH *Toronto*

Instructors

Craig, R. A., CertPHI *Manitoba*

Donaldson, Elizabeth F., DipISW *Toronto*

Hall, A. V., VS, DVM, DVPH *Toronto* On leave of Absence

Jeffs, J. I., MD, DPH *Toronto*

Leake, J. L., DDS, DDPH *Toronto*

Mumby, Dorothy M., BScN; MA *Columbia*

DIVISION OF FAMILY MEDICINE

Professor

McWhinney, I. R., MB, BCh, MD *Cambridge;* MRCP *London* Chairman of the Division

Associate Professor

Hunter, A. T., BA, MD

Assistant Professors

Hennen, B. K., MD *Queen's*

Lamont, C. T., MD

Pratt, G. E., BA, MD

Stein, P. B., MBBS *London*

Clinical Assistant Professor

McKim, J. S., MD, MSc, DCH(Eng), CRCP(C)

Lecturer

Vinger, I., BA, MDCM, *McGill*

Clinical Lecturer

Orchard, J. W., MD

Honorary Lecturer

Fletcher, H. G., MD

Instructors

Annett, R. K., MD

Burns, S. J., BSc *McGill;* MD

Butson, F. J., MD

Collyer, J. E., BA, MD

Crowther, C. H., MBChB *Manchester*

Dillon, M. T., BA, MD

Elliott, D. W., PhmB *Toronto;* MD

Ellyatt, W. G., MD

Gambrill, R. B., MD

Gay, K. E., MD *Ottawa;* CRCP(C)

Gillick, R. H., MD

Johnston, K. A., BA, MD

Keidan, H., MB,ChB *Liverpool*

McCue, D., MBChB *Glasgow*

Marchuk, P., MD

Merritt, J. O., MD

Naftolin, L. Z., BA, MD

Newell, J. P., BA, MD

Oosterhuis, J. W., MD *Groningen*

Patten, J. F., MD

Pennington, P. W., BSc *Windsor;* MD *Toronto*

Ragula, B. D., MD *Louvain*

Redden, C. S.

Robinson, H. C., MD

Southwood, K. J., MD *Toronto*

Suffel, Priscilla S., RN *Peking;* MD *West China*

Theoret, J. J., BSA *Toronto;* MD

Wilson, R. C., MBChB *Aberdeen*

ALLIED HEALTH PROFESSIONS

Instructors

Buchan, Jane, RN, BScN *McMaster*

Lamb, J. I. Linda, BA, BSN *British Columbia*

O'Neil, Theresa F., RN, BSc, *St. Thomas, New Brunswick*

Department of the History of Medicine and Science

Assistant Professor

Richardson, R. A., BA *Sir George Williams;* MA *McGill;* PhD *Wisconsin*

Assistant Professor (Library Science)

Pendrill, G. R., BA, MA *Cantab;* DipLib *London;* FLA

Lecturer

Plotkin, H. N., BA *Michigan;* PhD *Johns Hopkins*

Department of Medicine

The Richard Ivey Professor of Medicine

Gunton, R. W., MD; DPhil *Oxon;* FRCP(C), FACP
Head of the Department

Professors

Brien, F. S., BA, MB *Toronto;* FRCP *London;* FRCP(C), FACP

Hession, B. L., MD, MSc, FRCP(C)

Manning, G. W., MA, MD, PhD *Toronto;* FRCP(C)

Lewis, J. A., MD, FRCP(C), FACP

Professor (Neurology)

Barnett, H. J. M., MD *Toronto;* FRCP(C)

Associate Professors

Bocking, D., MD, FRCP(C), FACP

Bondy, D. C., MD, FRCP(C)

Cameron, W. M., MD, FRCP(C)

Clarke, O., BA, MA, MB,BCh, MD *Cantab;* MRCS, LRCP *London;* MRCP *London*

Hudson, A. J., MD, BSc *Toronto;* FRCP(C)

Lefcoe, N. M., BSc *McGill;* MD *Vanderbilt;* FRCP(C)

Toogood, J. H., MD *Toronto;* DiplIntMed *McGill;* FRCP(C)

Watson, W. C., MB,ChB, MD, PhD *Glasgow;* MRCP *London;* FRCPG

Clinical Associate Professors

Barton, W. B., MD; FRCP(C), DiplIntMed *McGill*

England, N. J., MBE, MD, FRCP(C)

Meltzer, D. B., BSc *Manitoba;* MD, FRCP(C)

Pace, W. E., MD, MSc, FRCP(C)

Wilcox, L. D., MD, FRCP(C)

Assistant Professors

Ahuja, S. P., MB BS *Nagpur, India;* DTM&H(Eng), FRCP(C)

Borda, I. T., MD *Budapest;* FRCP(C)

Chodirker, W. B., BSc(Med), MD *Manitoba*

Harth, M., MD *Toronto;* FRCP(C)

Kertesz, A., MDCM *Queen's;* BSc(Med) *Toronto; FRCP(C)*

Kimber, R. W., BA *McMaster;* MD, FRCP(C)

Linton, A. L., MB, ChB *Edin;* FRCP *Glasgow;* FRCP *Edin*

Loudon, J. L., MD *Toronto;* FRCP(C)

McCourtie, D. R., MD, FRCP(C)

McDonald, J. W. D., MD, PhD, FRCP(C)

Plunkett, E. R., MD, PhD

Roach, Margot R., BSc *New Brunswick;* MD, CM *McGill;* PhD, FRCP(C)

Rodger, N. W., BSc, MD, BSc(Med), *Manitoba;* FRCP(C)

Shaw, D. B., BSc *St.F.X.;* MD CM, PhD *McGill*

Stuart, R. K., MD, FRCP(C)

Thompson, J. M., BA *Amherst;* MD, FRCP(C)

Wolfe, B. M., BA *Saskatchewan;* BA, MA, BM,BCh *Oxon;* MSc *McGill;* FRCP(C)

Wood, T. E., BA, MD; MSc *McGill;* FRCP(C)

Clinical Assistant Professors

Aikenhead, D. E., MD *Manitoba;* MRCP *London* FRCP(C)

Alway, A. E., MD, MSc, FRCP(C)

Chertkow, G. C., BA *Saskatchewan;* MD *Toronto;* FRCP(C)

Coulter, W. K., MD, FRCP(C)

Fisher, C. F. S., MD, MSc, CRCP(C)

Pickard, H. A., MD, FRCP(C)

Rechnitzer, P. A., BA, MD, MRCP(Edin); FRCP(C)

Sears, G. A., MD, FRCP(C)

Smith, D. R., MD, FRCP(C)

Walker, J. B., MD, FRCP(C), MRCP *London*

White, D. F., MD, FRCP(C)

Clinical Lecturers

Albers, H. J., MD *Dusseldorf;* CRCP(C)

Beattie, J. H., MD

Douglas, J. H. C., BA, MD

Lovatt, G. E., BSc *London;* LRCP *London;* MRCS(Eng); MB, BS *London;* DObstRCOG, CRCP(C)

Hagerman, E. S., MD, CM *Queen's;* FRCP(C)

McInnis, W. P., BA, MD

Price, I. C., MDCM *Dalhousie;* CRCP(C)

Watt, A. J., MD *Toronto;* FCCP, CRCP(C)

Honorary Lecturers

Bartram, E. A., MD

Goddard, E. S., MD; DPsych *Toronto;* CRCP(C)

Hobbs, G. E., BA, MD *Toronto;* MPH *Michigan;* FRCP(C)

Kennedy, F. S., BA, MD; MS in Medicine *Minnesota;* FACP

Langland, K., BA *Saskatchewan;* MSc

Neufeld, A. H., BSc, MSc, PhD *Manitoba;* MDCM *McGill;* FCIC

Parker, J. M., MD *Manitoba;* DPH, PhD *Toronto*

Robinson, J. B., MD *Toronto*

Sexton, G. B., MDCM *Queen's*

Warwick, O. H., BA *Mount Allison;* MDCM *McGill;* MA *Oxon;* FRCP *London;* FRCP(C), FACP, LLD *Mount Allison*

Webling, D. D., BSc, MB, BS, PhD *Adelaide;* DTM&H *Sydney*

Instructors

Cholod, E. J. M., MD *Alberta;* CRCP(C)

Stiller, C. R., MD

Department of Obstetrics and Gynaecology

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Plunkett, E. R., MD, PhD Chairman of the Department

Walters, J. H., BA, MD, MRCOG, FRCS(C)

Clinical Professor

Allen, H. H., MD, FRCS(C)

Associate Professor

Harding, P. G. R., MD, MSc, FRCS(C)

Assistant Professors

Gammal, E. B., MB BCh *Cairo;* PhD

Yuzpe, A. A., BSc *Assumption of Windsor;* MD, MSc, FRCS(C)

Clinical Assistant Professors

Collins, J. A., MD, FRCS(C)

Prueter, G. W., MD, BSc(Med) *Toronto;* MRCOG, FRCS(C)

Wearing, M. P., MD, MSc, CRCS(C)

Lecturer

Ramaprakash, H. N., MB, BS *Mysore;* CRCS(C)

Clinical Lecturers

Copeland, G. G., BA, MD

Girvan, G. R., MDCM *McGill;* CRCS(C)

Manners, D. O., BA, MD, FRCS(C), FACOG, FACS

Robinson, M. L., BA *McMaster;* MD, MRCOG, FRCS(C), FACS, FACOG

Tew, W. L., BA, MD, FRCS(C), FACS

Wright, V. C., MD, FRCS(C)

Honorary Lecturer

Johnson, F. L., MD *Toronto;* FRCS(C)

Department of Ophthalmology

Clinical Professor

Dyson, C., MD; DOph *McGill;* CRCS(C)
Head of the Department

Clinical Associate Professors

Ballantyne, J. F., MD *Toronto;* FRCS(C)

Nicholls, J. V. V., BA, MDCM, MSc *McGill;* FACS, FRCS(C)

Thompson, C. A., BA; MD, CM *McGill;* CRCS(C)

Clinical Assistant Professor

McFarlane, D. C., MD, CRCS(C)

Clinical Lecturers

Collyer, R. T., BA, MD, FRCS(C)

Mills, D. W., BA, BSc *Carlton;* MD; MSc(Med) *Queen's;* FRCS(C)

Oliver, G. L., MD, MSc, FRCS(C)

Honorary Lecturer

Hollenberg, M. J., BSc(Med), MD *Manitoba;* MSc, PhD *Wayne State*

Department of Otolaryngology

Professor

Rounthwaite, F. J., BSc, MDCM *McGill;* FRCS(C), FACS. Head of the Department

Clinical Professor

Greenway, R. E., MD, FRCS(C)

Clinical Associate Professors

Babb, J. W., BA, MD, CRCS(C)

Burnett, W. H., MD *Toronto;* CRCS(S)

Assistant Professor

Ruby, R. R., BA, MD, FRCS(C)

Clinical Assistant Professor

Leboldus, G. M., MD, FRCS(C)

Clinical Lecturers

MacRae, E. E., MD *Dalhousie;* CRCS(C)

Smith, D. M., BA, MD, CRCS(C)

Wong, G. L., BSc, MD *Alberta;* CRCS(C)

Honorary Lecturer

Gettas, P. G., MD, CRCS(C)

Department of Paediatrics

Professors

Rathbun, J. C., MD *Toronto;* FRCP(C), FAAP Head of the Department

Valentine, G. H., MB, ChB *Bristol;* MRCS(Eng), MRCP(London), DCH(Eng), FRCP(C)

Associate Professors

de Veber, L. L., MD *Toronto;* FRCP(C)

Hinton, G. G., BSc, MDCM *McGill;* DCH

Jaco, N. T., BA, BSc, MA, BM, BCh *Oxon;* DCH, CRCP(C)

Assistant Professors

Ecclestone, E. R., MD, FRCP(C)

Li, M. D., MB *National Taiwan;* FRCP(C)

Sutton, Marilyn D., MD, FRCP(C)

Clinical Assitant Professors

Cram, D. M., MD, MSc, CRCP(C)

Denison, A. G., MD, DCH(Eng), FAAP, CRCP(C)

McKim, J. S., MD, MSc, DCH(Eng), CRCP(C)

Rajic, D. S., MD *Graz;* CRCP(C)

Riese, R. R., BA, MA, PhD

Vincent, J. E., MDCM *Queen's;* BSc *McGill;* FAAP, CRCP(C)

Clinical Lecturers

Albarracin, Aurora B., Associate in Arts and MD *Santo Tomas, Philippines*

Dubois, J. R., BSc, MD *Michigan;* CRCP(C)

Nicholson, J. R., BA, MD

Pozspmyi, J., MD *Pess, Hungary*

Trout, Ellen E., MD, CRCP(C)

Whelen, W. S., BSc, MDCM *McGill*

Honorary Lecturers

Campbell, Margaret K. P., MD *Toronto;* CRCP(C)

Feasby, W. H., DDS, DipPaed *Toronto;* FRCD(C)

Haust, M. Daria, MD *Heidelberg;* MSc *Queen's* CRCP(C)

McAlpine, K. L., MD

Instructor

Robinson, Halina M, C., Chem(Eng) *Sweden*

Department of Pathological Chemistry

Professors

Barton, W. B., MD, FRCP(C), DipIntMed *McGill*

Brownstone, Y. S., BScA, MSc *Manitoba;* PhD *McGill*

Neufeld, A. H., BSc, MSc, PhD *Manitoba;* MDCM *McGill;* FCIC Head of the Department

Associate Professors

de Veber, L. L., MD *Toronto;* FRCP(C)

Tustanoff, E. R., BA *Assumption;* MS *Detroit;* PhD

Zaharia, W., BSc *Manitoba;* PhD *McGill*

Clinical Associate Professors

Binns Smith, M., MB, ChB, PhD *Edinburgh;* CRCP(C)

Haust, H. L., MD *Heidelberg;* MSc(Med), PhD *Queen's*

Meltzer, D. B., BSc *Manitoba;* MD, FRCP(C)

Assistant Professors

Kimber, R. W., BA *McMaster;* MD, FRCP(C)

McDonald, J. W. D., MD, PhD, FRCP(C)

Lecturer

Jones, D. S., BA *Albion College;* BS *Michigan State;* PhD

Department of Pathology

Professors

Haust, M. Daria, MD *Heidelberg;* MSc *Queen's* CRCP(C)

Paterson, J. C., OBE, MD, BSc(Med) *Toronto*

Wallace, A. C., BA, MD, FACP, CRCP(C) Head of the Department On leave of Absence

Clinical Professors

Mills, D. M., BA, MD, CRCP(C)

Smout, M. S., MD, MCPath, FCAP

Associate Professors

Frei, J. V., MDCM *Queen's;* MSc, PhD *McGill;* CRCP(C)

Gardner, D. G., DDS *Toronto;* MSD *Indiana*

Warren, B. A., BSc(Med), MBBS *Sydney;* DPhil, MA *Oxford*

Assistant Professors

Jones, D. S., BA *Albion College;* MS *Michigan State;* PhD

Lewis, F. N., BA, MD, MCPath, CRCP(C)

Sapp, J. P., DDS *Dalhousie;* MS *Michigan*

Clinical Assistant Professors

Abdelnour, G. M., MB, ChB *Alexandria, Egypt,* CRCP(C)

Ball, M. J., MD *Toronto;* CRCP(C)

Davies, Eleanor M., MD *Toronto;* CRCP(C)

Enriquez, A. A., AA *San Carlos;* MD *Santo Tomas;* CRCP(C)

Slinger, R. P., BA, MD *Toronto;* MCPath, CRCP(C)

Turnbull, D. I., Bsc, MDCM *McGill*

Instructors

Adilman, H. B., BA *Saskatchewan;* MD *Alberta;* CRCP(C)

Bell, J. H., DDS *Toronto*

Dietrich, M., MD, CRCP(C)

Frishette, W. A., MD, CRCP(C)

Gursel, S., MD *Ankara;* MSc *Ohio State*

Department of Pharmacology

Professors

Gowdey, C. W., BA, MSc; DPhil *Oxon.* Head of the Department

Parker, J. M., MD *Manitoba;* DPH, PhD *Toronto*

Associate Professors

Colhoun, E. H., BSA *Toronto;* PhD *Cantab*

Hamilton, J. T., BSc, PhD *Edinburgh*

Philp, R. B., DVM *Toronto;* PhD

Assistant Professors

Hersey, M. L. W., BSc *McGill;* MD, PhD, CRCP(C), FACA

Hirst, M., BSc, PhD *Liverpool*

Honorary Lecturers

Borda, I. T., MD *Budapest;* FRCP(C)

Lovegrove, T. D., BA, MD, MSc

Meltzer, D. B., BSc *Manitoba;* MD, FRCP(C)

Spoerel, W. E. G. A., MD *Frankfurt-on-Main;* FRCP(C)

Instructors

Dinel, B., BScPhm *Toronto;* MSc *Ohio State*

Hansford, D. F., PhmB *Toronto*

White, D. F., MD, FRCP(C)

DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION

Professor

Cameron, M. G. P., MD *Toronto;* FRCP(C) Head of the Department

Assistant Professors

Durnin, R. A., MD, CM *Queen's;* FRCP(C)

Stewart, Olive J., BA, MD, CRCP(C)

Trider, Margaret F., DipOT *Toronto;* OTReg, OTR

Clinical Lecturer

Berkeley, J., MBChB, DPH, MD *Glasgow;* CRCP(C)

Honorary Lecturer

Robinson, J. B. C., MD, MSc

PROGRAM IN MEDICAL REHABILITATION

(Physical Therapy)

Assistant Professor

Morgan, Sally, BA, DipP *Toronto;* MCPA; Teacher's Diploma in Physiotherapy Head of Section

Lecturer

Egan, D. A., MCSP, DipTP, MCPA Teacher's Diploma in Physiotherapy

Instructors

Cameron, Sheila E., BA(PT) *Manitoba;* MCSP, MCPA

Gilroy, Jean F., DipTP *Toronto;* MCPA

MacRae, Agnes G., MCSP, MCPA

Valentine, Pamela J., MCSP, MCPA

Department of Physiology

Professors

Armstrong, D. T., BSA *Toronto;* MS, PhD *Cornell*

Mogenson, G. J., BA, MA *Saskatchewan;* PhD *McGill*

Stevenson, J. A. F., BA, MA, MDCM *McGill;* FRSC

Associate Professors

Bondy, D. C., MD, FRCP(C)

Calaresu, F. R., BA *Pavia;* MD *Milan;* PhD *Alberta*

Critz, J. B., BS in Ed, MA, PhD *Missouri*

Dellow, P. G., BDS, MB, BS *Adelaide;* FACDS

Harding, P. G. R., MD, MSc, FRCS(C)

Mercer, P.F., DVM *Toronto;* PhD *Cornell*

Séguin, J. J., BSc, MSc, PhD

Squires, B. P., BA, MD, PhD

Vanderwolf, C. H., BSc *Alberta;* MSc, PhD *McGill*

Assistant Professors

Cunningham, D. A., BA, MSc *Alberta;* PhD *Michigan*

Girvin, J. P., MD; PhD *McGill;* FRCS(C)

Hinton, G. G., BSc, MDCM *McGill;* DCH, FRCP(C)

O'Hea, E. K., BAgrSc, MAgrSc *Dublin;* PhD *Illinois*

Stewart, D. J., BSc *British Columbia;* PhD *California: Santa Barbara*

Lecturers (sessional)

Reese, L., MDCM *Queen's;* FRCS(C), FACS

Sellery, G. R., MD *Toronto;* DA *England;* DA *Toronto;* FRCP(C)

Honorary Lecturers

Chess, G. F. H., BASc *Toronto;* MEng *McGill*

Hart, J. S., BA, MA, PhD *Toronto;* FRSC

Manning, G. W., MA, MD, PhD *Toronto;* FRCP(C)

Rounthwaite, F. J., BSc, MDCM *McGill;* FRCS(C), FACS

Steele, J. E., BSc *Dalhousie;* MSc; PhD *Saskatchewan*

Instructors

Stein, P. B., MBBS *London*

Walker, Esme H., BA, MA *Toronto*

Department of Psychiatry

Professor

Hobbs, G. E., BA, MD *Toronto;* MPH *Michigan;* FRCP(C), FAPA Head of the Department

Associate Professors

Keil, W. E., MD, CRCP(C)

Tillmann, W. A., MD, MSc, CRCP(C)

Clinical Associate Professors

Metcalfe, E. V., MD; DPsych *Toronto;* CRCP(C)

Wickware, D. M., MDCM *Queen's;* DPsych *Toronto;* CRCP(C)

Assistant Professors

Boyce, R. M., MD; DPsych *Toronto;* CRCP(C)

Johnson, F. G., MB, BS *London;* LRCP, MRCS, CRCP(C)

Jurjans, V., MD *Tuebingen;* CRCP(C)

McLeish, J. C., MD, CRCP(C)

Max, P., BA, MD, CRCP(C)

Clinical Assistant Professors

Goldberg, B., BSc *New Brunswick;* MD, CM *Dalhousie;* CRCP(C)

McGregor, K. M., BA, MD; DPsych *Toronto;* CRCP(C)

Lecturers

Gort, G. H., MD *Alberta;* CRCP(C)

Stewart, Olive J., BA, MD, CRCP(C)

Thurlow, H. J. A., BA, MA, MD

Clinical Lecturers

Babiak, W., MD *Kiel;* DPsych *Toronto*

Carscallen, H. B., MD; DPsych *Toronto;* CRCP(C)

Galbraith, D. A., MD, CRCP(C)

Galbraith, H. C., MD, CRCP(C)

Jenkins, G. E., MD; DPsych *Toronto;* CRCP(C)

Summerby, J. H., BSc, MDCM *McGill;* CRCP(C)

Honorary Lecturer

Goddard, E. S., MD; DPsych *Toronto;* CRCP(C)

Instructors

Andrews, W. N., MB, ChB *New Zealand;* CRCP(C)

Corrin, R. C., MD; DPsych *Toronto;* CRCP(C)

Deinum, E. Jeanne, MD; DPsych *Toronto;* FRCP(C)

Dingus, R. L., BA, MA *Cincinnati*

Dingus, Ruth Marie Adams, AB *Wellesley College;* MA *Pittsburgh*

Dolan, J., MBChB *Glasgow;* DPH(Eng), DPM(Eng), MRCP *Glasgow;* FRCP(C)

Downe, W. N., MD, CRCP(C)

Dubois, J. R., BSc, MD *Michigan;* CRCP(C)

Hoover, M. P., MD *Toronto*

Johnson, Diana M. M., BA, MD, CRCP(C)

Kalb, S., MD *Manitoba;* DPsych *Toronto;* CRCP(C)

Kaufman, J. J., BA, MD *Ottawa;* CRCP(C)

Lapp, C. A., BA, MDCM *Queen's;* CRCP(C)

McKenzie, F. A., BA *Iowa;* MD, CRCP(C)

Mountain, H. E., MD, CRCP(C)

Palmer, R. B., MD, CRCP(C)

Pivnick, B. E., MD *Toronto;* CRCP(C)

Riese, R. R., BA, MA, PhD

Tobin, W. G., MD *Toronto*

Department of Diagnostic Radiology

Clinical Associate Professors

Wilkins, W. W. J., MDCM *Queen's;* DMR *Toronto;* FRCP(C) Acting Chairman

Hill, M. B., MDCM *Queen's*

Johnston, E. E., MDCM, DMR *Queen's;* CRCP(C)

Clinical Assistant Professors

Allcock, J. M., MRCS, LRCP(Eng), MB BS *London;* DMRD(Eng), FFR

MacDonald, A. C., MD, FRCP(C)

Rajic, D. S., MD *Graz;* CRCP(C)

Clinical Lecturers

Nicol, D. A., BA *Saskatchewan;* MD, DMR *Toronto*

Treleaven, R. B., MD, CRCP(C)

Honorary Lecturer

Hauch, P. P., MD, DMRD *London;* CRCP(C)

Instructors

Agnos, J. W., MD; DMR *Toronto;* CRCP(C)

Brown, T. C., MD

Coates, R. K., BA, MD, FRCP(C)

Edgar, H. W., MD; DMR *McGill*

Greenhow, P., MD *Toronto;* CRCP(C)

Hamilton, G., MD, FRCP(C)

Harwood, R. A., MD, CRCP(C)

Linsdell, F. J., BA, MD, CRCP(C)

Reid-Smith, E. A. M., BA, MB, BCh *Dublin;* DMRD *London;* CRCP(C)

Mullen, L. H., MD *Toronto;* FRCP(C)

Department of Therapeutic Radiology

Clinical Professor

Watson, T. A., MB, ChB *New Zealand;* DMR *London;* MD *Saskatchewan;* FACR, FRCP(C) Head of the Department

Associate Professors

Heagy, F. C., MD, MSc, PhD

Inch, W. R., BSc *Queen's;* PhD

MacDonald, J. C. F., BA, MA *British Columbia;* PhD *Toronto*

Clinical Associate Professor

Thomson, D. H., MB, ChB *Glasgow;* DMRT(Eng), CRCP(C)

Clinical Assistant Professors

Banerjee, P., MBBS *Calcutta;* DMRT(Eng), FFR(Eng)

Fetterly, J. C. M., MD, CM *Queen's;* DMRT, CRCP(C)

Lecturer

Sutherland, R. M., BSc *Acadia;* PhD *Rochester*

Honorary Lecturers

Barton, W. B., MD, FRCP(C), DiplIntMed *McGill*

McCredie, J. A., MB, BCH, BAO *Belfast;* FRSC(Edin), FRCS(Eng), MCh *Belfast;* FRCS(C), FACS

Plunkett, E. R., MD, PhD

Reese, L., MDCM *Queen's;* FRCS(C), FACS

Warwick, O. H., BA *Mount Allison;* MDCM *McGill;* MA *Oxon;* FRCP *London;* FRCP(C), FACP, LLD *Mount Allison*

White, D. F., MD, FRCP(C)

Instructors

Dawson, D. J., BASc, MA, PhD *Toronto*

Miller, G. M., MD, CRCP(C)

Department of Surgery

Professors

Carroll, S. E., BA, MD, FRCS(C), FACC, FACS, FACCP

Drake, C. G., MD, MSc, FRCS(C), MS *Toronto*

McLachlin, A. D., MD, MSc; DPhil *Oxon;* MS *Toronto;* FRCS(C), FRCS(Eng), FACS
Head of the Department

Clinical Professor

Johnston, D. W. B., BA, MD, FACS, FRCS(C)

Associate Professor

McCredie, J. A., MB, BCH, BAO, MCh *Belfast;* FRCS(Edin), FRCS(Eng), FRCS(C), FACS

Clinical Associate Professor

McLarty, T. D., BA, MD, FRCS(C)

Assistant Professor

Girvin, J. P., MD; PhD *McGill;* FRCS(C)

Passi, R. B., MD, FRCS(C)

Clinical Assistant Professors

Barr, H. W. K., BSc(Med) *Toronto;* MD, FRCS(C)

Jamieson, W. G., BA *Eastern Michigan;* MD, FRCS(C), FRCS(Eng)

MacKenzie, D. A., MD; MSc *Minnesota;* FRCS(C), FACS

Clinical Lecturer

Meads, G. E., BA *Michigan;* MD

Instructors

McLachlin, J. A., MD, FRCS(C), FACS, MClSc

Marshall, D. G., MD, FRCS(C), FAAP

Walker, J. H., MD, MSc, FRCS(C), FACS

DIVISION OF CARDIOVASCULAR AND THORACIC SURGERY

Clinical Professor

Coles, J. C. G., BA, MD, MSc, FRCS(C)
Chairman of the Division

Clinical Lecturer

Gergely, N. F., MD *Budapest;* FRCS(C)

DIVISION OF NEUROSURGERY

See Department of Clinical Neurological Sciences

DIVISION OF ORTHOPAEDIC SURGERY

Clinical Professor

Kennedy, J. C., MD, FRCS(C) Chairman of the Division

Clinical Assistant Professor

Cameron, H. S., MD, FRCS(C), FACS

Clinical Lecturers

Bailey, W. H., BA, MD, FRCS(C)

Fowler, P. J., BA, MD, FRCS(C)

Grainger, R. W., MD, FRCS(C)

Instructor

Ollerhead, W. W., BA, MD, MChOrth *Liverpool;* CRCS(C)

DIVISION OF PLASTIC AND RECONSTRUCTIVE SURGERY

Clinical Professor

McFarlane, R. M., MD, MSc, FRCS(C), FACS
Chairman of the Division

Clinical Lecturer

Stavraky, W. K., MD, FRCS(C)

DIVISION OF UROLOGY

Professor

McAninch, L. N., MD, FRCS(C), FACS
Chairman of the Division

Clinical Assistant Professors

Sales, J. L., MD, FRCS(C)

Wyatt, J. K., MD, FRCS(C)

Clinical Lecturer

Reese, L., MDCM *Queen's;* FRCS(C), FACS

Instructors

Busby, S. M., MD, CRCS(C)

Downham, D. W., BA, BChir, MB *Cantab;* FRCS (Eng), CRCS(C)

Special Lecturers

Special Lecturer in Legal Medicine

Krever, H., QC, BA, LLB *Toronto*

Special Lecturer in Medical Ethics

Robinson, J. B. C., MD, MSc

Faculty of Medicine
Program of Medical Rehabilitation / Physical Therapy

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PROGRAM IN MEDICAL REHABILITATION (PHYSICAL THERAPY)

GENERAL INFORMATION

GENERAL EXPENSES

Books, uniforms, stationery, travel, instruments - $700.

SPECIAL BURSARIES

The London District, Canadian Physiotherapy Association Bursary:

VALUE $100. Available to any student in the final three years of the four year course in Physical Therapy, at the University of Western Ontario. The Bursary will be awarded on the basis of need and scholastic standing. Inquiries should be send to the President, London District, Canadian Physiotherapy Association, P.O. Box 2011, London, Ont., by September 30th.

ATTENDANCE

100% attendance is required for hospital placements; if the student is ill, he is requested to notify the hospital department as early in the day as possible.

Students may be denied the right to write examinations because of unsatisfactory attendance at lectures or laboratories, or unsatisfactory work.

HEALTH

The applicant must be of sound physical and mental health.

EVALUATION OF STUDENT

The student will be evaluated on the basis of tests, assignments, and practical work throughout the year, and on the final spring examinations.

ADVANCEMENT

The student must obtain a minimum overall average of 60% in each year, and is permitted to write no more than two supplemental examinations.

LANGUAGE

Examinations in the professional subjects may be written in English or in French. The quality of the candidate's command of language and of spelling will be taken into consideration in marking examinations.

Admission Requirements – Physical Therapy

A – TO FIRST YEAR (GENERAL PROGRAM)

7 credits from Ontario Grade XIII or its equivalent, plus satisfactory completion of either the SACU or CEEB aptitude tests (See Admission Requirements in General section of the calendar). Courses should include Mathematics A and at least one of Biology, Chemistry, Physics or Mathematics "B".

B – TO SECOND YEAR (PHYSICAL THERAPY PROGRAM)

Five course credits from First Year University. These five credits must include Psychology, and two of Physics, Chemistry or Biology. The other two credit courses are elective. If the candidate is considering research or graduate work in the Medical Sciences he is strongly advised to take non-terminal courses in Physics, Chemistry and Biology.

Acceptance of candidates will be based on several factors:

(a) The overall average in Year I; this average must reach at least 60%

(b) The performance of the candidate in the required courses must reach an overall average of at least 60%

(c) The Secondary School records; at least 60% must be reached in the average and in the Math-Science averages

(d) Other factors such as interest in the profession, outside interests, etc.

PLEASE NOTE:

(a) The candidate is advised that the number of placements available is limited to 20; he should therefore maintain a high grade average.

(b) The candidate should have an alternative plan should he not gain entry to the program. If this alternative is to proceed into a General or an Honors Program, he must ensure that his choice of subjects in First Year does not prevent his entering such a program. He should seek the advice of the Faculty concerned and/or a Counsellor.

(c) Applications for the regular program and winter session of the post-diploma program should be in by April 30th, for the summer session of the post-diploma program by December 15. of preceding year.

Course Content

FIRST YEAR (GENERAL PROGRAM)

Determined by the student's choice of subjects.

SECOND YEAR (PHYSICAL THERAPY)

Anatomy: A lecture and laboratory dissection course with special emphasis on the nerves, muscles and skeletal system; demonstration lectures in organ anatomy.

Neuro-Anatomy: A descriptive course of the gross anatomy of the central nervous system with demonstrations of prepared specimens.

Physiology: A lecture and laboratory course designed to enable the student to understand the normal human physiology.

Physical Therapy

(i) Electrotherapy: An introduction to the production, effects and uses of various types of electrical energy.

(ii) Kinesitherapy: An introduction to the underlying theories of posture, movement and exercise, as related to the normal and abnormal. Practice is gained in the application of massage, movement and exercise, and in general patient management. Includes patient evaluation which closely follows the anatomy lectures and trains the student in observing and recording normal muscle action, joint movement, sensation and function, as a preparation for assessment of the patient's disability.

Psychiatry: A survey course on abnormal behavior with brief descriptions of the common mental disorders.

Elective: The student is required to take an Elective from Arts or Science in each of the three years. A variety of courses in Psychology and Sociology are offered; however, the student may choose any elective for which timetabling is possible. He is advised to choose a subject or an area where there is some continuity in each of the three years, and which will have some relevance to the professional field.

Hours in Second Year: Approximately 30 per week.

NOTE: At the end of the second Academic Year the student is required to spend three weeks in May becoming oriented to basic hospital duties. No honorarium is offered during this period. The placements are arranged by the Director of the Program.

THIRD YEAR

Pathology: A brief description of general pathological processes enabling the student to comprehend the pathology of disease.

Survey of Human Diseases: Lectures and demonstrations of disease, emphasizing those which may benefit from Physical Therapy techniques.

Physical Therapy

(i) Electrotherapy: Demonstration and practice in the application of various forms of electrical energy, heat and cold.

(ii) Kinesitherapy: Physical Therapy and Rehabilitation aspects of conditions described in Survey of Human Diseases will be discussed. The use of various forms of exercise as therapeutic measures will be demonstrated and practised in these sessions.

Clinical Physical Therapy: Students will gain practical experience by observing and putting into practice, under supervision, the methods used in evaluating and treating patients in the hospital situation.

Elective:

Hours in Third Year: Approximately 30 hours per week.

FOURTH YEAR

Physical Therapy: Studies in more specialized areas of Physical Therapy; discussion of problems of administration, research and continuing education; sessions pertaining to the total field of Medical Rehabilitation.

Medical Rehabilitation Paper: A comprehensive report or study done by the student on some aspect of Medical Rehabilitation.

Physiology: Further studies in Physiology of Exercise and Neurophysiology.

Sociology 46: A course emphasizing the Socio-Medical aspects of the community.

Clinical Physical Therapy: The student will be given increasing responsibility in more difficult areas for evaluating his patient, planning the program and carrying out the treatment.

Elective:

Hours in Fourth Year: Approximately 30 hours per week.

NOTE: The above outline of courses is subject to change.

Graduate Information

INTERNING

(a) In addition to the supervised work done in the hospital setting during the academic year, the student must also fulfill the requirements of a further four-month internship period before he is acceptable for licensing.
(b) A small stipend is paid the interne during this period.
(c) Following this internship period the graduate is eligible for membership in the Canadian Physiotherapy Association. Membership entitles him to licensing in the provinces.

Regulations regarding working in Britain, the United States of America, or other countries may be obtained by writing to one of the following addresses:

The Canadian Physiotherapy Association
64 Avenue Road, Toronto, Ontario

The Chartered Society of Physiotherapy
14 Bedford Row
London W.C.1., England

The American Physical Therapy Association
1740 Broadway
New York, N.Y., 10019, U.S.A.

The World Confederation of Physical Therapy
Secretary General
Burdett House
15 Buckingham St., Strand
London, W.C.2, England

CONTINUING EDUCATION

The background of basic and medical sciences places the candidate in an excellent position to seek a higher degree, to enter the research field or to train as a Physical Therapy instructor. In all three instances he is advised to work in the clinical field for several years, so that further studies will have a practical basis, benefiting not only himself but the patients or students he serves.

Many hospitals offer financial assistance on a rotational basis to their professional staff so that they may attend professional meetings or short courses of up to three months in length. Again the candidate is expected to capitalize on his attendance by furthering the knowledge of his colleagues and generally improving the quality of care offered by his hospital.

Information concerning postgraduate bursaries or loans may be obtained by writing to the Canadian Physiotherapy Association.

POST GRADUATE DIPLOMA COURSE

A special program of two winter sessions, or two summer and one winter session is offered to candidates who hold a recognized diploma in Physical Therapy, and are eligible for membership in the Canadian Physiotherapy Association. Upon successfully completing the program, the candidate will be awarded a BSCMR(PT). Further details should be requested from The Secretary, Program in Medical Rehabilitation, Room 1006, Dental Sciences Building, University of Western Ontario, London 72, Ontario.

Members of the Faculty of the Department of Physical Medicine and Rehabilitation

Professor

Cameron, M. G. P., MD *Toronto;* FRCP(C). Head of Department

PHYSICAL MEDICINE

Assistant Professors

Durnin, R. A., MD, CM *Queen's;* FRCP(C)

Stewart, Olive J., BA, MD, CRCP(C)

Clinical Lecturer

Berkeley, J., MBChB, DPH, MD *Glasgow;* CRCP(C)

Honorary Lecturer

Robinson, J. B. C., MD, MSc

MEDICAL REHABILITATION

1. Physical Therapy Program

Assistant Professor

Morgan, Sally, BA, DipP *Toronto;* MCPA, Teacher's Diploma in Physiotherapy. Head of Section

Lecturer

Egan, D. A., MCSP, DipTP, MCPA, Teacher's Diploma in Physiotherapy

Clinical Lecturers

Cameron, Sheila E., BA(PT) *Manitoba;* MCSP, MCPA

Gilroy, Jean F., DipTP *Toronto;* MCPA

MacRae, Agnes G., MCSP, MCPA

Valentine, Pamela J., MCSP, MCPA

2. Occupational Therapy Program

(to start September, 1971 – subject to approval of Senate and Board of Governors)

Assistant Professor

Trider, Margaret F., DipOT *Toronto;* OTReg, OTR. Head of Section

Faculty of Music

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Administrative Staff

Administrative Officer and Secretary to the Dean

Mrs. Marjorie Thomas, BA

Administrative Assistant

Eric A. Cosgrove

Secretary to the Associate Dean

Mrs. Erlene Prevett

Departmental Secretaries

Mrs. Marjorie Semple
Mrs. Sheila Turcon
Mrs. Gwen Willison

Librarian in charge of the Faculty of Music Library

Larry C. Lewis, AMus, BA, BLS

Requirements for Admission to all Programs

I. Academic Requirements

Ontario Grade 13 standing (or the equivalent) with an average of at least 60% in the following academic subjects: 5 credits

Two subjects from
(English), (Languages), (Mathematics A) 4 credits

One subject other than Grade 13 Music at least 1 credit.

OR

Six credits: Five from the academic subjects above and one credit from Grade 13 Music, totaling *6 credits.*

Grade 12 Requirements

Applicants for admission to the First Year in September 1970 must present standing in at least six Ontario Grade 12 or *equivalent subjects (excluding* Physical Education). These subjects must be chosen as follows:
(i) English
(ii) Four subjects from:
French, German, Greek, Italian, Latin, Russian, Spanish, Geography (Part I; Part II), History (Part I; Part II), Mathematics (Part I; Part II), Science (Physics; Chemistry).
(iii) Together with one or more other subjects

Admission to the 1970-71 Session applications will be considered from applicants who found it impossible to meet the above requirements because of the program taken in Grade 11.

II. Music Requirements

Satisfactory results in an audition to be held at the Faculty of Music by appointment. To ensure early acceptance, auditions should be arranged before May 15. The final date for auditions is September 1, 1970.

Applicants must demonstrate a performance level of Grade VIII standard in a performance area. The audition includes the performance of two or three pieces of contrasting styles of at least Grade VIII level of difficulty, some scales and other technical exercises, sight reading and general musicianship tests. Pieces need not be memorized.

Students whose principal instrument is other than piano are required, in addition, to try a piano proficiency examination. Candidates who are unable to pass this examination will register for class piano until this requirement is met. The examination will include scales, chords and arpeggios in major and minor keys, simple chord progressions, harmonization of a melody, simple transposition, sight reading and the performance of pieces of approximately the Grade VI level of difficulty.

Proficiency beyond Conservatory Grade II Theory and Grade III Harmony, or Ontario Grade 13 Music, would be helpful to students in the general musicianship portion of the audition.

Admission to the Faculty of Music

All inquiries regarding admission should be directed to: The Dean of the Faculty of Music, The University of Western Ontario, London 72, Canada.

General Information

The Faculty of Music offers programs leading to the following degrees:

1. Bachelor of Music with Honors in one of (1) Music Education; (2) Performance – Piano, Voice, Organ & Church Music, or Orchestral Instrument; (3) Theory & Composition; (4) Music History.
2. Bachelor of Arts with Honors Music.
3. Bachelor of Arts with Music Options.
4. Bachelor of Musical Arts.
5. Masters Degree (see pages 10 – 11)

BACHELOR DEGREE PROGRAMS

These are four-year Honors and three-year General Programs. All students will be enrolled in a common first year. At the beginning of the second year each student will choose an area of concentration and will enrol in one of the five honors programs or two general programs outlined below.

Before graduation all students who elect a four-year Honors Program must reach a minimum of the Associate level in performance in their applied principal instrument. Honors in Performance candidates must be well above this level and, in addition, must present a public recital in their final year. All students are encouraged to perform on student recital programs.

Students who elect the Bachelor of Arts with Music Options Program must reach a minimum of Grade X level of performance, although students who are able will be encouraged to reach the Associate level.

Students who elect the Bachelor of Musical Arts Program must attain one of the following:

Grade X level on Orchestral Instrument or Voice with Grade VIII level piano;

OR

Grade X level piano with Grade VIII level Voice

OR

Associate level, any instrument, with Grade VI level piano.

A minimum of two years must be devoted to Applied Music.

Financial Assistance

Lady Eaton Bursaries

Awards up to $250.00

Faculty of Music

One award of $300.00 to be awarded to a music student from a country other than Canada.

One award, the amount to be determined annually, to a deserving music student.

Prize of $50.00 per year to be awarded to a student in any year for outstanding achievement.

Gordon V. Thompson Bursary

One award of $100.00

Women's Committee to the London Symphony Association Bursary

One award of $200.00

Waterloo Music Company Bursary

One award of $500.00

London Women's Music Club Award

One award annually to a student of voice, piano, organ, or string instrument.

Julius A. Cohen Award

One award of $100.00 to a student of a string instrument.

St. Paul's Cathedral Choir Prize

One award of $50.00 to a student of composition for a musical setting of a text specified by the donors.

Board of Governors Scholarship

Two awards of $60.00 each for the students with the highest standing in the second and third years of the Bachelor of Music Honors program when no other scholarship is awarded.

University Gold Medal

For a graduating student with the highest standing in a Bachelor of Music Honors program, when no other medal is awarded.

Alumni Gold Medal

For the graduating student with the highest standing in the Bachelor of Arts with Honors Music Program or the Bachelor of Music with Honors program.

The above awards, scholarships and bursaries are available to full-time students registered in the Faculty of Music.

Music students are also eligible for any of the scholarships or bursaries listed in the Faculty of Arts, Music, Science and Social Science Calendar that are available to General Arts students. Application should be made to the Awards officer.

Library Resources and Equipment

The book collections of the University total approximately a million volumes. The University receives annually about 3,200 periodicals in all subjects and in many languages. Most of this material is in the General Library, housed in the Lawson Memorial Building.

All the major collected editions of composers' works have been purchased in microfilm and in book form. They are available in the Faculty of Music Library. Standing orders have been placed for major publications such as the Neue Bach Ausgabe, the Neue Mozart Ausgabe, the Schubert edition, etc. Facsimile editions of early manuscripts are being purchased as they become available. Reprints of many important studies, biographies, and scores have been published in the last few years, most of which have been, or are being, procured. The growing collection of recordings and study scores represents a wide selection of works, particularly of the twentieth century and of very early times. The collection includes all the important journals, dictionaries, encyclopedias and research tools, as well as several unique items such as a fifteenth century Antiphonale in manuscript, and a facsimile of a thirteenth century manuscript bound in Australian blackwood. A microfilm and a microcard reader enables the student to consult photocopies of original manuscripts and early editions from all periods of music history.

The Faculty of Music has a large collection of string, woodwind and brass instruments for student use. A collection of historical instruments for use in the Collegium Musicum performances

has also been started with the acquisition of members of the viola da gamba family and recorders. A two-manual Challis harpsichord and two practice organs are also a part of this growing collection.

Performing Organizations

A number of musical ensembles are under the supervision of the Faculty of Music.

Faculty of Music Concert Choir

This ensemble of about 70 mixed voices performs the major choral literature.

Faculty of Music Singers

This ensembles of about 35 mixed voices performs choral literature from all periods in history.

Collegium Musicum

A small ensemble of mixed voices and instrumentalists who study the performance practices of Medieval, Renaissance and early Baroque music through performance.

University of Western Ontario Orchestra

This orchestra functions as a Faculty of Music ensemble for instrumental majors, and is open, by audition, to students from all university faculties. It performs the major symphonic literature.

University Symphonic Band

One of the most active ensembles on campus, this group is for instrumental majors and is open, by audition, to students from all university faculties. Its repertoire ranges widely and includes major works for symphonic band.

University of Western Ontario Choir

This is an interfaculty mixed choir of about 80 members whose activities are closely allied to the Faculty of Music program.

Chamber Ensembles

Experience in chamber literature is provided in a variety of trio, quartet and quintet ensembles.

Bachelor Degree Programs

Since few music students have sufficient knowledge of music on entrance to University to choose wisely the path that best suits their individual abilities and talents, and since the same basic core of knowledge is necessary to all musicians whatever area of the field they may ultimately enter, we have designed a common first year. It is felt that by the end of the freshman year the student should be better equipped to decide upon an area of specialization.

COMMON FIRST YEAR

	Hours
21. Applied Principal Instrument	1
24. Instrumental Music	1
25. Theory	5
26. Music History	3
27. Choral Technique	1
28. Ensemble	3
29. *The Child Voice (For prospective Music Education [Elementary] majors only)*	1
117. *Brass and Woodwind class (For prospective Music Education [Secondary] majors only)*	1
Class Piano (If required)	
English 20	3
One other course from the Faculties of Arts, Science or Social Science.	
(Those intending to major in Honors Music History or Honors in Performance with a major in Voice must take a language other than English).	2 to 3
Total Hours	19 to 21

HONORS IN MUSIC EDUCATION

Students planning to teach music in the secondary schools should enrol in the Honors Music Education (Secondary) program in second year.

Those planning to teach music in the elementary schools should enrol in the Honors Music Education (Elementary) program in second year.

Honors in Music Education (Secondary)

The Bachelor of Music in Music Education meets the requirements of the Ontario Department of Education circular 649, and leads to the Type A certificate in instrumental and vocal music.

*On application, all other Bachelor of Music pro*grams will be evaluated by the Registrars of the Ontario Colleges of Education for admission to the Type A or Type B programs for secondary school teaching.

Choral technique courses beyond the first year are required in all Music Education programs, in the Performance with a Major in Organ and Church Music, and in all Bachelor of Arts programs. In the other Performance programs, in Theory and Composition, and in Music History, choral technique courses beyond the first year are optional. Students who may decide to enter school music teaching upon graduation are advised to include all the choral technique courses in their program.

HONORS IN MUSIC EDUCATION (SECONDARY)

Second Year

217. Brass and Woodwind Class	1
231. Applied Principal Instrument	1
231A. Secondary Piano (Required for all students except piano principals)	½
232. Music Education Ensemble	1
235. Theory	5
236. Music History	3
237. Choral Technique	1
238. Ensemble	3
247. String Class	1
Any senior English course	3
One course from the Faculties of Arts, Science or Social Sciences	2 to 3
Total Hours	21 to 22½

Third Year

317. Brass and Woodwind Class	1
332. Music Education Ensemble	1
337. Choral Technique	1
341. Applied Principal Instrument	1
342. Conducting	1
345. Counterpoint	3
347. String Class	1
348. Ensemble	3
Physics 33	3
One music elective	2
One course from the Faculties of Arts, Sciences or Social Science.	2 to 3
Total Hours	19 to 20

Fourth Year

417. Brass and Woodwind Class	1
432. Music Education Ensemble	1
437. Choral Methods and Materials	2
442. Conducting	1
447. String Class	1
447A. Music Education String Repertoire	1
450. Music Education Seminar	2
451. Applied Principal Instrument	1
455. Orchestration	2
458. Ensemble	3
467. Percussion Class	½
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	17½ to 18½

HONORS IN MUSIC EDUCATION (ELEMENTARY)

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano (Required for all students except piano principals)	½
232. Music Education Ensemble	1
235. Theory	5
236. Music History	3
237. Choral Technique	1
238. Ensemble	3
229. Child Voice (only if 29 was not taken in first year)	1
One of 217. Brass and Woodwind Class (Prerequisite 117)	1
or	
247. String Class	1
Any senior English course	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	21 to 22½

Third Year

332. Music Education Ensemble	1
337. Choral Technique	1
339. Communication in Music (Prerequisite229)	2
341. Applied Principal Instrument	1
342. Conducting	1
345. Counterpoint	3
348. Ensemble	3
One of 317. Brass and Woodwind Class (Prerequisite 217)	1
or	
347. String Class (Prerequisite 247)	1
Physics 33	3
One music elective	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	20 to 21

Fourth Year

432. Music Education Ensemble	1
437. Choral Methods and Materials	2
442. Conducting	1
449. Comparative Studies in Music Education	2
450. Music Education Seminar	2
451. Applied Principal Instrument	1
455. Orchestration	2
458. Ensemble	3
One of the following two combinations:	
417. Brass and Woodwind Class	1
and	
467. Percussion Class (Prerequisite 317)	½
or	
447. String Class	1
and	
447A. Music Education String Repertoire (Prerequisite 347)	1
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	17½ to 19

HONORS IN PERFORMANCE WITH A MAJOR IN PIANO

For admission to the Honors in Performance with a Major in Piano Program, Grade X in piano, as well as evidence of exceptional performing ability, will be required in addition to the requirements listed on page 3.

Second Year

231. Applied Principal Instrument	1
235. Theory	5
236. Music History	3
238. Ensemble	3
Any senior English course	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	17 to 18

Third Year

341. Applied Principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
351. Chamber Music	1
354(P). Piano Literature	1
One music elective	2
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
	15 to 17

Fourth Year

451P. Applied Principal Instrument (1hour individual lesson) (1 hour class lesson)	2
453. Piano Pedagogy	1
458. Ensemble	3
461. Chamber Music	2
One music elective	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
	12 to 13

HONORS IN PERFORMANCE WITH A MAJOR IN VOICE

For admission to the Honors in Performance with a Major in Voice Program, Grade X in voice, as well as evidence of exceptional performing ability, will be required in addition to the requirements listed on page 3.

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano	½
235. Theory	5
236. Music History	3
238. Ensemble	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
One language course other than English	2 to 3
Total Hours	16 to 18½

Third Year

341. Applied Principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
352. Music History Seminar	2
One music elective	2
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	15 to 17

Fourth Year

451P. Applied Principal Instrument (1 hour individual lesson) (1 hour class lesson)	2
452. Music History Seminar	2
453. Vocal Pedagogy	1
458. Ensemble	3
One music elective	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	12 to 13

HONORS IN PERFORMANCE WITH A MAJOR IN ORGAN AND CHURCH MUSIC

For admission to the Honors in Performance with a Major in Organ and Church Music Program, Grade X in organ, as well as evidence of exceptional performing ability, will be required in addition to the requirements listed on page 3.

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano	½
235. Theory	5
236. Music History	3
237. Choral Technique	1
238. Ensemble	3
Any senior English course	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	18 to 19½

Third Year

337. Choral Technique	1
341. Applied Principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
353. Church Music	1
354(O). Organ Literature	1
One music elective	2
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	16 to 18

Fourth Year

437. Choral Methods and Materials	2
451P. Applied Principal Instrument (1hour individual lesson) (1 hour class lesson)	2
453. Organ Pedagogy	1
458. Ensemble	3
463. Church Music	2
One music elective	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	14 to 15

HONORS IN PERFORMANCE WITH A MAJOR IN ORCHESTRAL INSTRUMENT

For admission to the Honors in Performance with a Major in Orchestral Instrument Program, Grade X in the Orchestral Instrument, as well as evidence of exceptional performing ability, will be required in addition to the requirements listed on page 3.

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano	½
235. Theory	5
236. Music History	3
238. Ensemble	3
Any senior English course	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	17 to 18½

Third Year

341. Applied Principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
351. Chamber Music	1
One music elective	2
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	14 to 16

Fourth Year

451P. Applied Principal Instrument (1 hour individual lesson) (1 hour class lesson)	2
453. Pedagogy	1
458. Ensemble	3
461. Chamber Music	2
One music elective	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	12 to 13

HONORS IN THEORY AND COMPOSITION

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano (Required for all students except piano principles)	½
235. Theory	5
236. Music History	3
238. Ensemble	3
239. Composition	2
Any senior English course	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	19 to 20½

Third Year

341. Applied Principal Instrument	1
342. Conducting	1
345. Counterpoint	3
348. Ensemble	3
349. Composition	3
Physics 33	3
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	16 to 17

Fourth Year

451. Applied Principal Instrument	1
455. Orchestration	2
458. Ensemble	3
459. Composition	3
One music elective from the Music History area	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
Total Hours	13 to 14

HONORS IN MUSIC HISTORY

Second Year

231. Applied Principal Instrument	1
231a. Secondary Piano (Required for all students except piano principles)	½
235. Theory	5
236. Music History	3
238. Ensemble	3
252. Music History Seminar	2
One course from the Faculties of Arts, Science or Social Science	2 to 3
One language course other than English	2 to 3
Total Hours	18 to 20½

Third Year

341. Applied Principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
Two Music History electives	4
Two courses from the Faculties of Arts, Science or Social Science, (one of which should be general political and economic history)	4 to 6
Total Hours	15 to 17

Fourth Year

451. Applied Principal Instrument	1
452. Music History Seminar	2
458. Ensemble	3
Two Music History Electives	4
One other music elective	2
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	16 to 18

BACHELOR OF ARTS WITH HONORS MUSIC

Requirements for Admission

Completion of the common first year with an average of at least 60%. All students must reach the minimum of the Associate level in performance in their principal applied music subject before graduation. On application, this program will be evaluated by the Registrars of the Ontario Colleges of Education for admission to the Type A or Type B programs for secondary school teaching.

Second Year

231. Applied Principal Instrument	1
231A. Secondary Piano (Required for all students except piano principals)	½
235. Theory	5
236. Music History	3
237. Choral Technique	1
238. Ensemble	2
Three courses from the Faculties of Arts, Science or Social Science	6 to 9
Total Hours	18 to 21½

Third Year

337. Choral Technique	1
341. Applied principal Instrument	1
345. Counterpoint	3
348. Ensemble	3
Two music electives from Theory or Music History areas	4
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	16 to 18

Fourth Year

437. Choral Methods and Materials	2
451. Applied Principal Instrument	1
458. Ensemble	2
Two music electives	4
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	13 to 15

BACHELOR OF ARTS WITH MUSIC OPTIONS

Requirements for Admission

Completion of the common first year with an average of at least 50%.

Second Year

31. Applied Principal Instrument	1
31A. Secondary Piano (Required for all students except piano principals)	½
35. Theory	5
36. Music History	3
37. Choral Technique	1
38. Ensemble	2
Three courses from the Faculties of Arts, Science or Social Science	6 to 9
Total Hours	18 to 21½

Third Year

41. Applied Principal Instrument	1
45. Counterpoint	3
47. Choral Methods and Materials	2
One music elective	2
Three courses from the Faculties of Arts, Science or Social Science	6 to 9
Total Hours	14 to 17

BACHELOR OF MUSICAL ARTS

Second Year

31. Applied Principal Instrument	1
31A. Secondary Piano (Required for all students except piano principals)	½
35. Theory	5
36. Music History	3
37. Choral Technique	1
38. Ensemble	3
39. Communication in Music	2
One of 217 Brass and Woodwind Class	1
or	
247. String Class	1
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	20 to 22½

Third Year

41. Applied Principal Instrument (If graduation requirements have not been completed)	1
42. Conducting	1
47. Choral Methods and Materials	2
49. Comparative Studies in Music Education	2
One or 317. Brass and Woodwind Class (Prerequisite 217)	1
or	
347. String Class (Prerequisite 247)	1
Two music electives	4
Two courses from the Faculties of Arts, Science or Social Science	4 to 6
Total Hours	14 to 17

Master's Degrees in Music

The Master of Music degree is offered in the fields of Music Theory, Music Education, Composition, and Music Literature and Performance. The Master of Arts degree is offered in Musicology.

Admission. A candidate must be a graduate of an accredited university or hold equivalent qualifications, including an Honors degree (Bachelor of Music) or its equivalent with at least a B average. Students who have taken a Pass degree (three year) course may be admitted conditionally but they must complete a qualifying year before being admitted to candicancy or must demonstrate exceptional competence beyond the Pass degree on entrance examinations and auditions.

Entrance Examinations. During January, May and September, all new graduate applicants shall be required to take a number of examinations which serve as placement tests. Entrance examinations will be given in the areas of Music Theory, Music History, Piano proficiency, and in the student's principal applied music subject (piano, voice, violin etc.). The content of these examinations may be obtained by writing to the Dean of the Faculty of Music. Additional course work may be recommended depending upon the results of the entrance examinations.

The successful completion of all entrance examinations or deficiency courses is necessary before a student can be considered a candidate for the degree.

Special Prerequisites. A course in acoustics and undergraduate training in orchestration or demonstration of knowledge in these areas is required of candidates pursuing the degree in Music Theory. Knowledge of German in required of candidates in Musicology. Students concentrating in Music Education must have completed two years' successful classroom teaching. This prerequisite does not apply to all courses, but it does apply to the Music Education seminar, Advanced Conducting, and the Choral and Instrumental Techniques courses in that program. Candidates in Composition must submit scores of recent compositions for acceptance.

Candidates in the area of Literature and Performance must demonstrate in their audition a high level of performing ability.

A more detailed description of prerequisites to various programs may be obtained by writing to the Dean, Faculty of Music.

Period of Study. Candidates shall be required to spend at least one academic year (two terms) in residence, and to complete the program within five years after admission to candidacy for the degree by the Faculty of Graduate Studies. It is expected that the minimum time in which the requirements can be completed is one full year (three terms). Candidates who undertake remunerative employment must be prepared to spend additional time.

Course of Study. The course of study shall be determined by the Chairman of the Department in which the candidate is working and shall be approved by the Music Committee on Graduate Studies. The course of study normally involves five courses (fifteen hours) and a thesis. The suggested content of the study program in each of the areas of concentration may be obtained from the Dean of the Faculty of Music.

Information. More detailed information may be found in the calendar of the Faculty of Graduate Studies. All inquiries concerning the Master's program in Music should be directed to the Dean, Faculty of Music, The University of Western Ontario.

Description of Courses

THEORY AND COMPOSITION

25. Theoretical Studies. Analysis, sight-singing, dictation and written harmony based on triads, dominant seventh chords and their inversions. Rhythmic reading and dictation, modulation. Keyboard harmony.
Five hours

35, 235. Theoretical Studies. Continuation of Music 25. Analysis, sight-singing, dictation and writing using diatonic seventh chords, chromatic harmony and extended modulation. Application of harmonic theory to eighteenth century counterpoint. Advanced rhythmic reading and dictation. Keyboard harmony.
Prerequisite: Music 25
Five hours

45, 345. Counterpoint. First term – The contrapuntal style of the sixteenth century, including analysis of works of Palestrina and Lassus. Writing in two, three and four parts, Second term – Contrapuntal techniques of the twentieth century.
Prerequisite: Music 35 or 235
Three hours

455. Orchestration. Instruments of the orchestra – tone-colors, transpositions. Practical scoring for individual choirs, chamber orchestra and full orchestra, choir, and symphonic band.
Prerequisite: Music 345
Two hours

239. Composition. An introductory course in composition including analysis of widely divergent works in the established literature. Students will write compositions for voices and instruments.
Two hours

349, 459. Composition. Works in the larger forms for solo instruments and chamber ensembles. Continuation of analysis with an emphasis on twentieth century literature. Third and fourth year students will be expected to have several works completed during the year.
Three hours

HISTORY AND LITERATURE OF MUSIC

26. Music History. A study of the history and literature of music up to 1750. The first half of a two year survey.
Texts: Grout, A History of Western Music (W.W. Norton 1960)
Starr & Devine, eds., Music Scores Omnibus, vol. 1 (Prentice-Hall, 1964)
Three hours

36, 236. Music History II. A continuation of the survey to the present time.
Texts: Grout, A History of Western Music
Starr & Devine, Music Scores Omnibus, Vol. II
Prerequisite: Music 26
Three hours

306. History of Ancient, Medieval and Renaissance Music. A seminar on music to circa 1600.
Prerequisite: Music 36, 236 or equivalent
Two hours

316. History of Music in the Baroque Era. A seminar on music from approximately 1600 to 1750.
Prerequisite: Music 36 or 236
Two hours

326. History of the Symphony. A seminar on music composed for orchestra from the pre-Classic through the Romantic era.
Prerequisite: Music 36 or 236
Two hours

336. History of Chamber Music. A seminar on music composed for chamber ensembles from the sixteenth century to the present time.
Prerequisite: Music 36 or 236
Two hours

346. History of Music in the Romantic Era. A seminar on music of the nineteenth century.
Prerequisite: Music 36 or 236
Two hours

346A. History of the Art Song and Ontario. A seminar devoted to the study of the literature of song and oratorio.
Prerequisite: Music 36 or 236
Two hours

354(P). Piano Literature. A study of the literature for solo piano. For piano majors in the third year.
Prerequisite: Music 36 or 236
One hour

354(O). Organ Literature. A study of the literature for organ. For organ majors in the third year.
Prerequisite: Music 36 or 236
One hour

356. History of Opera. A seminar on the development of opera from the time of the Florentine Camerata to the present day.
Prerequisite: Music 36 or 236
Two hours

366. Selected Composer Study. A seminar on the life and works of a single composer, to be selected and named in advance by the instructor.
Prerequisite: Music 36 or 236
Two hours

376. Contemporary Music. A seminar in music of the twentieth century.
Prerequisite: Music 36 or 236
Two hours

APPLIED MUSIC AND PEDAGOGY

21, 31, 231, 41, 341, 451. Individual lessons in the student's principal applied music areas.
One hour

At the end of each academic year, the student must successfully pass an examination of his or her principal applied music subject conducted by a jury of the faculty. Before graduation each student must have reached the required examination level in his principal applied subject. Honors in Performance candidates must be well above this level and, in addition, must present a public recital. All other majors are encouraged to perform on student recital programs.

31A, 231A. Secondary Piano. Required of those students whose principal instrument is not piano. A minimum of Grade VI level must be achieved by the end of the second year.
One half hour

Class Piano. A deficiency course for students whose principal instrument is other than piano and who are unable successfully to pass the piano proficiency examination. Students will be assigned to appropriate sections of the course until the deficiency is removed.
One hour per week in each of the first two years.
No credit

353, 463. Church Music. Materials, methods and techniques of service playing. For organ majors in the third and fourth years.
Music 353 One hour
Music 463 Two Hours

453. Pedagogy of the principal instrument or voice. Required of all students registered in an Honors in Performance program in the fourth year.
One hour

ENSEMBLES

28, 38, 48, 238, 348, 458. Band, Orchestra, Chorus, Collegium Musicum and Chamber Ensembles. Performance of major works for the respective media. The faculty will assign students to those performing ensembles which are deemed necessary to the musical development of the individual.
Three hours

351, 461. Chamber Music. Duos, trios, quartets, etc., with and without piano.
Music 351 One hour
Music 461 Two hours

252, 352, 452. Music History Seminar. A study of Medieval, Renaissance and Baroque music (vocal and instrumental). Participation in Collegium Musicum is required of Music History majors.
Two hours

MUSIC EDUCATION

24. Instrumental Music. A general history of the development of the wind and string instruments. The instrumentation of the orchestra and band. Transposing instruments. Elementary score reading and conducting.
One hour

117, 217, 317, 417. Woodwind and Brass Class. Class instruction in the woodwind and brass instruments. The student is expected to acquire playing proficiency in one instrument of each family and a general playing knowledge of the others.
One hour

232, 332, 432. Music Education Ensemble. Performance of band and orchestral literature suitable for school performing ensembles.
One hour

27, 37, 237, 337. Choral Technique. Basic elements of voice production and choral singing. Elementary choral conducting. Study of rehersal techniques through performance of selected repertoire.
One hour

29, 229. The Child Voice. Music materials and procedures which may be employed in the development of the child and adolescent voice.
One hour

39, 339. Communication in Music. An exploratory course in rhythmic movement, instrumental activities, and listening techniques which are related to the development of the child. Attention will be given to special areas of creativity.
Two hours

49, 449. Comparative Studies in Music Education. A comparative study of the materials and procedures in music education. The work of Kodaly, Orff, and Suzuki will be selected for more intensive work.
Two hours

47, 437. Choral Methods and Materials. A survey of choral repetoire suitable for use in high schools. Advanced choral conducting. The administration of a choral music program in the schools.
Prerequisite: Music 337
Two hours

247, 347, 447. String Class. Class instruction in performance on the string instruments.
One hour

447A. String Repertoire. A survey of string literature for school orchestras and ensembles.
One hour

42, 342. Conducting. Basic conducting techniques.
One hour

442. Conducting. Advanced instrumental conducting techniques
One hour

450. Music Education Seminar. School music administration. Classroom teaching techniques. School music libraries. Methods and materials of school wind, string and percussion classes. Band and orchestra performing materials. Psychology of the musical mind. Tests and measurements of musical ability.
Two hours

467. Percussion Class. Instruction in the fundamental playing techniques of percussion instruments.
One half hour

MUSIC COURSES FOR ARTS AND SCIENCE STUDENTS

The following music courses are offered on the main campus as electives for Arts and Science students.

Music 20. Performance and Survey of Music Literature I. This course is divided into two parts. To obtain credit, both parts must be taken.

Performance. Individual lessons arranged by the Faculty of Music. Credit for this course will be determined by the student's progress during the year and by the final performance examination.
Prerequisite: A minimum of the Grade VI level in the instrument. (The student must pay for individual lessons.)
One hour (half course)

Survey of Music Literature. Baroque, Classic and Romantic repertoire. Students will be expected to prepare works for class performance.
One hour lecture, one hour lab. (half course) — 18

Music 20Y. A listener's course designed to acquaint students with the landmarks of the orchestral, choral and chamber repertoire through guided listening to recordings and live performance.
Two hours, plus lab. — 18

Music 30. Performance and Survey of Music Literature II. This course is divided into two parts. To obtain credit, both parts must be taken.

Performance. Individual lessons arranged by the Faculty of Music. Credit for this course will be determined by the student's progress during the year and by a final performance examination.
Prerequisite: A minimum of the Grade VIII level in the instrument. (The student must pay for individual lessons.)
One hour (half course)

Survey of Music Literature. Music repertoire and performance practices with special emphasis on contemporary trends. Students will be expected to prepare works for class performance.
One hour lecture, one hour lab (half course) — 24

Music 30Y. A continuation of Music 20Y, including a detailed study of several large-scale compositions from a listener's viewpoint.
Prerequisite: Music 20Y or equivalent
Two hours, plus lab. — 18

Members of the Faculty of Music

Dean and Professor

von Kuster, C., LRCT, MusBac *Toronto* (Piano and Piano Pedagogy)

Associate Dean and Professor

McKellar, D. A., ARCT, AMus, MusBac *Toronto,* MM *Eastman*

Professors

Rosé, A., BA (Voice, Music History)

Woodburn, D., BA; MA *New York* (Choral Music)

Visiting Professor

Tsutsumi, T., To Ho Conservatory, *Tokyo;* Artist Diploma *Indiana University* (Violoncello)

Associate Professors

Bray, K. I., MusBac *Toronto,* MM *Eastman* (Music Education, Theory and Bassoon)

Downs, P. G., BA *Leeds, England,* MusM, PhD *Toronto* (Musicology)

Green, J. P., ARCT, MusBac *Toronto,* MM *Eastman* (Music Education)

Greene, G. K., AMus, BA, BEd, MA *Alberta* (Music History)

Haenselman, C. F., BMusEd, MMus *Colorado,* PhD *Indiana* (Theory and Composition)

Johnson, D. J., BA *Sterling, Kansas,* MA *Colorado* (Choral Music and Voice)

McIntosh, J. S., ARCT *Toronto,* AAGO *New York,* MusBac *Toronto,* MM *Eastman* (Applied Music)

Assistant Professors

Aldrich, R., LRSM, LGSM *London,* MusBac *Victoria at Wellington, N.Z.* (Viola, Chamber Music and Theory)

Boos, Elizabeth L., BA *American, Washington, D.C.,* SMM *Union Seminary, New York;* (Musicology)

Bratuz, Damiana, Master' Diploma in Piano *Trieste, Italy,* MM *St. Louis,* MusDoc *Indiana* (Piano, Piano Literature)

Clements, P. J., MusBac, MM *Michigan* (Theory and Composition)

Giron, A., BMus *Oberlin,* MA *Tulane* (Theory and Composition)

Munn, H., (Piano and Piano Teaching Materials)

Skelton, R., ARCT, MusBac *Toronto,* MM *Indiana* (Violin String Classes, Chamber Music)

Stark, J. A., BA *Minnesota,* MusM *Toronto* (Voice, Music History)

Terry, E., BA, BPaed *Toronto,* MMus *Montreal* (Choral Music)

VanOstrand, G., BSc *State University of New York,* MM *Eastman* (Music Education and Woodwinds)

Lecturers

Dalkert, C., BM *Illinois Wesleyan,* MM *Eastman* (Trombone)

Fisher, A. J., BM *Boston,* MM *Michigan* (Theory and Composition)

Ford, A. J., (Brass Instruments)

Instructors

Aldrich, Pauline, LTCL *Trinity, London, England,* LRSM *Royal Schools, London, England,* Premier Prix *Luxembourg* (Piano)

Anderson, Jean M., BM *Nottingham,* LRAM *Royal Academy, London, England,* MM *Eastman* (Theory and Composition)

Bendzsa, P. S., MusBac *Michigan* (Clarinet)

Bracey, J. P., BM *Converse,* MM *Eastman* (Piano)

Cortner, L., MusBac *Oberlin,* MM *Eastman* (Organ and Theory)

Clarke, Joan,MusBac *Toronto* (Trumpet)

Giron, Patricia, BMus *Oberlin* (Piano)

MacLennan, Marian, RCAD (Artist's Diploma) *Toronto,* BA (Piano)

Madill, Alma, ATCM *Toronto* (Piano and Theory)

Mazan, Antonia, LMus, BA; *Graduate of Vienna Academy* (Piano)

Meyer, G. J., *Graduate of Royal Conservatory, Amsterdam* (Flute)

Munn, Lesley, BMus *Philadelphia Conservatory of Music* (Piano)

Murphy, P., BA, MusGPaed (Clarinet)

Turnbull, I., (Percussion)

Weaver, Sandra, BM, MM *Indiana* (Piano)

Wood, S., (Oboe)

Faculty of Nursing

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ACADEMIC CALENDAR

1970

September 8	Registration for Year I of Basic Program. Classes start for Year III of Basic Program.
September 9	Registration for all other BScN Nursing students.
September 10	Classes start for Year IV of Basic Program.
September 14	Classes start for all other Nursing students.
December 12	Term I ends.
December 13	Christmas vacation commences.

1971

January 4	Term II commences.
February 22-27	Conference Week (no classes).
April 10	Term II ends.
April 19	Term III commences for Year III of Basic Program.
May 3	Term III commences for Years I and II of Basic Program.
May 28	Term III ends for Years I, II and III of Basic Program.

The Booklet *"General Information"*, presenting concise introductory information about The University of Western Ontario, may be obtained from the Registrar's Office, The University of Western Ontario, London 72, Canada.

History of the Faculty of Nursing

The year 1970 marks the fiftieth year since the establishment of the first educational program in nursing at The University of Western Ontario.

It is important to view our present Faculty against those years of effort and interest, but equally important to go back to an earlier date, the year 1917, in order to bring a significant event into perspective. That year, with considerable awareness of need and concern to carry its special educational role in the control of disease and the promotion of health, the University's Board of Governors brought into being the Faculty of Public Health— the first independent Faculty of Public Health to be established in a university within the British Commonwealth. The objective of this educational program was to prepare graduate physicians for their responsibilities as medical officers of health. The new Faculty was housed in the building of the Institute of Public Health at the corner of South and Waterloo Streets, just across from the old Medical School,and the Director of the Institute, the late Dr. H. W. Hill, was appointed Dean of the new Faculty.

In 1920, the Canadian Red Cross Society granted to five Canadian Universities sufficient funds to support, for a three-year period, educational programs in Public Health Nursing. Having been selected, and receiving its grant through the Ontario Division of the Canadian Red Cross Society, The University of Western Ontario established a Division of Studies for Graduate Nurses within the Faculty of Public Health under Dean Hill. The late Miss Margaret McDermid was appointed to give professional leadership to the new program.

Dean Hill was succeeded by the late Dean A.J. Slack. Thus, under the capable leadership of two successive Deans, both of whom were outstanding public health men, the University's varied public health enterprises within the Institute continued to expand. This became increasingly true of the laboratory services provided for London and the counties of South Western Ontario. Expanding laboratory services during this period might be taken as an index of the growth of health services throughout the region, and an index of the rapidly growing, though still very young, public health movement.

In 1924, the Board of Governors and Senate approved the establishment of a five-year undergraduate program, leading to the degree of Bachelor of Science in Nursing. The following year, two further post-basic programs were established:

1. A program designed to prepare teachers for hospital schools of nursing, leading to a Certificate of Instructor of Nursing.

2. A program designed to prepare hospital administrators, leading to a Certificate in Hospital Administration.

In 1946, nearing the completion of three decades of public health activity within the Institute of Public Health, the Board of Governors of the University reviewed its many enterprises to see what reorganization might be undertaken. As preventive medicine had become an integral aspect of medical education, it was decided that the Faculty of Public Health should close with the end of the 1946-1947 academic year. This year coincided with the retirement of Dean Slack. A further decision was made to withdraw from the laboratory services so that these, as a regional laboratory, would become the responsibility of the Ontario Department of Health.

The future of educational programs in nursing was assured with a further decision of the Board of Governors to establish a School of Nursing, as an autonomous unit within the constituent University. Miss Edith M. McDowell was appointed Dean of this new Faculty in the summer of 1947. The W.K. Kellogg Foundation of Battle Creek, Michigan, made a grant of $50,000 to be spent over a three-year period (1947-1950) in improving and strengthening the educational programs of the School. Under Dean McDowell's inspiring leadership, the School developed rapidly in both quality of programs offered and in enrolment.

The new School of Nursing remained in the Institute Building until January 1951, when it moved to the lower hall of University College. As enrolment in the School of Nursing continued a marked upward trend, it was not long before the space in University College became inadequate. During the summer months of 1958, the School of Nursing moved to more spacious quarters in the upper floor of the Physics-Chemistry Building, but before a year had passed, these quarters became overcrowded.

The 1957-1958 academic year saw the establishment of a third post-basic program leading to a Diploma in Nursing Service Administration. Eleven students were enrolled. (The Certificate program in Hospital Administration had not been offered since the 1946-47 Academic Session.) Hospital administrators, governing boards and members of the medical and nursing professions had become acutely aware of the need for better preparation for those who are given responsibility for the administration of nursing services in our hospitals. The new program was an outgrowth of that expressed concern.

In the early summer of 1959, having approved a brief presented by the School of Nursing, the W.K. Kellogg Foundation of Battle Creek, Michigan, presented the University with the first of a series of cheques which reached a total of $142,000 over a six-year period. This was spent in the development of projects in administration.

This very generous grant made possible the establishment of a two-year graduate program in administration leading to a Master of Science in Nursing degree. The first candidate was presented at the 1961 Spring Convocation and her degree, Master

of Science in Nursing, was conferred. This was the first time in the history of nursing in Canada that a Master's Degree in Nursing had been granted by a Canadian University.

Another significant event occurred during the 1960-61 Academic Session. During the Christmas recess the School of Nursing moved to its own building. This attractive new building was made possible largely through a very generous grant from the Kresge Foundation. The School of Nursing is thus able to provide well-lighted, air-conditioned lecture, group conference and case-method rooms, and study-hall space in which books of reference and professional journals are available for student and faculty use. Additional reading room space, conference rooms and faculty offices are being planned.

Major changes in the programs offered by the School of Nursing occurred during 1966 and 1967. All diploma programs were discontinued. A four-year basic program leading to the degree of Bachelor of Science in Nursing was inaugurated in September 1966, and replaced the five-year undergraduate program established in 1924. The Program for Registered Nurses was altered and expanded to correspond with the current requirements for a Bachelor of Science in Nursing awarded by this University. The Master of Science in Nursing program now offers a major in teaching as well as in administration.

In May, 1969, on the recommendation of the Senate, the Board of Governors changed the designation of "School of Nursing" to "Faculty of Nursing".

Programs of the Faculty of Nursing

The Faculty of Nursing offers two programs leading to the degree, Bachelor of Science in Nursing. The Basic Nursing Program extending over four years is designed for high school graduates. The Program for Registered Nurses is planned for graduates from diploma schools of nursing and extends over a period of three academic years. In both programs the nursing component gives focus to critical survey of the major concepts, assumptions and skills upon which professional nursing is based. This is done with a view to appreciating factors involved in the formulation of a generalized theory of nursing which can be tested.

Two graduate programs in nursing are offered. One program leads to the degree Master of Science in Nursing (Administration), and the other leads to the degree, Master of Science in Nursing (Education). Individual planning makes provision for study in the particular area of administration or teaching for which the candidate is preparing. Admission requirements are: a Bachelor's degree in Nursing or, a Bachelor's degree in Arts or Science in addition to graduation from an approved school of nursing and an academic year of post-basic study with a diploma in one of the nursing specialties at a university school of nursing. An overall B standing in undergraduate university courses is the minimum admission standard.

Further information concerning the Master of Science in Nursing programs may be obtained by writing to the Faculty of Nursing for the 1970-71 Announcement of the Faculty of Graduate Studies.

The Bachelor of Science in Nursing Programs

The purpose of the programs is to prepare professional nurse practitioners who:

1. are capable of assuming beginning professional responsibilities in hospitals and other health agencies.

2. are capable of using further experience to proceed to the assumption of greater responsibility in the practice of nursing.

3. have a sound education foundation for proceeding to graduate studies preparing clinical specialists, teachers, administrators, consultants and researchers.

The major objectives of the programs are to assist the student to develop to the optimum:

1. as an individual participating in the process of higher education for a profession

(a) inherent abilities

(b) an understanding of self and others

(c) an examined value system giving meaning and direction to life;

2. as a future professional nurse

(a) the ability to apply basic nursing theories, concepts and principles in the practice of nursing

(b) a scientific approach to the practice of nursing and basic skill in its implementation

(c) an understanding of and commitment to the role of the nurse and the nursing profession in a dynamic society;

3. as an educated citizen

(a) appreciation of the privileges of citizenship

(b) acceptance of the responsibilities pertaining thereto.

ADMISSION REQUIREMENTS 1970-71

The Faculty of Nursing reserves the right to limit the number of applicants admitted to either Bachelor of Science in Nursing program.

Academic Admission Requirements

A. For Applicants With Ontario Grade 13 Standing

English	2 credits
Mathematics A or another language	2 credits
Chemistry	1 credit
Physics or Biology	1 credit
Other (biology or a language recommended	1 credit
	7 credits

Minimum overall average 60%
Minimum science average 60%

1. Registered nurses are advised to review grade 12 and grade 13 Chemistry prior to registration.

2. A mature applicant not less than twenty-three years of age whose academic qualifications do not meet in full the stated admission requirements may be admitted by special permission of the Faculty of Nursing Admissions Committee. Such applicants must have obtained Ontario Grade 13 standing in English, in Mathematics or in another language other than English, and in Chemistry, with a minimum overall average of 60%.

B. For Applicants With High School Standing From Other Canadian Provinces

All applicants with high school standing from high schools in jurisdictions outside of Ontario must write the tests offered by the College Entrance Examination Board (CEEB).

1. Students from other provinces in Canada are eligible to apply for admission to the first year at this Faculty if their academic records meet in subject matter and standing obtained **both** the requirements for admission to this Faculty and the requirements for admission to a recognized university in their own province in a program similar to the one to which admission is being sought at this University.

2. A mature applicant with high school standing from other Canadian provinces not less than twenty-three years of age whose academic qualifications do not meet in full the admission requirements stated in B1 above may be admitted by special permission of the Faculty of Nursing Admissions Committee. Such applicants must have obtained equivalent Ontario Grade 13 standing in English, in Mathematics or in another language other than English, and in Chemistry, with a minimum overall average of 60%.

C. For Applicants With High School Standing From Other Countries

All applicants from other countries interested in either of the Bachelor of Science in Nursing programs are requested to write to the Dean, Faculty of Nursing, The University of Western Ontario, London 72, Ontario.

Other Admission Requirements

A. All applicants to the Program for Registered Nurses must also meet the following qualifications:

1. Graduation from an approved diploma school of nursing

2. Registration as a nurse in good standing

3. Professional competence.

B. Prior to enrolling in the Faculty of Nursing, all students are requested to submit proof of immunization against diphtheria, tetanus, poliomyelitis and smallpox. This immunity should be at a maximum level of protection through the administration of a booster or reinforcing dose where indicated. An Immunization Record form will accompany Forms of Application.

Submission of Applications

Applications for admission to the Program for Registered Nurses are to be submitted to the Dean, Faculty of Nursing, The University of Western Ontario.

Applications for admission to the Basic Nursing Program are to be submitted to the Registrar, The University of Western Ontario.

THE BASIC NURSING PROGRAM

This is a four-year program leading to the degree of Bachelor of Science in Nursing (BScN) and qualifies graduates to apply for registration with the College of Nurses of Ontario. The curriculum includes both general education in the arts and sciences and professional nursing education throughout the four years. The University provides and directs clinical nursing experiences essential for learning nursing. These are currently arranged in teaching hospitals and health agencies in the community. The facilities of the University Hospital will also be utilized on its completion.

Length of Academic Years

Each of the four years consists of two terms of the same length as those of the Faculties of Arts, Science, Social Science. In the first year there follows an additional term of five weeks, and in the second year an additional term of three to five weeks. The third year is preceded by a two-week experience and followed by a five-week experience. These additional periods provide opportunity for concentrated emphasis upon nursing.

Required Courses

Approximately one half of the total program is planned for nursing courses; the other half is planned to include general education and health-related courses.

First Year

Biology	22
Chemistry	25
English	20
Nursing	20
Psychology	20
Sociology	20

Second Year

Anatomy	206
Biochemistry	206
Chemistry	33
Nursing	230
Physiology	206
Psychology	36
Sociology	Senior Course

Third Year

Bacteriology	206
Nursing	340
Pathophysiology	206
Pharmacology	206
Statistics	N200

Fourth Year

Nursing	450
Nursing	460
Nursing	470
Three electives	

THE PROGRAM FOR REGISTERED NURSES

This is a three-year program leading to the degree of Bachelor of Science in Nursing for registered nurses graduated from a diploma school of nursing. The curriculum recognizes the knowledge and skills already learned and follows a progression designed to 1) broaden and deepen concepts of nursing and increase ability to give comprehensive nursing care, 2) develop leadership ability, 3) promote greater appreciation of the use of research in nursing and the responsibility of the professional nurse in assessing the need for and instituting indicated change, and 4) further develop understanding of the role of nursing in the provision of health services.

NOTE: Nursing courses as described in this calendar are currently under revision. An addendum describing the nursing component as it will be presented 1970-71 will be published by June 1, 1970.

Length of Academic Years

Each of the three years consists of two terms of the same length as those of the Faculties of Arts, Science, Social Science. A third term of a maximum of three weeks may be required at the end of the second and third year.

Required Courses

The electives provide opportunity for progressive study in the sciences or humanities.

Second Year

Biology	22
Chemistry	25
English	20
Nursing	221
Psychology	20
Sociology	20

Third Year

Biochemistry	206
Chemistry	33
Nursing	371
Physiology	206
Psychology	36
Sociology	Senior Course
Statistics	N200

Fourth Year

Bacteriology	206
Nursing	471
Pharmacology	206
Three electives	

Course Descriptions

Anatomy 206. An introductory course in Human Anatomy. The gross and microscopic structure of the human body is taught by systems, with an emphasis on the clinical importance of surface anatomy. Some radiology, embryology and teratology are included. Student participation seminars are distributed throughout the course. This course is taught by the Department of Anatomy.
3 hours – Term I
2 hours – Term II

Bacteriology 206. Lectures, practical classes and demonstrations to illustrate the scope and principles of Microbiology and Immunology, and the application to nursing and to public health. The course involves a survey of microbial life, sterilization, disinfection, and antibiosis; the host-parasite relationship; immunity mechanisms and hypersensitivity; serological diagnosis; specific bacterial, viral and fungal infective processes, and their prevention; sanitary and food microbiology; protozoon and animal parasites; the practice of immunization; the services and responsibilities of hospital, regional, provincial and government laboratories. This course is taught by the Department of Bacteriology.
3 hours – Term I
2 hours – Term II

Biochemistry 206. Lectures dealing with the chemical nature of biological materials including blood, bile, urine, cerebrospinal fluid and tissues, and an introduction into catabolic and anabolic process of physiological and medical interest. This course is taught by the Department of Biochemistry.
2 lectures – 3 laboratory hours – Term II

Biology 22. The fundamental principles of biology stressing the features common to all living organisms. This course is given both in the Department of Botany and in the Department of Zoology.
2 lectures – 3 laboratory hours – Terms I and II

Chemistry 25. General Chemistry stressing modern atomic theory, the physico chemical properties of solutions and including an introduction to organic chemistry, This course is taught by the Department of Chemistry.
2 lectures – 3 laboratory hours – Terms I and II

Chemistry 33. Organic Chemistry. This course is taught by the Department of Chemistry.
2 lectures – 3 laboratory hours – Term I

English 20. General Literature and Composition: Short stories, novels, plays, and a selection of poems from Chaucer to T.S. Eliot. There will be some study of English composition. Six assignments (at least one of them a test) will be required. This course is taught by the Department of English.
3 hours – Terms I and II

Nursing 20. Introduction to professional nursing. Some of the major concepts, assumptions and skills underlying professional nursing practice are considered. Attention is directed toward developing a beginning understanding of the nature of health and illness and the organization of resources for the practice of comprehensive health care. Study is made of the contribution of the individual nurse, organized nursing services, and the nursing profession in the local and wider community health service. Theory is supplemented by selected experiences in community agencies.
6 hours – Terms I and II
5 weeks – Term III

Nursing 221. Introduction to professional nursing practice based on the assumption that the professional nurse provides a service that is academically sound and interpersonally helpful. Two major areas interlock throughout the course: **Nursing** with focus on the nurse-patient relationship, its process and principles – consideration of the use of the scientific method in planning for and validating nursing care – an examination of professional nursing practice, including a five-day hospital nursing practicum; **Nursing** – an introduction to nursing in the community designed to develop understanding of health concepts and illness patterns with reference to the individual, the family and community – community health services and the coordination of nursing with other disciplines. A concurrent practicum is planned as part of this section.
4 hours – Terms I and II

Nursing 230. Nursing care of the family during the childbearing years focusing on normal growth and development. Experience is provided to develop increasing skill in the promotion and maintenance of maternal, child and family health. Theory is supplemented by selected experiences with families and community agencies.
6 hours – Terms I and II
3-5 weeks – Term III

Nursing 340. Consideration of the role of the professional nurse in the care of adults and children with primary focus on their needs in illness. Nursing practice in relation to early diagnosis and prompt treatment, disability limitation and rehabilitation, also health promotion and illness prevention. Experience is provided in the nursing of selected individuals and families to augment and facilitate theoretical learning and to develop increasing skill in nursing practice.
2 weeks preceding Term I
16 - 18 hours – Terms I and II
5 weeks – Term III

Nursing 371. Promotion of the concept of comprehensive nursing and health care with emphasis upon the collaborative relationships within the health team; the expanding role of the professional nurse as a teacher of patients' families and personnel and as a leader in influencing the provision of quality care for patients.
6 hours – Terms I and II

Nursing 450 - 460

Psychiatry. A lecture course covering the clinical syndromes of Psychiatry. Emphasis is on the syndromes encountered in professional practice. Taught by the Department of Medicine.

Psychiatric Nursing. Nursing of the individual and his family with emotional health problems. Promotion of therapeutic nursing with emphasis upon the collaborative relationships with the health team. Experience is provided in the nursing of selected individuals and families in hospital and community.

Community Medicine. A course dealing with the epidemiologic and organizational aspects of communicable disease control, occupational health, family and child health, mental health, chronic disease control and other programs directed toward the prevention of disease and disability as well as the provision of primary, continuing and comprehensive care of individuals and disability. Taught by the Faculty of Medicine.

Public Health Nursing. Nursing of the family within the community in complex situations, Promotion of family nursing with emphasis on community health services. Advanced experience is provided in the nursing of selected individuals and families in the community.
2 days Preceding Term I
10 - 12 Hours Terms I and II

Nursing 470. Guided study, class discussion and practice related to the role of a beginning professional nurse practitioner. Interrelated areas receiving focus:

(a) clinical experience in selected areas,

(b) the leadership role,

(c) developments in the delivery of health services, with special emphasis on nursing,

(d) brief introduction to research methodology, evaluation and utilization.
6 - 8 hours Terms I and II

Nursing 471. Current professional concerns and developments in health services; research in nursing; study and practice in clinical nursing, e.g.: public health, psychiatry, medicine, surgery, maternity and children.
7 hours – Term I
12 hours – Term II

Pathophysiology 206. Introductory classes in general pathological processes followed by consideration of pathophysiological basis of signs, symptoms, medical diagnosis and therapy. Taught by the Departments of Pathology and Medicine of the Faculty of Medicine.
9 hours – Pre Term
2 hours – Terms I and II
2 hours – Term III

Pharmacology 206. A survey of the principles involved in drug actions, classification of drugs, description of the characteristic effects of drugs on various systems of the body in health and disease; and their uses, abuses and toxicity. The aim of this course is to provide a basis for skillful and safe therapy. This course is taught by the Department of Pharmacology.
2 hours – Terms I and II

Physiology 206. Lectures, demonstrations and practical classes to illustrate the principles of human physiology and their application to nursing. The course involves the physiology of the cell; the internal environment, excitable tissue and muscle; the blood and immunity; the cardiovascular, respiratory and gastrointestinal systems; energy metabolism and nutrition; body water and the kidney; reproduction; the endocrine and nervous systems; controls, regulation and homeostatis. This course is taught by the Department of Physiology.
5 hours – Terms I and II

Psychology 20. Introduction to Psychology: Problems and Methods; individual differences and their assessment; learning; memory; thinking; sensation and perception; motivation; emotion; personality. This course is taught by the Department of Psychology
3 hours – Terms I and II

Psychology 36. Child Psychology: An introduction to theory and research in selected areas of child behavior with particular emphasis on learning, motivation, and personality. This course is taught by the Department of Psychology.
2 hours – Terms I and II

Sociology 20. Introduction to Sociology: An examination of the major theoretical perspectives in the field of Sociology, methods of empirical investigation of social phenomena, socialization, group structure, principles of social organization, community structure, population and social change. This course is taught by the Department of Sociology.
3 hours – Terms I and II

Sociology – Senior Course. See announcement of the Faculties of Arts, Music, Science and Social Science.

Statistics N200. Introduction to Statistics: basic concepts, sampling, measures of central tendency, variability, tests of probability, correlation, significance.
1 hour – Terms I and II

Examinations and Grades

The following policies for examination and grades obtain for the academic year 1970-71. The Faculty of Nursing reserves the right to alter these academic requirements in subsequent years.

Final Grade

The final grade for most courses is based upon individual assignments, group projects, satisfactory clinical performance and written examinations.

Mid-Term Examinations

Mid-term examinations are given in some courses. The purpose of these papers is to help students evaluate their progress and by subsequent conferences with members of the Faculty, afford an opportunity to discuss problems encountered.

Requirements To Sit For Examination

The right to sit for examinations is conditional upon regular attendance at classes, completion of assignments and satisfactory clinical performance.

Final Examinations

Final examinations for students registered in intramural courses are conducted in April, May and June.

A student may be refused permission to write the final examination for failure to maintain satisfactory academic standing throughout the year.

Final examination papers will not be returned to students.

Supplemental Examinations

Supplemental examinations are conducted in August for students conditioned in the regular examinations. All supplemental examinations must be written at The University of Western Ontario or at another Canadian university more than 150 miles from London. Permission to write a supplemental examination at an outside centre other than the above may be granted under unusual circumstances.

A student is allowed two supplemental examinations in the initial year and only one in each succeeding year in the respective programs.

A student is allowed to write a supplemental examination in each of two years in nursing courses of her respective program.

If a student fails in more than two courses, no supplemental privileges will be granted and no credit will be given for any of the year's study.

Application for supplemental examination privileges must be made to the Registrar not later than July 1 of that year. The result of a supplemental examination is final. To be eligible for a supplemental examination in a nursing course, a student must achieve a grade D (50% or 59%) and in a non-nursing course a grade E (40% to 49%).

A student who fails a supplemental examination will not be permitted to write another examination in that course unless the total course is repeated. Permission to repeat a course must be obtained from the Dean of the Faculty of Nursing.

Nursing Courses

If a student has a second failure in a nursing course, she may only proceed with special permission of the Dean, Faculty of Nursing.

Special Examination

A special examination is any examination other than the regular or supplemental examination and it may be offered only with consent of the Dean of the Faculty of Nursing.

A special examination may be written only at this University.

Deferred Examination

Permission to defer an examination is given by the Dean of the Faculty of Nursing only on compassionate grounds. A deferred examination is written normally during the supplemental examination period. No supplementals will be allowed for a student who is permitted to defer examination. No examination fee is charged for deferred examinations.

A deferred examination may be written only at this University.

Aegrotat Standing

Aegrotat standing (academic standing without examination) may be given only to students in the final year of a Bachelor of Science in Nursing program. No aegrotat standing is given in the other years of either program. On compassionate grounds, and with supporting documents, a student may petition the Dean of the Faculty of Nursing for:

1. the privilege of writing deferred examinations

or

2. aegrotat standing which would be 50% in non-nursing courses and 60% in nursing courses.

Failure To Appear At Examination

A student who fails to appear for an examination at the time set in the timetable will not be allowed to write on the examination paper thus missed. The student may petition the Dean of the Faculty of Nursing for the privilege of writing a deferred examination or for aegrotat standing if she is in the final year of a program. Petitions will be entertained only when they are submitted on compassionate grounds with supporting documents.

Failed Course

If a student is given permission to repeat a failed course, she must, regardless of the timetable, satisfactorily complete that course during the next academic year or an adjacent summer session. Only one failed course may be carried in any one year.

Failed Year

A student who fails to complete a year may be permitted by the Dean of the Faculty of Nursing to repeat the year. Permission is given only under exceptional circumstances, and then only when a vacancy is available in that year. When a student is allowed to repeat a year, she must pass that year without conditions to be allowed to continue in the program.

Grading System

The following grading system is used:

80% - 100%	A
70% - 79%	B
60% - 69%	C – passing grade in nursing courses
50% - 59%	D – supplemental privileges in nursing courses
40% - 49%	E – failure in nursing courses – supplemental privileges in non-nursing courses
Less than 40%	F – failure in non-nursing courses

Passing Grade

Students may proceed to the next year of their respective programs if the following conditions are met:

1. Satisfactory clinical performance
2. A grade of 60% and above in each nursing subject
3. A grade of 50% and above in all non-nursing subjects
4. An overall average of 60%

A student writing a supplemental examination will receive either a pass or fail grade for the course. A pass will give the student credit for the course but will not change her average for the year.

FEES

Fees are due and payable in full on registration day but if necessary the fees may be divided into two instalments, the first payable on registration day and the second on the first day of the second term. The extra charge for this division is $5.00.

Students may not attend lectures or examinations, nor may they be recommended for any degree until their tuition fees, fines and other accounts owed to the University are paid, except by permission of the Dean, Faculty of Nursing and the Comptroller.

The Board of Governors reserves the right to amend fees after the printing of this Announcement.

Students whose fees are to be paid wholly or in part by other organizations, by scholarships, bursaries or loans, must present written evidence of such assistance at time of registration. Provided such evidence is satisfactory, credit will be allowed the student for that portion of fees to be so covered. The student will therefore be required to pay only the remaining balance, if any.

The following amounts include for full-time students, Student Activity and Health Insurance fees, totalling $51.50;

Fees Schedule

Full-time students	$515.00
If paid in two instalments	
Registration day	$300.00
First day of Second Term	$220.00
Part-time Intramural Students	
per course	$105.00
Laboratory fee (extra)	$ 10.00
Late Registration Fee	
After September 19	$ 25.00
Examination Fee	
Supplemental, each paper	$ 10.00

Student Expenses

A statement of annual expenses can at best be approximate. In the summary below, personal items such as laundry, clothes, recreation and transportation are not included.

Tuition and incidental fees	$515.00
Board and room (Terms I and II)	$800.00 to $1,000.00
Books and supplies	$100.00 to $120.00

Additional expenses to be considered differ for each year of the program, e.g.: Approximately $25.00 to $32.00 is required for room and board for each week the course of studies precedes or extends beyond Term I and Term II. Approximately $100.00 is required by students registered in the first year of the Basic Nursing Program for purchase of the Faculty of Nursing uniform. (Instructions for obtaining the Faculty of Nursing uniform will be provided upon enrollment.)

Registered nurses are expected to bring their own uniforms.
Cost of transportation related to required clinical experience and for laundering uniforms is an annual expense item for all students.

REGULATIONS

1. Experience proves that success in nursing studies requires that students devote a substantial portion of their time to the requirements of the program. The Faculty advises all students to avoid outside employment unless absolutely necessary. If a

student believes that outside employment is essential in order to remain at the University, she should discuss this with the Dean. Efforts will be made to secure financial assistance so that employment will not be necessary.

2. Students admitted to the Faculty of Nursing are not permitted to take additional courses concurrently in other faculties of the University, or other educational institutions, without special permission from the Dean of the Faculty of Nursing.

3. Regular attendance is expected of students in all courses. A student who is absent from two or more consecutive classes in a course because of illness or other valid reason should report to the instructor upon return to class. Leave of absence is permitted in unusual circumstances after consultation with the Dean or a member of the Faculty of Nursing. Students in good standing who withdraw from the Faculty can only be readmitted subject to the regulations in force at the time they apply to re-enter.

AWARDS

The Gold Medal of the Alumni Association of The University of Western Ontario is awarded each year. Selection is made by the Faculty of the Faculty of Nursing from among students with first class standing in the Bachelor of Science in Nursing programs.

FINANCIAL ASSISTANCE

The University of Western Ontario's "General Information" booklet lists scholarships, prizes, awards, bursaries and loans open to all students registering at this University. There are also a number of additional sources of financial aid available to students enrolling in nursing programs.

I.O.D.E. (Dr. David Crombie Chapter) Bursary

VALUE: $100.00
FOR: A student registered in the Faculty of Nursing.
Enquiries are to be directed to the Awards Officer, Stevenson Hall, The University of Western Ontario, London 72.

Ontario Department of Health Bursaries

VALUE: Tuition fees and $1,400 ($1,800 for students with a spouse or children totally dependent upon them for support).

FOR: Students registered in the final two years of the Program for Registered Nurses. Enquiries are to be directed to Principal Nurse Consultant, Research and Planning Branch, Department of Health, Parliament Buildings, Toronto 5.

VALUE: Tuition fees and $1,600 ($2,000 for students with a spouse or children totally dependent upon them for support).

FOR: Students registered in the MScN programs. Enquiries are to be directed to Principal Nurse Consultant, Research and Planning Branch, Department of Health, Parliament Buildings, Toronto 5.

Registered Nurses' Association of Ontario Fellowship

VALUE: $3,500.00

FOR: Members of the R.N.A.O. enrolled in full-time graduate study. Enquiries are to be directed to Miss Laura W. Barr, Executive Director, Registered Nurses' Association of Ontario, 33 Price Street, Toronto 5, not later than May 15th.

Registered Nurses' Association of Ontario Loan Fund

VALUE: Up to $1,000.00, interest free for three years.

FOR: Members of the R.N.A.O. for a minimum of one year, registered in university study.
Enquiries are to be directed to Miss Laura W. Barr, Executive Director, Registered Nurses' Association of Ontario, 33 Price Street, Toronto 5, not later than May 15th.

St. John Ambulance Association of Canada — The Countess Mountbatten Bursary Fund

VALUE: $200.00 to $400.00

FOR: Students enrolled in any year of any nursing program.
Enquiries are to be directed to the Chairman of Bursary Funds, St. John Ambulance, 321 Chapel Street, Ottawa 2, not later than May 16.

St. John Ambulance Association of Canada — The Margaret MacLaren Memorial Fund

VALUE: $1,000.00

FOR: Registered Nurses for study at the Masters level. Enquiries are to be directed to the Chairman of Bursary Funds, St. John Ambulance, 321 Chapel Street, Ottawa 2, not later than May 16th.

The Mildred I. Walker Bursary

VALUE: Up to $500.00

FOR: A nursing student in a Bachelor of Science in Nursing program. Enquiries are to be directed to the Awards Officer, Stevenson Hall, The University of Western Ontario, London 72.

The W.B. Saunders Company Canada Limited Nursing Fellowship

VALUE: $1,200.00

FOR: A nurse undertaking advanced study in nursing. Availability of this fellowship is subject to the decision of the W.B. Saunders Company from year to year.
Enquiries are to be directed to the Secretary Treasurer, Canadian Nurses' Foundation, 50 The Driveway, Ottawa 4.

Miss Helen Marion Cole RN Memorial Bursary

VALUE: $100.00

FOR: Students in the penultimate year of a nursing program.
Enquiries are to be directed to the Awards Officer, Stevenson Hall, The University of Western Ontario, London 72.

Victorian Order of Nurses for Canada (National) Bursaries

VALUE: $1,800.00

FOR: Students in the final year of a baccalaureate program which includes preparation in public health nursing and for graduate nurses taking post-basic preparation in public health nursing.
Enquiries are to be directed to the Director in Chief, Victorian Order of Nurses for Canada, V.O.N. House, 5 Blackburn Avenue, Ottawa 2.

Victorian Order of Nurses, Brantford Branch Bursaries

VALUE: $1,500.00

FOR: Students registered in the final year of a Bachelor of Science in Nursing program who intend to serve with the Victorian Order of Nurses, Brantford Branch, if required, and if not for one year at a branch to be designated by the National Victorian Order of Nurses.
Enquiries are to be directed to Victorian Order of Nurses, Brantford Branch, 194 Terrace Hill, Brantford.

Victorian Order of Nurses, Hamilton-Dundas Branch Bursaries

VALUE: $1,500.00

FOR: Students registered in the final year of a Bachelor of Science in Nursing program who intend to serve with the Victorian Order of Nurses, Hamilton-Dundas Branch.
Enquiries are to be directed to Victorian Order of Nurses, Hamilton-Dundas Branch, 29 Augusta Street, Hamilton 20.

Victorian Order of Nurses, Metropolitan Toronto Branch Bursaries

VALUE: $1,000.00

FOR: Students registered in the final year of a Bachelor of Science in Nursing program who intend to serve with the Victorian Order of Nurses, Metropolitan Toronto Branch.
Enquiries are to be directed to the Director, Victorian Order of Nurses, Metropolitan Toronto Branch, 277 Victoria Street, Toronto 200.

Victorian Order of Nurses, Windsor-Essex Branch Bursaries

VALUE: $1,000.00

FOR: Students registered in the final year of a Bachelor of Science in Nursing program who intend to serve with the Victorian Order of Nurses, Windsor-Essex County Branch, for a minimum of one year.

Enquiries are to be directed to Victorian Order of Nurses, Windsor-Essex County Branch, 410 Giles Boulevard East, Windsor.

MEMBERS OF FACULTY OF NURSING

(Unless otherwise stated, degrees are from this University).

Professor and Dean

Aikin, R. Catherine, RegN; BA *McGill;* BN *McGill;* MA *Chicago*

Professors

Griffin, Amy E., RegN; BA *Toronto;* MSc *Wayne State;* EdD *Columbia*

Hibbert, Dorothy M., RegN; BS *Columbia;* MA *Columbia;* Professional Diploma, *Columbia*

Associate Professors

Brown, Louise S., RegN; BScN; MS *Western Reserve*

Healey, Eileen N., RegN; BScN; MA *London*

Horn, Ethel M., RegN; BS *Columbia;* MA *Columbia*

Stewart, Diane Y., RegN; BScN; MScN; (Part time)

Wood, Vivian (Mrs.), RegN; BScN; EdM *Boston*

Assistant Professors

Buzzell, E. Mary, RegN; BN *McGill;* MS *Boston*

Calvert, Phyllis R., RegN; BSN *British Columbia;* MS *California*

Forrest, Jean W., RegN; BN *McGill;* BA *Laurentian;* MS *Boston*

Hezekiah, Jocelyn A., RegN; BN *McGill;* MEd *Toronto*

Hurlock, Joan (Mrs.), RegN; BScN, *Johns Hopkins;* MS *Maryland*

McWhirter, Jeananne, RegN; BN *McGill;* MPH *Pittsburg*

Mantle, Jessie H., RegN; BN *McGill;* MS *California*

Moncrieff, Margaret J., RegN; BScN *Washington;* MScN

Potter, Thelma I., RegN; BN *McGill;* MScN *Boston*

Lecturers

Gow, Christina, RegN; MSc *Manitoba;* BSN *Queens*

Wynne, Ethel, RegN; BScN

Instructors

Fisher, Sandra (Mrs.), RegN; BScN *Syracuse*

Fraleigh, Donna M. (Mrs.), RegN; BScN

Kelton, Sheila, RegN; BScN

McCallum, Susan (Mrs.), RegN; BN, *McGill*

Parker Patricia J. (Mrs.), RegN; BScN *Toronto*

Pfisterer, Janet (Mrs.), RegN; BScN

Affiliated Colleges – Huron College · Brescia College · King's College

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Principal

The Venerable J. Grant Morden, BA *Toronto;* LTh, BD, DD *Wycliffe;* STM *Union Theological Seminary;* DTh *General Theological Seminary, New York*

Registrar

J. Catharine Ridley

PROGRAMS

The General Program in Arts and Social Science, all Honors Programs which include English, History and Philosophy, and the first two years of Honors Business Administration are offered by Huron College. All laboratory courses in Science are taught in the College of Science.

Through its Department of Religious Studies, Huron College offers courses open to all students of the University.

HEBREW

COURSES

These courses are given in Huron College on behalf of the Faculty of Arts of the Constituent University, and Huron College.

1-10. Grammar. Text of Genesis 1-3; 22; Jonah. Language Laboratory - Isareli Hebrew
5 hours – 27

20. Introduction to Hebrew Narrative and Poetry. Text of II Samuel 9-20; 1 Kings 1-2. Selected Psalms.
Prerequisite: Hebrew 1-10
3 hours – 17

30. Hebrew Prophetic Literature. Selection from Amos, Isaiah of Jerusalem, Jeremiah, and Deutero-Isaish. Introduction to Gunkel's **Formgeschichte** and **Gattungskritik.**
Prerequisite: Hebrew 20
2 hours – 21

40. Hebrew Text of the Psalms. Principles and forms of Hebrew poetry. Studies of representative Psalms. Gunkel's **Gattungen** and Mowinckel's cultic **Psalmenstudien.**
Prerequisite: Hebrew 20
2 hours – 4

RELIGIOUS STUDIES

COURSES

20. A study of great personalities in the Judaeo-Christian tradition, and modern religious leaders by the biographical method. An examination of their effect on social, political and religious action.
2 hours

30. An Introduction to the Living Religions of the World. A study of the history, faith, and practices of the major living religions.
2 hours

38. Is God fact or fiction? How is he related to this world? An Introduction to Biblical Process Thought. A lecture and discussion course designed to examine objectively the biblical world-outlook, the distinctively Hebrew experience that produced it. A discussion of key biblical concepts in terms of the thought of Whitehead, Teilhard de Chardin, Bultmann, Tillich, and others.
2 hours

44. 20th Century Theological and Philosophical Problems. A seminar designed to exhibit clearly the rational basis for the radical transformation of theology in the 20th century. The literature of contemporary analysis will be examined as it bears on specific topics, e.g., the existence of God, Order and Design, Meaning and Morality, Religious Experience and Authority. The latter part of the course will be a critical scrutiny of some contemporary responses to the problems posed.
2 hours

45. An introduction to New Testament Geek.
2 hours

Members of the Faculty of Huron College

BUSINESS ADMINISTRATION

Lecturer

Pearce, M. R., BA

CLASSICS

Associate Professor

Allen, F. H., (Reverend), MA, BD *Oxon*

ECONOMICS

Lecturers

Inman, M. K., BA *Acadia;* MA, PhD *Harvard;* DLitt *Acadia*

Williamson, D. R., BA *Liverpool;* MA

ENGLISH

Professors

Poisson, R, BA, MA *British Columbia;* PhD *Washington*

Jared, Eleanor Croysdale, BA, MA *Toronto;* AM, PhD *Radcliffe*

Associate Professor

McVey, E. D., MA *Queen's;* PhD *Princeton*

Assistant Professor

Bowe, Elaine Campbell, BA *Mills College;* MA *Indiana,* PhD *Oregon*

Revell, Elizabeth, BA *Toronto;* MA, BLitt *Oxon*

Lecturers

Sharp, M. Corona, (Sister), BA, MA, PhD *Notre Dame*

Bieman, Corinne, BA

Speer, S., BA *Yale,* MA *University of Pennsylvania*

Tucker, J. A., BA, BMus *McGill;* MA *Toronto*

FRENCH

Associate Professors

Black, G. A., MA *Toronto*

Metford, Deborah, BA, MA *British Columbia;* DU *Paris*

Lecturers

Miller, Valentine, BA, MA, BLitt *Oxon*

Van der Wel, C. M., BA *London;* MA

HEBREW

Professor

Park-Taylor, G. H. (Reverend), BA, MA *Toronto;* LTh, BD, DD *Wycliffe*

Lecturer

Kay, H. (Reverend), BA *Dalhousie;* LTh *King's,* BD *Trinity,* MA *Temple*

HISTORY

Professor

Henderson, J. L. H. (Reverend) BA, BD, DD

Assistant Professors

Blocker, J. S., BA *Flordia;* MS *Wisconsin*

Owens, G. L., BA, MA *Nebraska*

Thompson, J. N., BA *McMaster;* MA, PhD *Princeton*

MATHEMATICS

Lecturer

Lee, R. H., BA

POLITICS

Lecturer

Dawson, Helen, BA *McGill;* MA *Queen's;* BLitt *Oxon*

PHILOSOPHY

Assistant Professors

Miller, R. P., BA *Cornell;* BPhil *Oxon,* MA *Michigan*

Schacter, Jean-Pierre, BA *City College of New York;* MA *City University of New York;* PhD *Syracuse*

Lecturer

Irvine, D. F. (Reverend), BA, BTh; MA *University of Waterloo*

PSYCHOLOGY

Associate Professor

Burd, F. W., MA *Toronto*

Sansom, Moira, BA *Mount Allison;* BA *New Brunswick;* BLS *Toronto;* PhD

Lecturers

Harris, T. (Reverend), BA *Toronto;* LTh *Wycliffe;* MA *Columbia;* BD *Union Theological Seminary*

Munn, F. G., BA *Waterloo Lutheran;* MA

RELIGIOUS STUDIES

Professor

Morden, J. G. (Venerable), BA *Toronto;* LTh, BD, DD *Wycliffe;* STM *Union Theological Seminary;* DTh *General Theological Seminary, New York*

Associate Professor

Allen, F. H. (Reverend) MA, BD *Oxon*

Lecturers

Irvine, D. F. (Reverend), BA, BTh; MA *University of Waterloo*

Kay, H. (Reverend), BA *Dalhousie;* LTh; BD *Trinity;* MA *Temple*

Rousom, G. E. (Reverend), BA, MA *Toronto;* BD *Emmanuel*

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OFFICERS OF ADMINISTRATION

Dean

Sister Arleene Walker, BA, MA

Registrar

Sister Paula Janisse, BA, MA

Librarian

Sister Pierina Caverzan, BA, MALS, *Rosary College*

Assistant Librarian

Christine Suokaite, BA, MALS, *Rosary College*

THE PRELIMINARY YEAR

The Preliminary Year offered at Brescia College is designed for students who have completed Grade 12 (Ontario) or who have the equivalent standing. Minimum standards of admission as set by the College are based on percentage, or rank-in-class, and on principals' reports.

Each case of an adult special student seeking admission to the Preliminary Year will be judged on its own merits by the Admission Committee of the College.

The Preliminary Year will consist of the following *program:*

FOR ADMISSION TO FIRST YEAR GENERAL PROGRAM (Arts, Music, or Social Science), or to Secretarial Sciences:
English 10
Another Language 2 or 10, or Mathematics 10
Any three of: History 14, Geography 10, Mathematics 10, Religious Studies 10, another language 2 or 10, Home Economics 25.

SPECIAL COURSES

The following courses, equivalent to Grade 13 subjects, are not offered in the College of the University, but may be offered by the affiliated colleges as part of the Preliminary Year:

English 10. Literature and Composition.
3 hours – 11

French 10. Intermediate French.
Prerequisite: Grade 12 French
3 hours – 23

Geography 10. Geography of Canada.
3 hours

History 14. History of the Americas.
3 hours – 14

Latin 10. Intermediate Latin.
Prerequisite: Grade 12 Latin
3 hours – 26

Mathematics 10. Introduction to Analysis.
5 hours – 5

Religious Studies 10.

Programs

The General Programs and some of the Honors Programs are available in Brescia College. All laboratory courses in the Natural Sciences are taught entirely in the College of Science.

HOME ECONOMICS

Requirements for Admission. Grade 13 standing (with an average of 60%) in four subjects comprising seven credits including English, a language other than English or Mathematics A, Chemistry, and at least one other subject (Biology recommended).

This program which leads to the BA degree in Home Economics, is offered jointly by the University and Brescia College. All Home Economics courses are offered at Brescia College. The Department of Education of Ontario accepts a degree in this program as the academic qualification for High School Assistant's Certificate, Type B, for teaching in the Elementary or Secondary Schools of Ontario.

Students may also take dietetic interneship in institutions approved by The Canadian Dietetic Association for professional training.

First Year

Biology 21
Chemistry 25
English 20
Language or Mathematics at 20 level
Home Economics 23, 25
Psychology 20 or Sociology 20

Second Year

Botany 36
Chemistry 33
Senior English course
Home Economics 30, 31, 32, 33

Third Year

Biochemistry 46
Home Economics 40, 41B, 42, 45
Psychology 36 or Sociology 39 (for students interested in teaching and related fields).

OR

Biochemistry 46
Home Economics 41A, 42, 45, 48, 49 (for students interested in Food Service Management, Nutrition, and Therapeutics).

HOME ECONOMICS

23. Basic Design. Fundamentals of design and color.
2 hours – 13

25. Household Administration. General principles of Home construction and planning, problems of home management and equipment.
2 hours – 31

30. Clothing & Design. Interdisciplinary study of clothing, historic costume, clothing industry of Canada, modern design adaptations of historic costume in the study of fashion. Principles of design and figure types in clothing selection; fit, use and care. Basic comparative clothing construction techniques used with various fibres, fabrications and finishes of cloth.
2 hours lecture, 2 hours laboratory – 13

31. Normal Nutrition. Normal requirements of the body; food nutrients and their functions; deficiencies.
2 lectures both terms, 2 laboratory hours
1 term – 21

32. Food Science. Experimental approach to the study of factors influencing behavior of foods.
1 lecture, 3 laboratory hours – 31

33. Interior Decoration. Fundamentals of interior design and history of interior decoration with emphasis on furniture styles from ancient times to the present.
Prerequisite: Home Economics 23
1 hour, half course – 35

40. Clothing and Designing. Interdisciplinary study of clothing and historic costume; clothing and tailoring methods. Design adaptations of historic costume in the study of flat pattern and draping techniques.
Prerequisite: Home Economics 30
2 lectures, 3 laboratory hours – 7
NOTE: Given in this form for 1970-71. Beginning 1971, Textile Science will be offered).

41. Advanced Nutrition. Nutritional needs during infancy; the adolescent. Diet therapy.
Seminars
3 hours – 14

41A. For students interested in Food Service Management, Nutrition and Therapeutics.

41B. For students interested in teaching and related fields.

42. Principles of Food Science.
Prerequisite. Home Economics 32
1 lecture, 3 laboratory hours – 19

45. Consumer Economics and Communications. Marketing and consumer problems. Demonstration techniques.
1 lecture, 2 laboratory hours – 23

48. Institutional Food Production. The application of scientific principles to the preparation, selection and storage of quality food. Floor planning, layout and equipment. Laboratory exercises and field trips.
2 lectures, 3 laboratory hours – 29

49. Institution Management. Principles of management; personnel supervision; financial control. Clinical studies.
3 hours – 33

PHILOSOPHY

20x. Introduction to Philosophy. This course deals with fundamental problems in Philosophy, especially in Natural Philosophy, Moral Philosophy and Metaphysics, and the solutions offered by great thinkers in these respective fields.
3 hours – 1

RELIGIOUS STUDIES

10. An Introduction To Old Testament Theology. Through the men and messages of the Old Testament.
2 hours

35. Comparative Religion. Ecumenism – a study of contemporary religions under various aspects.
2 hours

37. Contemporary Theology.
2 hours

MEMBERS OF THE FACULTY OF BRESCIA COLLEGE

CLASSICS

Associate Professor

Margaret (Sister) BA, MA *Detroit*

Assistant Professor

Mary Turner (Sister) BA, MA *Notre Dame*

ECONOMICS

Lecturer

Poddar, A. K., BA *New Delhi;* MA (part time)

ENGLISH

Professor

Sharp, Corona (Sister), BA; MA, PhD *Notre Dame*

Assistant Professor

Zoll, A., AB *Michigan;* AM *New Mexico;* PhD *Michigan*

Lecturers

Black, M. W., BA (part time)

Fajardo, S. J., MA *Montreal,* PhD *Chicago*

McKenzie, Mary Louise (Sister), BA, MA (on leave)

FRENCH

Professor

Marie, (Sister), BA, MA; PhD *Toronto*

Assistant Professors

Carter, Carol, BA, MEd *Arkansas;* MA *Wisconsin*

Fajardo, S. J., MA *Montreal,* PhD *Chicago*

GEOGRAPHY

Lecturer

Angelov, AD, BA (part-time)

GERMAN

Lecturer

Teresa, (Sister), BA

HISTORY

Lecturers

Golden, Beverley, BA, MA

Ryan, J., BA *Ottawa* (part time)

HOME ECONOMICS

Assistant Professor, Acting Chairman

Penney, Rhoda, BSc, BEd *St.F.S.;* MS *Cornell*

Assistant Professors

Chen, Shirley Chii-Shya (Mrs.), BA *Taiwan,* MA, PhD *Nebraska*

DiStefano, Lynn D. (Mrs.), BA *Russel Sage;* AM *Boston,* MA *Pennsylvania*

Lecturers

Mercer, Nina (Mrs.), BS *Nebraska;* MS *Cornell*

Rickman, Lillian (Mrs.), SB *Chicago;* RPDT

Sather, Jane M., BSc *Sask.;* MS *Guelph*

Instructors

McNab, Elizabeth (Mrs.), BSc *St.F.X.* (part-time)

Portis, Mary (Mrs.), BA *Kansas,* MA (part-time)

PHILOSOPHY

Professors

St. Michael, (Sister), BA, MA *Cath. U. of America;* PhL, PhD *Laval*

Ryan, M. (Reverend), BA; MA, PhD *Notre Dame*

Assistant Professor

Cavanagh, P. E. (Reverend), BA; MA *Toronto;* PhD *Notre Dame*

PSYCHOLOGY

Professors

Kuntz, Dolores (Sister), BA; MA *Detroit;* DipPsych, PhD *Queen's*

Paul, J., BA, MA, PhD *Toronto* (part time)

Assistant Professors

Howe, Margaret (Mrs.), BA *Acadia;* MA *Toronto* (part time)

RELIGIOUS STUDIES

Lecturers

Hunter, R. B., (Reverend), BA; STB (part-time)

Murphy V. Richard (Reverend), TA *Murphy,* OP, STD *Angelicum;* SSD *Biblical Commission;* STM *Dominican Order* (part-time)

SPANISH

Lecturer

Price, Nancy E., BA

SOCIOLOGY

Professor

Walker, Arleene (Sister), BA; MA *Catholic U. of America*

Lecturers

Ryan, Frances (Sister), BA, MA (on leave)

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King's College is a co-educational, residential, liberal arts College affiliated with the University of Western Ontario. The College is sponsored by the Roman Catholic Diocese of London, but is open to students of all denominations.

King's Students are members of the Western Community and participate fully in the academic, recreational, social, and cultural life on the Western Campus.

OFFICERS OF ADMINISTRATION

Principal and Dean of Arts

Carrigan, D. Owen, BA *St.F.X.;* MA *Boston U;* PhD *Maine*

Registrar

Campbell, J. H., BA *St.F.X.;* BEd, MA *UNB*

Assistant Registrar

Chenier, Helen J. (Mrs.), BA *St.F.X.*

Librarian

Mitchell, P. D., BA, BLS *McGill*

Comptroller

Low, M. D. J.

PROGRAMS

The General Program in Arts and Social Science and some Honors Programs are offered at King's College. These courses follow the same prescription as those taught at the University. For course descriptions please see the pertinent sections of this Calendar.

Upon successful completion of the first two years at King's College, students transfer into Year III of the Western School of Business Administration Program.

SOCIAL WELFARE

The Social Welfare Program for the University is offered at King's College only. This Honors Program prepares students for careers in Social Work, including: Municipal Welfare Departments, Provincial and Federal Departments of Health and Welfare, Departments of Manpower and Immigration, Probation Services, Veterans Affairs, Children's Aid Societies, Family Service Agencies, School Social Work, Attendance Counselling, Court Counselling Service, Hospital Social Service, Psychiatric Social Work.

REQUIREMENTS FOR ADMISSION

Admission requirements from Grade 13 are those of The University of Western Ontario. Prospective Social Welfare Students should meet the requirements for admission to the first year of the General Arts or Social Science Program. The five-course first year program should include Social Welfare 20 and at least one other Social Science course, preferably Psychology 20 or Sociology 20. In order to give students ample time to consider a career in social service, and to become acquainted with social work and other university courses, students do not register in the Social Welfare Program until the second year of university.

Students may be admitted to Year II of the Bachelor of Social Welfare Program by meeting the following standard:

A student will be eligible for admission if he has an average of at least 70% in Social Welfare 20 and two other subjects; or an average of 70% in any three courses if he has not taken Social Welfare 20 in the first year. He must have a passing grade in all other courses. A student who does not meet this requirement but who has a good academic record and the necessary personal qualifications, may be admitted by special permission of the Social Welfare Department.

All applicants seeking admission to the second or subsequent years of the Social Welfare Program must be interviewed by the Department. Students wishing to enter the Social Welfare Program must register at King's College.

CURRICULUM

FIRST YEAR

Five courses in a General Arts or Social Science Program, which should include Social Welfare 20 and at least one other Social Science course. If Social Welfare 20 is not taken in the First Year, it must be taken as an option in the Second Year.

SECOND YEAR

Principal Courses

Two Social Welfare Courses from the 200 series

Subsidiary Courses

Three options

THIRD YEAR

Principal Courses

Three Social Welfare Courses from the 300 series

Subsidiary Courses

Two options

FOURTH YEAR

Principal Courses

Three Social Welfare Courses from the 400 series. (Considerable emphasis will be placed on field practice in Fourth Year.)

Subsidiary Courses

Two options

The curriculum is designed to give the student maximum flexibility in his program. It is possible to transfer into the third year of the General BA Program should a student decide not to continue in the Social Welfare Program. In such a case, credit would be retained for all work done in the first two years. It is also possible to enter the Social Welfare Program in Year III providing at least two Social Welfare Courses were taken in the first two years. However, admission to either Year II or III of the Program can only be approved after consultation with the Department.

Other Courses offered at King's but not at the Constituent University:

Philosophy

41. Aristotelian Logic. A study of Aristotelian Logic with special emphasis on the various uses of words, along with a thorough examination of the nature of definition, proposition, and the different types of argumentation, both deductive and inductive. An intensive study of fallacies in argumentation is also made. Likewise included is an evaluation of the methodology of the sciences, both nonexperimental and experimental.
2 hours – 30

45. Political Philosophy. Critical readings from selected original sources of the political thought of ancient, modern, and contemporary thinkers.
3 hours – 5

Religious Studies

21. Faith and Doubt in the 20th Century. An investigation of the problems encountered by the modern mind in accepting the Bible. The approach combines history, literary analysis, archaeology and biblical theology.
2 hours – 18

32. Comtemporary Moral Problems. A critical examination of contemporary moral attitudes and standards. An attempt to present a Christian approach to some recent moral issues, such as sex, drugs, mass-media, money, politics, war, segregation, etc.
2 hours – 26

33. Introduction to Eastern Orthodoxy. An introduction to the Church of the East: Spirituality, liturgy, theology, basic history and present position in World Christianity, with particular emphasis given to the distinctive differences of Orthodoxy.
2 hours – 12

35. Comparative Christian Religions. A study of the theological issues at stake in the division of Christendom; approaches to Christian unity; Ecumenism.
2 hours – 8

40. The Theology of Marriage. A study of marriage considered from the psychological, moral, social, and theological points of view.
2 hours – 28

46. Christian Social Theory. The modern and contemporary teachings of the Christian Church on social justice, wages, property, work, poverty, social reconstruction, etc. The course will examine the thought of leading theorists and its application to contemporary society.
2 hours – 34

48. Systematic Moral Theology. Introduction to general moral theology; nature and task of moral theology, Biblical moral theology, historical overview of moral theology, natural law, virtue of prudence, sin, human act.
2 hours – 16

Social Welfare

20. Introduction to Social Welfare. Attention will be focused on the essentials of social welfare policy and practice for the rapidly changing conditions of today's society. The historical antecedents will also be examined and the influence of Europe and America on the development of social services in Canada.
3 hours – 22

230. Social Issues and Problems. A detailed examination of major social issues and problems and the various approaches to them: poverty, housing, health, deviant behavior, etc. An assessment of the environmental factors contributing to these problems such as the urban ghetto, social isolation, automation, etc.
3 hours – 5

234. Systems and Policy. A study of the systems of social service administration at the municipal, provincial and federal government levels; the formulation and execution of social welfare policy; an evaluation of systems and policy and their effect on the community.
3 hours – 17

330. Methods of Intervention. A study of the various interventive strategies used by the social work profession to deal with social problems at all levels - individual, group and community. The adequacy and effectiveness of these strategies will be examined in detail.
3 hours – 28

334. Systems and Policy II. A critical, in depth, appraisal of the formulation and effectiveness of social welfare policy as reflected in existing social welfare programs. An analytic framework will be used to assess current problems and issues in social welfare policy and to evaluate characteristic

solutions. An attempt will be made to develop a fresh viewpoint on the role of the social work profession in the formulation, implementation and evaluation of social welfare policy.
3 hours – 20

336. Human Behavior and Social Environment. An examination of the factors that underlie an individual's social functioning and their relationship to social work interventive process.
3 hours – 10

MEMBERS OF THE FACULTY OF KING'S COLLEGE

Dean

Carrigan, D. O., BA ST.F.X.; MA *Boston U;* PhD *Maine* (Professor, History)

Professors

Havelka, J., BA, MA *Masaryk;* PhD *Milan;* MSc *McGill;* (Professor, Psychology)

Lenardon, D., BA, BEd *Alberta;* MA, PhD *Toronto* (Professor, French)

Murphy, R. T. A. (V. Reverend) OP, STD *Angelicum;* SSD Biblical Commission; STM Dominican Order (Professor, Religious Studies)

Ring, W. (Reverend), BA; PhL *Laval* (Professor, Philosophy)

Thomas, A. (Reverend), SA, STL, MA, MS, PhD (CUA); LittD *Notre Dame* (Professor, Psychology)

Treacy, C. J., BA; MA, PhD *Toronto* (Professor Classics)

Associate Professors

Cavanagh, P. E. (Reverend), BA; MA *Toronto;* PhD *Notre Dame* (Associate Professor, Philosophy)

Crunican, P. E. (Reverend), BA; MA, PhD *Toronto* (Associate Professor, History)

Goutor, J. R., BA *Allegheny;* MA, PhD *Illinois* (Associate Professor, History)

Graveline, R. A. (Reverend), BA; PhL, STL *Laval;* (Associate Professor, Philosophy)

Keane, C. E. (Reverend), BA; MA *Notre Dame* (Associate Professor, English)

Maor, H., PhD *Mainz* (Associate Professor, Sociology)

Ryan, M. (Reverend), BA; MA, PhD *Notre Dame* (Associate Professor, Philosophy)

Snyder, J. J., BA *Notre Dame;* MA, PhD *Toronto* (Associate Professor, Philosophy)

Assistant Professors

Brown, Trudy (Mrs.), BA *Ottawa;* MSW *Carleton* (Assistant Professor, Social Welfare)

Canzona, L., BA, MSW *Toronto* (Assistant Professor, Social Welfare)

Donohue, J. H. (Reverend), BA; STL *Gregorianum* (Assistant Professor, Religious Studies)

de Fabry, Anne Srabian, BA *Houston;* MA, PhD *Rice* (Assistant Professor, French)

Koop, P. A., BComm *Manitoba;* MBA *Toronto;* PhD *Southern California* (Assistant Professor, Economics)

Olsen, G. W., BA, MA *Windsor* (Assistant Professor, History)

Paterson, G., BA, MA, PhilM, PhD *Toronto* (Assistant Professor, English)

Toop, R., BA, MA, PhD *Toronto* (Assistant Professor, English)

Visiting Professor

Lawlor, Monica M., BA, MA, PhD *London* (Visiting Professor of Psychology)

Lecturer

Orange, J. C., MA, PhilM *Toronto* (Lecturer, English)

Britain, Susan Dorothy, BA, MA *San Jose State* (Lecturer, Psychology)

Part-Time Faculty

Aneste, G. (Reverend), STL *Athens* (Religious Studies)

Leach, Phyllis, BA *Heidelberg College;* MA *Chicago* (Politics)

Marr, W., BA *McMaster;* MA (Economics)

Norey, N. P., BSc, PhD (Mathematics)

Robertson, J., BA *Gonzaga;* MSW *Ottawa* (Social Welfare)

Smith, T., BA *St. Mary's;* MSW *Maritime School* (Social Welfare)
