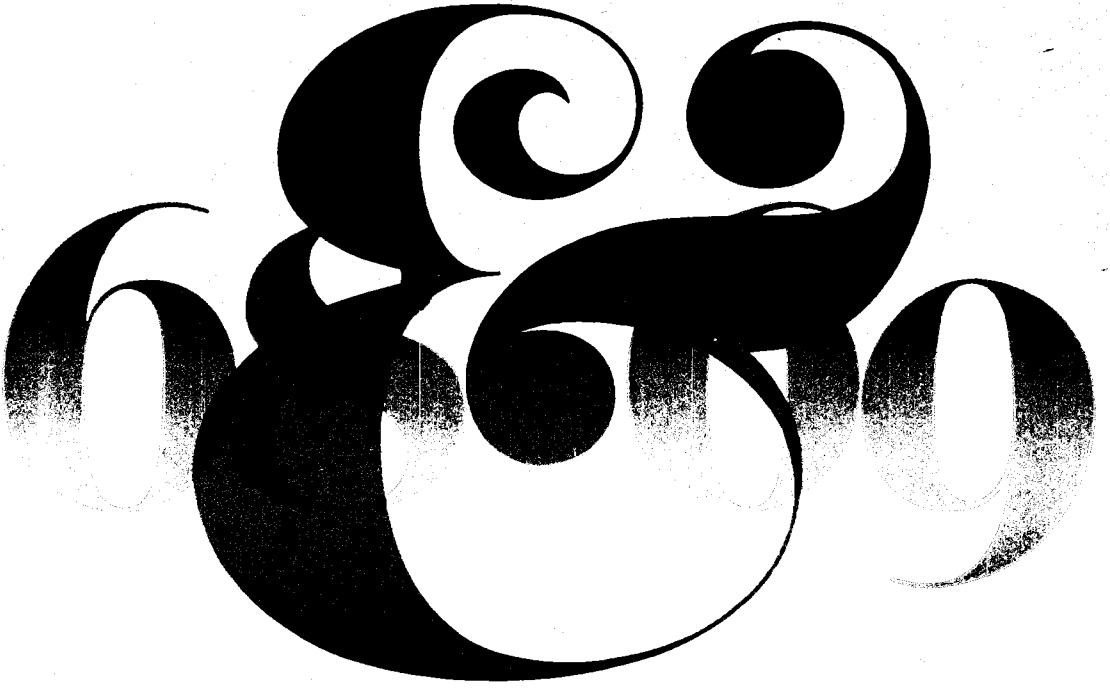
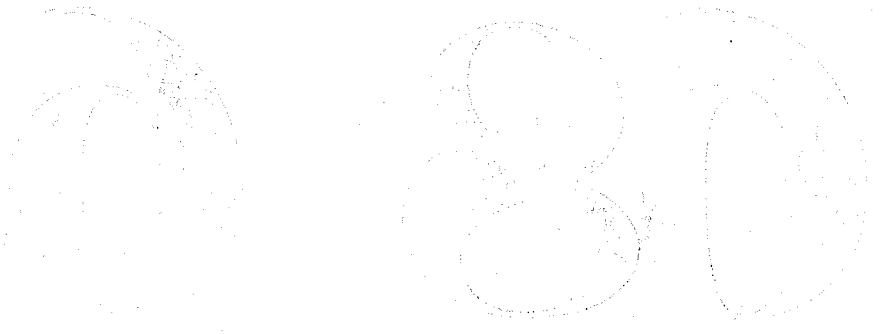
FACULTY OF ARTS AND SCIENCE

THE UNIVERSITY OF WESTERN ONTARIO



EDUCATION • RESEARCH • SERVICE SINCE 1878



IMPORTANT NOTICE

1. In view of increasing costs of supplies and labour, residence dues and other charges set forth in this Calendar are subject to change by the Board of Governors.
2. The Council of the Faculty reserves the right to withdraw any course or subject listed in this Calendar.
3. The courses of study listed in this Calendar are subject to restrictions of time-table.
4. The possession of the minimum admission requirements does not in itself guarantee admission to the Faculty.

The University of Western Ontario
London, Canada



Arts and Science

1968-1969

1968

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ACADEMIC CALENDAR

1968

May 6, Monday ..... Summer Session Evening Classes begin
July 2, Monday ..... Summer Session begins
July 29 - August 3
Monday to Saturday ..... Supplemental Examinations
August 15, Thursday ..... Summer Session ends
September 18, 19
Wednesday, Thursday .... Freshmen Registration, Thames Hall
September 20, 21
Friday, Saturday ..... Upperclass Registration, Thames Hall
September 23, Monday ..... Classes begin
September 26, 27
Thursday, Friday ..... Faculty of Graduate Studies Registration, Alumni Hall
October 14, Monday ..... Thanksgiving Day, Holiday
October 15, Tuesday ..... Last day for enrollment of full-time students
Last day for adding any subject
October 24, Thursday ..... Meeting of the University Senate
October 25, Friday ..... Autumn Convocation
November 11, Monday ..... Remembrance Day Ceremony
November 15, Friday ..... Last day for dropping a course without penalty
December 18, Wednesday .... Classes end — 5:30 p.m.

1969

January 2, Thursday ..... Classes resume — 8:30 a.m.
January 4, Saturday ..... First Term ends
January 6, Monday ..... Second Term begins
January 9, 10
Thursday, Friday ..... Summer School Supplemental Examinations
February 15, Saturday ..... Last day for receiving applications for Graduation
February 24 - March 1
Monday to Saturday ..... Conference Week
March 7, Friday ..... Founder's Day
April 4, Friday ..... Good Friday, Holiday
April 12, Saturday ..... Second Term ends
April 14 - May 3
Monday to Saturday ..... Examinations
May 26, Monday ..... Meeting of the University Senate
May 27, 28, 29, 30, 31
Tues., Wed., Thurs., Fri., Sat. ..... Spring Convocation
June 2, Monday ..... Last day for receiving applications for Summer Session from students registering for first time
June 16, Monday ..... Last day for receiving applications for Summer Session from students previously registered

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GENERAL INFORMATION

The booklet "Information About Western" which presents concise introductory information about The University of Western Ontario is available from the Registrar's Office, The University of Western Ontario, London, Canada.

SENATE ELECTIONS 1968

Call for nominations of eligible candidates to represent the academic units, other than the Faculty of Graduate Studies, the student body as required by The University of Western Ontario Act, 1967:

October 1 - 12, 1968

Elections — October 21 - 26, 1968

Call for nominations of eligible candidates to represent the Faculty of Graduate Studies as required by The University of Western Ontario Act, 1967:

October 28 - November 9, 1968

Elections — November 18 - 23, 1968

UNIVERSITY OFFICERS

Official Visitor	His Honour, the Lieutenant-Governor of Ontario
Chancellor	A. W. Trueman, B.A., M.A., D.Litt., LL.D.
President and Vice-Chancellor	D. C. Williams, B.A., M.A., Ph.D.
Vice-President of the University	R. B. Willis, M.A.
Vice-President (Arts and Science)	M. K. Inman, B.A., M.A., Ph.D., D.Litt.
Vice-President (Health Sciences)	O. H. Warwick, M.D., C.M., M.A., M.R.C.P., F.R.C.P.(C), F.A.C.P.
Dean of Men	T. L. Hoskin, M.A.
Assistant Dean of Men	A. D. MacKenzie, M.A.
Dean of Women	Leola E. Neal, M.A., Ph.D.
Registrar	J. K. Watson, M.A., Ph.D.
Associate Registrar	Margaret P. May, B.A.
Assistant Registrar	D. G. Henderson, B.A.
Assistant Registrar, Admissions	B. G. Browning, B.A.
Chief Librarian	J. J. Talman, M.A., Ph.D., F.R.S.C.
Deputy Chief Librarian	J. F. MacPherson, B.A., M.A., A.L.A.
Director, Summer School & Extension	Angela M. Armitt, B.A., M.A.
Director, French Summer School	F. K. Harper, B.A., M.A.
Director, Intercollegiate Athletics	J. P. Metras
Director, Health Sciences	R. J. Bowen, B.A., M.D.
Awards Officer	E. J. McLeod, B.A.
Placement Officer	C. F. Way
Comptroller	R. R. Glover, B.A.
Director, Information Services & University Publications	G. C. McDonald, B.A.
Secondary School Liaison Officer	A. G. McColl, B.A.
Director, Alumni Affairs	G. C. McDonald, B.A.
Director, Physical Plant	John Shortreed, B.A.Sc.
Director, Food Services	George A. Bullas

*FACULTY OF ARTS AND SCIENCE

The University of Western Ontario Faculty of Arts and Science include the following Units: University College, Middlesex College, Talbot College, College of Music, College of Science, Department of Summer School and Extension, and Department of French Summer School, Trois-Pistoles, Quebec; and the following Arts Colleges affiliated with the University: Huron College, Brescia College and King's College.

Vice-President (Arts and Science): Mark Keith Inman, B.A., M.A., Ph.D., D.Litt.

University College
Dean: Norman L. Nicholson, B.A., M.Sc., Ph.D.

Middlesex College
Dean: Robert Newton Shervill, B.A., M.A., Ph.D.

Talbot College
Dean: Gordon H. Turner, B.A., M.A., Ph.D.

College of Music
Dean: Clifford von Kuster, Mus. Bac.

College of Science
Dean: Andrew E. Scott, B.Sc., Ph.D.
Assistant Dean: George Harold Reavely, M.A., D.I.C.

Department of Summer School and Extension
Director: Angela M. Armitt, B.A., M.A.
Assistant Director: D. L. Harris, B.A., M.S.W.

Department of French Summer School
Director: F. K. Harper, B.A., M.A.

THE AFFILIATED COLLEGES

Huron College
Principal: The Rev. J. Grant Morden, B.A., L.Th., B.D., D.D., S.T.M., D.Th.

Brescia College
Dean: Sister Dominica, B.A., M.A.

King's College
Principal and Dean of Arts: D. Owen Carrigan, B.A., M.A., Ph.D.

*The University Senate has approved the establishment of the following Faculties: Faculty of Humanities, Faculty of Music, Faculty of Science, and Faculty of Social Sciences. At the time of printing the organizational structure of the new Faculties has not been completed.

ADMISSION REQUIREMENTS

FIRST YEAR — GENERAL REQUIREMENTS

Applicants for admission to the First Year in September, 1968, must satisfy the following Grade 12 and Grade 13 requirements

1. **Grade 12:** standing in at least six Ontario Grade 12 or equivalent subjects (excluding Physical Education). These subjects must include at least **five** from the following list with a minimum of one from each division.
   (a) English
   (b) French, German, Greek, Italian, Latin, Russian, Spanish
   (c) Geography (Part I; Part II), History (Part I; Part II)
   (d) Mathematics (Part I; Part II), Science (Physics; Chemistry)

   These Grade 12 requirements are effective for admission in September, 1968. However, applications will be considered from applicants who find it impossible to meet the above requirements because of reasons other than academic failure. Such applicants should present their cases in writing to the Registrar for consideration by an Admissions Committee.

2. **Grade 13:** standing in at least **four subjects** comprising **seven credits,** with a minimum average of 60% and no mark below 50%, or, where schools use a grade system of marking, the equivalent standing.
   The following Ontario Grade 13 subjects (or their equivalents) are approved subjects for purposes of admission to this University in September, 1968:

   One Credit: Art; Biology; Chemistry; Physics; Geography; History; Mathematics B; Music*.

   Two Credits: English; French; German; Greek; Italian; Latin; Russian; Spanish; Mathematics A; Français.

Note: *The combination of two Conservatory of Music certificates (Grade 8 Practical and Grade 2 Theory) will be accepted in lieu of one Grade 13 credit to meet the academic requirement for admission in September, 1968. Conservatory of Music certificates may not be counted as one of the four subjects required for admission.

Note: The following Grade 13 subjects **are not acceptable** to meet the admission requirements in September, 1968: Accountancy Practice; Secretarial Practice; Mathematics of Investment; Home Economics.

Scholastic Aptitude Tests: All Ontario Grade 13 applicants must present the results of the Scholastic Aptitude Tests of the Ontario Institute for Studies in Education (OSAT) or of the College Entrance Examination Board (SAT). All students should submit achievement test scores when achievement tests are available in the subjects offered for admission.

Students may obtain information about the test and test centres by enquiring at their school or by writing to the College Entrance Examination Board, P.O. Box 592, Princeton, New Jersey, 08540, U.S.A.

Weighted Average: The overall average for admission is calculated on the basis of seven credits of Ontario Grade 13 or equivalent standing. The marks obtained in two-credit examinations are doubled.

Limited Enrollment: The University reserves the right to limit the number of applicants admitted to the first year of a particular programme. This means that on the basis of their academic records some applicants may be admitted to the first year of a programme other than their first choice.

The University also reserves the right to reject, on the basis of his complete academic record, an applicant whose academic qualifications may meet technically the published admission requirements.

ACADEMIC STANDING ACCEPTED AS EQUIVALENT TO ONTARIO GRADE 13 STANDING FOR ADMISSION:

Canada (provinces other than Ontario):

Students from other provinces in Canada are eligible to apply for admission to the First Fear at this University if their academic records meet in subject matter and standing obtained both the requirements for admission to this University and the requirements for admission to a recognized university in their own province in a programme similar to the one to which admission is being sought at this University.

Provided that the subjects are acceptable for admission, the following certificates and/or academic standings are accepted as equivalent to Ontario Grade 13 standing:

British Columbia: Grade 13 or first year at the Universities of British Columbia, Simon Fraser, Victoria, or Notre Dame.

Alberta, Saskatchewan, Manitoba: Grade 12.

Quebec: Grade 12 (fifth year high school) or first year at McGill, Sir George Williams, Bishop's Universities or Loyola College or the Senior School Certificate — McGill University.

Prince Edward Island: Honour Diploma of the third year at Prince of Wales College or first year at St. Dunstan's University.

New Brunswick: Grade 13 or first year at New Brunswick universities.

Nova Scotia: Grade 12 or first year at Nova Scotia universities.

Newfoundland: First year at Memorial University of Newfoundland.

The College Entrance Examination Board tests must be written.

United Kingdom and Other Countries of the Commonwealth:

A student from the United Kingdom or another country of the Commonwealth is eligible to apply for admission to the First Year at this University on the basis of a General Certificate of Education (G.C.E.) or an equivalent certificate, with passes in at least five acceptable subjects of which two must be at the advanced (A) level, or with passes in four acceptable subjects of which three must be at the advanced (A) level. These subjects must include English language, a language other than English or Mathematics or Science and subjects appropriate to the programme to which admission is sought.

The College Entrance Examination Board tests should be written.

United States of America:

A student with an outstanding high school record may be considered for admission directly from Grade 12 but normally only a student from the United States who has graduated from high school (Grade 12) and has completed success-

fully the freshman year at an accredited American junior college, college or university, is eligible to apply for admission to the First Year at this University.

The applicant's freshman programme must include English (six semester hours), a language other than English or Mathematics or Science (six semester hours) and other subjects (eighteen semester hours) similar to the Ontario Grade 13 subjects required for admission to the programme to which admission is sought.

Languages other than English must be languages studied in both high school and the freshman year. Beginners' courses in languages at the freshman level are not acceptable to meet the admission requirements.

The College Entrance Examination Board tests must be written.

Hong Kong:

A student from Hong Kong is eligible to apply for admission to the First Year at this University on the basis of the Matriculation Certificate of the University of Hong Kong or the General Certificate of Education (G.C.E.) with passes in at least five acceptable subjects of which two must be at the advanced (A) level or with passes in at least four acceptable subjects of which three must be at the advanced (A) level. These subjects must include English language, a language other than English or Mathematics or Science and other subjects appropriate to the programme to which admission is sought.

The College Entrance Examination Board tests, as well as English proficiency tests, must be written.

ADMISSION WITH ADVANCED STANDING

Students from other universities and colleges may be admitted to the Arts and Science programmes with advance 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 advance standing will be dealt with individually by the Admissions Committees.

PROFICIENCY IN ENGLISH

Since lectures, seminars and examinations in this University are, for the most part, conducted in English, it is essential that all students have an adequate knowledge of written and spoken English. An applicant for admission, for whom English is a second language, must submit with his application evidence, acceptable to this University, of his proficiency in English.

Most applicants, from countries where English is not the common language, meet this requirement by writing the Test of English as a Foreign Language

administered by the Educational Testing Service. This test may be administered on request in most countries of the world at stated times during the academic year. The English Proficiency Test of the English Language Institute, The University of Michigan, Ann Arbor, Michigan, U.S.A., is also acceptable.

Applicants must make their own arrangements for the administration of the test. Applicant's scores in the Test of English as a Foreign Language or English Proficiency Test are forwarded directly to this University by the testing agency when requested.

MATURE APPLICANTS — M.A.A.T. TESTS

An applicant of not less than twenty-three years of age whose academic qualifications do not meet in full the published admission requirements and who submits evidence of his potential ability to succeed in academic courses at the university level is eligible to apply for admission to the First Year at this University.

Mature applicants for admission must write aptitude tests which will be administered in Room 7, Natural Sciences Centre at 9:00 a.m. on the following Saturdays: February 10, March 9, April 6, April 20, May 11, May 25, June 8, August 10, August 24, and September 7, 1968.

The fee for the administration of The University of Western Ontario aptitude tests (payable at the time the test is written) is $5.00 at The University of Western Ontario, and $10.00 if written at another Canadian university.

In general, mature applicants are expected to have obtained Ontario Grade 13 or equivalent standing in English and at least one other subject, preferably a language other than English.

In Ontario, Grade 13 standing may be obtained by attending evening classes conducted in at least one secondary school in each large centre of population or through correspondence courses available from the Correspondence Course Division of the Ontario Department of Education (Toronto).

ADMISSION OF TEACHERS (ONTARIO)

A teacher of any age whose academic qualifications do not meet in full the published admission requirements is eligible to apply for admission to the First Year at this University if

a) he or she has completed successfully the one year programme at an Ontario Teachers' College and

b) he or she has completed a minimum of two years of employment as a teacher on a full time basis.

All applicants for admission in this category must write the aptitude test described above.

ADMISSION PROCEDURES

Applicants who have not previously attended The University of Western Ontario must submit to the Registrar's Office a completed Application For Admission form with the required supporting documents before the prescribed date.

ACADEMIC COUNSELLING SERVICE

An Academic Counselling Service will be available during the Summer months for freshman students. All students entering First Year studies are urged to seek an appointment for counselling on the composition of their programme. Appointments may be arranged through the Office of the Registrar or through the Secretary, Academic Counselling Service, Middlesex College, The University of Western Ontario. Appointment hours are 9:00 - 12:00 and 1:00 - 4:30, Monday to Friday. Appointments will be approximately 30 minutes in length.

Tentative dates for the operation of the Academic Counselling Service are June 17 to August 30, 1968.

TERMINAL DATES

Final Dates for the Acceptance of Applications for Admission — 1968-69:

JUNE 1, 1968 — Applications for Admission to register for 1968 SUMMER SESSION

JULY 1, 1968 — Applications For Admission to register for 1968-69 WINTER SESSION (intramural students)

SEPTEMBER 1, 1968 — Applications For Admission to register for EXTENSION COURSES, 1968-69 WINTER SESSION

OCTOBER 1, 1968 — Applications For Ontario Student Awards

A non-refundable late application fee of $25.00 must accompany each Application for Admission submitted after the final date.

HOW TO APPLY

Students presently enrolled in Grade 13 must use the Ontario Universities Common Application Form which is available only through the Ontario Secondary Schools. Other applicants should request an Application for Undergraduate Admission by writing to: The Registrar, The University of Western Ontario.

Completed Application for Admission forms and the required supporting documents are to be mailed to: The Registrar's Office, The University of Western Ontario, London, Canada, as early as possible.

It is the responsibility of each applicant to ensure that the following certificates, documents and information accompany his Application for Admission:

A Confidential Report of Secondary School Record mailed directly to this University by the Principal or Director of the Guidance Department of the last Secondary School attended except in the case of students presently enrolled in Grade 13 where the report is an integral part of the Common Application Form.

Additional documents required from applicants in Special categories:

1. An applicant who is attending or has attended institutions of post-secondary education:
   Official Certified Transcripts of academic record mailed directly to this University by the Registrars of the institutions attended.
2. An applicant whose full-time formal education has been interrupted for more than four months:
   A Resume of occupation or employment for all the academic years (September to June), during which the applicant has not been a full-time day student; confirmation may be required.
3. A mature applicant for admission as an Adult Special Student:
   A Resume of occupation or employment for all the academic years (September to June) during which the applicant has not been a full-time day student; confirmation may be required.
   A Birth Certificate or other proof of age.
4. A married woman must submit her Marriage Certificate with her supporting documents if they bear her maiden name.
5. A student of the University applying for re-admission must present statements from employers describing his employment since withdrawing from courses.

FEES

Fees are due and payable in full on registration day but if necessary the fees may be divided into two instalments payable on the first day of each 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 or diploma until their tuition fees, fines and other accounts owed to the University are paid, except by permission of the Dean or Principal of their Faculty and the Comptroller.

Students registered in a College of the University and transferring during the same year to an affiliated college will be charged by the University, on such transfer, a minimum penalty of $50.

Students transferring from an affiliated college to the University under similar circumstances will be charged by the University the full annual fee for the year regardless of the date of the transfer.

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

ANNUAL FEES

Full-time intramural undergraduate students:

The following amounts include, for full-time students Student Activity and Health Insurance fees totalling $51.50.

Arts and Science $515
- If paid in two instalments
  - Registration day $300
  - First day of Second Term $220
- Late Registration Fee
  - First day ..... $ 10
  - Each additional day ..... $ 3
  - Maximum ..... $ 25

Part-time Intramural Students
- Per Course $100
- Laboratory Fee ..... $ 10

Summer School, Extension and Correspondence Students
- Per Course $100
- Laboratory Fee ..... $ 10
- Non-Credit ..... $ 50

Late Registration Fee
- Applicable to all Part-time fees ..... $ 5
- Late Application For Admission fee applicable to all Full and Part-time students, non-refundable ..... $ 25

EXAMINATION FEES

Payable at time of application for any of the following:
- Supplemental, each paper ..... $ 10
- Presiding fee at an outside centre, each half-day ..... $ 5
- Aptitude Test ..... $ 5
- Special examination ..... $ 15

CERTIFICATES

- Evaluation of non-Canadian certificates for admission ..... $ 2
- Transcript of record, first two copies, each ..... $ 1
  - Additional copies, each ..... .25

DEGREES AND DIPLOMAS

- Degree of B.D. ..... $ 24

(The fees for all other degrees and diplomas are included in the annual fees).

STUDENT EXPENSES

The following is an estimate of the expenses of a First Year student:

Tuition fees, which include registration fees, regular examination fees, students and athletic association fees, health insurance and health service fees	$ 515 to $ 550*
Board and lodging (34 weeks)	$ 600 to $1000*
Books, stationery, instruments	$ 75 to $ 125
Other expenses	$ 210 to $ 425
TOTAL	$1400 to $2100**

*1968-69 First Year tuition fees and residence fees are subject to change.

**First Year students who live with their parents or relatives in the London area may require no more than $900 to $1200 for the first year.

CONDUCT OF STUDENTS

The primary concern of this University is with scholarship and the pursuit of academic excellence in the traditional roles of preserving, transmitting and creating knowledge. The University, therefore, enjoys a special status within society as a whole.

Under the provisions of The University of Western Ontario Act 1967, the University's academic standards are the responsibility of its Senate and a student who fails to meet these may be required to withdraw.

By the same Statute, the ultimate authority in matters of discipline is vested in the Board of Governors but, of course, the reputation, peace, order, and good government of the University will be the rightful interest of all its members. The University reserves the right at any time to suspend or expel a student whose conduct, in its judgment, is unsatisfactory. Not all universities have the same requirements of conduct and those students who find it difficult to accept or live up to Western's standards would do well to seek admission elsewhere.

Students convicted in a court of law may be liable also to disciplinary action by the University. The illegal use or sale of drugs is considered a particularly serious offence. All regulations relating to the conduct of students extend to conduct off the campus in circumstances which by any means associate a student with the University.

STUDENT ACTIVITIES

"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.

HEALTH SERVICES

Both in his own interest and in the interest of others, a student who is suffering from any illness or physical disability is expected to report it immediately to the University Health Services even if he or she is to be treated by a physician outside the University.

TRAFFIC AND PARKING

A number of parking lots are situated on campus and are available for use under a system involving regulations and controls.

Because the University grounds are private rather than public property, the University reserves the right to maintain full jurisdiction over all vehicle and pedestrian traffic. Enforcement for the Traffic and Parking Regulations is authorized by the Board of Governors and carried out by the Campus Security Police.

Parking permits are required for all vehicles and may be obtained at the Traffic Control Office, Room 22, Stevenson Hall. Operators holding such permits are restricted to parking only in those lots designated for them.

CURB PARKING IS NOT ALLOWED EXCEPT AS INDICATED BY REGULATORY SIGNS.

Students are required to park in the "General" parking lots, now located opposite the men's residences on University Drive, and south of Huron Street. Current regulations do not permit parking privileges for freshmen, except on medical grounds and when considered commuters.

It should be noted that the term "student" as defined in the Traffic and Parking Regulations include any person proceeding toward a degree, or attending any class, seminar, course or conference, etc. This definition is not affected by the fact that a student may also be employed in some capacity by the University.

Present penalties for a violation of the Traffic and Parking Regulations are $5.00 fine and/or having the vehicle towed away at the owner's expense and risk. After 48 hours unpaid fines are billed through the University Accounts Office at double the amount. Unless these are paid promptly, they may result in a student being excluded from classes and examinations, or in the withholding of examination results. These embarrassments and inconveniences can be avoided by co-operative attitude toward the campus parking situation.

Continuing study is being given to further revisions of traffic and parking regulations in order to cope with the growth factor. It is anticipated that these new regulations will be in effect by the Summer 1968. It will be the responsibility of every driver to make inquiries as to the established parking policies, including the amount of the parking fee yet to be determined.

CANADIAN ARMED FORCES — SUBSIDIZED PLANS

The Canadian Armed Forces Regular Officers Training Plan (ROTP) is a completely subsidized university plan covering tuition, books, year-round room and board, pay, and medical and dental care for up to four years of undergraduate study.

The Medical Officers' Training Plan (MOTP) and the Dental Officers' Training

Plan (DOTP) covers the above, with the addition of a graduated pay and rank throughout four years of undergraduate study.

Graduates of these plans are commissioned in the Regular Force and are given the option of a Permanent Commission or release after four years' Regular Service for members of the ROTP, three years' Regular Service for members of the MOTP and five years' Regular Service for members of the DOTP.

Students interested in any of the above Regular Force Plans should enquire at any Canadian Forces Recruiting Centre (CFRC). The London CFRC is located at 120 Queens Avenue, Telephone 433-5124.

ADMISSION SCHOLARSHIPS

An Admission Scholarship is an award made for Academic Excellence to a First Year student.

Applications are not required for the Admission Scholarships administered by The University of Western Ontario. The Admission Scholarships are awarded by the Scholarship Committee on a student's academic standing in Grade 13 and may be awarded to students from provinces of Canada other than Ontario on the basis of Senior Matriculation standing considered equivalent to the required Ontario Grade 13 standing.

Scholarships may not be deferred. Winners must register for a full year's work in the academic session following the award. In order to retain the privilege of continuing scholarships, the winners must maintain a required degree of proficiency in each year of their academic programme.

The Admission Scholarships listed below are not tenable in the affiliated colleges (Huron, Brescia, King's). For information about admission scholarships awarded by the affiliated colleges, students should write to the registrars of those colleges.

The Alcan Scholarship: Value $500 payable for the first year.

The General Motors Canadian Scholarship: Value $4,000 ($1,000 a year for a maximum of four years). For Canadian citizens on the basis of academic record and all-round ability.

Harriet M. Giddens Scholarship: Value $200 payable the first year for the highest ranking student from the City of London who has not qualified for a more valuable award. The capital fund for this scholarship was bequeathed to the University by the late Harriet M. Giddens of London.

Inco Scholarship: Value $300 plus tuition and incidental fees, each year for four years. For a student enrolling in an engineering, geology, geophysics or physics and mathematics programme. The award is based on academic record, character, and financial need.

The London Life Actuarial Scholarship: Value $2400 ($600 in each of the four years) for a student entering the Honours Mathematics programme to take the actuarial option, based on highest standing in Grade 13 credits with highest standing in Mathematics.

Two Ontario Department of Education and National Council of Fitness and Amateur Sport Admission Scholarships: Value $500 each, payable in the first year. For the man and the woman recommended for competence and promise in physical education by the Heads of the Departments in Physical Education in their secondary schools who obtain the highest standing.

Two Queen Elizabeth Scholarships of the Corporation of The City of London: Value $1000 each, payable the first year. For the man and the woman with the highest standing in Grade 13 credits who have lived in the City of London for at least three years, and who have attended secondary schools in the City of London for their three final years.

Captain Jack Birnie Smith Scholarship: Value $150 payable the first year. For proficiency in single subjects to the student who enters first year pre-business.

Three George Williamson Young Memorial Scholarships: Value $500 ($300 the first year, $200 the second year). The capital fund for this scholarship was bequeathed to the University by the late George Williamson Young of Port Stanley.

SCHOLARSHIPS TENABLE AT ANY ONTARIO UNIVERSITY

H. J. Heinz Company of Canada Scholarship: Value $2000 ($500 for each of four years). For a student enrolled in the district high schools in **Essex and Kent Counties** on the basis of academic record or character. Applications are to be submitted to the principal of the school attended by May 1.

Imperial Leaf Tobacco Scholarship: Value $1000 ($600 the first year, $400 the second). For highest standing in required Grade 13 credits; to students enrolled in East Elgin District High School and Delhi District High School. Applications are to be submitted through the appropriate high school principal.

Institute of Chartered Accountants of Ontario Scholarship: Value $1000. For students who register for an Honours Programme in Business Administration leading to a B.A. degree. Applications are to be submitted to the Institute of Chartered Accountants of Ontario, 69 Bloor Street W., Toronto 5, before June 20.

London Board of Education Awards: Value $500 each year for four years and $1000 while attending the Ontario College of Education. For students from London Secondary Schools, who enrol in an Honours Programme leading to Type A certification in the Ontario College of Education. The winners must agree to teach in the Secondary School system in Ontario for three years after graduation. Applications are to be submitted to the London Board of Education by June 1.

National Secretaries Association Scholarship: Value $100 payable the first year. For a student from a secondary school in Windsor or Riverside, Ontario, who registers in a Secretarial Science Programme. Applications are to be submitted to the Scholarship Chairman, Windsor Chapter of the National Secretaries' Association, 1163 Pierre Avenue, Windsor, Ontario.

UNDERGRADUATE SCHOLARSHIPS AND PRIZES

No applications are required. Awards are made by the Arts and Science Scholarship Committee on the basis of examination standing. Scholarships are not ordinarily awarded to students who do not obtain a first class standing.

To be eligible for an award, a student must take the prescribed subjects in his year and programme. Students who take courses out of sequence or fail to write any examination due to illness or other reasons, are not eligible. Recipients of continuing scholarships must maintain a degree of proficiency in each year of their academic programme.

No limit is placed on the number of awards a student may receive in any one year. Where a student receives more than one award, the Scholarship Committee may place a limit on the total amount of money received by the student in that year.

Awards of more than $1200 will be paid in two instalments on November 1 and February 1.

Board of Governors' Scholarships: $60 each; for general proficiency in Humanities, Natural Sciences and Social Sciences of the first year of the General Programme.

Board of Governors' Scholarships: $60 each; for highest standing in the Second and Third Year of Honours Programmes when no other scholarship is awarded.

Board of Governors' Scholarship: $50 for the student in Humanities or Social Sciences of the General Programme first year, with the highest standing who enters one of the following second year Honours Programmes: English and History, History and Philosophy or Philosophy and Psychology.

Alumnae Association Prize: $10; Third Year Canadian History (History 31); only women are eligible for competition.

The Helen I. Battle Scholarship: $200; for the highest ranking student in the third year of the Zoology option, in the Honours Biology programme. This scholarship was endowed by Biology graduates and colleagues.

The J. P. Bickell Foundation Scholarship: $1500; $500 a year for three years for a student entering the second year of the Honours Geology Programme; or the Chemical option of Engineering Science; if he maintains Scholarship standing from year to year.

The Hon. Edward Blake Scholarship, No. 1: $100; for Honours Economics, Second Year. Offered in 1969-70.

The Hon. Edward Blake Scholarship, No. 2: $100; for Honours Economics, Third Year. Offered in 1969-70. These scholarships were endowed by the late Major Hume Cronyn, K.C., M.P., in memory of his uncle, the Hon. Edward Blake, sometime Premier of Ontario, and, later, member of the British House of Commons.

The B'Nai Brith Scholarship: $50; for the highest ranking student in Humanities or Social Sciences of the General Programme, first year, who enters one of the following programmes: English, Ancient or Modern Languages and Literature, or Philosophy. Given each year by the London Branch of the Order.

The Boreal Biological Laboratories Award: $200; for the highest ranking student in the second year of Honours Biology, entering the Zoology option of the third year. Preference will be given to a student planning to enter the teaching profession.

Brescia College Home Economics Prize, No. 1: $25; for Second Year Clothing (Home Economics 30x).

Brescia College Home Economics Prize, No. 2: $25; for Second Year Foods (Home Economics 32x).

Bruce County Scholarships: Two, $100 scholarships; one for the man, one for the woman, from Bruce County who stands highest in any year of any regular programme in the University. Each scholarship can be held two years in succession, provided there is no other scholar qualified to receive it.

The Richard and Julia Butler Scholarship: $60; for Second Year Honours Botany. This scholarship was bequeathed to the University by the late Mrs. Mary E. B. Moorhouse.

The Canadian Association of Geographers: Book prize to the graduating student who has demonstrated the greatest proficiency in this subject.

Chemical Institute of Canada Prize: $25; in books to be awarded to the student with the highest standing in Chemistry Courses in the Honours Chemistry with Physics option, or Honours Chemistry Programme of the third year.

College of Music Prize: $50 per year is to be awarded to a student in any year for outstanding achievement.

Cominco Scholarship: $800; to the highest ranking student entering the penultimate undergraduate year of one of the following programmes: Honours Geology, Metallurgical Engineering, Chemical Engineering, Honours Chemistry or Mechanical Engineering. This scholarship may be continued into the fourth year providing the student maintains Scholarship standing. Application must be made to the Registrar by May 1.

The Gordon Dixon Memorial: Presented by the Geology class of 1957. A book to a senior student who has demonstrated interest and proficiency in Pleistocene Geology.

Elgin County Scholarships: Two, $100 scholarships; one for the man, one for the woman, from Elgin County (excluding the City of St. Thomas) who stands highest in any year of any regular programme in the University. These scholarships were voted by the Council of Elgin County in June, 1945. Application must be made to the Registrar by October 1.

The Famous Players Canadian Corporation Scholarship: $500; to be awarded for high standing in the Journalism subjects of the penultimate year of the Honours Journalism programme; the award may be augmented by a waiver of fees of the Trois Pistoles Summer School for a candidate who agrees to attend that Summer Session.

Gamma Phi Beta Alumnae Jubilee Prize: $10; Second Year Secretarial Science (Secretarial Science 30, 37, 38, 39).

The Andrew Grant Scholarship, No. 1: $100; for Honours Economics, Second Year. Offered in 1968-69.

The Andrew Grant Scholarship, No. 2: $100; for Honours Economics, Third Year. Offered in 1968-69.

The Andrew Grant Scholarship, No. 3: $100; for Honours Political Science, Second Year.

The Andrew Grant Scholarship, No. 4: $100; for Honours Political Science, Third Year. These scholarships were bequeathed to the University by Mrs. Grant as a memorial to her husband, Mr. Andrew Grant, St. Thomas.

Huron County Scholarships: Two, $100 scholarships; one for the man, one for the woman, from Huron County who stands highest in any year of any regular programme in the University. These scholarships were voted by the Council of Huron County in 1944. Application must be made to the Registrar by October 1.

The International Nickel Company Award in Journalism: A plaque and a portable typewriter for the student completing the Graduate Diploma Programme

in Journalism with the highest average, provided the average is at least 70 percent. The award shall be made by the Scholarship Committee on recommendation of the Head of the Department of Journalism.

The Albert O. Jeffery Scholarship, No. 1: $60; for Honours Biology, Second Year.

The Albert O. Jeffery Scholarship, No. 2: $60; for Honours Biology, Third Year.

The Albert O. Jeffery Scholarship, No. 3: $60; for Honours Mathematics, Third Year. These three scholarships were bequeathed to the University by the late Mrs. Jeffery as a memorial to her husband, Mr. Albert O. Jeffery, K.C., D.C.L., LL.D., former president of the London Life Insurance Company.

The F. G. Jewell Scholarship: $50; for the highest ranking student in Humanities or Social Sciences of the General Programme or Pre-Business, First Year, who enters one of the professional programmes: Honours Business Administration, Business Administration and Secretarial Science, Journalism or Physical and Health Education. Given in memory of the late Francis G. Jewell, C.A., former Auditor of the University.

The Johnson's Wax Scholarship: $2,400; $800 a year for three years to an outstanding student in first year Pre-Business tenable in the second year; if he maintains Scholarship standing from year to year.

Herbert K. Kalbfleisch Prize: $80; for a third or fourth year student with the highest standing in German as determined by the German Department. This prize was endowed by former students, colleagues and friends.

The Kennecott Copper Corporation Minerals Exploration Scholarship: $1000; to be awarded to a male student entering the third or the fourth year of the Honours Geology Programme or Honours Geophysics Programme. Application must be made to the Registrar by May 1.

The Kitchener-Waterloo Record and Kitchener-Waterloo Press Club Award in Journalism: $200; to be awarded in January to the student with the highest standing in the Diploma Programme in Journalism at the end of the first term.

The A. N. Knowles Scholarship: $300; for Honours Chemistry, Second Year.

The J. C. Knowles Scholarship: $300; for Honours Chemistry, Third Year. The above scholarships are donated to the University as memorials by Mrs. A. N. Knowles, London.

Sir Wilfred Laurier Memorial Scholarships: Two scholarships, one elementary ($30) and one advanced ($50); awarded annually for proficiency in French conversation: open only to Canadian-born English-speaking students, or the sons or daughters of naturalized British subjects not of French parentage. The capital fund of these scholarships was the gift of the Women's Liberal Association.

The John McEachern Scholarship: $150; in memory of Mr. Thomas E. Carr, a graduate of this university; for the student with the highest standing in Third Year Honours English and History who enrols in the Fourth Year.

The John Gordon McIntosh Scholarship, No. 1: $60; for Honours Physics, Second Year.

The John Gordon McIntosh Scholarship, No. 2: $60; for Honours Physics, Third Year. These scholarships were endowed by the late Mrs. John Gordon McIntosh, of Winnipeg, in memory of her husband.

The Wilhelmina and J. Gordon McIntosh Prize, No. 4: $60; for Honours Geography, Second Year, tenable in the Third Year of Honours Geography.

The Wilhelmina and J. Gordon McIntosh Prize, No. 5: $60; for Honours Geography Third Year. These prizes were bequeathed to the University by the late Wilhelmina Morris McIntosh, of Winnipeg and London.

The Joseph Henry Marshall Scholarship: $60; for Honours History, Third Year. Offered in 1968-69. Open only to Canadian-born students. Bequeathed to the University by Mrs. Amy Marshall as a memorial to her late husband, Joseph Henry Marshall, M.P., to commemorate his interest in all phases of Canadian History.

The Mathematics Class of 1949 Prize: $25; for the highest standing in first year Calculus.

The Midland-Osler Securities Scholarship: $100; for the student with the highest standing in Journalism 20, who registers in the Honours Journalism programme.

The National Council of Jewish Women of Canada (London Section) Scholarship: $60; for a graduating student in Honours Psychology.

Benjamin Noble Scholarship, No. 1: $75; for Honours Business Administration and Secretarial Science, Second Year.

Benjamin Noble Scholarship, No. 2: $75; for Honours Business Administration and Secretarial Science, Third Year.

The Northern Electric Undergraduate Scholarships: Two, $500 each; one in Honours Business Administration and the other in Engineering Science or Honours Physics, for a student who is a Canadian citizen or landed immigrant with at least one year successfully completed at a recognized university. The award is renewable for one year and is tenable in any year except the first.

The Stan C. Reade Award: $250; for the student with the highest (at least Second Class Honours) standing in the Honours courses of the second year, who registers for the third year of the Honours Physics programme.

The Stan C. Reade Essay Prize: A single reflex camera, for competition among fourth year Honours students in Physics.

The Reader's Digest Journalism Scholarships: Two at $500 each; for students entering the second, third or fourth years of the Honours Journalism Programme. The candidates selected by the Scholarship Committee, on recommendation of the Head of the Department of Journalism, shall have attained an average of First Class standing in the Journalism and the other Honours courses of the previous academic year, with an average of at least Second Class standing in the remaining courses. If no undergraduate student qualifies for one of the scholarships, it will be awarded to a student entering the Graduate Diploma Programme in Journalism at this University, on the basis of his academic record in his final undergraduate year, provided that his average is First Class.

No student shall hold both of these scholarships in one year, unless no other student, undergraduate or graduate, qualifies for the second scholarship.

The Rhoda Ann Rinn Scholarship in English Literature: $1000; to be awarded on the basis of academic standing in Humanities or Social Sciences of the General Programme, first year, to a student in a College of the University who enrols in the second year of Honours English Language and Literature. The winner will be selected by the Scholarship Committee, on recommendation of the Department of English, from applications to be received by the Registrar before May 1. $500 will be payable in the second year, $300 in the third year and $200 in the final year, provided the student maintains First or Second Class Honours and remains in the Honours Programme in English Language and Literature. This scholarship was established as a memorial to his mother, by the late Lionel Harris Rinn, Honours English graduate of this University.

The W. J. Roche Scholarship: $50; for the highest ranking student in Humanities or Social Sciences of the General Programme, first year, who enters one of the social science programmes: Honours Economics, Politics, Geography, History or Psychology. Given in honour of the late Hon. W. J. Roche, M.D., LL.D., C.M.G., former Chancellor of the University.

The Myrtle Rowntree Memorial Scholarship: $60; for Honours English Language and Literature, Third Year. This scholarship was established as a memorial to the late Myrtle Martindale Rowntree, a graduate in Honours English and History, by her brothers and sisters.

The Dean Russell (Limited) Award: Two at $100 each; for two students (preferably one girl and one boy) highest in fourth year Zoology. Preference will be given to students planning to enter the teaching profession.

The Russian Club Award: $25; for a member of the Russian Club with the highest standing in Russian 20.

The Society of Chemical Industry Merit Award: A gold key and a year's subscription to the Journal of the Society (Chemistry and Industry) for the highest standing in the final year of Honours Chemistry or Honours Chemistry with Physics options, provided that First Class Honours is obtained and the course has been completed in four years.

The Sons of Italy Italian Award, No. 1: $25; for Italian 20.

The Sons of Italy Italian Award, No. 2: $25; for Italian 30 or 40.

Legation of Switzerland: Book prizes to students in modern languages, on recommendation of the Departments of Romance Languages and German.

Summer School for French and English, Trois-Pistoles, Quebec: Applications for the following scholarships available for study at Trois-Pistoles will be received by the Directors of Trois-Pistoles Summer School up to April 30.
The winners will be selected by a special committee:

Robert Simpson Company Limited Scholarships: Two; $150 each.
Imperial Oil Company Limited Scholarship: $150.
Lachapelle Scholarship: $100.
Board of Governors' Scholarship: $60.
The W. Sherwood Fox Scholarship.

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.

The Timken International Fund Scholarship: Four at $250; two for the highest standing in the first and second years of Honours Mathematics and two for the highest standing in the first and second years of Honours Engineering Science.

The Frances Weir Scholarship: $100; when the winner of the Governor-General's Medal is a woman, she will receive a scholarship in memory of Miss Frances M. Weir who won the Governor-General's Medal when she graduated from this University in 1916; as a gift of Mr. Samuel E. Weir, Q.C. through The Weir Foundation.

Albert E. Wells: $150; for Second Year Honours Chemistry with Physics option.

The Helen Atfield White Scholarship: $250; for the U.W.O. student registering in the first year of the Faculty of Medicine, with the highest average in the previous year's work.

The William Wyatt Scholarship, No. 1: $60; for Honours English Language and Literature, Second Year.

The William Wyatt Scholarship, No. 2: $60; for Honours History, Second Year. The capital fund for these scholarships was bequeathed to the University by the late William Wyatt, of London.

MEDALS AWARDED TO GRADUATING STUDENTS

These medals are competitive and are awarded through selection by the Scholarship Committee from among students with First Class standing.

Students in affiliated colleges are eligible for The Governor-General's Medal only.

The Helen M. B. Allison Gold Medal: Honours English Language and Literature. (Endowed by the Undergraduate Women's Organization.)

The Alumni Gold Medals: Honours Chemistry, Honours English and French, Honours Music, and the degree programme in Nursing. These medals were endowed by the Alumni Association of the University.

Brescia College of Arts Award: Gold Medal; Home Economics.

The Raymond Compton Dearle Gold Medal: Honours Physics. Endowed by former students and friends of Dr. Dearle, M.B.E., F.R.S.C., Head of the Department of Physics, 1919-1949; Research Professor of Physics, 1949-57.

The Dillon Gold Medal: Honours Applied Mathematics.

The Robert LaVerne Eagleson Gold Medal in History: Endowed by Miss Lyla Eagleson of Toronto, in memory of her brother who graduated from the University with the University Gold Medal in History in 1925.

The S. F. Glass Awards: Gold Medals; one in Honours Economics and the other in Honours Political Science. Endowed by the estate of the late S. F. Glass of London.

Governor-General's Medal: General Programme.

The Joseph J. and Annie R. Kingston Gold Medal: Honours Mathematics Programme 1, endowed by the late Dr. H. R. Kingston in memory of his parents.

The Maude Holt Kingston Gold Medal: Honours Astronomy, endowed by the late Dr. H. R. Kingston in memory of his wife.

The R. B. Liddy Gold Medal: Honours Psychology; endowed in memory of the late Professor R. B. Liddy, Head of the Department of Psychology in this University, 1931-54, by his children, Catherine and James, both graduates of this University.

The London Life Insurance Company Gold Medal: Honours Actuarial Mathematics.

The Northern Life Gold Medal: Honours Statistical Mathematics.

The Thomas B. Richardson Gold Medal: Honours Geography, endowed by Leverne and Ronald Richardson in honour of their father.

The A. Dorothy Turville Gold Medal: Honours French and Spanish. (Endowed by the Undergraduate Women's Organization.)

University Gold Medals: For all Honours Programmes when no other medal is awarded.

The Frances Weir Gold Medal and Scholarship: $100 in English and History; the gift of Mr. Samuel E. Weir, Q.C. through the Weir Foundation, in memory of his sister Miss Frances M. Weir who died in 1959 and who was at the time of her graduation in 1916 the winner of the Governor-General's Gold Medal, which was then awarded to the best student in the Honours English and History Course.

ADMISSION AWARDS

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 Awards Officer, Stevenson Hall. To facilitate processing, students are requested to submit applications as soon as possible, but no later than 31 October, 1968. Completion of this form automatically secures consideration for the majority of awards administered by the University.

ADMISSION BURSARIES

To be eligible for an admission bursary an applicant must be a full-time student and show genuine financial need. An average of 66% is generally required.

The following are applied for before registration:

The Bobby Bauer Memorial Award: Up to the total expenses of one academic year, depending on need. Available to students demonstrating outstanding proficiency in Hockey. Apply by August 31 to The Bobby Bauer Memorial Foundation, 60 Victoria Street, North, Kitchener, Ontario.

Brant County Medical Association Award: $500. Brant County residents enrolled in a course leading ultimately to a degree in Medicine are eligible. Apply in writing to Dr. A. E. Croal, Brantford General Hospital, Brantford, Ontario, no later than October 12.

The Children of the War Dead (Education Assistance Act): Fees and monthly allowances are provided for children of veterans whose death was attributable to military service. Application should be made to your District Office, Department of Veterans Affairs. (The Canadian Legion and the Provincial Chapter of the Imperial Order Daughters of the Empire also offer some scholarship and bursary aid to children of deceased veterans. Apply through your local branch.)

Fireco Sales Limited Bursary: $515 to $600 (full tuition for programme of applicant). Available to a student who has worked in a grocery store during the last year of High School. Application forms, which are available at 1,500 grocery stores throughout Canada, should be forwarded to the Awards Officer not later than August 14 — awards will be announced by September 1.

Leonard Foundation Bursaries: Up to $400 each (for 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 Military Colleges 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. Appli-

cation forms may be obtained from the Awards Officers and must be filed by February 15 of the year preceding the award.

London Free Press Printing Company Limited Award: $250 each and summer employment worth $1,000 or more, renewable each year for scholarship satisfactory to the Selection Committee. Only students who have attended secondary schools in the fourteen counties of southwestern Ontario for three years or more and have demonstrated interest and ability in journalism are eligible. Submit applications to the London Free Press before June 1.

Ontario Department of Education and National Fitness Council and Amateur Sports Awards: Up to $500. Available to students who intend to continue in the Honours Physical and Health Education programme. Apply to the Awards Officer by September 1.

Ontario Hockey Association Bursary: Value $100 payable the first year. Available to students selected by the Awards Officer, in consultation with the Department of Physical Education, on the basis of need, and normally, some contribution made to amateur hockey in Ontario. Apply after publication of Grade 13 marks, but not later than September 1, to the Awards Officer.

O-Pee-Chee Company Bursaries: $500 each renewable for two additional years. Apply after publication of Grade 13 marks but not later than August 15 to the Awards Officer, Awards will be announced by September 1.

The Steel Company of Canada Bursaries: $500 each renewable for three additional years. Apply after publication of Grade 13 marks but not later than August 15 to the Awards Officer. Awards will be announced by September 1.

Many companies offer bursaries or scholarships for children of their employees. Applications should be submitted through the Company concerned.

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 demonstrates genuine financial need. Completion of an application form for the Ontario Student Awards (see page 26) automatically gains consideration for all the restricted and unrestricted bursaries except where otherwise stated.

The following bursaries are restricted by residence, sex, course or year, as indicated:

The J. P. Bickell Foundation Bursaries: Up to $500 each. Students registered in the Department of Geology or in the Chemical Engineering course are eligible.

The Canadian War Correspondents Association Bursary: $200. Students enrolled in the Honours Journalism programme are eligible. Offered in alternate years. Available next in 1969-70.

The Isabel Dingman Memorial Bursary: $50. Women students entering the third or fourth year of the Honours Journalism programme are eligible for this bursary, which is a gift of the Canadian Women's Press Club (London Branch).

The Leslie W. Dunstall Educational Bursary: At least three bursaries of $500 are offered, in competition annually. Open to full-time students registered in Actuarial Mathematics (G.P. 2). Further information should be requested directly from: Director of Awards, Association of Canadian Universities and Colleges, 151 Slater Street, Ottawa 4, Ontario. Completed applications must arrive at the above address not later than June 1.

Lady Eaton Bursaries: Up to $250 each. Students registered in the College of Music or in the General Arts course with Music Options are eligible.

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, Midlesex, 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.

Hydro Electric Power Commission of Ontario: $500. This bursary is available to students in the second year in Engineering, Business Administration, or Mathematics and Physics.

I.O.D.E. (London Air Force Chapter) Bursary: $100. Third year students in any branch of Honours Physics, or any allied programme are eligible for this bursary.

I.O.D.E. (Grace Blackburn Chapter) Bursary: $100. Students enrolled in the second Pre-medical year are eligible, with the idea of subsequent awards to the same student throughout the programme.

I.O.D.E. (Harriet Boomer Chapter) Bursary: $100. Students enrolled in the College of Music are eligible.

I.O.D.E. (Dr. John Dearness Chapter) Bursary: $100. Students in Honours Biology, preferably in a Mycology course, are eligible for this bursary.

I.O.D.E. (The Colonel William Gartshore Chapter) Bursary: $100. This bursary is available to a student in any year in the Humanities.

I.O.D.E. (Nina Moore Jamieson Chapter) Bursary: $100. Students in the third year of the Honours Programme in English and French are eligible for this bursary.

I.O.D.E. (Municipal Chapter) Bursary: $100. Students in any year of a degree programme in Honours Science are eligible for this bursary.

I.O.D.E. (Overseas Chapter) Bursary: $100. Students in the final year of any degree programme are eligible.

I.O.D.E. (The Sir George Ross Chapter) Bursary: $100. This bursary is available to a student in the third or fourth year of a programme in the Humanities or Social Sciences.

I.O.D.E. (William E. Saunders Chapter) Bursary: $100. Students registered in the Botany option of Honours Biology during the preceding session are eligible. This bursary may be awarded, under special circumstances, to a student registered in a programme other than Botany.

I.O.D.E. (Nicholas Wilson Chapter) Bursary: $100. Students enrolled in the final year of any Honours or Professional course are eligible for this bursary.

The Joseph Kerbel Student-Aid Bursary: $100. Available to a student, preferably from a new Canadian family, registered in any year of any course in the Faculty of Arts and Science.

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. 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 15 of the year preceding the award.

The Olga Alice Miller Bursary: $100. This bursary is available to a woman in any year of any programme. The Selection Committee shall be the Dean of Women and the Awards Officer. This bursary is a memorial to the late Olga Alice Miller, who was a 1928 graduate in Honours English and History and Assistant Registrar 1933-51. It was established by her mother, Mrs. A. E. Miller and her sister, Helen.

Ontario Department of Education and National Fitness Council and Amateur Sports Awards: Up to $500 each. Available to students in the Honours Physical Health and Recreation Education programme. Apply after registration but not later than September 30.

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. Marys and Stratford, are eligible.

The James H. Rattray Memorial Trust Fund: Up to $200 each. Available to students in any year of Engineering Science or a Science programme which includes English 20.

The Melvin Vernon Rayner Memorial Bursaries: Up to $250 each. Students registered in the College of Music are eligible.

Royal Canadian Legion (London) Student-Aid Fund: Up to $200 each. Deserving undergraduates who are veterans or dependents of veterans are eligible.

The London Centennial Chapter, National Secretaries Association (International) Bursary: $100. This bursary is available to a woman in a senior year of the Secretarial programme. It is awarded by a committee consisting of the Dean of Women, the Head of the Department of Secretarial Science, the Awards Officer, and a member of the Executive of the London Centennial Chapter of the National Secretaries Association (International).

The Undergraduate Women's Organization Bursary: $100. This bursary is available to a woman in any year of any programme selected by a Committee composed of the Dean of Women, the Awards Officer, and the President and Chairman of the Undergraduate Women's Organization.

The University Women's Club Bursary: $100 each. These bursaries are available to women in the third or preferably the fourth year in the Faculty. They are awarded on the basis of academic standing and some financial need by a committee consisting of the Dean of Women, the Awards Officer and, from the University Women's Club of London, a Convener and the President or her representative.

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. (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 Gilbert A. Labine Bursaries: Up to $500 each.

The Local 27 U.A.W. Bursary: $250.

The Procter 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.

The Masonic Foundation of Ontario Special Awards: (See "Grants" section).

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

The Masonic Foundation of Ontario Special Awards: The Masonic Foundation makes available funds to assist deserving students who encounter unexpected difficulties in their second term. Application forms are available from the Awards Officer.

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 through the Awards Officer.

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 and secondary schools in Ontario. Ontario residents see Ontario Student Awards. Applications terminate October 31, 1968.

University Loan Funds: Up to $400. Available to full-time students in any year of any programme.

Commercial Bank Student Loans: Several Canadian banks make money available to students for educational purposes. Interested students should consult the bank of their choice.

For more information regarding Financial Aid write to: Awards Officer, The University of Western Ontario, London, Canada.

ACADEMIC REGULATIONS

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 eighty percent 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 College. 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.

CREDIT FOR FOREIGN LANGUAGE BEGUN AT UNIVERSITY

When a student begins a foreign language in the University, one course numbered 1 to 9 may be credited towards a General Programme degree. To gain credit for an additional course numbered 1 to 9, the student must complete successfully a second course in the same subject. This rule applies only to the student who meets the normal admission requirements.

EXTRA COURSES

Permission to take an extra course must be obtained in writing from the Dean or his designate either prior to registration or at the time of registration. Only students with overall B averages in the previous year's work may apply.

ADDING AND DROPPING COURSES

Following registration, a student may add a course only with the joint approval of the Dean of the College and the Head of the Department concerned. A course cannot be added after October 17.

A student may drop a course only with the joint approval of the Dean of the College or his designate, and the Head of the Department concerned. A course dropped after November 14 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 Honours or Major subject and cannot do so without penalty after October 17. All substitutions must conform to the basic requirements as laid down by the Senate.

UNSATISFACTORY KNOWLEDGE OF ENGLISH

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

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 conducted in August for students conditioned in the regular examinations, and in January for students of the Summer School (subject to Regulations concerning Supplementals, see below). Fee $10.

All supplemental examinations 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 Academic Standing Committee. Fee $15.

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 college 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 Arts and Science Departments have introduced comprehensive examinations for Honours 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 Honours Programme. They are additional to the course examinations.

DEFERRED EXAMINATIONS

Permission to defer an examination is given by the Academic Standing Committee only on compassionate grounds. A student must petition the Academic Standing Committee for this privilege. A deferred examination is written normally 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 this 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 on the examination paper thus missed. He may,

with the approval of the Head of the Department concerned, petition the Academic Standing Committee 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 GENERAL PROGRAMMES

Aegrotat Standing (academic standing without examination) may be given to students in the graduating year of the General Programmes. On compassionate grounds, and with supporting documents, a student may petition the Academic Standing Committee for:

(a) the privilege of writing deferred examinations

or

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

ELIGIBILITY FOR SUPPLEMENTAL EXAMINATIONS

A student is allowed two supplemental examinations in his first year and only one in each succeeding year. A student who is granted a supplemental privilege must write the supplemental the first time it is offered. A supplemental thus missed is recorded as a failure.

To be eligible for a supplemental examination a student must:

In the General Programme:

Pass two-thirds of his year's work.

Obtain grade E (40% to 49%) in the course in which a supplemental may be written.

Formally apply to the Registrar for the privilege of taking the examination.

In an Honours Programme:

Pass two-thirds of his year's work.

Obtain grade E (40% to 49%) in the course in which a supplemental may be written.

Obtain the consent of the Department in which he takes his honours work.

Formally apply to the Registrar for the privilege of taking the examination.

EXAMINATION TIMETABLE

Each Arts and Science course offered has 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 1969 will be held according to the following schedule:

First Week		Second Week		Third Week	
Monday	9 a.m. — 25	Monday	9 a.m. — 1	Monday	9 a.m. — 13
	2 p.m. — 26		2 p.m. — 2		2 p.m. — 14
Tuesday	9 a.m. — 27	Tuesday	9 a.m. — 3	Tuesday	9 a.m. — 15
	2 p.m. — 28		2 p.m. — 4		2 p.m. — 16
Wednesday	9 a.m. — 29	Wednesday	9 a.m. — 5	Wednesday	9 a.m. — 17
	2 p.m. — 30		2 p.m. — 6		2 p.m. — 18
Thursday	9 a.m. — 31	Thursday	9 a.m. — 7	Thursday	9 a.m. — 19
	2 p.m. — 32		2 p.m. — 8		2 p.m. — 20
Friday	9 a.m. — 33	Friday	9 a.m. — 9	Friday	9 a.m. — 21
	2 p.m. — 34		2 p.m. — 10		2 p.m. — 22
Saturday	9 a.m. — 35	Saturday	9 a.m. — 11	Saturday	9 a.m. — 23
	2 p.m. — 36		2 p.m. — 12		2 p.m. — 24

GRADES

TABLE OF GRADES

The marking system of examinations allows for six grades:

Grade A indicating a mark of 80 percent or higher
Grade B indicating a mark of 70 percent to 79 percent inclusive
Grade C indicating a mark of 60 percent to 69 percent inclusive
Grade D indicating a mark of 50 percent to 59 percent inclusive
Grade E indicating a mark of 40 percent to 49 percent inclusive
Grade F indicating a mark of less than 40 percent.

SESSIONAL AVERAGE

The **sessional** average is compiled from the marks for all courses taken in an academic **session** in which a mark of 40% or higher has been obtained. No average will be compiled for a student who has failed a course.

SUPPLEMENTAL EXAMINATION GRADES

A student will receive either a "pass" or "failed" grade for a course after a supplemental examination. A "pass" will give the student credit for the course but

will not change his average for the year. **A student passing a supplemental examination will receive a mark of 50% to be used in the compilation of major and graduating averages.**

GENERAL PROGRAMME

For students in General Programme B.A. with majors:

The passing grade in all courses is 50 percent, except as specified for the major subject. (See General Regulations for a B.A. Degree — page 41).

For students in General Programme B.Sc. with majors:

The passing grade in all courses is 50 percent, except as specified for the major subject. (See General Regulations for a B.Sc. Degree — page 44).

For students in General Programmes with options:

No student will be admitted to the degree of Bachelor of Arts in the General Programme with Home Economics, Secretarial Science or Music Options who has not obtained a minimum of 50 percent on all the prescribed and elective work of his programme, and a minimum of 60 percent in half the courses of his senior year.

HONOURS PROGRAMMES

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% 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% in the principal courses of his Honours Programme and a passing grade in each of the subsidiary courses, may be accepted by special permission of the Department(s) concerned.

A student who passes all courses in his Honours Programme in the Third Year but who has failed to obtain the requisite average for honours (60%) must meet the requirements of the General Programme to qualify for the General B.A. or B.Sc. degree.

A candidate in an Honours Programme for the degree of Bachelor of Arts or Bachelor of Science who has obtained 50% in each course of his final year, but has failed to obtain the requisite average for honours in his final year (60%), may be awarded a B.A. or B.Sc. degree without designation. The candidate may write a subsequent examination for an Honours degree.

TERM WORK

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

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 College. 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.

FAILED YEAR

A failed year is:

(a) A normal year in which the student fails to pass at the Spring examinations two-thirds of the courses in which he is registered after the last date for change of programme;

(b) A repeated year in which, regardless of the programme taken, the student fails to pass all courses at the Spring examinations.

Summer School and/or supplemental privileges are not granted to a student who has failed his year.

If a student fails and wishes to repeat his year, he may, upon application to the Admissions Committee, be given permission to re-enter the University immediately, or be requested to stay out a year, or be required to withdraw.

CREDIT FOR COURSE IN FAILED YEAR

A student who has failed his year and is given permission to repeat his year's work shall not be allowed to hold credit for any course of that failed year. Courses passed with a minimum of 70% in a failed year will not be repeated but the student shall substitute for such a course another course of equivalent weight approved by his Dean or his designate. When the course passed with 70% or higher standing is a required course in a student's programme, he will be credited with meeting this requirement when he has successfully completed the courses substituted for it in his repeated year.

FAILED COURSES

If a student is carrying a First Year course into his second year, regardless of the time-table, he must take that course and not carry it into the third year.

Only one failed course or deficiency caused by a failure may be carried into the second or third year.

A student who is permitted by the Admissions Committee to enter a programme with one condition must remove that condition by September 1st of the following year.

A copy of the Senate regulations governing appeals by students may be consulted in the Registrar's Office.

APPEALS TO THE ACADEMIC STANDING COMMITTEE

A student who wishes to petition the Academic Standing Committee for special consideration on medical, compassionate or other grounds, should submit his petition in writing to the secretary of the Committee (the Registrar).

TEACHERS' PROGRAMMES AND CERTIFICATES

PROGRAMMES FOR TEACHERS:

The Faculty of Arts and Science through the Summer School and Extension Department offers General Programme courses leading to a General B.A. degree for students unable to attend the intramural winter sessions. These subjects are available in three ways: (1) at the Summer Session in London, (2) during the Winter Session in London and other centres in Western Ontario and (3) by correspondence.

HIGH SCHOOL ASSISTANTS' CERTIFICATES:

Type B: The academic standing for admission to the course in the Ontario College of Education leading to a high School Assistant's Certificate, Type B, is a degree programme approved by the Minister of Education.

The university programme should include a minimum of seven full university courses in at least two subjects that provide background for Secondary School teaching.

Type A: Subject to the conditions specified below, an Honours Degree in Arts or in Science is the academic standing required for admission to the courses leading to High School Assistant's Certificate, Type A, in Biology, Chemistry, Classics, Economics, English, English and French, English and Russian, English and German, English and History, English and Latin, French and German, French and Russian, French and Spanish, French Language and Literature, Geography, Geology, History, Latin and French, Latin and Greek, Mathematics, Mathematics and Physics, Music, Physical Education, Physics, Political Science, Psychology.

Any student planning to obtain the Ontario High School Assistant's Certificate, Type A, should seek advice from the Registrar, Althouse College of Education, London, Ontario.

Candidates shall attend for at least the complete third and fourth academic years and obtain at least second class standing.

The Minister of Education shall have authority to deal with any case not already covered. The University shall submit to the Minister a recommendation on any case whose merits justify special consideration.

Graduates in General Programmes who wish to obtain Type A standing should submit formal transcripts of their university records to the Dean, Althouse College of Education, London, Ontario.

PUBLIC SCHOOL INSPECTORS' CERTIFICATES:

By agreement with the Minister of Education, the work described below satisfies the academic requirements for a Public School Inspector's Certificate:

An Honours Degree in Arts or Science in accordance with the present agreement prescribed for Type A qualifications; or a General Programme Degree in Arts and Science with a B standing percent on the work of the final year of the programme; and including English in any three of the first, second, third and fourth year courses of study. For professional requirements, candidates should consult the Ontario Department of Education, Toronto 5, Ontario.

PROGRAMMES

The Faculty of Arts and Science offers:

Three-Year General Programmes leading to a **B.A.** degree or a **B.Sc.** degree with concentration in a major subject.

Four-Year Honours Programmes leading to a **B.A.** or a **B.Sc.** or a **Mus.B.** degree.

Programmes leading to admission to other Faculties and Schools: *Business,* two years; Dentistry, two years; Law, two years; Medicine, two years; Physical Therapy, one year.

First Year students will register in one of the following:

Humanities, Social Sciences, Natural Sciences, Pre-Business, Secretarial Science, Home Economics, Music.

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

Students intending to enter Dentistry, Medicine or Physical Therapy should register in the College of Science (Natural Sciences). For further guidance see the Faculty of Medicine and Faculty of Dentistry Calendars.

COURSE-NUMBERING SYSTEM

Courses 1-9 are equivalent to corresponding subjects of Secondary School Grade 12 (Ontario).

Courses numbered 2 are equivalent to corresponding subjects of Secondary School Grade 13 (Ontario).

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

Courses 20-29 are First Year General Courses.
Courses 30-59 are Second and Third Year General Courses.
Courses 200-299 are Second Year Honours Courses.
Courses 300-399 are Third Year Honours Courses.
Courses 400-499 are Fourth Year Honours Courses.

A course-number followed by "a" is offered in the first term only; followed by "b" in the second term only; followed by "x" in an Affiliated College only.

A half course is one which meets less than two hours a week throughout the academic year or less 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 PROGRAMMES

FIRST YEAR - Humanities, Social Sciences and Natural Sciences

The purpose of the First Year General Programme is to offer one year of basic general education and to postpone the selection of a specific programme until the beginning of the second year. Thus the student can make a final decision as to his future programme 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 Programme, the student is eligible to register in the second year of one of the General Programmes or the second year of one of the Honours Programmes.

The General Programmes require two more years for completion and lead to the B.A. or B.Sc. degree. Honours Programmes require three more years and lead to an Honours B.A. or an Honours B.Sc. degree, and permit specialization in one or two subjects.

The courses are grouped into four divisions: see page 44.

Division A - The Humanities
Division B - The Social Sciences
Division C - The Natural Sciences, Astronomy, Computer Science and Mathematics
Division D - Other Subjects

Humanities and Social Sciences

The First Year of the General Programme in the Humanities and Social Sciences leads to the senior years in the General Programme B.A. and to Honours Programmes in the Humanities, Social Sciences, Mathematics, Journalism, Physical and Health Education, and fulfills admission requirements for the Faculty of Law.

Requirements for admission (Ontario Grade 13):

(a) Two from: English, a language, Mathematics 'A' (4 credits)
(b) At least two other subjects (3 credits)
At least 4 subjects comprising 7 credits.
Average: at least 60%.

Natural Sciences

The First Year of the General Programme in the Natural Sciences leads to the

senior years in the General Programmes and to Honours Programmes in Computer Science, Mathematics, the Natural Sciences, some Humanities and Social Sciences, Physical and Health Education, Medicine, and fulfills the First Year requirements for admission to Dentistry and Physical Therapy.

Requirements for admission (Ontario Grade 13):

(a) Mathematics 'A' (2 credits).
(b) Three from — Biology (1 credit), Chemistry (1 credit), Mathematics 'B' (1 credit), Physics (1 credit).
(c) English OR a Language (2 credits).

At least 4 subjects comprising 7 credits.
Overall average: At least 60%.
Science - Mathematics Average: At least 60%.

For eventual admission to Medicine:

(a) Mathematics 'A', Chemistry, Physics (4 credits).
(b) Biology or Mathematics 'B' (1 credit).
(c) English or a language other than English (2 credits).

At least 4 subjects comprising 7 credits.
Overall average: At least 60%.
Science - Mathematics Average. At least 60%.

GENERAL REGULATIONS FOR B.A. DEGREE

For a General Programme B.A. a student must pass sixteen 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.

Select, before he enters the Second Year, a major subject consisting of four senior courses (numbered 30 or higher) in a particular subject, e.g., English, Psychology, etc.

A student in a General B.A. Programme must obtain at least a 60% average in the courses of his major subject and at least 60% in each of three of those courses in order to graduate. Deficiencies incurred prior to 1967-68 are not removed by this rule.

Take in the Second Year:

Two courses in the major subject.
Three courses from at least two Divisions (see page 44) with no more than one from Division D.

Take in the Third Year:

Two courses in the major subject.
Three courses from at least two Divisions.
One Division D course may be included unless two Division D courses have been completed in Years I and II.

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

No more than two courses from Division D may be counted towards a degree.

Out of the 10 courses required in the last two years of the programme, at least seven must be senior courses.

In addition to these course requirements see attendance requirements on page 31.

THE ELECTION OF FIRST YEAR COURSES 1968-69

FIRST YEAR
ENGINEERING SCIENCE
(6 courses)

Engineering Science 21
Chemistry 20
Applied Mathematics 20
Physics 20
Humanities Elective
Social Sciences Elective

FIRST YEAR
PRE-BUSINESS
(6 courses)

English 20
Mathematics 20
Economics 20
Psychology 20
Business 20
Language 2, 10 or 20

FIRST YEAR
NURSING
(6 courses)

English 20
Psychology 20
Sociology 20
Biology 22
*Chemistry 25
Nursing 20

FIRST YEAR
SECRETARIAL SCIENCE
(6 courses)

English 20
Language 20
Business 20
Secretarial Science 28
Secretarial Science 29
Natural Sciences II (one)

FIRST YEAR
HOME ECONOMICS
(7 courses)

English 20
Language 20
Biology 21
*Chemistry 25
Home Economics 23x
Home Economics 25x
Psychology 20 or
Economics 20

FIRST YEAR
MUSIC OPTIONS
GENERAL PROGRAMME

English 20
Language
1 of { History 20, Mathematics 20, Philosophy 20, Psychology 20, 2nd Language }
6 Music Courses

FIRST YEAR
BACHELOR OF MUSIC PROGRAMME

English 20
Language
8 Music Courses

* Grade 13 Chemistry required

THE ELECTION OF FIRST YEAR COURSES 1968-69

FIRST YEAR
HUMANITIES
(6 courses)

(1), (2), (3) — 3 courses from HUMANITIES
(4) 1 course from SOCIAL SCIENCES
(5) 1 course from NATURAL SCIENCES II
(6) 1 Year One course, any division.

FIRST YEAR
SOCIAL SCIENCES
(6 courses)

(1), (2), (3) — 3 courses from SOCIAL SCIENCES
(4) 1 course from HUMANITIES
(5) 1 course from NATURAL SCIENCES II
(6) 1 Year One course, any division.

FIRST YEAR
NATURAL SCIENCES
(6 courses)

(1), (2), (3) — 3 courses from NATURAL SCIENCES I
(4) 1 course from HUMANITIES
(5) 1 course from SOCIAL SCIENCES
(6) 1 Year One course, any division.

HUMANITIES

Courses	Prerequisite
English 20	Grade 13
French 20	Grade 13
Spanish 20	Grade 13
German 20	Grade 13
Italian 20	Grade 13
Russian 20	Grade 13
Latin 20	Grade 13
Greek 20	Grade 13
Hebrew 20	Grade 13
Philosophy 20	None
Music 10 or 20y	None
Music 20	Music 10
**Fine Art 20	None
French 10	Grade 12
Greek 1	None
Greek 10	Grade 12
German 1 or 2	None
German 10	Grade 12
Italian 1	None
Italian 10	Grade 12
Spanish 1 or 2	None
Spanish 10	Grade 12
Russian 1 or 2	None
Russian 10	Grade 12
Hebrew 1	None
Hebrew 10	Grade 12

SOCIAL SCIENCES

Courses	Prerequisite
Economics 20	None
Geography 20	*None
History 20	None
Politics 20	None
Psychology 20	None
Sociology 20	None

NATURAL SCIENCES I

Courses	Prerequisite
Astronomy 20	Math. A
Biology 22	None
Zoology 20	None
†Computer Science 20	*None
Geology 20	None
Chemistry 20	None
Physics 20	Math. A
Physics 22	Math. A
†Mathematics 20	Math. A
†Mathematics 24	Math. A & B
†Mathematics 27	Math. A or B
†Applied Math. 20	Math. A

NATURAL SCIENCES II

Courses	Prerequisite
Astronomy 21	None
Biology 21	None
Chemistry 21	None
Physics 21	None
Geophysics 21	None
Geology 21	None
Contemporary Science A (Physical Science)	None

ELECTIVES

Courses	Prerequisite
Journalism 20, 21	None
Physical Education 20	None
Business 20	None
Religious Knowledge 20	None
Engineering Science 21	Math.A

* Grade 13 Mathematics "A" recommended.
** Registration will be restricted to 70 students. Students intending to proceed to the Second Year of Honours Fine Art will be given preference.
† Does not fulfill Laboratory Science requirement of General Programme. Only one course may be chosen for credit in any one subject.

THE DIVISIONS

Junior courses are numbered from 1 to 29.

Senior courses are numbered from 30 to 499.

Division A (Humanities)

English (page 122)
Fine Art (page 126)
French (page 128)
German (page 138)
Greek (page 113)
Hebrew (page 140)
Italian (page 183)
Latin (page 115)
Music (page 151)
Philosophy (page 158)
Russian Studies (page 177)
Spanish (page 183)

Division B (Social Sciences)

Economics (page 119)
Geography (page 131)
History (page 141)
Political Science (page 170)
Psychology (page 173)
Sociology (page 180)

Division C (Natural Sciences)

*Applied Mathematics (page 97)
Astronomy (page 99)
Biology (pages 106 & 185)
Botany (page 106)
Chemistry (page 110)
*Computer Science (page 116)
Contemporary Science (Physical Sciences) (page 179)
Geology (page 135)
Geophysics (page 137)
*Mathematics (page 147)
Physics (page 164)
Zoology (page 185)

*Does not satisfy requirements as laboratory course in General Programme.

Division D (Other Subjects)

The following subjects may not be used as major subjects and not more than two courses may be counted toward a General Programme degree.

Business Administration 20, 250
Engineering Science 21
Dramatics 46
Home Economics (page 195)
Journalism (page 145)
Physical and Health Education (page 162)
Religious Knowledge (in Affiliated Colleges) (pages 192, 197, 201)
Secretarial Science (page 179)
Speech 39

GENERAL REGULATIONS FOR B.Sc. DEGREE

For a General Programme B.Sc. a student must:

Pass sixteen 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% in the courses of the major subject and a minimum passing grade of 50% 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 Honours Programmes are not bound by the above sequence.

At the discretion of the Departments in question a student may be permitted or, in some cases, required to take Honours courses (number 200 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 programme, at least eight must be senior courses.

Out of the sixteen 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 31.

SUBJECT REQUIREMENTS FOR THE B.Sc. DEGREE

Initially offered in these four major subjects only —

Chemistry Major

Chemistry 253, 254, 261 and at least one of: 351, 353, 354
Physics 256
Applied Mathematics 270 or its equivalent is desirable in the Second Year.

Computer Science Major

Computer Science 31, 34, and two of: 41, 42, 43 (304 or 313 may be taken by consent of the Department).
Two senior Mathematics courses (approval may be given for a course such as Statistics taught in a Department other than Mathematics).

Mathematics Major

The Department of Mathematics offers the following programmes:
(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, 463.

Other programmes may be set up in consultation with the Department of Mathematics.
The prerequisite for programme (a) is Mathematics 20 or 24 or 27 or Applied Mathematics 20. For any other programme the prerequisite is Mathematics 24 or 27 or Applied Mathematics 20.

Physics Major

Physics 250, 256 (in the Second Year); 251, 356 (in the Third Year)
OR
Physics 254, 255, 259 (in the Second Year); 250, 356 (in the Third Year) to which may be added 251.
Applied Mathematics 270 or its equivalent is desirable in the Second Year.

GENERAL PROGRAMME — 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, Chemistry and at least one other subject (Biology recommended).

This programme, which leads to the B.A. degree in Home Economics, is offered jointly by University College and Brescia College. University College students in the course will take all their classes at University College except in Home Economics; Brescia College students will take all their science courses in College of Science. Home Economics and Chemistry courses must be taken in the order and year designated.

On graduation, students may take dietetic interne training in institutions approved by the Canadian Dietetic Association for professional standing. Students who have obtained 60% or more in the work of the final year, may attend College of Education and obtain the High School Assistant's Certificate, Type B, for teaching in the Elementary and Secondary schools of Ontario.

First Year

Biology 21
Chemistry 25
English 20
French 20 or language at 20 level
Home Economics 23x, 25x
Psychology 20 or Economics 20

Second Year

Botany 36
Chemistry 33
Senior English course
Home Economics 30x, 31x, 32x, 33x

Third Year

Chemistry 46
Home Economics 40x, 41x, 42x, 45x
Psychology 36 or Sociology 39x
(For students interested in teaching and related fields)

OR

Chemistry 46
Home Economics 41x, 42x, 45x, 48x, 49x
(For students interested in Food Service Management, Nutrition and Therapeutics)

GENERAL PROGRAMME — MUSIC

This three-year music programme is offered at the College of Music. A student may major in piano, voice, organ, or one of the orchestral instruments. All students must reach the minimum of the Associate level in performance in their major practical music subject before graduation.

Requirements for Admission:

Academic requirements: Grade 13 standing (or the equivalent) with an average of 60% in two of English, another language, Mathematics 'A', and at least one other subject (other than Grade 13 Music).

Music Requirements: Satisfactory results in an audition to be held at the College of Music by appointment. To ensure early acceptance, auditions should be arranged before May 15. The final date for auditions is September 1.

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 aural tests. Pieces need not be memorized.

Those whose major is other than piano are required, in addition, to demonstrate a level of piano proficiency equivalent to Grade VI or be admitted conditionally until this requirement is met, at least by the end of the second year.

The theory requirement may be met by submitting Grade II theory and Grade III harmony certificates, or by demonstrating this level in the theory placement test administered by the College of Music.

Grade 13 Music of the Ontario Department of Education may be substituted for Grade II theory and Grade III harmony in either of the above categories.

First Year

Music 21, 21A (except for piano majors), 24, 25, 26, 27

English 20
One of: French 10, 20; German 1, 10, 20
One of: History 20; Mathematics 20; Philosophy 20; Psychology 20; a second language

Second Year

Music 31, 31A (except for piano major), 35, 36, 37

Any senior English course
One of: French 30, 31; German 10, 20, 30
One of: History 36; a senior course in mathematics; Philosophy 30; Psychology 21, 36; French; German; another language

Third Year

Music 41, 45, 47, 48
One music elective approved by the College of Music

Three courses in Divisions A, B, or C

PRE-BUSINESS PROGRAMME

Requirements for Admission: Grade 13 standing in Mathematics 'A', English or one other language, and at least two other subjects, for a total of four subjects, comprising seven credits, with an overall average of at least 60%.

Admission to Third Year is granted by the School of Business Administration on the courses of the first two years with an overall average of not less than 60%.

First Year

Business 20
Economics 20
English 20
Mathematics 20
Psychology 20

Foreign language at the 2 or 10 level if no language taken in Grade 13
OR
Foreign language at the 20 level if a language taken in Grade 13.

Second Year

Business 250
A Senior English
One of: History 20, 31, 33, 36; Philosophy 30; Politics 20; French 20 or foreign language 20

One of: Biology 21; Chemistry 21; Geology 21; Physics 21
Two other courses in Arts or Science.

GENERAL PROGRAMME — SECRETARIAL SCIENCE

Requirements for Admission: Grade 13 standing (with an average of 60%) in English, a modern language (French preferred), and three other credits.

The Department of Education of Ontario accepts a degree in this programme 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.

Students must obtain credit for all of the First Year before beginning any Second Year work.

First Year

Business 20
English 20
Natural Science 21
One of: French 20; German 20; Spanish 20
Secretarial Science 28, 29

Second Year

Economics 20
A Senior English
Philosophy 30 or Politics 20 or Psychology 20
One of: French 31; German 30; Spanish 31.
Secretarial Science 30, 37, 38, 39.

Third Year

A Senior English
History 31
One of: French 43; German 40; Spanish 30, 40, 41
Secretarial Science 47, 48, 49

HONOURS PROGRAMMES

Students in the Arts and Science Programmes are not registered in specific Honours Programmes during their First Year at this University. There are specific requirements for admission to the Second Year of all 4-year Honours Programmes based upon the courses selected and the standing obtained in the First Year.
Three types of Honours Programmes are offered:

1. Four-year Honours Programmes in the Humanities, Social Sciences, Mathematics, Journalism, Physical Education and Business Administration leading to the Bachelor of Arts (B.A.) degree.
2. Four-year Honours Programmes in Natural Sciences, Medical Biological Sciences and Computer Science leading to the Bachelor of Science (B.Sc.) degree.
3. Four-year Honours Programmes in Music leading to the Bachelor of Music (Mus.B.) degree or Bachelor of Arts (B.A.) degree.

The Department of Education accepts a degree in an Honours Programme as the academic qualification 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 Honours Programme should consult that programme before selecting his options in General Programme.

In all years of all Honours Programmes *options* must be approved by all Departments concerned.

ADMISSION TO AND PROGRESS IN HONOURS PROGRAMMES

A student will be automatically accepted if he has an average of at least 70% with no grade of less than 60% 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% in the **principal courses** of his Honours Programme and a passing grade in each of the subsidiary courses, may be accepted by special permission of the Department(s) concerned.

Any student planning to obtain the Ontario High School Assistant's Certificate, Type A, should seek advice from the Registrar, Althouse College of Education, London, Ontario.

ANATOMY

Requirements for Admission: The admission requirements are determined by the prerequisites of the programme selected for the Second Year (see page 50).

Second Year

One of:

(a) **Second Year of Programme in Honours Biology**
For prerequisite and courses see page 54.

(b) **Second Year of Programme in Honours Chemistry**
For prerequisite and courses see page 56.

(c) **Second Year of other Honours Programmes**
With permission of the Department of Anatomy, a student may petition the Vice-President (Arts and Science) for recognition of the Second Year of such other Honours Programmes as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses	**Subsidiary Courses**
Anatomy 300	*Two options*
Two of: Bacteriology 300; Biochemistry 300; Biophysics 300; Physiology 300	
One of: Botany 255; Physiology and Pharmacology 301; Zoology 255, 270, 352	

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	**Subsidiary Courses**
Anatomy 440, 441, 460, 461, 462, 463, 464, 480	Two options selected with the advice of the Department of Anatomy. One of Botany 300, Psychology 255 or Zoology 465 is required if a course in statistics has not previously been taken.

APPLIED MATHEMATICS

Requirements for Admission: First year General Programme (Natural Sciences) with Applied Mathematics 20 (or Mathematics 24 or Mathematics 27) and Physics 20 or 22 as principal courses. For grades required for admission and progression see page 49.

A student who has completed either the Second Year Computer Science Programme with Applied Mathematics 200, and Physics 250, 257 or the Second Year Physics Programme may enter the Third Year Applied Mathematics Programme, subject to the conditions given below.

Second Year

Principal Courses	**Subsidiary Course**
Applied Mathematics 200	One course from Division A or B
Mathematics 250, 256	
Physics 250, 257	

Third Year

Principal Courses	**Subsidiary Course**
Applied Mathematics 300, 350, 351b, 360a	One senior course from Division A or B
Physics 355, 357	
One of: Mathematics 350, 356	

Note: Students entering Third Year Applied Mathematics from Second Year Physics must take Mathematics 256 instead of their principal course option. Students entering Third Year Applied Mathematics from second year Computer Science must take whichever of Mathematics 256 and Applied Mathematics 200 was not taken in Second Year, instead of their principal course option. Students in either category **must** then take one of Mathematics 350, 356 instead of one of their Fourth Year options.

Fourth Year
(1968-69)

Principal Courses
Applied Mathematics 400, 420, 451, 454
One of: Applied Mathematics 360, Mathematics 350, 356, 456, Physics 453

Fourth Year
(1969-70)

(1) **Continuum Mechanics Option**

Principal Courses
Applied Mathematics 400, 403b, 420, 452
Two of: Applied Mathematics 453, 454, 460, Physics 453*

(2) **Theoretical Physics Option**

Principal Courses
Applied Mathematics 400, 403b, 420, 454
Two of: Applied Mathematics 452, Physics 451, 453*

Note: It is possible but not desirable to choose courses in either of these two programme options, which will result in the same final programme. The prospective Fourth Year student should consult the Applied Mathematics staff for advice.

* see note under Third Year.

ASTRONOMY

Requirements for Admission: First Year General Programme (Natural Sciences) with Astronomy 20, Applied Mathematics 20 or Mathematics 24 or 27 and Physics 20 or 22, as principal courses. For grades required for admission and progression see page 49.

Students entering or continuing in the Honours Astronomy Programme are required to consult with the Department for approval of their programmes.

Second Year

Principal Courses	**Subsidiary Course**
Astronomy 220	German 5 or Russiar 1
Mathematics 250	
Applied Mathematics 200 or Mathematics 278	
Physics 250, 254, 255, 259	

Third Year

Principal Courses
Astronomy 320
Applied Mathematics 300
Physics 350, 357
One additional Applied Mathematics, Mathematics or Physics course at the 300 or 400 level

Subsidiary Course
German 35 or Russian 35

Fourth Year

Principal Courses
Astronomy 420
Physics 453, 457
Two additional courses at the 300 or 400 level, from Applied Mathematics, Geophysics, Mathematics or Physics

Subsidiary Course
One course from Division A or B

BACTERIOLOGY AND IMMUNOLOGY

Requirements for Admission: The admission requirements are determined by the prerequisites of the programme selected for the Second Year.

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

Either

(a) **Second year of programme in Honours Biology**
For prerequisites and courses see page 54.

Note: Mathematics 20, 24 or 27 or Applied Mathematics 20 is required for students who have not previously taken a university course in Mathematics.

or

(b) **Second Year of other Honours Programmes**
With permission of the Department of Bacteriology and Immunology, a student who has completed First Year General Programme (Humanities or Social Sciences), may petition the Vice-President (Arts and Science) for recognition of the Second Year of such other Honours Programmes 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 300, 342, 353, Physiology 255, 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, 463a, 465, 467 and 480

or

Additional option(s) with the permission of the Head of the Department

Subsidiary Courses
One of: Botany 300, Psychology 255 or Zoology 465 if a suitable course in Statistics has not been taken previously

BIOCHEMISTRY

Requirements for Admission: The admission requirements are determined by the prerequisites of the programme 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 Programme in Honours Biology**
For prerequisites and courses see page 54. Note that one of Applied Mathematics 20, Mathematics 20, 24 or 27 will be required.

(b) **Second Year of Programme in Honours Chemistry**
For prerequisites and courses see page 56.

(c) **Second Year of other Honours Programmes**
With permission of the Department of Biochemistry, a student may petition the Vice-President (Arts and Science) for recognition of the Second Year of such other Honours Programmes as permit inclusion of a course in Organic Chemistry.

Third Year

Third Year Biochemistry

Principal Courses
Biochemistry 300
Two of: Anatomy 300; Bacteriology 300; Biophysics 300; Physiology 300
One of: Botany 255; Chemistry 351, 353, 354, 374; Physiology and Pharmacology 301; Zoology 255

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	**Subsidiary Courses**
Biochemistry 440, 441, 460, 461b, 468a and 480	One option: to be selected from Botany 300; Psychology 255 or Zoology 465 if Statistics not previously taken
Two of: Biochemistry 462a, 463b, 465, 467 or 469a,	One additional option with the permission of the Department of Biochemistry
or	
A full course at the Honours level approved by the Department	

BIOLOGY

Requirements for Admission: First Year General Programme (Natural Sciences) including the following as principal courses: either Biology 22 **or** both Botany 20 and Zoology 20 (neither will be offered in 1968-69); Chemistry 20; Physics 20, 21 or 22.

One of the following two programmes must be taken:

1.	**or**	**2.**
Biology 22		Botany 20
Chemistry 20		Zoology 20
Physics 20, 21 or 22		Chemistry 20
One course from Division A		Physics 20, 21 or 22
One course from Division B		One course from Division A
One of:		One course from Division B

Mathematics 20, 24, 27 or Applied Mathematics 20.
Geology 20
Course from Division A, B or D

Physics 20 or 22 is the normal Physics prerequisite for entrance into Second Year Honours Biology but Physics 21 will be accepted for those lacking Grade 13 Physics.

For grades required for admission and progression see page 49.

Caution: Programme 2 will not be offered in 1968-69. All students entering Second Year should examine the prerequisites for courses which they expect to take in Second Year and subsequent years.

Second Year

Principal Courses	**Subsidiary Courses**
Botany 250	Chemistry 203
Botany or Zoology 255	Two of: Chemistry 204, Mathematics 20, 24, 27 or Applied Mathematics 20; Geology 20; Physics 204; a Division A or B course
Zoology 270	

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 their respective Departments.

All Third and Fourth Year students must consult the Head of the Department of Botany or the Head of the Department of Zoology before registering in any of the courses prescribed for Third and Fourth Years.

Third Year

(a) Botany Option

Principal Courses
Botany 300, 342, 351, 353, 357

Subsidiary Courses
Biochemistry 406 or an Honours Course other than Botany from Division C
One of: French 20; German 5; Russian 1

(b) Zoology Option

Principal Courses
Zoology 352, 354, 370, 454
Biochemistry 406 or Biochemistry 300
One of: Zoology 453, 456, 460, 465, 470, 471, 473; Botany 342, 351, 353, 357; Geology 20, 275, 367; Mathematics 35; or any other course approved by the Department Head.

Subsidiary Course
One of: French 20; German 5; Russian 1

Fourth Year

(a) Botany Option

Principal Courses
Botany 499
Four of: Botany 442, 443, 452, 453, 454, 455, 457, 459, 460, 461, 466, 471

Subsidiary Courses
One course other than Botany from Division C
One of: French 31; German 35; Russian 35

(b) Zoology Option

Either

Principal Courses
Zoology 437
Five of: Zoology 453, 456, 460, 465, 470, 471, 473, 480

Subsidiary Course
One of: French 31; German 35; Russian 35

or

Principal Courses
Zoology 437
Four of the above Zoology courses
One of: Botany 342, 351, 353, 357, 452, 453, 454, 455, 457, 459, 466, 471; Geology 20, 275, 367; Mathematics 35; Chemistry 211; Physiology 300; Zoology 544, 552; or any other course approved by the Department Head.

Subsidiary Course
One of: French 31; German 35; Russian 35

BIOPHYSICS

Requirements for Admission: The admission requirements are determined by the prerequisites of the programme 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.

Concerning the selection of an option in the Second and Third 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.

Second Year

One of:

(a) **Second Year of Programme in Honours Physics**
For prerequisites and courses see page 86.

(b) **Second Year of Programme in Honours Biology**
For prerequisites and courses see page 54.

(c) **Second Year of Programme in Honours Chemistry**
For prerequisites and courses see below.

(d) **Second Year of other Honours Programme**
With permission of the Department of Biophysics, a student may petition the Vice-President (Arts and Science) for recognition of the Second Year of such other Honours Programmes as permit inclusion of a course in Organic Chemistry.

Third Year

Principal Courses	**Subsidiary Course**
Biophysics 300	One Option
Two of: Anatomy 300; Bacteriology 300; Biochemistry 300; Physiology 300; Physiology & Pharmacology 301	
Two Natural Science, Mathematics or Applied Mathematics Courses on the 200 or higher level	

Fourth Year

Principal Courses	**Subsidiary Courses**
Biophysics 440, 441, 460, 461a, 461b, 462a, 462b, 480	Two Natural Science, Mathematics, Applied Mathematics, or Health Science courses on the 200 or higher level.

All course selections must be made with the approval of the Head of the Department of Biophysics. During undergraduate training, the student should take an approved Statistics course (for example, Botany 300), at least one Physical Chemistry course, and as much Mathematics or Applied Mathematics, and as much Physics as possible.

CHEMISTRY

Requirements for Admission: First Year General Programme (Natural Sciences), including Chemistry 20, Physics 20 or 22, and one of Mathematics 24, Mathematics 27 and Applied Mathematics 20, with all courses of the programme as principal courses. Engineering Science 1 will be accepted as an equivalent First Year programme. For grades required for admission and progression see page 49.

French, German or Russian, at the 20 level or higher, must be taken as one of the options in the senior years if not already taken in the first year.

Second Year

Principal Courses
Chemistry 251, 253, 254
Applied Mathematics 270
Physics 250, 256

Third Year

Principal Courses	**Subsidiary Course**
Chemistry 351, 352, 353, 354, 374 Applied Mathematics 380 (under certain circumstances another course may be elected in consultation with the Chemistry Department).	One option

Fourth Year

Principal Courses	**Subsidiary Course**
Chemistry 409, 459, 474 (and 452 for 1968-69 only) Three of: Chemistry 451, 453, 454; Physics 350, 355, 356; Biochemistry 456	One option

CLASSICS

(See also Latin, Latin and Greek — page 76).

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Greek 20 and Latin 20 as principal courses, English and another modern language as recommended options.

Second Year

Principal Courses	**Subsidiary Course**
Greek 230, 251 Latin 230, 251 Greek and Latin 257	*One option from Division A, B or C*

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 Third Year)
*Comprehensive Examination in the Spring

COMPUTER SCIENCE

Requirements for Admission: First Year General Programme (Humanities, Social Sciences or Natural Sciences) with Mathematics 24, 27 or Applied Mathematics 20 as a principal course. Computer Science 20 is recommended. For grades required for admission and progression see page 49.

Second Year

Principal Courses	Subsidiary Courses
Computer Science 200, 206	Two options from the Natural Sciences or Social Sciences
Mathematics 250 and one of Mathematics 256, Applied Mathematics 200	One option

Third Year

Principal Courses	Subsidiary Courses
Computer Science 304, 306, 313	Course in Physiology
Two Mathematics or Applied Mathematics courses at the 300 level	One option

Fourth Year

Principal Courses	Subsidiary Courses
Computer Science 404, 405	Two courses at the 300 or 400 level from Natural Sciences or Social Sciences
Mathematics 453	One option, preferably a course in the history of development of scientific ideas.

ECONOMICS

Requirements for Admission: First Year General Programme (Humanities, Social Sciences or Natural Sciences) or Pre-Business with Economics 20 as a principal course. Students may be allowed to enter the Honours Programme without Economics 20 if they have an average of 75% in all courses taken in First Year. For grades required for admission and progression see page 49. 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 a course in Algebra.

Honours students will not receive credit for Mathematics 35. All options must be approved by the Department.

Second Year

Principal Courses	Subsidiary Course
Economics 200, 230, 237, 255 A Mathematics Course or Business 250	One option other than Economics

Third Year

Principal Courses	Subsidiary Courses
Economics 340, 351, 360	Three options, including at least two honours courses in Economics or other subjects.

Fourth Year

Principal Courses	**Subsidiary Courses**
Economics 480 *Two Honours Economics Courses*	Two options, including at least one honours course in Economics or other subjects.

ECONOMICS WITH HISTORY OPTIONS

Requirements for Admission: *First Year General Programme (Humanities or Social Sciences) with Economics 20 and History 20 as principal courses. For grades required for admission and progression see page 49. It is recommended that Mathematics 20, 24 or 27 be taken as early as possible.*

Second Year

Principal Courses	**Subsidiary Course**
Economics 230, 237, 255 *Two options in Honours History*	One option

Third Year

Principal Courses	**Subsidiary Course**
Economics 340, 351, 437 Two options in Honours History	One option

Fourth Year

Principal Courses	**Subsidiary Course**
Economics 447 Two Honours Economics courses One Honours History course	One option

ECONOMICS WITH MATHEMATICS OPTIONS

Requirements for Admission: First Year General Programme (Humanities, Social Sciences or Natural Sciences) with Economics 20 and Mathematics 24 or 27 as principal courses. For grades required for admission and progression see page 49.

Second Year

Principal Courses	**Subsidiary Course**
Economics 230, 237, 255 Mathematics 250 and 256 or 278	One option

Third Year

Principal Courses	***Subsidiary Course***
Economics 340, 351 Mathematics 355, 363 One Honours Economics course	One option

Fourth Year

Principal Courses	**Subsidiary Course**
Economics 360, 480 Mathematics 453 One Honours Economics course	One option

ENGLISH

There are two English options in all English Honours Programmes: the first emphasizes the study of English literature, the second emphasizes the study of the English language. Most of the principal courses in each year of every programme are common to both of these English options.

In the descriptions of the Honours Programmes which appear below, each English language course specifically required as a part of the English Language option is placed in square brackets, and either replaces an English literature course or is included among a group of courses from which a selection is to be made.

Subsidiary courses must be approved by both Departments in the case of double programmes and by the Department of English in the case of English Language and Literature.

ENGLISH AND FRENCH

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with English 20 and French 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see above) must take the courses in square brackets; others may take them, if they wish to do so.

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

Second Year

Principal Courses	**Subsidiary Course**
English 237, 256, 270	One option
French 270, 271	

Third Year

Principal Courses	**Subsidiary Course**
English 360, 354, or [373], 380	One option [English 263]
French 380, 381	
One of: French 338, 350	

Fourth Year

Principal Courses
English 459, 480
One of: English [427], 436, 438, 444
French 490, 491, 495*, 499

*Comprehensive Examination in the Spring

ENGLISH AND GERMAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences), with English 20 and German 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Principal Courses
English 237, 256, 270
German 290, 291

Subsidiary Courses
One of: History 30, 36
Another option

Third Year

Principal Courses
English 360, 380, 354 or [373]
German 333, 390, 391

Subsidiary Course
One Option [English 263]

Fourth Year

Principal Courses
English 459, 480
One of: English 263, [427], 436, 438, 444
German 420, 480, 481, 495*

*Comprehensive Examination in the Spring

ENGLISH AND HISTORY

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with English 20 and History 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them if they wish to do so.

Second Year

Principal Courses
English 256, 270
History 236
History 231 or 234

Subsidiary Courses
French or a foreign language option
Another option [English 237]

Third Year

Principal Courses
English 380, 354 or [373]
History 335
One other course from the Honours History 300 series

Subsidiary Courses
French or a foreign language option
Another option, preferably an honours course [English 263]

Fourth Year

Principal Courses
English 480
English 438 or 459
A third honours English course if chosen [427]
Two or three courses chosen from the Honours History 400 series
Five courses constitute a normal load in Fourth Year

ENGLISH LANGUAGE AND LITERATURE

Requirements for Admission: Sequence A: First Year General Programme (Humanities or Social Sciences) with English 20, French or a foreign language, and any two others, as principal courses. **Sequence B:** First Year General Programme (Humanities or Social Sciences) with English 20, two languages, and any other course, as principal courses. Latin 20 and Philosophy 20 are preferred as First Year options. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Principal Courses
English 256, 263 or [237], 270, 280

Subsidiary Courses
Sequence A:
History 30
One of: French 30, German 30, Latin 30, Greek 30

Sequence B:
Two of: French 270, German 290, Latin 230, Greek 230, History 30

Third Year

Principal Courses
English 360, 373, 380
One of: English 338, 354, 366

Subsidiary Courses
Sequence A:
One of: History 32, 35, 36, a Philosophy course, French or a foreign language course, English 338, 354 or 366
One Option

Sequence B:
One of: French 380, German 390, Latin 340, Greek 352
One Option

Fourth Year

Principal Courses
English 438, 459, 480, 495*
One of: English 400, 401, [427], 436, 444

Subsidiary Course
Sequences A and B:
English 263, if not already taken, or
One option

*Comprehensive Examination:

Students in the Fourth Year of Honours English Language and Literature must obtain a grade of at least 60% in the English Comprehensive Examination before they may be admitted to an Honours 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 Honours English Language and Literature programme 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 must be obtained from the Department of English.

ENGLISH AND LATIN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with English 20 and Latin 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Principal Courses
English 237, 256, 270
Latin 230, 251, 257

Subsidiary Course
One of: French 270, Greek 20, 230, German 20, 290

Third Year

Principal Courses
English 360, 380, 354 or [373]
Latin 340, 351, 352

Subsidiary Course
One of: History 30, 32, 35, [English 263]

Fourth Year

Principal Courses
English 459, 480
One of: English [427], 436, 438, 444
Latin 450, 451, 452, 495*

*Comprehensive Examination in the Spring

ENGLISH AND PHILOSOPHY

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with English 20 and French 20 or German 20 or Latin 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Sequence A
Principal Courses
English 256, 270
Philosophy 254, 257

Subsidiary Courses
[English 237] and one option
or
Two options

Third Year

Principal Courses
English 354 or [373], 380
Philosophy 256, and one of: 335, 357, 362

Subsidiary Courses
[English 263] and one option
or
Two options

Fourth Year

Principal Courses
Two or three of: English 360, 459, 480, and 436 or 438 or 444 or [427]
One of: Philosophy 456, 458, 466, 467, 477
One of: Philosophy 450, 454, 464, 474
If an additional Philosophy course is required, one of 338, 456, 458, 466, 467, 477

Sequence B

Second Year

Principal Courses
English 237, 256, 270
Philosophy 254, 257

Subsidiary Course
One of: French 270 and 271, German 290 and 291, Latin 230 and 251

Third Year

Principal Courses
English 360, 380
One of: English 354, [373]
One of: Philosophy 256, 355

Subsidiary Course
One of: French 380, German 390, Latin 340, [English 263]

Fourth Year

Principal Courses
English 480, and 438 or 459
Two of: Philosophy 357, 456, 466, 467, 477
An additional Honours English course [English 427] or an additional Honours Philosophy course.

ENGLISH AND RUSSIAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with English 20 and Russian 2, 10, or 20 as principal courses. Students who begin Russian at the university will take Russian 20 in the Second Year. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Principal Courses
English 237, 256, 270
Russian 280, 281

Subsidiary Courses
History 37
One option

Students who begin Russian at the University will take Russian 20 in the Second Year.

Third Year

Principal Courses
English 360, 380 and 354 or [373]
Russian 390, 391, 393

Subsidiary Course
One option [English 263]

Fourth Year

Principal Courses
English 459, 480
One of: English 436, 438, [427]
Russian 420, 490, 491, 495*

*Comprehensive Examination in the Spring

ENGLISH AND SPANISH

Requirements for Admission: First Year General Programme (Humanities or

Social Sciences) with English 20 and Spanish 20 as principal courses. For grades required for admission and progression see page 49.

Students who elect the English Language option (see page 60) must take the courses in square brackets; others may take them, if they wish to do so.

Second Year

Principal Courses
English 237, 256, 270
Spanish 230, 231, 260

Third Year

Principal Courses
English 360, 380
One of: English 354, [373]
Spanish 340, 341

Subsidiary Course
One Option

Fourth Year

Principal Courses
English 459, 480
One of: English [427], 436, 438, 444
Spanish 460, 461, 465, 495*
*Comprehensive Examination in the Spring

FINE ART

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

Second Year

Principal Courses
Fine Art 220, 221
Two of Fine Art 230, 231, 237, 238

Subsidiary Courses
One (or two) options selected in consultation with the Fine Art Dept.

Third Year

Principal Courses
Fine Art 320, 321
Two of Fine Art 323, 332, 336, 337

Subsidiary Courses
One (or two) options selected in consultation with the Fine Art Dept.

Fourth Year

Principal Courses
Two of Fine Art 410, 420, 423
Four of Fine Art 431A, 431B, 433A, 436B, 452A, 452B

Subsidiary Courses
One (or two) options selected in consultation with the Fine Art Dept.

FRENCH AND GERMAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with French 20 and German 20 (or 2 or 10) as principal courses. Those who take German 2 or 10 in First Year will take German 20 in Second Year

and will elect German 291 as one of the two Second Year options. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
French 270, 271	Two options
German 290, 291	

Third Year

Principal Courses	**Subsidiary Courses**
French 380, 381 and One of: French 338, 350 (Students intending to undertake graduate studies in French should elect French 350)	One option
German 333, 390, 391	

Fourth Year

Principal Courses
French 490, 491, 495*, 499
German 420, 480, 481, 495*
*Comprehensive Examination in the Spring.

FRENCH LANGUAGE AND LITERATURE

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with French 20 as a principal course. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
French 232, 270, 271	Two options

Third Year

Principal Courses	**Subsidiary Courses**
French 338, 350, 380, 381	Two options

Fourth Year

Principal Courses	**Subsidiary Courses**
French 490, 491, 495*, 499	Two options

*Comprehensive Examination in the Spring.

FRENCH AND LATIN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with French 20 and Latin 20, as principal courses. For grades required for admission and progression see page 49.

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

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 Course
One option

Fourth Year

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

*Comprehensive Examination in the Spring.

FRENCH AND RUSSIAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with French 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 Year and Russian 20 in the Second Year.

For grades required for admission and progression see page 49.

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

Second Year

Principal Courses
French 270, 271
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*
*Comprehensive Examination in the Spring.

FRENCH AND SPANISH

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with French 20 and Spanish 20 (or 2, or 10) as principal courses. Those who take Spanish 2 or 10 in First Year will take Spanish 20 in Second Year and will elect Spanish 231 as one of the two Second Year Options. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
French 270, 271	Two options
Spanish 230, 231, 260	

Third Year

Principal Courses	**Subsidiary Courses**
French 380, 381 and One of: French 338, 350 (Students intending to undertake graduate studies in French should elect French 350)	One option
Spanish 340, 341 and One of: Spanish 348, 365 (Students intending to undertake graduate studies in Spanish should elect Spanish 365)	

Fourth Year

Principal Courses
French 490, 491, 495*, 499
Spanish 460, 461, 465, 495*
*Comprehensive Examination in the Spring.

GEOGRAPHY

Requirements for Admission: First Year General Programme (Humanities, Social Sciences or Natural Sciences) 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 programme 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. For grades required for admission and progression see page 49.

Second Year

Principal Courses	**Subsidiary Courses**
Geography 200, 230, 232, 241	Two options

During the first two years the following courses must be completed. Economics 20, Geology 20 or 21.

Third Year

Principal Courses	Subsidiary Courses
Geography 339, 343, 345, 346 Geology 367	Two options other than Geography courses.

Students who intend to continue into Graduate studies are advised to take French 20 or foreign language 20 not later than Second Year.

Fourth Year

Principal Courses	Subsidiary 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.	One of: French 45, German 35, Russian 45, Spanish 45 (half course) One option

GEOLOGY

Requirements for Admission: First Year General Programme (Natural Sciences). The Honours 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 Honours 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 Honours student must 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 49.

Second Year

Principal Courses	Subsidiary Courses
Geology 200, 210, 219, 275	Two of: Chemistry 204, Applied Mathematics 270, Zoology 370 One of: Physics 20, Biology 22 or Physics 256*

*Students who are still contemplating Geophysics (II) should elect Physics 256, Chemistry 204, and Applied Mathematics 270.

Immediately after final examinations, the Department conducts a field camp (Geology 200, 300) of ten day's duration in which Second and Third Year students are required to attend. The cost for each session will not exceed $60.

Third Year

Principal Courses	Subsidiary Courses
Geology 300, 320, 340, 350, 360, 367	One of: Option of the second year, Chemistry 354, Computer Science 34, Geography 431, Physics 251, Zoology 270 OR

An elementary or intermediate course in Scientific German, Russian or French
OR
A Humanities or Social Sciences course

Fourth Year

Principal Courses	**Subsidiary Courses**
Geology 400	One of: an advance science course, including Geology
Three of: Geology 415, 420, 425, 430, 450, 463, 475; Geophysics 365; Engineering Science 426.	OR
	Intermediate course in a scientific language
	OR
	A Humanities or Social Sciences course

A student may substitute a science course in a closely related field for one selected geology provided permission is given by the Head of the Department.

GEOPHYSICS I (Physical)

Requirements for Admission: First Year General Programme (Natural Sciences) with Physics 20 or 22 and Mathematics 24 or Applied Mathematics 20 as principal courses, and Geology 20.

Students planning to enter a graduate school are advised to start a language (German, Russian or French) in their First Year.

Second Year

(Content identical with second year Honours Physics)

Principal Courses	**Subsidiary Courses**
Physics 250, 251, 254, 255, 259	Mathematics 250, Applied Mathematics 200
	One option

Third Year

Principal Courses	**Subsidiary Courses**
Geology 210, 219	Applied Mathematics 300
Geophysics 365	Geology 200
Physics 350, 355, 357	

Fourth Year

Principal Courses	**Subsidiary Courses**
Geology 340	Geophysics 458
Geophysics 470	One option
Physics 356	
Two of: Astronomy 320, 420; Geology 320, 350, 430; Applied Mathematics 400; Physics 450, 451, 453, 457	

GEOPHYSICS II (Geological)

Requirements for Admission: First Year General Programme (Natural Sciences) with Physics 20 or 22 and Geology 20 as principal courses, Mathematics 24 or Applied Mathematics 20 and Chemistry 20.

Students planning to enter a graduate school are advised to start a language (German, Russian or French) in their First Year.

Second Year
(Satisfies requirements of Second Year Honours Geology with permission of Head of Geology Department)

Principal Courses	**Subsidiary Courses**
Geology 200, 210, 219, 275	Chemistry 204
Physics 256	Applied Mathematics 270

Third Year

Principal Courses	**Subsidiary Courses**
Geology 300, 320, 340, 350	Applied Mathematics 380
Geophysics 365	One option

Fourth Year

Principal Courses	**Subsidiary Courses**
Geophysics 470	Geophysics 458
Three of Geology 360, 367, 415, 420, 425, 430, 450, Physics 356	One option

GERMAN LANGUAGE AND LITERATURE

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with German 20 as a principal course. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
German 290, 291	Two options
One of: English 237, 256, 270	

Third Year

Principal Courses	**Subsidiary Courses**
German 333, 390, 391	Two options

Fourth Year

Principal Courses	**Subsidiary Courses**
German 420, 444, 480, 481, 495*	Two options

*Comprehensive Examination in the Spring

GERMAN AND RUSSIAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) 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 page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
German 290, 291	Two options
Russian 280, 281	

Third Year

Principal Courses	**Subsidiary Courses**
German 333, 390, 391	One option
Russian 390, 391, 393	

Fourth Year

Principal Courses	**Subsidiary Courses**
German 420, 480, 481, 495*	
Russian 420, 490, 491, 495*	

*Comprehensive Examination in the Spring

GERMAN AND SPANISH

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with German 20 (or 2 or 10) and Spanish 20 (or 2 or 10) as principal courses. Those who take German 2 or 10 in First Year will take German 20 in Second Year and will elect German 291 as one of the two Second Year options. Those who take Spanish 2 or 10 in First Year will take Spanish 20 in Second Year and will elect Spanish 231 as one of the two Second Year options. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
German 290, 291	Two options
Spanish 230, 231, 260	

Third Year

Principal Courses	**Subsidiary Courses**
German 333, 390, 391	One option
Spanish 340, 341 and One of: Spanish 348, 365	

Fourth Year

Principal Courses
German 420, 480, 481, 495*
Spanish 460, 461, 465, 495*

*Comprehensive Examination in the Spring

HISTORY

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with History 20 as a principal course and one foreign language. For grades required for admission and progression see page 49.

Second Year

Principal Courses
History 231, 234, 236

Subsidiary Courses
One (or two) options selected with the approval of the History Department, one of which should be an Honours course
One of: French 30, 34, German 30, Greek 30, Latin 30, Spanish 30, 40, Russian 1, 10

Third Year

Principal Courses
Three courses chosen from 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 (or three) options selected with the approval of the History Department, one of which must be an Honours course

Fourth Year

Principal Courses
Three courses from the History 300 and 400 series

Subsidiary Courses
Two (or three) options selected with the approval of the History Department, one of which must be an Honours course

HISTORY AND GERMAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with History 20 and German 20 as principal courses. For grades required for admission and progression see page 49.

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 Course
One option

*Comprehensive Examination in the Spring

HISTORY AND PHILOSOPHY

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with History 20 and Philosophy 20 as principal courses. For grades required for admission and progression see page 49.

Second Year

Principal Courses
History 231, 236
Philosophy 254, 257

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

Third Year

Principal Courses
Two of: History 330, 335, 346, 356
Philosophy 256
One of: Philosophy 357, 362

Subsidiary Courses
Two options

Fourth Year

Principal Courses
Two or three of History 330, 337, 431, 432, 436, 441, 456, 457, 460
One of: Philosophy 456, 458, 466, 467, 477
One of: Philosophy 450, 454, 464, 474
If an additional Philosophy course is required:
One of: 456, 458, 466, 467, 477

HISTORY AND RUSSIAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with History 20 and Russian 20 (or either 2 or 10). (Students who begin Russian in the University will take Russian 2 in the First Year and Russian 20 in the Second Year). For grades required for admission and progression see page 49.

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

*Comprehensive Examination in the Spring

JOURNALISM

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Journalism 20 as a principal course and English 20. Transfer students from other Colleges or Programmes must include Journalism 20 in Second Year if it has not been completed and delay 250 until Third Year. For grades required for admission and progression see page 49.

Second Year

Principal Courses	Subsidiary Courses
Journalism 250, 255, 260	Senior course in English, or French or a foreign language
History 31	Social Science course (Politics 20 if not completed previously)
	One option

Third Year

Principal Courses	Subsidiary Courses
Journalism 350, 351, 356, 375	Senior course in English, or French or a foreign language
Politics 362	One option

Fourth Year

Principal Courses	Subsidiary Courses
Journalism 451, 455	Senior Social Science course
History 34 or Politics 44	Senior course in English, or French or a foreign language
	One option

JOURNALISM — PUBLIC RELATIONS OPTIONS

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Journalism 20 as a principal course and English 20. For grades required for admission or progression see page 49.

Second Year

Principal Courses	Subsidiary Courses
Journalism 250	Two Social Science courses
Politics 20	Senior course in English, or French or a foreign language
	One option (non Journalism)

Third Year

Principal Courses	Subsidiary Course
Journalism 350, 352, 356, 375	One option
An Honours Social Science course	
Business 20	

Fourth Year

Principal Courses	Subsidiary Courses
Journalism 452, 455	History 31
An Honours Social Science course (must be in the same subject as the Honours Social Science course of Third Year)	A Humanities course
	One option

DIPLOMA PROGRAMME 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

LATIN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Latin 20 (and Greek 1, if taken) as principal course(s), English and another modern language as recommended options. If Greek 1 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 page 49.

Second Year

Principal Courses	Subsidiary Courses
Greek 1 or 10, 257	Two options from Divisions A, B, C
Latin 230, 251	

Third Year

Principal Courses	Subsidiary Courses
Greek 20	Two options from Divisions A, B, C
Latin 340, 351, 352	
Greek 357 or Latin 457 (whichever is currently offered)	

Fourth Year

Principal Courses	Subsidiary Course
Greek 230, 251	One option from Division A, B, or C
Latin 450, 451, 452, 495*	
Latin 457 or Greek 357 (the one not taken in Third Year)	

*Comprehensive Examination in the Spring

LATIN AND GREEK

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Latin 20 and Greek 1 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 page 49.

Second Year

Principal Courses
Greek 20, 257
Latin 230, 251

Subsidiary Courses
Two options from Divisions A, B, C

Third Year

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

Subsidiary Course
One option from Division A, B, or C

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)

*Comprehensive Examination in the Spring

LATIN AND SPANISH

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Latin 20 or Spanish 20 (or 2 or 10) as principal courses. Those who take Spanish 2 or 10 in First Year will take Spanish 20 in Second Year and postpone Spanish 231 until Third Year.

Second Year

Principal Courses
Latin 230, 251, 257
Spanish 230, 260, 231 or 20

Subsidiary Course
One option from Division A, B, or C

Third Year

Principal Courses
Latin 340, 351, 352
Spanish 340, 231 or 341, 348 or 365

Subsidiary Course
One option from Division A, B, or C

Fourth Year

Principal Courses
Latin 450, 451, 452, 495*
Spanish 460, 465, 341 or 461, 495*

*Comprehensive Examination in the Spring

MATHEMATICS

Requirements for Admission: First Year General Programme with Mathematics 24 or 27 or Applied Mathematics 20 as a principal course. For grades required for admission and progression see page 49. For requirements concerning joint Honours Programme in Philosophy and Mathematics see page 84. For Honours Programme in Economics, Mathematics Option, see page 59.

Second Year

Principal Courses	Subsidiary Courses
Mathematics 250, 256, 278	Two options. A student intending to proceed in the Actuarial Mathematics Programme 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 programmes.

A student who has completed the Second Year of the Computer Science Programme may be permitted to enter one of Programmes 1, 2, or 3 provided Mathematics 256 has been taken in the Second Year. Such a student must take Mathematics 278 before the end of Third Year.

Students who plan to continue into graduate studies are advised to take French or a foreign language in their Second Year if they have not already done so in their First Year.

MATHEMATICS (Programme 1)

Third Year

Principal Courses	Subsidiary Courses
Mathematics 350, 356 One other Mathematics course numbered 300 or above	Two options

Fourth Year

Principal Courses	Subsidiary Course
Two of Mathematics 450, 456, 460 Two Mathematics courses numbered 300 or above	One option

ACTUARIAL MATHEMATICS (Programme 2)

Programme 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	Subsidiary Courses
Mathematics 353, 355, 356	Two options One of these options must be Mathematics 253 if it has not been taken previously

Fourth Year

Principal Courses	Subsidiary Course
Mathematics 463 Three Mathematics courses numbered 300 or above	One option

MATHEMATICAL STATISTICS (Programme 3)

Third Year

Principal Courses
Mathematics 355, 356
Two Mathematics courses numbered 300 or above

Subsidiary Course
One option

Fourth Year

Principal Courses
Mathematics 445, 455
Two Mathematics courses numbered 300 or above — one of these must be Mathematics 350 if not taken previously

Subsidiary course
One option

MATHEMATICS, ECONOMICS OPTION (Programme 4)

Requirements for Admission: First Year General Programme with Mathematics 24 or 27 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

BACHELOR OF MUSIC

This four-year programme is offered at the College of Music. All students will be enrolled in a common First Year. At the beginning of Second Year each student will choose an area of concentration and will enrol in one of the Four Honours Programmes outlined below.

Requirements for Admission:

Academic Requirements: Ontario Grade 13 standing (or the equivalent) with an average of at least 60% in the following:

Two subjects from	English Languages Mathematics A	4 credits
One subject other than Grade 13 Music at least		1 credit

Ontario Grade 13 candidates must also have standing in at least six Ontario Grade 12 or equivalent subjects (excluding Physical Education).

These subjects must include at least five of the following subjects and at least one subject from each of the four groups:

(I) English
(II) French, German, Greek, Italian, Latin, Russian, Spanish
(III) Geography (Part I; Part II), History (Part I; Part II)
(IV) Mathematics (Part I; Part II), Science (Physics; Chemistry)
Music may be used as the sixth Grade 12 subject.

Music Requirements: Satisfactory results in an audition to be held at the College of Music by appointment. To ensure early acceptance, auditions should be arranged before May 15. The final date for auditions is September 1.

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 aural tests. Pieces need not be memorized. Those whose major is other than piano are required, in addition, to demonstrate a level of piano proficiency equivalent to Grade VI or be admitted conditionally until this requirement is met, at least by the end of the second year.

The theory requirement may be met by submitting Grade II theory and Grade III harmony certificates, or by demonstrating this level in the theory placement test administered by the College of Music.

Grade 13 Music of the Ontario Department of Education may be substituted for Grade II theory and Grade III harmony in either of the above categories.

For admission to the Honours in Performance programme, Grade X in piano, voice, organ or orchestral instrument, as well as evidence of exceptional performing ability, will be required in addition to the other requirements listed above.

All students must reach the minimum of the Associate level in performance in their major practical music subject before graduation.

BACHELOR OF MUSIC

First Year

Music 21, 21A (except for piano majors) 24, 25. 26, 27, 28, 117 (for prospective Music Education students only)	English 20 French 20 or German 1, 10 or 20

HONOURS MUSIC EDUCATION

Second Year

Music 217, 231, 231A (except for piano majors), 232, 235, 236, 237, 238, 247	Any Senior English course One course in Divisions A, B, or C. (German 10 must be taken if German 1 was chosen in first year)

Third Year

Music 317, 332, 337, 341, 342, 345, 347, 348
One music elective approved by the College of Music
Physics 33
One course in Divisions A, B, or C

Fourth Year

Music 417, 432, 437, 442, 447, 447A, 450, 451, 455, 458, 467
One course in Divisions A, B, or C

HONOURS IN PERFORMANCE (With major in Piano)

Second Year

Music 231, 235, 236, 237, 238
Any Senior English course
One course in Divisions A, B, or C.

Third Year

Music 337, 341, 345, 348, 351, 354
One music elective approved by the College of Music
Two courses in Divisions A, B, or C

Fourth Year

Music 437, 451P, 453, 458, 461
One music elective approved by the College of Music
One course in Divisions A, B, or C

HONOURS IN PERFORMANCE (With major in Voice)

Second Year

Music 231, 231A, 235, 236, 237, 238
Any Senior English course
One course in Divisions A, B, or C

Third Year

Music 337, 341, 345, 348, 352
One music elective approved by the College of Music
Two courses in Divisions A, B, or C

Fourth Year

Music 437, 451P, 452, 453, 458
One music elective approved by the College of Music
One course in Divisions A, B, or C

HONOURS IN PERFORMANCE (With major in Organ and Church Music)

Second Year

Music 231, 231A, 235, 236, 237, 238
Any Senior English course
One course in Divisions A, B, or C

Third Year

Music 337, 341, 345, 348, 353, 354	Two courses in Divisions A, B, or C
One music elective approved by the College of Music	

Fourth Year

Music 437, 451P, 453, 458, 463	One course in Divisions A, B, or C
One music elective approved by the College of Music	

HONOURS IN PERFORMANCE (With major in Orchestral Instrument)

Second Year

Music 231, 231A, 235, 236, 237, 238	Any Senior English course
	One course in Divisions A, B, or C

Third Year

Music 337, 341, 345, 348, 351	Two courses in Divisions A, B, or C
One music elective approved by the College of Music	

Fourth Year

Music 437, 451P, 453, 458, 461	One course in Divisions A, B, or C
One music elective approved by the College of Music	

HONOURS IN THEORY AND COMPOSITION

Second Year

Music 231, 231A, (except for piano majors), 235, 236, 237, 238, 239	Any Senior English course
	One course in Divisions A, B, or C

Third Year

Music 337, 341, 342, 345, 348, 349	Two courses in Divisions A, B, or C, one of which should be Physics 33.

Fourth Year

Music 437, 451, 455, 458, 459	One course in Divisions A, B, or C
One music elective from the Music History area	

HONOURS IN MUSIC HISTORY

Second Year

Music 231, 231A, (except for piano majors), 235, 236, 237, 238, 252	Any Senior English course
	French 30 or 31, or German 10, 20 or 30

Third Year

Music 337, 341, 345, 348
Two music history electives

Two courses in Divisions A, B, or C
(One of which should be general political and economic history)

Fourth Year

Music 437, 451, 452
Two music history electives
One other music elective

Two courses in Divisions A, B, or C

BACHELOR OF ARTS WITH HONOURS MUSIC

Requirements for Admission: First Year Bachelor of Arts with Music Options with an average of at least 60% for admission to the second year. All students must reach the minimum of the Associate level in performance in their practical music subject before graduation.

First Year

Music 21, 21A (except for piano majors), 24, 25, 26, 27

English 20
One of: French 10, 20; German 1, 10, 20
One of: History 20; Mathematics 20; Philosophy 20; Psychology 20; a second language

Second Year

Music 231, 231A (except for piano majors), 235, 236, 237, 238

Any Senior English course
One of: French 30 or 31, German 10, 20 or 30
One of: History 36, a second course in French or German or another language, Mathematics 24, Philosophy 30, Psychology 36

Third Year

Music 337, 341, 345, 348
Two music electives from Theory or Music History areas

Two courses in Divisions A, B, or C

Fourth Year

Music 437, 451, 458
Two music electives

Two courses in Divisions A, B, or C

PHILOSOPHY

(This programme is offered in the Colleges of the University only.)

Requirements for Admission: First Year General Programme (Humanities, Social Sciences or Natural Sciences). Students planning to enter the programme are advised to take Philosophy 20.

Second Year

Principal Courses	Subsidiary Courses
Philosophy 254, 256, 257	A senior course from Division A or Division B Two options, one of which must be a senior course

Third Year

Principal Courses	Subsidiary Courses
Philosophy 357, 362 Two of: Philosophy 338, 350, 351, 353, 355 (351 must be taken if not elected in second year)	A senior course (which must be a Division B course, if not previously taken.) One senior option

Fourth Year

Principal Courses	Subsidiary Course
Two of: Philosophy 456, 458, 466, 467, 477 Two of: Philosophy 450, 451, 454, 464, 474	One senior option

PHILOSOPHY AND GERMAN

Requirements for Admission: First Year General Programme (Humanities or Social Sciences), English 20 and German 20 as principal courses and History 20. For grades required for admission and progression see page 49.

Second Year

Principal Courses	Subsidiary Courses
German 290, 291 Philosophy 254, 257	Two options

Third Year

Principal Courses	Subsidiary Courses
German 333, 390, 391 Philosophy 256, 357	Two options

Fourth Year

Principal Courses

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

*Comprehensive Examination in the Spring

PHILOSOPHY AND MATHEMATICS

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

Second Year

Principal Courses	**Subsidiary Course**
Philosophy 254, 257	One course from Division A, B, or C
Mathematics 250, 256, 278	

Third Year

Principal Courses	**Subsidiary Course**
Philosophy 256, 351	One senior course from Division A or B
Mathematics 350, 356	
One of: Mathematics 340, 351	

Fourth Year

Principal Courses
Two of: Philosophy 450, 454, 464, 474
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 PSYCHOLOGY

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) 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 page 49.

Second Year

Principal Courses	**Subsidiary Course**
Philosophy 254, 257	One option
Psychology 235, 236, 255	

Third Year

Principal Courses	**Subsidiary Course**
Philosophy 256	One option
One of: Philosophy 351, 357, 362	
Psychology 338, 349	
One of: Psychology 337, 343	

Fourth Year

Principal Courses
One of: Philosophy 456, 458, 466, 467, 477
Two of: Philosophy 450, 454, 464, 474
Psychology 445, 459
One of: Psychology 446, 450

PHYSICAL AND HEALTH EDUCATION

Requirements for Admission: First Year General Programme (Humanities, Natural or Social Sciences) with Physical Education 20 and any two others as

principal courses, and Biology. For grades required for admission and progression see page 49.

Second Year

Principal Courses	Subsidiary Course
P.H.E. 251, 254 Any two of: 253, 258, 340	3 options, one of which is from the Humanities, beginning a concentration approved by the Department

Third Year

Principal Courses	Subsidiary Courses
P.H.E. 342, 351, 353 and Any one of: 253, 258, 340, 352 not taken previously	2 options, approved by the Department

Fourth Year

Principal Courses	Subsidiary Courses
P.H.E. 451, 456 and Any two of: 442, 457, 458	2 options, approved by the Department

PHYSICS

Requirements for Admission: First Year General Programme with Physics 20 or 22 and Applied Mathematics 20 or Mathematics 24 or 27 as principal courses. For grades required for admission and progression see page 49.

Concerning the selection of 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 Honours Applied Mathematics (Programme 4) with Physics options. Admission to the Third Year of this Programme is open to students who have completed the Second Year of Physics.

Second Year

Principal Courses	Subsidiary Course
Applied Mathematics 200 Mathematics 250 Physics 250, 251, 254, 255, 259	One option

Third Year

Principal Courses	Subsidiary Course
Applied Mathematics 300 Physics 350, 355, 356, 357, 359	One option

Fourth Year

Principal Courses	Subsidiary Course
Physics 450, 451, 453, 457, 458, 459 One of: Physics 464, 466, a senior option	One option

PHYSICS: MAJOR - MINOR

Requirements for Admission: First Year General Programme with Physics 20 or 22 and Applied Mathematics 20 or Mathematics 24 or 27 as principal courses.

The Department will accept students for Major - Minor Honours Programmes who elect their Minors in Biology, Chemistry, Geography, Applied Mathematics, Mathematics and some other subjects. All such programmes require the approval of the Head of the Department.

The number of honours 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 Programme will be as follows:

Second Year

Principal Courses	**Subsidiary Courses**
Physics 250, 256	Two options
Two courses from the Minor	

Third Year

Principal Courses	**Subsidiary Courses**
Physics 251, 356	Two options
Two courses from the Minor	

Fourth Year

Principal Courses	**Subsidiary Course**
Physics 350, 367, 453	One option
One course from the Minor	

PHYSIOLOGY

Requirements for Admission: The admission requirements are determined by the prerequisites of the programme selected for the Second Year (see below). In choosing options in these programmes, a university course in Mathematics, required for the Honours Programme 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 Programmes in Honours Biology**
For prerequisites and courses see page 54.

(b) **Second Year of Programme in Honours Chemistry**
For prerequisites and courses see page 56.

(c) **Second Year of Programme in Honours Physics**
For prerequisites and courses see page 86.

(d) **Second Year of other Honours Programmes**
With permission of the Department of Physiology, a student who has completed the First Year of General Programme (Natural Sciences) may

petition the Vice-President (Arts and Science) for recognition of the Second Year of other Honours Programmes. 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

Subsidiary Courses
Two options

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.

Fourth Year

Students may choose either the Physiology or Physiology and Pharmacology option in the last year of this programme.

Principal Courses
Physiology and Pharmacology 440, 460

Subsidiary Courses
One option of Botany 300; Psychology 255 or Zoology 465 if Statistics not previously taken
One additional option with the permission of the Departments of Physiology and Pharmacology

and

Physiology Option
Physiology 441, 461, 462, 463, 464, 480
or
Physiology and Pharmacology Option
Pharmacology 441, 461, 480
Two of: Physiology 461, 462, 463, 464

PHYSIOLOGY AND PSYCHOLOGY

See Psychology and Physiology (Page 89).

POLITICAL SCIENCE

Requirements for Admission: First Year General Programme (Natural Sciences, Humanities or Social Sciences) including Politics 20. For grades required for admission and progression see page 49.

Students will normally be advised to take a diversified selection of options from the Social Sciences and Humanities. Programme to be selected with the approval of the Department.

Principal Courses

Second Year

Two of: Politics 231, 237, 240, 242, 244
Three options

Third Year

Principal Courses
Two senior Honours Politics courses, including 237 if it has not already been taken.
Three options

Fourth Year

Principal Courses
Politics 480
Two of: Other senior Honours Politics courses
Two options

PSYCHOLOGY

(This programme is offered in the Colleges of the University only.)

Requirements for Admission: First Year General Programme 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. For grades required for admission and progression see page 49.

Second Year

Principal Courses
Psychology 234, 235, 236, 255

Subsidiary Courses
One of: Mathematics 20, 24, 35, Applied Mathematics 20, Philosophy 30, 34, Physics 21, Physiology 22, Sociology 20, Biology 22, Zoology 30
One option

Third Year

Principal Courses
Psychology 337, 338, 343, 349

Subsidiary Courses
Two options

Fourth Year

Principal Courses
Psychology 445, 446, 450, 459

Subsidiary Courses
Two options

PSYCHOLOGY AND PHYSIOLOGY

Requirements for Admission: First Year General Programme (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 49.

Second Year

Principal Courses	**Subsidiary Courses**
Psychology 235, 255	One option
One of: Chemistry 203, 33, or 313	
Zoology 255 or 270	
One of: Physics 204, 256; Applied Mathematics 20, 200; Mathematics 20, 24, 27, 250	

Third Year

Principal Courses	**Subsidiary Course**
Psychology 338, 343	One option
Physiology 300, 301	
One of: Anatomy 300; Biochemistry 300	

Fourth Year

Principal Courses	**Subsidiary Course**
Physiology 463, 464, 480	One option
Physiology 460 or 461 and 462	
Two of: Psychology 234, 236, 337, 349, 445, 446	

Students in this programme will undertake a major project in behavioural physiology or sensory processes as part of their experimental work in Physiology 480.

RUSSIAN STUDIES

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Russian 2, or 10, or 20.

Students without previous training in Russian take Russian 2 in the First Year and Russian 20 in the Second Year. 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	**Subsidiary Courses**
Russian 280, 281, 290 (if offered)	History 37
	One option selected with the approval of the Department

Third Year

Principal Courses	**Subsidiary Courses**
Russian 290 (unless taken in second year, in this case 440 must be taken in the third year)	Two options selected with the approval of the Department
390, 391, 393	

Fourth Year

Principal Courses	**Subsidiary Courses**
Russian 420, 440 (unless taken in the third year)	Two options selected with the approval of the Department
490, 491, 495*	

Russian 290 and 440 will be offered in alternate years (check under Department of Russian Studies — page 177).

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

*Comprehensive Examination in the Spring

RUSSIAN AND SPANISH

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Russian 20 (or 2, or 10) and Spanish 20 (or 2, or 10) as principal courses.

Students who begin Russian in the University will take Russian 2 in the First Year and Russian 20 in the Second Year. Those who take Spanish 2 or 10 in First Year will take Spanish 20 in Second Year and will elect Spanish 231 as one of the two Second Year options. For grades required for admission and progression see page 49.

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

Second Year

Principal Courses	**Subsidiary Courses**
Russian 280, 281	Two options
Spanish 230, 231, 260	

Third Year

Principal Courses	**Subsidiary Courses**
Russian 390, 391, 393	One option
Spanish 340, 341, and One of: Spanish 348, 365	

Fourth Year

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

*Comprehensive Examination in the Spring

SECRETARIAL SCIENCE AND BUSINESS ADMINISTRATION

Requirements for Admission: First Year General Programme (Humanities or Social Sciences), with *Economics 20* and *Business 20* as *principal courses*. For grades required for admission and progression see page 49.

Second Year

Principal Courses	**Subsidiary Course**
Business 250 (Accounting)	Geography 39
Economics 33, 237	
Secretarial Science 28, 29, 36	

Third Year

Principal Courses	Subsidiary Course
Business 351 (Marketing) and 357 (Control) Secretarial Science 37, 38, 39	A senior course in English

Fourth Year

Principal Courses	Subsidiary Courses
Business 456 (Commercial Law and Documents of Commerce) One of: Business 460b (Auditing); 461 (Retailing); 471 (Advertising) Secretarial Science 47	Two of: Economics 36; A senior course in English; History 31, 34, 36; Philosophy 30

SPANISH LANGUAGE AND LITERATURE

Requirements for Admission: First Year General Programme (Humanities or Social Sciences) with Spanish 20 as principal course. English 20 is also highly recommended. For grades required for admission and progression see page 49.

Students who begin Spanish at the University are permitted to take Spanish 20 in the Second Year as one of their options. However, they are urged to take it in Summer School if at all possible.

Second Year

Principal Courses	Subsidiary Courses
Spanish 230, 231, 260	Two (or three) options selected with the approval of the Department

Third Year

Principal Courses	Subsidiary Courses
Spanish 340, 341, 348, 365	One (or two) options selected with the approval of the Department

Fourth Year

Principal Courses	Subsidiary Courses
Spanish 460, 461, 465, 495*	Two options selected with the approval of the Department

*Comprehensive Examination in the Spring

For other Honours Programmes involving Spanish, see English and Spanish (page 64), French and Spanish (page 68), German and Spanish (page 72), Latin and Spanish (page 77), Russian and Spanish (page 91).

ZOOLOGY

Requirements for Admission: First Year General Programme (Natural Sciences) including either Biology 22 or **both** Botany 20 and Zoology 20, and Chemistry 20. For grades required for admission and progression see page 49. All the Natural Science courses that the student has taken will be counted as principal courses.

Second, Third and Fourth Years

A minimum of 15 courses must be taken, namely 5 in each of the Second, Third and Fourth Years. Of these, at least 8 must be Zoology courses, which must include Zoology 270 and 370 to be taken in the Second Year; of the remainder, 2 courses must be selected from each of Sections II and III listed below, the other 2 being optional Zoology courses. The student must obtain the approval of the Departmental Advisory Committee for his programme for each year.

Section I Zoology 270, 370, 460, 471

Section II Zoology 255, 354
Zoology 352, 454; for each of these courses the prerequisites are Organic Chemistry and Biochemistry, **either** Chemistry 203 and Biochemistry 300, **or** Chemistry 33 and Biochemistry 406. The biochemistry course may be taken concurrently with either of these two Zoology courses.

Section III Zoology 470, 473
Zoology 453 (prerequisite Zoology 465)

Section IV Zoology 437, 465, 480
Zoology 456 (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 Honours course may with the approval of the Advisory Committee substitute the corresponding general course in the same subject.

The remaining 7 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 High School Assistant's Certificate courses in Botany, Chemistry, Physics or Mathematics are required. Each of the Zoology courses offered is a full course, counting for 3 credits.

THE SUMMER SCHOOL AND EXTENSION DEPARTMENT

Director:
Angela M. Armitt, B.A., M.A.
Assistant Director:
D. L. Harris, B.A., M.S.W.

The Faculty of Arts and Science, through the Summer School and Extension Department, offers subjects leading to a general degree (B.A. or B.Sc.) These subjects are available in several ways: (1) at Summer Schools on both the London

and Owen Sound Campuses; (2) by Summer Evening Classes; (3) by Extension Classes during the winter session in London and at 9 other centres in Western Ontario; (4) by Correspondence.

In addition, some honours courses are offered in London and Owen Sound Summer Schools and in London by winter Extension Classes. These are available to teachers with university degrees who are working toward Type A teaching certificates.

The dates for the 1968 Summer Evening Classes are May 6 to August 15 (two classes a week). The dates for the 1968 day Summer Schools (London and Owen Sound) are July 2 to August 15, including examinations. Extension and Correspondence courses run from late September or early October until the end of April or early May.

A student enrolled in the Summer School and Extension Department may take as many as five courses a year — two in a day Summer Session (or a combination of one in a Summer Evening Class and one in a day Summer School) and three during a Winter Session (by Extension Lecture Classes, Correspondence Courses or a combination of these with no more than two Correspondence Courses).

A candidate for a degree must attend this University for one academic year and two Summer Sessions or five Summer Sessions. This requirement is reduced to a minimum of one Winter Session or three Summer Sessions by attendance at Extension Lecture Classes held by this University, or by the transfer of credit from an approved college or university. The four Senior courses of the major must be done at The University of Western Ontario.

No intramural student may register in an extension or correspondence course without the written permission of his Dean. Any student who receives such permission is expected to pay the full extension or correspondence fee unless he presents to the Registrar and the Comptroller a credit slip to be obtained from the Summer School and Extension Department and countersigned by both the Dean and the Director of the Summer School and Extension Department.

Detailed regulations with respect to subjects offered to part-time students are available on application to the Director, Summer School and Extension Department, The University of Western Ontario, London, Ontario.

TROIS-PISTOLES SUMMER SCHOOL DEPARTMENT

36th Session — July 4 - August 14, 1968

The programme at Trois-Pistoles puts the emphasis on oral expression. It seeks to develop fluency in the second language by means of classroom work and by living in a French environment with French families. The morning is devoted to formal work with small classes. In the afternoon and evening, an organized programme of informal discussion groups and recreational activities provides further opportunities for oral practice.

A Landscape Painting Course is also offered. This course offers some instruction in the techniques of art and a great deal of practical work. Students at all stages are accepted. University credits may be obtained in French. For further details, write for the special booklet to the Director, Trois-Pistoles Summer School Department, The University of Western Ontario, London.

OFFICERS OF INSTRUCTION AND COURSES

University College

Middlesex College

Talbot College

College of Music

College of Science

ANATOMY

College of Science

Professors:

Robert Crawforth Buck, M.Sc., M.D.; Ph.D. London, Chairman of the Department

Murray Llewellyn Barr, B.A., M.Sc., M.D.; LL.D. Queen's, Toronto and Alberta; Dr. med. h.c. Basel; F.R.S.C., F.R.C.P.(C), F.A.C.P.

Associate Professors:

James Harry Cutts, B.A. Saskatchewan; M.Sc. Dalhousie; Ph.D.

Kazumasa Hoshino, M.D., D.Med.Sc. Tokyo

Cyril Levene, M.B., B.Ch., B.A.O., M.D. Belfast

Donald Gilbert Montemurro, B.A., M.Sc., Ph.D.

Andrew Wilson, M.B., Ch.B., M.D. Glasgow

Associate Professor of Human Genetics:

Hubert Constantine Soltan, B.A., Ph.D. Toronto

Assistant Professors:

Gabriel Altmann, B.Sc. Dalhousie; M.Sc., Ph.D. McGill

Eric Werner Karl Fritz Donisch, M.D. Bonn; M.Sc.

David Graham Gwyn, M.B., B.Sc. London

Martin James Hollenberg, B.Sc. (Med.), M.D. Manitoba; M.Sc., Ph.D. Wayne

Maureen Burke Sass,* M.D.; M.Sc. Australian National University

Lecturers:

Frederick Raymond Sergovich, B.A. McMaster; Ph.D.

Evelyn Louise Shaver, B.Sc., M.Sc.

Roderick Pataudi Singh, B.A., M.Sc., Ph.D.

Honorary Lecturers:

Carl Franz Robinow, M.D. Hamburg; F.R.S.C. (Professor of Bacteriology and Immunology)

David Burton Walden, B.A. Wesleyan; M.Sc., Ph.D. Cornell (Associate Professor of Botany)

Postdoctoral Fellows:
Peter Gordon Price, B.Sc. McMaster; M.D.C.M. McGill

*On leave of absence 1968-69

COURSES

254. Functional Human Anatomy: For students in the Physical and Health Education Programme.
1 lecture, 1 laboratory hour—29

HONOURS COURSES

300. Histology: Survey of mammalian cytology, microscopic anatomy and neuroanatomy for Honours students.
2 lectures, 3 laboratory hours—1

440. History and Methods: A survey of the history of biological science and of methods pertinent to the anatomical sciences. Given in collaboration with other departments.
2 hours (half course)—3

441. Seminar: Presentation of assigned topics and discussion of current literature.
2 hours (half course)—13

460. Gross Anatomy: A survey of human anatomy, given only to Honours Anatomy students.
2 lectures—7

461. Cell Structure: Cytology and histology with emphasis on advanced methods, especially electron microscopy.
Prerequisite: Anatomy 300 or equivalent.
2 lectures (half course) - 13

462. Cytogenetics: An examination of chromosome morphology and behaviour, including chromosomal abnormalities in man as causes of diseases.
2 lectures (half course)—17

463. Embryology: The principles of mammalian development.
2 lectures (half course)—21

464. Neuroanatomy: A course in the anatomy of the mammalian central nervous system, especially the brain of man.
2 lectures (half course)—25

480. Laboratory: The major laboratory course in various aspects of anatomy for students in the fourth year of the programme.
A minimum of 10 hours

APPLIED MATHEMATICS

College of Science

Professor and Head of the Department:
John Henry Blackwell, E.D.; B.Sc. Melbourne; M.Sc., Ph.D.

Professors:
Stanley Charles Rees Dennis, B.Sc., A.R.C.S., Ph.D. London
James Davis Talman, B.A., M.Sc.; Ph.D. Princeton

Associate Professors:
Trevor M. Luke, B.Sc. Queen's; M.Sc., Ph.D. McGill
Donald Richard Miller, B.A., M.A., Ph.D. Toronto
Morton A. H. Nerenberg, B.Sc., Ph.D. McGill
Ismail A. Sakmar, M.Sc. Istanbul; Ph.D. California, Berkeley

Assistant Professors:
A. Stanton Deakin, B.Sc. Carleton; M.A., Ph.D. Toronto
Eric Lewis, B.Sc., Ph.D. Bristol
Peter W. Manuel, B.Sc., M.Sc., Ph.D.
Douglas Edwin Smylie, B.Sc., Queen's; M.A., Ph.D. Toronto (Assistant Professor of Geophysics)

COURSES

20. Introduction to Calculus and its Applications:
Prerequisite: Grade 13 Mathematics A.
4 lecture/tutorials—30

200. Calculus and Differential Equations: Infinite sequences and series, indeterminate forms, Taylor's formula, functions of several variables, partial differentiation, vector functions, cylindrical and spherical co-ordinates, integrals as functions of parameters, improper integrals, multiple integration, line and surface integrals, uniform convergence of series and improper integrals, ordinary differential equations.
Prerequisite: Applied Mathematics 20, or Mathematics 24, or Mathematics 27.
3 hours—30

270. Engineering Mathematics II: For Second Year Engineering Science and for certain of the Natural Sciences. Partial differentiation, multiple integrals, infinite series including power series, an introduction to complex variables, elementary ordinary differential equations.
Prerequisite: Applied Mathematics 20, or Mathematics 24, or Mathematics 27.
3 hours—20

300. Methods of Applied Mathematics I: Theory of ordinary differential equations, special functions, orthogonal function expansions, properties and solutions of some partial differential equations of mathematical physics, Sturm-Liouville problems, calculus of variations. (3 hours a week).

Functions of a complex variable, stressing their applications to Mathematical Physics. (1 hour a week).

4 hours—1

Advanced Classical Dynamics: A logically connected development of classical mechanics including a thorough treatment of Lagrangian and Hamiltonian methods.

Prerequisite: Physics 250.

3 hours—~~25~~ 12 4

Introductory Fluid Dynamics: An introduction of Fluid Dynamics, with principal emphasis on ideal fluid theory.

3 hours for one term—7

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 IBM 7040 digital computer.

3 hours—14

Numerical Analysis: An introduction to Numerical Analysis and its applications, being the first term of Applied Mathematics 360.

3 hours for one term—14

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 hours—26

Applied Mathematics for Chemists: Linear algebra, ordinary differential equations including Bessel and Legendre functions, vector calculus, orthogonal function expansions, partial differential equations, and elementary probability theory.

3 hours—1

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: Characteristics. Green's functions, eigenfunction expansions, integral equations, integral transforms, special topics in complex variable theory, approximation methods.

3 hours—19

Applied Statistics: A course in Statistics for application similar to the second term of Applied Mathematics 470.

3 hours for one term—6

Advanced Electromagnetic Theory: Simple radiating systems; special theory of relativity, relativistic particle kinematics, collisions between charged particles, energy loss and scattering, radiation by accelerating charges, bremsstrahlung, multipole fields. A general treatment of tensors may be included.

3 hours—~~24~~ 16

451. **Mechanics of Continua:** An introduction to the theories of hydrodynamics and/or the theory of elasticity. (1968-69 only)

3 hours—~~36~~ 28

452. **Fluid Dynamics:** An advanced course in Fluid Dynamics divided approximately equally between viscous fluid flow and gas dynamics.

3 hours—28

455. **Solid Mechanics:** A first course in the theory of the mechanics of the solid continuum, including elasticity and plasticity.

3 hours—22

464. ***Quantum* Mechanics:** Wave mechanics, axioms of quantum mechanics, harmonic oscillator, angular momentum, hydrogen atom, perturbation theory, elementary atomic and molecular structure, elementary scattering theory.

Prerequisite: Applied Mathematics 350.

3 hours—3

466. **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.

3 hours—9

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 hours—~~24~~ 16

ASTRONOMY

College of Science

Professor:

William H. Wehlau, A.B., Ph.D. California; Head of the Department, Director of the Observatories

Assistant Professors:

David Gray, B.Sc. Wisconsin; M.Sc., Ph.D. Michigan

John M. Marlborough, B.Sc., M.Sc. Toronto; Ph.D. Chicago

James M. Moorhead, B.Sc. California Institute of Technology; M.Sc. U.C.L.A.

Lecturer:

Amelia W. Wehlau, A.B., Ph.D. California (part-time)

Honorary Lecturers:

Peter W. Manuel, B.Sc., M.Sc., Ph.D. (Assistant Professor of Applied Mathematics)

Romas Mitalas, B.A., M.A. Toronto; Ph.D. Cornell; (Assistant Professor of Physics)

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: The solar system; normal, variable and binary stars; structure of our galaxy; other galaxies, the identification of stars and constellations; observations with the 6-inch and 10-inch refractors. Astronomy as a science, including its development. This course satisfies the requirements for a laboratory science for the B.A.

3 hours—13

HONOURS COURSES

220. Astronomy II: Fundamental astronomy; binary stars; observational aspects of stellar atmospheres.

Prerequisite: Astronomy 20 or permission of the instructor.

2 hours—1

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~~ 10

BACTERIOLOGY AND IMMUNOLOGY

College of Science

Professors:

Robert George Everitt Murray, B.A., M.A. Cantab.; M.D., C.M. McGill; F.R.S.C., Head of the Department

Philip Chester Fitz-James, B.S.A. British Columbia; M.S.A. Toronto; M.D., Ph.D.

Carl Franz Robinow, M.D. Hamburg; F.R.S.C.

Associate Professors:

Kaney Ebisuzaki, B.Sc., Ph.D. Wisconsin

John Robinson, B.S.A. British Columbia; M.Sc., Ph.D. McGill

Clinical Associate Professors:

Alexander Bakerspigel, B.A., M.A. McMaster; Ph.D.
Leslie Arthur Hatch, M.B.B.S., Dip. Bact., M.C. Path., London

Assistant Professors:

Edward Lionel Medzon, B.Sc., M.Sc., Manitoba; Ph.D. McGill
Jacob Rozanis, M.Sc. Hebrew University, Israel; Ph.D. McGill
Nicholas Roderick Sinclair, B.Sc., M.D., Ph.D. Dalhousie

Clinical Assistant Professor:

Earl Wilson Robert Campsall, B.A. Queen's; M.D., C.M. McGill

Honorary Lecturers:

William Barnett Chodirker, B.Sc. (Med.) Manitoba; M.D., Manitoba
Christopher Lynton Hannay, B.S.A. Toronto; D.I.C., Ph.D. London
James Charteris Paterson, O.B.E., M.D., B.Sc. (Med.) Toronto
Eugene B. Roslycky, B.Sc., M.Sc. Manitoba; Ph.D. Wisconsin
John Howard Toogood, M.D. Toronto; Dipl. Int. Med. McGill; F.R.C.P.(C)
James Edward Zajic, M.S. Wisconsin; Ph.D., J.D. Oklahoma

Lecturer:

Ruth Bernstein-Ziv, B.Sc., M.Sc., Ph.D. Hebrew University, Israel

HONOURS COURSES

Prerequisites for the Fourth Year course: Successful completion of previous year's programme or permission of the Head of the Department.

~~360.~~ 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.

2 lectures, 3 laboratory hours—16

~~440.~~ History and Methods: 13 lectures in collaboration with other Health Science Departments on the history of science.
13 lectures on methods and instrumentation in Bacteriology and Immunology.

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 Bacteriology: An advanced consideration of the nature of bacteria and the parts they play in the living world.

2 lectures—~~5~~ 22

~~461a.~~ Microbial Anatomy and Methods of Morphology: A survey of cytological methods and their application to understanding the structure of microbes.

2 lectures (half course)— 9

~~462b.~~ Virology: General virology illustrated by detailed consideration of specific examples.

2 lectures (half course)—13

465a. Immunology: A course concerned with immunological theory and the interpretation of immune phenomena.

2 lectures (half course)—17

466. Microbial Biochemistry: Topics involving the biochemical activities and processes of microbes. Given in collaboration with the Department of Biochemistry. Prerequisites: Biochemistry 300, 406 or 456.

1 lecture (half course)—17

467a. Microbial Genetics: Aspects of genetics applying to microorganisms. Given in collaboration with the Department of Botany.

2 lectures, 2 laboratory hours—26

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, 463a and 465.

Minimum of 10 hours

BIOCHEMISTRY

College of Science

Professors:

Harold Brown Stewart, M.D., Ph.D. Toronto; Ph.D. Cantab; Head of the Department

Philip Chester Fitz-James, B.S.A. British Columbia; M.S.A. Toronto; M.D., Ph.D.

John Alexander McCarter, B.A. British Columbia; M.A., ibid; Ph.D. Toronto; F.R.S.C.

Roger James Rossiter, B.Sc. West Australia; B.A., M.A., D.Phil., B.M., B.Ch; D.M. Oxon; F.R.S.C.

David Burrard Smith, B.A., M.A. British Columbia; Ph.D. Toronto

Kenneth Percy Strickland, B.Sc., M.Sc., Ph.D.

Associate Professors:

Charles Cross Bigelow, B.A.Sc. Toronto; M.Sc., Ph.D. McMaster

Fred Clark Heagy, M.D., M.Sc., Ph.D.

William Lovell Magee, B.Sc., M.Sc., Ph.D.

William Colin Cameron McMurray, B.Sc., Ph.D.

Ian Gardner Walker, B.A. Saskatchewan; M.A., Ph.D. Toronto

Donald D'Arcy Webling, M.B.B.S., Ph.D., D.T.M. & H.

Assistant Professors:

Judith Kelsie Ball, B.Sc. Mount Allison; M.Sc. Dalhousie; Ph.D. ibid

John Richard Trevithick, B.Sc. Queen's; Ph.D. Wisconsin

Lecturers:

Valentine Donisch, M.D. Bonn; Ph.D.

Paul David Gatfield, M.D. Queen's; C.R.C.P.(C)

Bruce Arthur Gordon, M.D., C.M., Ph.D. Queen's

Instructor:

David Samuel Milton Haines, B.A., M.D., Ph.D. Toronto

Honorary Lecturers:

Kenneth Kitchener Carroll, B.Sc., M.Sc. New Brunswick; M.A. Toronto; Ph.D.
William Chefurka, B.Sc. Manitoba; M.A. Montana State; Ph.D. Harvard
Richard Morley Krupka, B.A., M.A. Saskatchewan; Ph.D. McGill

COURSES

46. General Biochemistry: A survey for General Programme students.
Prerequisites: Chemistry 33, 203 or 313.
2 lectures, 3 laboratory hours— 9

HONOURS COURSES

300. General Biochemistry: A survey for Honours students.
Prerequisites: Chemistry 203, 253 or 313; Chemistry 204, 254 or 214.
3 lectures, 2 laboratory hours—28

406. General Biochemistry: A survey for students in Honours Biology.
Prerequisites: Chemistry 33, 203 or 313.
2 lectures, 3 laboratory hours— 9

440. History and Methods: 13 lectures in collaboration with other Health Science Departments on the history of science. 13 lectures on methods and instrumentation in Biochemistry.
2 hours, half course— 1

441. Seminar: The presentation of scientific papers and the writing of essays on assigned topics.
1 hour (half course)

456. General Biochemistry: A survey for students in Honours Chemistry. (Given in conjunction with the Department of Chemistry.)
2 lectures (half course)— 1

460. Advanced Biochemistry: An advanced treatment of enzymology and intermediary metabolism.
Prerequisites: Biochemistry 300, 406 or 456.
2 lectures—14

461b. Nucleic Acids, Protein Synthesis and Molecular Genetics: A discussion of the role of the nucleic acids in protein synthesis.
Prerequisites: Biochemistry 300, 406 or 456.
2 lectures, half course— 9

462a. Neurochemistry: A survey of the composition and metabolic processes of nervous tissue.
Prerequisites: Biochemistry 300, 406 or 456.
2 lectures, half course—17

465b. Current Topics: A discussion of contemporary topics in the field of biochemistry.
Prerequisites: Biochemistry 300, 406 or 456.
2 lectures, half course—~~20~~ 18

465. Microbial Biochemistry: (Given in collaboration with the Department of Bacteriology.) A discussion of chemical processes peculiar to micro-organisms.
Prerequisites: Biochemistry 300, 406 or 456.
1 lecture (half course)— 5

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 456.
1 lecture (half course)— 9

468a. Physical Biochemistry: A discussion of the physico-chemical properties of macromolecules of biological interest.
Prerequisites: Biochemistry 300 or 456.
2 lectures, half course—~~30~~ 29

469a. Biochemical Regulation: A lecture course with demonstrations or Seminars dealing with the factors involved in the control of biochemical processes.
2 lectures, half course—28

480. Laboratory and Tutorial: Designed to give training in techniques and methods at the advanced level; emphasis is laid upon individuality of work and resourcefulness. Tutorial provides opportunity for staff-student discussion and supplementation of both laboratory and lecture topics.
10 hours

BIOPHYSICS

College of Science

Professor:

Alan Chadburn Burton, M.B.E., B. Sc. London; M.A., Ph.D. Toronto; LL.D. Alberta; F.R.S.C., F.R.S.A.; Head of Department

Associate Professors:

Alan Clifford Groom, B. Sc., Ph.D. London; F. Inst. P.

William Rodger Inch, B.Sc. Queen's; Ph.D.

Charles Patrick Sterling Taylor, B.A. British Columbia; B.A., M.A. Oxon, Ph.D. Pennsylvania

Margot Ruth Roach, B.Sc. New Brunswick; M.D., C.M. McGill; Ph.D., F.R.C.P.(C)

Assistant Professors:

Ronald Ian Duncan. B.S., M.S., Ph.D. Oklahoma

Marvin Harold Sherebrin, B.Sc. Manitoba; M.Sc., Ph.D., P.Eng.

Lecturer:

Peter Bennett Canham. B.A. Sc. Toronto; M. Sc. Waterloo; Ph.D.

Honorary Lecturer:

David M. Miller, B. Sc. Alberta; Ph.D. McGill

Robert Melvin Sutherland, B.Sc. Acadia; Ph.D. Rochester

HONOURS COURSES

~~300.~~ **General Biophysics:** A survey of the Physics of living things.
2 lectures, 3 laboratory hours— 8

~~440.~~ **History and Methods:** History — a survey of the history of science, given in collaboration with other Departments.
1 lecture (13 weeks, first term)— 2

Methods and instrumentation in Biophysics.
1 lecture (13 weeks, first term)

441. Research Topics and Seminar: The presentation by students of scientific reports on laboratory projects and selected topics from the scientific literature.
2 hours, 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.
2 lectures—~~30~~ 9

~~461a~~. **Bioelectrical Phenomena:** Bioelectric potentials, excitability and conduction, mechanism of biological transducers, and cybernetics.
2 lectures, first term—15

~~461b.~~ **Biophysical Analysis:** The application of physical and mathematical analysis to the physiological behaviour of living things, with a variety of examples.
2 lectures, half course—30

~~462a.~~ **Bio-Thermodynamics:** 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, first term—~~20~~ 18

~~462b.~~ **Environmental Biophysics & Radiobiology:** Effects of Environmental agents, natural or artificial, on living things; e.g. pressure, temperature, gaseous environment, gravity, vibration, sound, electric and magnetic fields, and radiation, (microwave, infra-red, visible, ultra-violet, and ionizing radiation). The principles of Radiobiology.
2 lectures, second terms— 6

480. Laboratory: This is the major laboratory course in experimental Biophysics for 4th year students. Students are expected to spend as much time as possible in laboratory work.
Minimum 10 hours weekly

BOTANY

College of Science

Professors:

Clarence James Hickman, B.Sc., Ph.D. Birmingham, Head of the Department
Frankland Shaw Cook, B.A., Ph.D. Toronto
Bruce Gordon Cumming, B.Sc. Reading; Ph.D. McGill
Wilbert Ezekiel McKeen, B.Sc., M.Sc.; Ph.D. Toronto
Duncan Archibald McLarty, B.A.; Ph.D. Columbia
David George Wilson, B.A. Toronto and Queen's; M.A. Queen's; Ph.D. Wisconsin

Associate Professor:

David Burton Walden, B.A. Wesleyan; M.Sc.. Ph.D. Cornell

Assistant Professors:

Paul Brethen Cavers, B.S.A. Toronto; Ph.D. Wales
Mary Dianne Fahselt, B.A. Saskatchewan; Ph.D. Washington
Richard I. Greyson, B.A. British Columbia; M.Sc., Ph.D. Oregon
Robert Christopher Jancey, B.Sc., M.Sc. Southampton; Ph.D. Sydney
Laszlo Orloci, B.S.F. Sopron; M.Sc., Ph.D. British Columbia
James Bird Phipps, B.Sc. Birmingham
Robert B. van Huystee, B.A., M.A. Saskatchewan; Ph.D. Minnesota
Angela Myra Wellman, B.Sc., Ph.D. Bristol

Honorary Lecturers (part-time):

William Harold Minshall, B.S.A. Toronto; M.Sc., Ph.D. McGill
Lloyd Thomas Richardson, B.A. McMaster; M.A. Ph.D. Toronto
Edward William Beswick Ward, B.Sc. Wales; M.Sc., Ph.D. Alberta

Instructor (Curator):

John K. Johannesen, Diploma, Royal Agricultural College, Copenhagen

Postdoctoral Fellows:

Yung Chang, B.Sc. Hong Kong; Ph.D. Cambridge
P. K. Battacharya, B.Sc., M.Sc. Banaras; Ph.D. Saskatchewan
C. C. Chen, B.Sc., M.Sc. Taiwan; Ph.D. McGill
K. R. Mitchell, B.Sc., Ph.D. Wales
E. Wagner, M.Sc., Ph.D. Freiburg

COURSES

20. Introductory Botany: For students of First Year General Programme (Natural Sciences); the general principles of Botany. (Not offered in 1968-69).
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 applications 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/tutorial hours— 7

22. Biology: For students of First Year General Programme (Natural Sciences) 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—7 8

35. 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

36. 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—12 17

36. Microbiology: Morphology, biology, classification and economic importance of micro-organisms.

Prerequisites: 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.

1 lecture, 3 laboratory hours—19

Prerequisite: Botany 20, Biology 21, or Biology 22.

HONOURS COURSES

Prerequisites for Second (250, 255), Third (300-353) and Fourth (442-499) Year courses: successful completion of previous year's programme or permission of the Head of the Department.

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 9

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—12 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 processes occurring within them.

2 lectures, 3 laboratory hours—10

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

358. Ecology and Development Physiology: Ecological and physiological considerations of plant survival, growth and development.

2 lectures, 3 laboratory hours—21

359. 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 for travel and subsistence.

402. Plant Biochemistry: Selected topics in plant biochemistry, including photosynthesis and nitrogen metabolism. Given in collaboration with the Department of Biochemistry.

1 lecture, 1 laboratory hour— 9

403. Quantitative Plant Ecology: Sampling and description of natural communities. Analysis of distribution patterns. Ordination and classification procedures.

1 lecture, 1 laboratory hour—16

412. Plant Physiology: Selected topics of current interest in plant physiology.

1 lecture, 1 laboratory hour—30

415. Experimental Plant Ecology: Plant responses to environment under experimental conditions, plant competition, evolution and plant ecology.

1 lecture, 1 laboratory hour— 6

424. Cytogenetics: The study of chromosomes and the genetic consequences of meiosis.

1 lecture, 1 laboratory hour— 1

456. Microbial Genetics: Aspects of genetics applying to micro-organisms. Given in collaboration with the Department of Bacteriology and Immunology.

1 lecture, 1 laboratory hour—26

457. 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.

1 lecture, 1 laboratory hour—28

482. Radiobiology: Nature and effects of nuclear radiations on living cells and organisms. Radioecology. Methodology.

1 lecture, 1 laboratory hour—34

460. Algae and Limnology: Morphology and biology of fresh-water algae with particular reference to their significance in natural waters.

1 lecture, 1 laboratory hour—21

461. Principles of Plant Pathology: Nature of plant diseases and of plant pathogens; relationships between host and pathogen; epidemiology of plant diseases; plant disease control.

1 lecture, 1 laboratory hour—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.

466. Bacteriology and Virology: Selected topics in bacteriology and virology with emphasis on current developments.

1 lecture, 1 laboratory hour—19

474. Mycology: Selected topics in mycology with emphasis on current developments.

1 lecture, 1 laboratory hour—14

499. Laboratory: A laboratory investigation in a selected field with presentation of a seminar and thesis.

9 laboratory hours

BUSINESS ADMINISTRATION

University College

(Members of the Faculty of the School of Business Administration)

Assistant Professor:

Fraser H. Rowland, B.A.

Instructors:

Ernest M. Kepper, B.A., M.B.A.
Dennis W. Konchak, B.A., M.B.A.
Elaine M. Wilson, B.Com., M.B.A.

COURSES

20. Introduction to Business Organization: 3 hours— 5.

250. Fundamentals of Accounting: 3 hours—21.

CHEMISTRY

College of Science

Professor and Head of the Department:
Howard C. Clark, B.Sc., M.Sc., Ph.D. Auckland; Ph.D. Cantab

Professors:
Patrick W. M. Jacobs, B.Sc., M.Sc. Natal; Ph.D., D.Sc. London
James F. King, B.Sc., Ph.D. New Brunswick
Paul de Mayo, B.Sc., M.Sc., Ph.D. London
Andrew E. Scott, B.Sc., Ph.D. St. Andrews; Dean of the College of Science
John B. Stothers, B.Sc., M.Sc., Ph.D. McMaster
Edgar W. Warnhoff, A.B. Washington U.; Ph.D. Wisconsin

Associate Professors:
Howard W. Baldwin, B.A., M.A. Saskatchewan, Ph.D. Chicago
Dino R. Bidinosti, B.Sc., M.Sc. Manitoba; Ph.D. McMaster
Donald M. Graham, B.Sc., M.Sc., Ph.D. Brooklyn Poly. Inst.
Walter C. Howell, B.Sc., M.Sc., Ph.D. (Administrative Assistant)
John W. Lorimer, B.A., M.A., Ph.D. Toronto
A. John Sukava, B.Sc., M.Sc. Manitoba; Ph.D. McGill
Christopher J. Willis, M.A., Ph.D. Cantab

Assistant Professors:
N. Colin Baird, B.Sc., Ph.D. McGill
Raymond K-C Chan, B.A., Ph.D. Toronto
Calliope Prevedorou-Demas, B.Sc. Alexandria; Ph.D. London
Roland A. Haines, B.Sc., M.Sc. Dalhousie; Ph.D. Pittsburgh
Duncan H. Hunter, B.Sc. Alberta; Ph.D. U.C.L.A.
R. Garth Kidd, B.Sc., M.Sc. Manitoba; Ph.D. London
Thomas C. W. Mak, B.Sc., Ph.D. British Columbia
William J. Meath, B.Sc. Carleton; Ph.D. Wisconsin
Patricia Reynolds-Warnhoff, A.B. Trinity College, Washington, D.C.; M.Sc. M.I.T.; Ph.D. Southern California

Instructor and Laboratory Supervisor:
Duncan A. MacRae, B.A.

Honorary Appointments:

Professors:
James W. Burns, B.A.Sc. New Brunswick; M.Sc. Queen's; LL.D.
Elvins Y. Spencer, M.Sc. Alberta; Ph.D. Toronto
J. Keith Watson, B.A., M.A. McMaster; M.A., Ph.D. Toronto

Lecturers:
Charles C. Bigelow, B.A.Sc. Toronto; M.Sc., Ph.D. McMaster
Kenneth K. Carroll, B.Sc. New Brunswick; M.Sc. Toronto; Ph.D.

William L. Magee, B.Sc., M.Sc., Ph.D.
David M. Miller, B.Sc., M.Sc. Alberta; Ph.D. McGill
J. Russell Robinson, B.S.A., M.S.A. Toronto; Ph.D.
Albert Stoessl, B.Sc., Ph.D. London
Kenneth P. Strickland, B.Sc., M.Sc., Ph.D.
G. Denis Thorn, B.Sc. Alberta; M.A. Queen's; Ph.D. McGill

Postdoctoral Fellows:

Roderick J. Acheson, B.Sc., Ph.D. Queens Univ. of Belfast; Mellis Allan, B.Sc. Aberdeen; Ph.D. London; Canan Bonnice, B.Sc. Robert College, Turkey; Ph.D. Univ. of New Hampshire; Neil Brown. B.Sc. Univ. of Glasgow; Ph.D. Univ. of Kent at Canterbury; David Cardin, B.Sc. Durham, D.Phil. Univ. of Sussex, Brighton; David G. Dawson, B.Sc., Ph.D. Aberdeen; Keith R. Dixon, B.A. Cantab; Ph.D. Strathclyde; John Ellis, B.Sc. Hons. Sydney; Ph.D. Univ. of New S. Wales (Australia); Theo Fehr, B.Sc., Ph.D. Eidg. Technische, Hochschule, Zurich; Charles Giannotti, B.Sc., Ph.D. Faculte des Sciences, Paris; Daniel P. Helmlinger, docteur du 3e cycle, Strasbourg; Hiroko Izawa, B.Sc., Ph.D. Tokyo; Peter C. Knight, B.Sc. London; Ph.D. Southampton; A. Krishna Menon, B.Sc. Travancore, India; M.Sc. Bombay; Ph.D. Univ. of Baroda, India; Philippos Pantelis, B.Sc., Ph.D. Manchester; Kenneth Piers, B.Sc., Ph.D. Alberta; Bangalore R. Sreenathan, B.Sc. Mysore; M.Sc. Karnatak; Ph.D. Panjab, India; Lasse Westfelt, civilingenor, teknologie licentiat, doctor of technology, Royal Institute of Technology, Stockholm; Ronald B. Yeats, B.Sc., Ph.D. Durham.

COURSES

20. General Chemistry: Primarily for students in First Year General Programme (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 laboratory hours—25

25. General Chemistry: For students in Home Economics and Nursing.
Prerequisite: Grade 13 Chemistry.
2 lectures, 3 laboratory hours—~~27~~ 25

Note that Chemistry 21 is a terminal course only. Chemistry 21, 22, or 24 taken prior to 1967-68, will be accepted as equivalent to Chemistry 25.

33. Organic Chemistry: For Home Economics, Nursing and General Programme students.
Prerequisite: Chemistry 20 or 25.
2 lectures, 3 laboratory hours—25

HONOURS COURSES

203. Organic Chemistry: For students in Honours Biology.
Prerequisite: Chemistry 20 or 25.
2 lectures, 1½ laboratory hours—~~23~~ 20

204. Physical Chemistry: For students in Honours Biology and Geology. (Familiarity with calculus is desirable for this course.)
Prerequisite: Chemistry 20 or 25.
2 lectures, 1½ laboratory hours— 2

207. Principles of Inorganic Chemistry: For students in Chemical Engineering Science.
2 lectures, 3 laboratory hours— 6

215. Elementary Physical Chemistry: For students in Engineering Science.
3 lecture hours—~~12~~ 4

251. Principles of Inorganic and Analytical Chemistry: For students in Honours and General Chemistry programmes.
3 lectures, 4 laboratory hours—13

253. Elementary Organic Chemistry: For students in Honours and General Chemistry programmes.
2 lectures, 3 laboratory hours— 2

254. Elementary Physical Chemistry: For students in Honours and General Chemistry programmes.
3 lecture hours— 8

303. Elementary Organic Chemistry: For Chemical Engineering students. Content similar to Chemistry 203.
2 lectures, 1½ laboratory hours—~~23~~ 20

314. Intermediate Physical Chemistry: For Chemical Engineering students. Content similar to Chemistry 354.
3 lectures, 1½ laboratory hours— 7

351. Intermediate Inorganic Chemistry: For students in Honours and General Chemistry programmes.
2 lectures, 3 laboratory hours— 4

352. Chemical Spectroscopy: Fundamental features of molecular spectroscopic methods including ultraviolet, visible and infrared spectroscopy, magnetic resonance and mass spectroscopy.
1 lecture hour—half-course—26

353. Intermediate Organic Chemistry: For students in Honours and General Chemistry programmes.
3 lectures, 4 laboratory hours—34

354. Intermediate Physical Chemistry: Chemical thermodynamics, phase equilibria, and electrochemistry. For students in Honours and General Chemistry programmes.
Prerequisites: Chemistry 254 and Mathematics 277 or equivalent.
Prerequisite or corequisite: Physics 256.
3 lectures, 3 laboratory hours— 7

374. Quantum Chemistry I: An introduction to the theory of atomic and molecular structure.
2 lecture hours—~~20~~ 18

409. Laboratory: Designed to accompany the lecture work of the Fourth Year Honours Chemistry.
6 laboratory hours

451. Advanced Inorganic Chemistry: Selected Topics.
2 lecture hours— 3

452. Instrumental Analysis:
(to be offered in 1968-69 only)
1 lecture hour, half-course—26

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 hours

474. Quantum Chemistry II: A continuation of Chemistry 374.
2 lecture hours—31

CLASSICS

Talbot College

Professors:

Alfred Ernest Raymond, B.A., M.A. Toronto; Ph.D. Chicago, Head of the Department; W. Sherwood Fox Professor of Classics

John Danby Ralph, B.A. Queen's; Ph.D. Chicago (part-time)

Associate Professors:

Douglas Earl Gerber, B.A., M.A.; Ph.D. Toronto

Hamilton Baird Timothy, M.A., B.D. Glasgow; B.A. London; Ph.D. Edinburgh

Assistant Professors:

Donald Edward Hill, M.A. Cantab.; M.A. Washington (St. Louis)

Charles Leslie Murison, M.A. Edinburgh; M.A. Cantab.

Lecturers:

Valerie Anne Broege, A.B. Vassar; M.A. Bryn Mawr

Nigel B. Crowther, B.A. Leeds; M.A. McMaster

Antony Robert Littlewood, B.A. Leeds; B.Litt. Oxon.

Instructors:

M. J. Moscovich, B.A. Alberta; M.A. Cincinnati

R. J. Littlewood (Mrs. A. R.), B.A. London (part-time)

GREEK COURSES

A. Elementary Greek: A preparatory course for those who wish to begin the study of Greek at the University. 3 hours—28

10. Intermediate Greek: Selections from Freeman and Lowe, Greek Reader; Plato, "Crito"; composition, sight translation.
Prerequisite: Grade 12 Greek or Greek 1 — 3 hours—28

20. Advanced Greek: Plato, "Apology"; a play of Euripides; composition, sight translation. — 3 hours—~~5~~ 28
Prerequisite: Grade 13 Greek, or Greek 10, or Greek 1 with permission of department.

30. The Attic Orators: Selections from Lysias and Demosthenes; composition, sight translation. (Offered by arrangement with the Department)
Prerequisite: Greek 20 — 3 hours—~~12~~ 4

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~~ 4

HONOURS COURSES

230. The Greek Epic: Selections from Homer.
Prerequisite: Greek 20 — 2 hours—~~12~~ 4

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~~ 16

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~~ 4

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 Honours Classics, Latin and Greek, or Latin; optional with the consent of the instructor for other qualified students. Will be offered in 1969-70 and alternate years thereafter.
1 hour, half course—~~25~~ 20

450. Greek Lyric poetry: Selections from the early elegiac, iambic, and lyric poets. (Not offered 1968-69)
Prerequisite: Greek 340, 351, or 352 — 2 hours—~~24~~ 16

351. (i) **The Greek Historians:** Thucydides.
(ii) **Composition and sight translation.** (Not offered 1968-69)
Prerequisite: Greek 351 2 hours—25

352. Greek Philosophy: The Pre-Socratics and Aristotle. (Not offered 1968-69)
Prerequisite: Greek 352 2 hours—35 27

495. *Comprehensive Examination:* A three-hour paper in sight translation of Greek authors, to be written in the final year by students in Honours Classics or Latin and Greek.

LATIN COURSES

20. Advanced Latin: Pliny, "Letters"; Vergil, "Aeneid" IV; composition and sight translation.
Prerequisite: Grade 13 Latin or Latin 10. 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

HONOURS COURSES

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 16

260. Vergil: His life and work; "Eclogues", "Georgics", Aeneid" (partly in translation).
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 Natura" (selections); Roman Satire (selections from Horace, "Satires", and Juvenal).
Prerequisite: Latin 340, 351, or 352 2 hours— 5

457. Study of a selected period in Roman History. Prescribed for students in Honours Classics, Latin and Greek, or Latin; optional with the consent of the instructor for other qualified students. Will be offered in 1968-69 and alternate years thereafter. 1 hour: half course— 1

495. Comprehensive Examination: A three-hour paper in sight translation of Latin authors, to be written in the final year by students taking programmes including Honours Latin.

COMPUTER SCIENCE

College of Science

Professor:

John Francis Hart, B.A., M.A., Ph.D. Toronto, Head of the Department

Honorary Lecturer:

G. Lake, B.Sc. Queen's; Director of the Computing Centre

Visiting Professor:

A. K. Salomaa, Ph.D. Turku

Assistant Professors:

G. Beckhoff, M.Sc. Southern Methodist, Dallas; Ph.D. Laval
Z. W. Pylyshyn, Ph.D. Saskatchewan (Joint Appointment with Psychology)
F. Zabransky, B.A.Sc. Toronto; M.A., P.Eng.

Lecturers:

M. Bennett, B.Sc. Queen's; M.A.
C. Dunham, M.A. U.B.C.
N. Callaghan, M.A.
B. Arnett, B.Sc. California
R. Newkirk, B.Sc.
P. Suttie, B.A.Sc. Toronto

Instructors:

A. G. Wilford, B.A. Queen's; M.A. Toronto
A. Szilard, B.A.
K. Langland, B.A. Saskatchewan
L. Konchak, M.A.

COURSES

Students in the General Programme who wish to major in Computer Science courses should consult with the Head of the Department.

Computer Science: This course provides an over-all view of the entire field of Computer Science. Students will have an opportunity to learn to programme 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.

Computer Science belongs to Division C, the Natural Sciences. Courses in this subject are of interest in Humanities as well as in science since they are valuable as a basis for interdisciplinary studies.

2 lectures, 2 laboratory hours— 6

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.

2 lectures, 2 laboratory hours— 6

Digital Computer Programming: An intensive course in computer programming for students in the General Programme or for Honours students in the Social Sciences or Humanities. Emphasis on a compiler language and its applications to computer-oriented statistics, numerical analysis, simulation, and non-mathematical problems.

2 lectures, 2 laboratory hours—26

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: C.S. 31 or COBOL language.

2 lectures, 2 laboratory hours—34

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: ALGOL or FORTRAN programming, one of Mathematics 30, 34, 35.

2 lectures, 2 laboratory hours—

Computer Logic and Programming: Theory of Boolean Algebra and switching circuits, basic logical elements of a digital computer, logical design of computer components, software systems — compilers, interpreters, monitor systems, design of languages.

Prerequisite: A course in programming.

2 lectures, 2 laboratory hours—

HONOURS COURSES

200. Digital Computer Programming: A thorough introduction to computer programming techniques, with emphasis on ALGOL, machine language, numerical methods, and statistics.

Prerequisite: A course in Mathematics.

2 lectures, 2 laboratory hours—26

206. Seminar: A study of General Systems concepts and their relationship to Information Science.

1 hour

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

306. Seminar - General Systems: Applications from the technical standpoint. Introduction to the analysis of linear systems with emphasis on feedback systems, applications to biological systems. A study of the COBOL language.

1 hour

313. Computer Logic and Programming: Theory of Boolean algebra, and switching circuits, basic logical elements of the digital computer, logical design of computer components, theory of automata.

Prerequisite: A course in computer programming.

2 lectures, 2 laboratory hours— 7

405. Introduction to Computing Algorithms: Algorithmic aspects of traditional problems in numerical analysis (approximation, linear algebra, differential equations). Discussions of error analysis and functional analysis. Some topics in mathematical programming.

2 lectures, 2 laboratory hours— 5

406. Theory of General Systems: A study of the mathematical theories related to General Systems and their applications in Computer Science.

3 hours—~~22~~ 20

408. Simulation Laboratory: Construction of mathematical models of various natural and social systems and their computer solutions. Monte Carlo methods, simulation languages.

2 lectures, 2 laboratory hours— 2

413. Non-Numeric Computing: One semester of programming techniques for non-numeric computation, including translation of algebraic langauges, 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.

2 lectures, 2 laboratory hours—17

ECONOMICS

University College

Professors:

Grant Louis Reuber. B.A., A.M., Ph.D. Harvard; Head of Department
Ronald George Bodkin, B.A. Swarthmore; M.A., Ph.D. Pennsylvania
Tillman Merritt Brown, B.A.; M.A. Toronto; Ph.D. Australian National
Kevin Hubert Burley, B.A., Ph.D. London
Mark Keith Inman, B.A. Acadia; M.A., Ph.D. Harvard; D.Litt. Acadia; Vice-President (Arts and Science)
Ronald Johnston Wonnacott, B.A., A.M., Ph.D. Harvard

Associate Professors:

Thomas J. Finn, A.B. Boston; A.M., Ph.D. Harvard (visiting)
Stephen Gabriel Peitchinis, B.A., M.A.; Ph.D. London

Assistant Professors:

David Winston Conklin, B.A. Toronto; Ph.D. M.I.T.
Thomas Joseph Courchene, B.A. Saskatchewan; Ph.D. Princeton
Georges Gallais-Hamonno, B.A., M.A., Ph.D. Paris
Suraj Bhan Gupta, B.A., M.A. Punjab; Ph.D. Chicago
K. Rao Kadiyala, B.Sc. Walstairs; M. Stat. Indian Statistical Institute; Ph.D. Minnesota
James Clark Leith, B.A. Toronto; M.Sc., Ph.D. Wisconsin
James Rae Melvin, B.Sc. Manitoba; M.A. Alberta; Ph.D. Minnesota
Thomas Russell Robinson, B.Com. British Columbia; M.A., Ph.D. Yale
Frank Roseman, B.A. Sir George Williams; M.A. McGill; Ph.D. Northwestern
Edward Saraydar, B.A. Syracuse; A.M., Ph.D. Rochester
William David Walsh, B.Com. British Columbia; M.A., Ph.D. Yale

Lecturers:

Robert Wayne Baguley, B.A.; A.M. Harvard
Carl E. Beigie, A.B. Muskingum
Cyril D. Hodgins, B.A. British Columbia
Peter O'Brien, B.Sc. (Econ.), M.Sc. (Econ.) London (visiting)
Louis Parai, B.A. Alberta; M.A. Toronto
Koen Suryatmodjo, M.A. Williams College; M.A. Yale (visiting)
Peter G. Tomlinson, B.A. Carleton
William Edward Vickery, B.E. Vanderbilt; M.B.A. Harvard

GENERAL COURSES: It is strongly recommended that all students enrolled in the *general programme with a major in Economics* take Economics 30 in their second year. Students who have taken a General Degree with a major in Economics can fulfill the requirements for a Master of Arts degree in Economics in two years.

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 optional tutorial hour—15

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

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

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 U.S.S.R.
Prerequisite: Economics 20. 3 hours—18

Money and Banking: Monetary theory, banking theory and practice, monetary policy and domestic stabilization, international monetary problems.
Prerequisite: Economics 20. 3 hours—15

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—9

Labour Economics: A study of the labour market, wage determination and the relationship between wages, employment and prices.
Prerequisite: Economics 20. 3 hours— 4

Economic History of North America: An examination of the sources of North American economic development.
Prerequisite: Economics 20. 3 hours— 9

Economic Development: A review of the principles of economic development and their application to contemporary problems.
Prerequisite: Economics 20. 3 hours—28

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—16

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

Economic History of Europe: An examination of the structure and development of the European economy since the eighteenth century.
Prerequisite: Economics 20. 3 hours— 5

HONOURS COURSES: Honours Courses are restricted to students who have the prescribed prerequisites and are enrolled in Honours Economics, Mathematics,

History, or any other Honours Course and to students enrolled in Pre-business and Engineering Science.

200. Seminar in Economic Policy
Prerequisite: Economics 20. 2 hours

230. Economic Theory 3 hours—17
Prerequisite: Economics 20 with at least 70% or permission of the instructor.

337. The Economic Development of the Modern World Since 1800
Prerequisite: Economics 20. 3 hours— 5

253. Statistics
Prerequisite: Economics 20 or permission of the instructor. 3 hours—25

340. National Income and Business Cycles
Prerequisite: Economics 230. 3 hours— 9

351. International Economics
Prerequisite: Economics 230. 3 hours—36 28

360. Resource Allocation and Economic Welfare
Prerequisite: Economics 230. 3 hours— 3

433. Monetary Theory and Policy
Prerequisite: Economics 340. 2 hours—36 28

434. Industrial Organization
Prerequisite: Economics 230. 2 hours—24 14

437. North American Economic History
Prerequisite: Permission of the Instructor. 2 hours—16

447. Economic History of Europe
Prerequisite: Permission of the Instructor. 2 hours—27

450. History of Economic Thought
Prerequisite: Economics 230 or permission of the Instructor. 2 hours—20 18

455. Mathematical Economics
Prerequisites: Economics 230 and Mathematics 20, 24, or 27 or permission of the instructor. 3 hours— 1

463. Public Finance
Prerequisite: Economics 230. 2 hours— 8

470. Contemporary Economic Problems and Policy
Prerequisite: Economics 230. 2 hours—30

480. Seminar
Prerequisites: Economics 340, 360. 2 hours—13

495. Econometrics
Prerequisite: Economics 255 or permission of the Instructor.
3 lectures and 1 tutorial hour— 5

ENGINEERING SCIENCE

(Members of the Faculty of Engineering Science)

Associate Professor:

George S. Emerson, B.Sc., A.R.C.S.T. Glasgow; M.Sc. London
A. T. Olson, B.Sc. Queen's; M.Sc. Birmingham

Assistant Professor:
A. J. Frick, B.E. Adelaide; Sc.M. Brown

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, 3 laboratory hours— 8 33

ENGLISH

University College

Chairman and Associate Professor:
Paul Duncan Fleck, B.A., M.A., Ph.D. Belfast

Associate Chairman and Assistant Professor:
Donald S. Hair, B.A., M.A., Ph.D. Toronto

Senior Professors:
Carl Frederick Klinck, B.A., M.A., Ph.D. Columbia; F.R.S.C.
Balachandra Rajan, B.A., M.A., Ph.D. Cantab.

Visiting Professors:
Kent Hicatt, A.B. Louisville; Ph.D. Columbia
Constance B. Hicatt (Mrs. K.), B.A., M.A. Hunter College; Ph.D. Yale (part-time)

Professors:
William Eric Duncan Atkinson, B.A. Cantab.; Ph.D. Chicago
Alfred Brandon Conron, D.S.O., B.A., M.A., A.M., Ph.D. Harvard
John Whichello Graham, B.A. Manitoba; M.A., Ph.D. Toronto
James Reaney, B.A., M.A., Ph.D. Toronto
Ross Greig Woodman, B.A. British Columbia; M.A. Manitoba; Ph.D. Toronto

Associate Professors:
Betty Bandeen, B.A., A.M., Ph.D. Radcliffe
Ronald Gordon Nudell Bates, B.A., M.A., Ph.D. Toronto
Anne C. Bolgan, B.A. D'Youville; M.A., Ph.D. Toronto
George E. Buckley, B.A. Mt. Allison; M.A. Columbia
Donald F. Chapin, B.A., M.A., Ph.D. Toronto
David Kaula, B.A. Cornell; Ph.D. Indiana
Geoffrey Rans, M.A. Cantab.; Ph.D. Leeds
Clifford Earle Sanborn, B.A., M.A., Ph.D. Toronto
Harry Rex Wilson, B.A., M.A., Toronto; Ph.D. Michigan

Assistant Professors:

Thomas J. Collins, B.A., M.A., Ph.D. Indiana
Terrence C. Cox, B.A. Toronto; M.A.
E. J. Devereux, B.A., M.A. Newfoundland; D.Phil. Oxon
Larry Garber, B.A., M.A. Toronto
Paul M. Gaudet, B.A. Toronto; M.A. Princeton
Kenneth Gibson, B.A. McMaster; M.A. Queen's
Donald H. Hensley, B.A., M.A. Oregon; Ph.D. Wisconsin
Victor M. Hoar, B.A. Illinois; M.A. Connecticut; Ph.D. Illinois
Neil C. Hultin, B.A. Concordia; M.A. Chicago; Ph.D. Johns Hopkins
Joel Kaplan, B.A. Pennsylvania; M.A. Toronto
Leroy J. Morrissey, B.A. Nebraska; A.M. Chicago; Ph.D. Pennsylvania
Gerald Douglas Parker, B.A. Acadia; M.A. Dalhousie; Ph.D. Toronto
Eugene A. Peyroux, Jr., A.B. Stanford; M.A. Stanford; Ph.D. Carnegie Tech.
Ernest Henry Redekop, B.A. Manitoba; M.A. Toronto
Richard James Shroyer, B.A. Yale College; M.A. Toronto
Mitchell E. Smith, B.A. Texas; M.A. Columbia; M.A. Yale
John A. B. Somerset, B.A. Toronto; M.A., Ph.D. Birmingham
Richard MacMillan Stingle, B.A., M.A. Toronto
Ann Therese Straulman, B.A. Wellesley; M.A. Kansas City; Ph.D. Wisconsin
Thomas Edward Tausky, B.A. McGill; B.A. Cantab.; M.A. Yale
Archibald M. Young, B.A. Toronto

Lecturers:

Michael Bell, B.A. London
Elizabeth Bieman (Mrs. G.), B.A., M.A.
Mary M. Brown (Mrs. C.), B.A., M.A.
Cynthia Margolis, B.A. Barnard College
Chandra Rajan (Mrs. B.), B.A., M.A. Delhi
Jay M. Sayer, B.A. San Fernando Valley State College

Instructors:

Robert S. Baker, B.A.
Clara E. Bartel, B.A.
Keith M. Benford, B.A. Liverpool
Robert C. Brandeis, B.A. Sir George Williams
Susan Crowther, M.A. Liverpool
Sarah M. Horrall, B.A. Carlton
Margaret A. Middleton, B.A. Bristol
Victor J. Milne, B.A., M.A. Toronto
Linda S. Newell, B.A. Bristol
Philip Michael Ondaatje, B.A. Toronto; M.A. Queen's
Douglas Parker, B.A., M.A.

COURSES

Detailed descriptions of the following courses may be obtained from the Department of English, University College, Room 180.

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

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 and six assignments (at least one of them a test) will be required. 3 hours—41

No student will be admitted to any of the following courses until he has successfully completed English 20.

A student who enters the second year of the General Programme after September, 1967 as an English major, must take, in either his second or third year, at least one course in a period prior to 1660 (30, 31, 34) and at least one course in a period following 1660 (32, 36, 38, 40, 44, 48, 49).

30. Medieval Literature: A study of representative Old and Middle English Literature, mostly in translation. Reference will be made to contemporary and earlier European works which are relevant. 3 hours—18

31. Renaissance Literature: Selected works by Wyatt, Surrey, Sidney, Spenser, Shakespeare (sonnets), Donne, Jonson, Milton, and other writers. 3 hours—27

32. Literature of the Nineteenth Century: Selected works by Wordsworth, Coleridge, Shelley, Keats, Byron, Arnold, Tennyson, Browning, Newman, Huxley, Pater, and other writers. 3 hours—10

34. Shakespeare: A study of the major plays. 3 hours— 2

36. Drama: A study of English and American dramatists against a background of Classical, Renaissance, and Modern European Drama. 3 hours—27

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

38. Literature of the United States and Canada (English) to 1885. 3 hours—17

40. Literature of the Restoration and Eighteenth Century (1660-1780). 3 hours— 3

41. Creative Writing: Not offered 1968-69.

44. The English Novel: A study of representative English, continental, and American novels from the eighteenth century to the present. 3 hours—33

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—9

48. Literature of the United States and Canada (English) from 1885 to the present. 3 hours—25

~~39~~. Literature of the Twentieth Century: Selected works by poets and novelists, chiefly British. 3 hours— 8

~~Speech 39~~. The major forms of oral discourse. 2 hours—30

~~Dramatics 46~~. Play Direction: An introductory course, with instruction in directing and acting, and participation in acting exercises and a final production. 2 hours— 9

HONOURS COURSES

~~237~~. History of the English Language. 2 hours—~~16~~ 20

~~289~~. Comparative Philology: Offered by the Departments of English, Russian, German, and Romance Languages to students in the Honours Comparative Literature programme. 1 hour— 1

~~230~~. Shakespeare. 2 hours—~~12~~ 10

~~265~~. Old English Language and Literature: with special emphasis on Beowulf. 2 hours— 2

~~270~~. Literature of the Romantic Revival (1798-1832). 2 hours— 8

~~280~~. Literature of the Sixteenth Century, excluding drama. 2 hours—~~24~~ 16

~~308~~. Literature of the United States and Canada (English) to 1885. 2 hours—17

~~354~~. Criticism: A survey of the major critics, and problems in terminology and practical criticism. 2 hours—22

~~360~~. Literature of the Victorian Period (1832-1900). 2 hours— 7

~~366~~. Elizabethan and Jacobean Drama, excluding Shakespeare. 2 hours— 5

~~375~~. Chaucer and his age. 2 hours—~~36~~ 28

~~380~~. Literature of the Seventeenth Century, excluding drama. 2 hours—~~12~~ 4

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 D. S. Hair, Associate Chairman, U.C. 177, before the day of registration.

401. Problems course. 2 hours—

~~427~~. General English Linguistics. 2 hours—28

~~436~~. Modern English and American Drama. 2 hours—~~23~~ 20

~~496~~. Literature of the United States and Canada from 1885 to the present. 2 hours—27

~~444~~. The English Novel. 2 hours—33

~~489~~. Literature of the Twentieth Century: Selected works by poets and novelists, chiefly British. 2 hours— 9

~~480.~~ Restoration and Eighteenth Century Literature (1660-1780).
2 hours—~~31~~

495. Comprehensive Examination: to be written by students in the Fourth Year of the Honours English Language and Literature Programme. Students must obtain a grade of at least 60% on this examination before they may be admitted to an honours 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 Honours English Language and Literature Programme 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 must be obtained from the Department of English.

FINE ART

Talbot College

Professor and Head of the Department:
William Scott Abell Dale, B.A., M.A. Toronto; Ph.D. Harvard; F.R.S.A.

Assistant Professor:
Anthony M. Urquhart, B.F.A. Buffalo

COURSES

~~20.~~ Introduction to the Study of Art: An analytical survey of art from ancient times to the present, with a related studio programme.
(2 hours lecture, 2 hours studio). 4 hours— ~~3~~

Note: Registration will be limited to 70 students, and priority will be given to students who intend to enter the Honours Programme in Fine Art. Fine Art 20 is a prerequisite for all studio courses.

~~30.~~ Classical Art: Greek and Roman Architecture, sculpture and minor arts — (not offered 1968-69).
Prerequisite: Fine Art 20 or permission of the Department. 3 hours—25

~~31.~~ Mediaeval Art: European architecture, sculpture and painting from the 4th century to the 15th.
Prerequisite: Fine Art 20 or permission of the Department. 3 hours— 8

~~37.~~ Art in North America: Painting, architecture and sculpture in the United States and Canada from the 17th century to the present.
Prerequisite: Fine Art 20 or permission of the Department. 3 hours—~~36~~ 28

~~39.~~ Supplementary Studio I: Primarily for those intending to qualify for the High School Assistant's Certificate, Type A, Art. 4 studio hours—22

49. Supplementary Studio II: A further development of Fine Art 39, which is a prerequisite for this course. (not offered 1968-69).
4 studio hours—42 4

HONOURS COURSES

220. Basic Composition: Exercises in formal analysis and composition in two and three dimensions. 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

250. Classical Art: Greek and Roman Architecture, sculpture and minor arts (not offered 1968-69). 3 hours—14

251. Mediaeval Art: European architecture, sculpture and painting from the 4th century to the 15th. 3 hours—32

252. Art in North America: Painting, architecture and sculpture in the United States and Canada from the 17th century to the present. 3 hours— 1

330. Chinese Art: The sculpture, painting and ceramics of China from prehistoric times to the 15th century — (not offered 1968-69). 3 hours—27

320. Contemporary Expression: A studio course in the contemporary use of various media in two and three dimensions — (not offered 1968-69).
4 studio hours— 2

321. Advanced Drawing: A continuation and refinement of Fine Art 221 (not offered 1968-69). 4 studio hours—33

322. Basic Print-making: Traditional techniques of intaglio print-making from linoleum, wood-blocks, etc. — (not offered 1968-69). 4 studio hours— 7

332. Italian Renaissance Sculpture: Sculpture in Italy from Jacopo della Quercia to Michelangelo — (not offered 1968-69). 3 hours—28

336. Twentieth Century Painting: Painting in Europe and North America since 1900 — (not offered 1968-69). 3 hours—16

337. The Group of Seven: The rise of the national school of painting in Canada — (not offered 1968-69). 3 hours—19

410. Museology: Seminar on the history and function of Art museums, with practical exercises in curatorial duties — (not offered 1968-69). 3 hours—

420. Studio thesis: Individual studio project under staff supervision, with the permission of the Department of Fine Art — (not offered 1968-69).
6 studio hours—

423. Advanced Print-making: A studio course in contemporary techniques (not offered 1968-69). 4 studio hours— 9

431a. Mediaeval Manuscripts I: Seminar on a selected topic in the field of manuscript illustration — (not offered 1968-69), fall term; half course. 3 hours—

431b. Mediaeval Manuscripts II: As above — (not offered 1968-69), spring term; half course. 3 hours—

433a. Masters of the Baroque: Seminar on a single artist of the 17th century, to be announced in advance — (not offered 1968-69), fall term; half course. 3 hours—

436b. Masters of the 20th Century: Seminar on a single artist, to be announced in advance — (not offered 1968-69), spring term; half course. 3 hours—

452a. Master Drawings and Prints I: Seminar on a selected topic in the field of drawings and prints — (not offered 1968-69), fall term; half course. 3 hours—

452b. Master Drawings and Prints II: As above — (not offered 1968-69) spring term; half course. 3 hours—

FRENCH

University College

Professors:

Robert Warren Torrens, B.S. Dartmouth; M.A. Harvard; Ph.D. Cornell; Head of the Department

Norman Adrian Bennetton, B.A., M.A. Southern California; Ph.D. Johns Hopkins

William S. Bush, B.A. John B. Stetson University; M.A. South Dakota, D. de l'U. de Paris

Lionel Jacques Seymour Metford, B.A., M.A. British Columbia; D. de l'U. de Paris

James Bernard Sanders, B.A., M.A. Manitoba; D. de l'U. de Paris

Henri Tuchmaier, D.U. Laval

Constant Venesoen, D. ès L. Laval

Associate Professors:

Mohan Laxman Balsé, B.A., M.A., Ph.D. Bombay; D. de l'U. de Paris

Douglas George Creighton, B.A., M.A. Toronto; Ph.D. Columbia

Adrien Favre, L. ès L. Toulouse

Frederick Kilburn Harper, B.A., M.A. Manitoba

Lane Murch Heller, B.A., M.A., Ph.D. Wisconsin

Dorothy Franklyn Jones, B.A. Smith; M.A. Columbia; Ph.D. Brown

Robert Lowell Walters, B.A. Oberlin; M.A., Ph.D. Princeton

Assistant Professors:

Pierre Cardinal. B.A. Loyola; M.A. Laval

Bruce Davies, B.A. McMaster; M.A. Harvard

Bryan Griffith Dobbs, B.A. Manitoba; M.A. Wisconsin

Louise Henrietta Forsyth, B.A. Sask.; M.A., Ph.D.

Alma Collins Saraydar, B.A. California (Los Angeles); M.A. Chicago; Ph.D California (Berkeley)

Jack Warwick, B.A. Oxon; M.A., Ph.D.

Honorary Lecturers:

Margaret M. Baldwin, B.A., M.A.
Théophile Joseph Casaubon, B.A. Laval

Lecturers:

Felix Rocque Atance, B.A. Toronto; M.A. Nebraska
Annick Hémery Deakin, L. ès L. Grenoble
David Savage Edy, B.A. George Williams, L. ès L. Dijon
Janine Gallais-Hamonno, L. ès L. Aix
Danielle Guestault, L. ès L. Montpellier
Nora Catherine Keeling Hall, B.A., M.A.
Deirdre Malone Pearce A.B. Duke; M.A. Wisconsin
David Edward Westgate, B.A. Nottingham; M.A. McMaster

Instructor:

Monique Pasternak, L. ès L. Paris

COURSES

Students in General Programme who choose French as their subject of concentration must elect French 31.

Students who major in this Department are required to elect four senior courses in the major subject: two in the Second Year and two in the Third Year.

~~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—~~22~~ 20

~~20.~~ **Advanced French:** Introduction to French literature, grammar, composition, oral practice. (One hour per week in the language laboratory may be required.)
Prerequisite: French 10 or Grade 13 French. 3 or 4 hours—~~23~~ 20

22. French Conversation: Systematic oral practice for those students who wish to develop fluency in speaking French.
Prerequisite: French 20. 2 hours: half course.

~~30.~~ **The French Novel:** Study of typical examples of the novel taken from French literature of the seventeenth through the twentieth centuries.
Prerequisite: French 20. 3 hours—21

~~31.~~ **Grammar, Composition, Phonetics, Oral Practice.** (One hour per week in the language laboratory may be required.)
Prerequisite: French 20. 3 or 4 hours—~~23~~ 20

~~34.~~ **French Drama:** Study of typical examples of French dramatic literature of the seventeenth through the twentieth centuries.
Prerequisite: French 20. 3 hours—31

~~36.~~ **French Poetry:** Study of representative French poems of the 16th through the 20th centuries.
Prerequisite: French 20. 3 hours—~~36~~ 28

36. French-Canadian Literature: Lectures and reading on the historical and cultural background and on the philosophical and literary contribution of French Canada.
Prerequisite: French 20. 3 hours— 9

41. Advanced Grammar, Composition and Oral Practice. (One hour per week in the language laboratory may be required.)
Prerequisite: French 31 or by permission of Department Head.
3 or 4 hours—25 20

43. Commercial French: Advanced transactions, reading. (For students in Secretarial Science.)
Prerequisite: French 31. 3 hours—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

HONOURS COURSES

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

252. 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: 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.)
Prerequisite: French 20. 3 or 4 hours—17

286. 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

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

300. French Literature of the Eighteenth Century: Lectures, reading, discussion, reports.
Prerequisite: French 270. 2 hours—24 16

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

~~490.~~ **The Literature of the Nineteenth Century:** Lectures, reading and reports.
Prerequisite: French 380. 3 hours—~~24~~ 16

~~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~~ 4

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. The examinations together will count as one course in the senior Honours Programme.

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

GEOGRAPHY

Middlesex College

Professors:

Edward G. Pleva. B.A., M.A., Ph.D. Minnesota; Head of Department
Hans A Hossé, B.A., M.A. Manitoba; Ph.D. Ottawa
Norman L. Nicholson, B.A., M.Sc.; Ph.D. Ottawa; F.R.G.S.; Professor and Dean of University College
Robert W. Packer, B.A., M.A. Cantab.; F.R.G.S.
Allen K. Philbrick, B.A., M.S., Ph.D. Chicago

Associate Professors:

Osmund P. Langtvet, C.Mag., C.Phil. Oslo
Robert McDaniel, B.A., M.A.
Victor W. Sim, B.A. McMaster; M.A. Clark; Ph.D. McGill
Harry W. Taylor, B.A. Westchester State; M.A. Indiana; Ph.D. Maryland
Charles F. J. Whebell, B.A., M.Sc.; Ph.D. London

Assistant Professors:

Richard W. Butler, B.A. Nottingham
J. Chadwick Day, B.Sc., M.Sc.
James M. Havens, A.B. Middlebury; M.S. Florida State; M.Sc. London
Michael J. Troughton, B.A., M.A., B.Litt. Oxon.
W. Robert Wightman, B.A., M.A.; Ph.D. Dunelm

Lecturers:

Paul M. L. Bruer, B.A.; M.A. Illinois (part-time)
Donald E. Guard, B.A.Sc., M.Sc. Manitoba (part-time)
Leonard N. Johnson, B.S.A. Toronto; M.A. (part-time)
Donald M. Scott, B.A. (Part-time)

Senior Technician:

S. Sauer, B.A.

COURSES

20. Elements of Physical Geography: The earth as the home of man; the elements of the physical landscape with special reference to man's adjustment to them.
2 lectures and 2 hours practical work—2

22. Cultural Geography: Concepts, systematic distribution, regional constructs, world perspective, and problems of cultural geography.
2 lectures and 2 hours practical work—35

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

43. 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: 2 courses 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

HONOURS COURSES

200. Quantative Methods in Geography: Methods of analyzing geographical data; an introduction to statistical methods.
Prerequisite: Mathematics 20 or 24 or permission (may be taken concurrently).
2 lectures and 2 hours practical work—25

220. Advanced 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

222. 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

260. Economic Geography: A systems anlaysis of the spatial organization of natural resources, agriculture, manufacturing, transportation and communication and tertiary activity.
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.

Mandatory for Third Year Honours.

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.

Prerequisites: 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.

Prerequisites: 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.

Prerequisites: Geography 200 and 230 or permission.

2 lectures and 2 hours practical work— 4

431. Geomorphology: Examination of recent periodical literature with particular emphasis on geomorphic processes, current research techniques, and the physiographic development of selected Canadian regions.

Prerequisites: Geography 230 or permission.

2 lectures and 2 hours practical work— 5

432. Advanced Cultural Geography: Seminar lectures and discussions toward the development of a quantative theoretical world cultural geography.

Prerequisites: 3 courses in Geography, including Geography 232.

2 lectures and 2 hours practical work— 7

435. Urban Geography: Systems of cities; land use; social, cultural, and political patterns within the city; urban problems.

Prerequisites: 2 courses in Geography or permission.

2 lectures and 2 hours practical work—~~11~~ 10

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.

Prerequisites: 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.

Prerequisites: 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.

Prerequisites: 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. Political Geography: A general study of geographical factors in governmental organization; a survey of the political-territorial units of the world in their geographical settings; an introduction to Geopolitics.

Prerequisites: 3 courses in Geography or permission.

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 Honours.

Sessions and hours by arrangement. (half course)

447. Historical Geography: Systematic and cross-sectional approaches to certain aspects of the historical geography of North America with special reference to Canada and Ontario.

Prerequisite: 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 Honours.

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 Honours.

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.

Prerequisites: 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.

Prerequisites: 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.

Prerequisites: 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.
Prerequisites: 3 courses in Geography or permission.
2 lectures and 2 hours practical work—34

464. U.S.S.R. and Eastern Europe. (Not given 1968-69) —36

465. Middle East (Southwest Asia and North Africa). (Not given 1968-69)—22

466. Africa. (Not given 1968-69) —30

467. Malaysia, Australasia, and the Pacific. (Not given 1968-69) —34

468. South, East, and Southeast Asia (particularly India, China, Japan). (Not given 1968-69)—17

GEOLOGY

College of Science

Professors:
C. G. Winder, Ph.D. Cornell; Head of the Department
G. H. Reavely, D.I.C. London; Assistant Dean of the College of Science
G. G. Suffel, Ph.D. Stanford
A. Dreimanis, Mag.rer.nat. Riga

Associate Professors:
R. N. Farvolden, Ph.D. Illinois
R. W. Hutchinson, Ph.D. Wisconsin

Assistant Professors:
W. R. Church, Ph.D. Wales
A. D. Edgar, Ph.D. Manchester
M. E. L. Fleet, Ph.D. Manchester
A. C. Lenz, Ph.D. Princeton
J. Starkey, Ph.D. Liverpool
P. G. Sutterlin, Ph.D. Northwestern
G. M. Young, Ph.D. Glasgow

Honourary Lecturer:
R. M. Quigley, Ph.D. Massachusetts Institute of Technology (Associate Professor of Engineering Science)

COURSES

10. 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

HONOURS COURSES

200. Mapping Procedures: Involving aerial photo interpretation, pace and compass techniques. Emphasis on lithogical examinations.
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

~~215.~~ Optical Mineralogy and Petrography: Light transmission in minerals; mineral identification using the polarizing microscope; lithology and spacial 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. Offered at field camp: (Half course)

~~320.~~ Petrography: Megascopic and microscopic description and classification of igneous, sedimentary and metamorphic rocks.
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 value of various minor structures; relations between structure and topography; earth's structure and mountain building. Laboratory work will include the interpretation of geologic structures from maps.
2 lectures. 2 laboratory hours—31

~~360.~~ Mineral Deposits: Principal types of metallic ore deposits including their origin. Laboratory study of ore and gangue minerals, ore suites, using the ore microscope. 2 lectures, 2 laboratory hours— 4

~~260.~~ Stratigraphy and Historical Geology: Principles of correlation classification, paleogeography and geologic time. History of the Canadian Shield.
5 hours per week—~~11~~ 10

~~365.~~ 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. 5 hours—~~20~~ 18

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.
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 27

430. Geochemistry: Element abundancies; meteorites; trace element geochemistry; application of thermodynamics to geological problems; sedimentary geochemistry; isotope geochemistry; polymorphism. 3 lectures—24 26 21

450. Economic Mineral Deposits: The occurrence and production of ores of the principal metals, with a study of outstanding examples. Laboratory work consists of (a) a series of reports based on original sources and (b) studies of specific ore deposits, with emphasis on microscopic examination.
1 lecture, 5 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—14 10

475. Invertebrate Macropaleontology: Advanced study of corals (rugose and tabulate), graptolites and Paleozoic brachiopods, 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

College of Science

Professors:

Alan Edward Beck, B.Sc. London; Ph.D. Australian National University; Head of Department

Charles Murray Carmichael, B.Sc., M.Sc., Ph.D.

Visiting Professor:

Samuel Warren Carey, B.Sc., D.Sc. Sydney

Associate Professor:

Robert Frank Mereu, B.Sc., M.A. Toronto; Ph.D.

Assistant Professors:

Lalu Mansinha, B.Sc., M.Tech., I.I.T. Kharagpur; Ph.D. British Columbia
Henry Currie Palmer B.Sc., St. Francis Xavier; Ph.D. Princeton
Douglas Edwin Smylie, B.Sc. Queen's; M.A., Ph.D. Toronto (Assistant Professor, Mathematics)

Post Doctoral Fellow:

Akio Hayatsu, B.Sc. Tokyo; Ph.D. Toronto
Keh-Gong Shih, B.Sc. Taipei; M.A. U. of Oregon; Ph.D. Oregon State U.

COURSES

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.
2 lectures, 2 laboratory hours—34

(Open only to students who do not intend to enter an Honours Science Programme.)

HONOURS COURSES

365. General Geophysics: An introductory course in the various geophysical problems associated with gravity, magnetism, seismology, radio-activity, and the internal constitution of the earth, with applications to geophysical exploration.
2 lectures, 2 laboratory hours—27

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 up in a style normally used for published papers.

470. Thesis: A report on a field or laboratory study conducted by the student.
One full course

GERMAN

Talbot College

Professors:

Gordon Lloyd Tracy, B.A. Queen's; M.A.. Ph.D. Wisconsin, Chairman of the Department
Richard Samuel, Ph.D. Berlin, Visiting Professor
Herbert Karl Kalbfleisch, B.A., M.A. New York; M.A., Ph.D. Michigan (part-time)

Associate Professor:

Alexander Robinson Anderson, B.A. Toronto; Ph.D. Brown

Assistant Professor:

Hanna Spencer (Mrs. E. Y.), Ph.D. Prague

Lecturer:

Gerald H. Seufert, Staatsexamen, Tübingen

Instructor:

Renata Purekevich, B.A., M.A.

COURSES

1. **Introductory German:** Study of the sounds and structure of the language. Intensive oral and written practice. Readings in prose and poetry and in the history and civilization of the German-speaking world. 3 hours—~~36~~ 28

2. **Intensive German for Beginners:** A more intensive course than German 1. Designed for students who begin German at the University and who contemplate making German their subject of major concentration or who desire to enter the German honours courses. 3 lecture hours, 2 laboratory hours—~~36~~ 28

5. **Elementary Scientific German:** The elements of German grammar with the reading of easy scientific German. 3 hours—~~23~~ 28

10. **Intermediate German:** Further study of the structure and idiom of the language. Oral and written practice. Readings in modern prose and poetry.
Prerequisite: German 1 or permission of the Department. 3 hours—~~36~~ 28

20. **Advanced German:** Survey of German literature, composition, grammar, conversation.
Prerequisite: Grade 13 German or German 2 or 10 or permission of the Department. 3 hours—~~36~~ 28

22. **Conversation and Composition:** Systematic oral practice and translation of texts.
Prerequisite: German 10 or German 20 or permission of the Department.
2 hours: (half course)

~~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 grammatical constructions as an aid to reading.
Prerequisite: German 1 or German 5 or permission of the Department.
2 hours—~~23~~ 20

~~40~~. **German Drama from the Classical Period to the Present.**
Prerequisite: German 20 or permission of the Department. 3 hours—~~24~~ 16

~~42~~. **Masterworks of 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 the special field of study of each student. This course may be elected by students without a previous knowledge of German. 2 hours—~~23~~ 20

HONOURS COURSES

All students in Honours Courses will take a comprehensive examination at the end of the final year.

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

291. Conversation, Composition, Translation, Phonetics.
Prerequisite: German 20. 2 hours—24

385. History of the German Language: Readings in Middle High German Literature. 2 hours—4

390. Drama of the Nineteenth Century. 2 hours—26

391. Conversation, Composition, Translation.
Prerequisite: German 291. 2 hours—34

420. German Literature of the Twentieth Century. 2 hours—16

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

450. German Classicism: Lessing, Goethe, Schiller. 2 hours— 6

491. Conversation, Composition, Translation. 2 hours—19

495. Comprehensive Examination: A written examination which will test the student's general knowledge of German literature.

GO BACK TO INDEX

HEBREW

Professor:

The Rev. Geoffrey Howard Parke-Taylor, B.A., M.A. Toronto; L.Th., B.D., D.D. Wycliffe

Lecturer:

The Rev. Harold Kay, B.A. Dalhousie; L.Th. King's; B.D. Trinity; M.A. Temple

COURSES

These courses are given in Huron College on behalf of University College and Huron College.

1-10. Grammar: Text of Genesis 1-3; 22; Jonah.
Language Laboratory - Israeli Hebrew 5 hours—27

20. Introduction to Hebrew Narrative and Poetry: Text of II Samuel 9-20; I Kings 1-2. Selected Psalms.
Prerequisite: Hebrew 1-10. 3 hours—27

~~30.~~ **Hebrew Prophetic Literature:** Selections from Amos. Isaiah of Jerusalem, Jeremiah, and Deutero-Isaiah. Introduction to Gunkel's **Formgeschichte** and **Gattungskritik.** (Not offered in 1968-69)
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

HISTORY

Talbot College

Professor and Chairman of the Department:
Walter Balderston, B.A., Ph.D. Cornell

Senior Professors:
Wallace Klippert Ferguson, B.A.; M.A., Ph.D. Cornell; Litt.D.; F.R.S.C.; J. B. Smallman Professor of History
Donald Gordon Grady Kerr, B.A. McGill; Ph.D. London
Richard Cleghorn Overton, A.B., A.M. Williams; A.M., Ph.D. Harvard
Hugh Mason Wade, M.A. McGill; LL.D. New Brunswick; D. és L. Ottawa

Professors:
Fred Harvey Hitchins B.A.; M.A., Ph.D. Pennsylvania
Jack Robert Lander, B.A., M.A., M.Litt. Cantab.; F.R. Hist. S.
John Gordon Rowe, A.B. Harvard; B.D. Episcopal Theological School, Cambridge, Mass.; M.A., Ph.D. Toronto
James John Talman, B.A., M.A.; Ph.D. Toronto; D.Litt. Waterloo; F.R.S.C.: University Librarian
Morris Zaslow, B.A., B.Ed. Alberta; M.A., Ph.D. Toronto

Associate Professors:
Frederick August Dreyer, B.A. Toronto; B.A. Oxon.; Ph.D. St. Andrews
John Rowland Gwynne-Timothy, B.A., M.A. Toronto; D.Phil. Oxon.
Kenneth Harry Warren Hilborn, B.A., M.A. Queen's; D.Phil. Oxon.
John Purves McLaughlin, B.A. Queen's; Ph.D. London
William Herbert Stockdale, B.A., M.A. Alabama; Ph.D. New York

Assistant Professors:
Frederick Henry Armstrong, B.A., M.A., Ph.D. Toronto
Peter George Cornwall, B.A. Toronto; A.M. Michigan
Roger Lee Emerson, B.A. Dartmouth; M.A. Brown; Ph.D. Brandeis
Robert Arthur Hohner, B.A., M.A., Ph.D. Duke
Albert Mark John Hyatt, B.A. R.M.C.; B.A. Toronto; M.A. Carleton; Ph.D. Duke
Peter Francis Neary, B.Sc., M.A. Memorial; Ph.D. London
John Charles Martin Ogelsby, A.B. Stanford; M.A., Ph.D. Washington

Charles Arthur Ruud, B.A. Willamette; A.M. Harvard; Ph.D. Berkeley
Ian Kenneth Steele, B.A. Alberta; Ph.D. London

Lecturers:
Thomas Nathan Guinsburg, A.B., M.A. Columbia
Donald S. Hoffman, B.A. Syracuse
Arthur A. Levin, A.B. Columbia; A.M. Harvard

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 Honours Programme in a related Department.

Modern Europe: 1715 to the Present. (Staff) 3 hours—14

Mediaeval Europe: From the 4th to the 15th Centuries. (Lander) 3 hours—34

Canada: From the beginnings of the French Régime to 1945. (Hitchins, Neary) 3 hours—29

England to 1688: A survey of English History from the Anglo-Saxons. (Balderston) 3 hours—10 9

The British Empire and Commonwealth: A survey of political, economic, and social aspects of British Imperial development since Elizabeth I. (Gwynne-Timothy, Steele) 3 hours—32

The United States, Colonial Period to the Present: Particular emphasis will be placed upon the American Revolution, Jacksonian Democracy, westward expansion, Civil War and Reconstruction, industrialization, Progressivism, America's rise to world power, and the New Deal. (Hohner) 3 hours—36 28

England since 1688: English political, social, economic, and diplomatic development. (Stockdale, Dreyer) 3 hours—18

Modern Europe: From the beginning of the 16th century to 1715. (Emerson) 3 hours—13

Russia: A general survey of Russian history. (Ruud) 3 hours— 6

Latin America: The evolution of Latin America from the time of Columbus to the present. (Ogelsby) 3 hours—30

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

Selected Topics in the History of Mediaeval Europe.
Prerequisite: History 30 or permission of the Department. 3 hours—12 4

Selected Topics in the History of Canada: British North America, 1759-1873. (Not offered 1968-69) 3 hours—15

Selected Topics in the History of Canada: Party Politics 1867-1945. Prerequisite: History 31 or permission of instructor. (Neary) 3 hours—15

Selected Topics in the Diplomatic History of the 20th Century. Prerequisite: Students must have completed their Second Year or have the permission of the instructor. (Hilborn) 3 hours—20

Selected Topics in the History of the United States. Prerequisite: History 34 or permission of the Department. Offered 1968-69: U.S. History 1841-1901: The Prelude to Modern America. (Overton) 3 hours—26

Selected Topics in European History: Modern Germany 1848-1945. (Hoffman) 3 hours—19

Selected Topics in European History: Modern France since 1815. (Gwynne-Timothy) 3 hours—19

Selected Topics in European History: 20th Century Russia. (Levin) 3 hours—19

Selected Topics in European History: Intellectual History of the Enlightenment. (Emerson) 3 hours—19

HONOURS COURSES

Canada: From the beginning of the French Régime to 1945. (Armstrong, Neary) 3 hours—29

United States, Colonial Period to the Present: Particular emphasis will be placed upon the American Revolution, Jacksonian Democracy, westward expansion, Civil War and Reconstruction, industrialization, Progressivism, America's rise to world power, and the New Deal. (Guinsburg) 3 hours—36

Europe and England in the 16th and 17th centuries. (Staff) 3 hours—13

The High Middle Ages: Charlemagne to the end of the 13th century. (Rowe) 3 hours—21

Selected Topics in the History of Canada: The Development of Western Canada and Northern Canada. (Not offered in 1968-69) 3 hours—25

The First British Empire: Seminar on selected areas; Elizabethan expansion to the American Revolution. (Steele) 3 hours—32

Foreign Policy of the United States since 1775. (Guinsburg) Prerequisite: History 234 or equivalent. 3 hours—14

England, 1715-1914. (Dreyer) 3 hours—18

Russia - U.S.S.R.: The 19th and 20th centuries, with special emphasis on intellectual and social developments. (Levin) 3 hours— 6

Latin America: A study of Spanish and Portuguese civilization in the New World. (Ogelsby) 3 hours—30

345. 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

346. Modern France: From 1715 to the Present. (McLaughlin) 3 hours—24 16

356. Modern Germany: 1701 to the Present. (Hoffman) 3 hours—30 9

400. Senior Thesis: With permission of the Department. (Staff) 3 hours—

416. Urban: A study of the city in history, its evolution, problems, and influence on civilization. (Armstrong) 3 hours—27

481. Canada since 1867: Emphasis on selected topics and seminar discussion. (Kerr) 3 hours— 7

482. England, 1399-1642: A political, social and constitutional study of England from the 15th century to the mid-17th century. (Lander) 3 hours—18 9

433. The Second British Empire and Commonwealth. (Gwynne-Timothy) 3 hours—19

434. The United States, 1848-1901: The Prelude to Modern America: Emphasis on economic, social, and constitutional developments against the general background of the period. (Overton)
Prerequisite: History 234 or equivalent. 3 hours—17

436. Selected Topics in European Intellectual History: English Rationalists to the Russian Revolution. (Ruud) 3 hours—22

441. French-Canadian Nationalism. (Not offered 1968-69) 3 hours— 2

444. The United States in the 20th Century: Attention is focused on domestic developments. Emphasis in the first term is upon the Progressives, 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 equivalent. 3 hours—14 16

451. Ontario: Study of the development of the province from 1784. (Armstrong) 3 hours—27 20

452. English Constitutional: A study of the development of the English constitution from the Anglo-Saxon monarchy to 1688. (Not offered 1968-69) 3 hours—35 27

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) 3 hours—11 10

457. Warfare: With emphasis on the relations between warfare and modern political, economic, and social conditions. (Hyatt) 3 hours—32 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

HOME ECONOMICS

See Brescia College section — page 193.

ITALIAN AND SPANISH

See Spanish and Italian — page 183.

JOURNALISM

University College

Professor:

John Leslie Wild, B.A.; M.A. Michigan, Head of the Department

Associate Professor:

Earle Beattie, B.A. Manitoba; B.Ed. Toronto; M.A. State U. of Iowa

Assistant Professors:

Frederick Kenneth Bambrick, B.A.

C. Edward Wilson, B.A.; M.S. Northwestern

Lecturers (Part-time):

Thomas Hugh Bremner

William C. Heine, B.A.

James O'Neail, B.A.

Hal Tennant, B.A. British Columbia

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 Honours Journalism Programme.
3 hours—~~23~~ 9

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 Journalism 20 may not elect Journalism 21. 3 hours—~~33~~ 9

HONOURS COURSES

250. News Writing and Reporting: Reporting specialized fields; techniques and problems in reporting public affairs, social, economic, and political news; ethics of reporting; content analysis of daily newspapers, feature writing; pictorial journalism.
Prerequisite: Journalism 20. 4 hours—24 16

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 4

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

352. Public Relations I: History and function of public relations; public relations processes with emphasis on communications; relations with the general public, employees, shareholders, customers, the community, the governments; lectures, seminars, case studies, workshops.
Prerequisite: Journalism 250. 4 hours—16

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

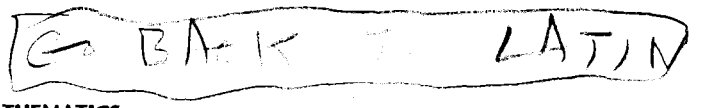
375. Feature and Magazine Article Writing: Feature writing for newspapers; article writing for industrial, trade and general circulation magazines, including assignments and a study of freelancing, readership, research, interviewing, organization, rewriting, style. 2 hours: half-course—35 27

400. Newswriting and Reporting: For students registered in the Diploma Programme in Journalism. Writing for mass communication; the forms and style of journalistic prose; reporting methods; news evaluation; interpretative reporting; world news editing and reporting. 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 news coverage and comment, foreign reporting. Lectures, seminars. 4 hours— 5

452. Public Relations II: Public relations in special situations; industry, banking, insurance, utilities, transportation, hospitals, churches, educational institutions, health and welfare agencies, government, armed forces; research, planning, evaluation, executive decision-making; seminars; case studies.
Prerequisite: Journalism 362 4 hours— 1

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. 3 hours—19



MATHEMATICS

College of Science

Professor and Head of the Department:

David Borwein, B.Sc. Witwatersrand; Ph.D., D.Sc. London; F.R.S.E.

Senior Professor:

Randal H. Cole, B.A.; M.A., Ph.D. Wisconsin

Professors:

Mir M. Ali, B.Sc., M.Sc. Dacca; M.S. Michigan; Ph.D. Toronto (on leave 1968-69)

Gordon R. Magee, B.A.; M.S., Ph.D. Chicago (part-time)

John T. Moore, B.A.; M.A. Wisconsin, Ph.D. Chicago

Derek Naylor, B.Sc., Ph.D. London

Leland F. S. Ritcey, B.A. Mount Allison; M.A. Harvard; Ph.D. Chicago; A.S.A. (Richter Memorial Chair of Actuarial Mathematics)

Associate Professors:

Thomas S. Blyth, B.Sc. St. Andrews; D. és Sc., Paris (visiting)

Donald O. McKay, B.A., M.A., Ph.D. Buffalo

B. Raja Rao, B.A. Madras; M.Sc., Ph.D. Poona (visiting)

Bruce L. R. Shawyer, B.Sc., Ph.D. St Andrews

Thomas H. Wonnacott, B.A.; Ph.D. Princeton

Assistant Professors:

Anne E. M. Bode, B.A., M.A. Saskatchewan (Administrative Assistant)

F. Peter A. Cass, B.Sc., M.Sc. Victoria (Wellington, New Zealand); Ph.D.

Lai. K. Chan, B.Sc., Hong Kong Baptist College; M.A. Ph.D.

Jay L. Delkin, B.A. Reid; M.A. British Columbia

John B. Florence, M.A. St. Andrews; M.Sc. Newcastle-upon-Tyne; Ph.D. Simon Fraser

M. Safiul Haq, M.A., Ph.D. Toronto

Irvine J. W. Robinson, B.A., M.A. Queen's

T. M. Viswanathan, B.A. Madras; M.Sc. Assumption; Ph.D. Queen's

Lecturers:

Geoffry Horrocks, M.A. Oxon; F.S.A.; F.C.I.A., A.I.A. (part-time)

John A. Mereu, B.A.; F.S.A., F.C.I.A. (part-time)

COURSES

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 B. 3 lectures—30

24. Calculus: Differential and integral calculus with applications.
Prerequisite: Grade 13 Mathematics A **and** Mathematics B.
3 lectures, 1 tutorial hour—30

27. Introductory Calculus: For students with either Grade 13A or Grade 13B Mathematics. Students with both Mathematics A and B should take Mathematics 24.
Prerequisite: Grade 13 Mathematics A **or** Mathematics B.
4 lectures and 1 tutorial hour—30

Note: Applied Mathematics 20 is an acceptable alternative for Mathematics 24 or 27.

30. Algebra: Introduction to modern algebra: rings, domains, fields, groups, polynomials, matrices, determinants.
Prerequisite: Mathematics 20 or 24 or 27. 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. 3 hours—38 27

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. 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; finite sequences and series; ordinary differential equations.
Prerequisite: Mathematics 20 or 24 or 27. 3 hours— 9

36. Statistics: Standard probability distributions; sampling distributions; estimation; test of hypothesis, analysis of variance; regression and correlation.
Prerequisite: Mathematics 20 or 24 or 27. 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. 3 hours—22

41. Complex Variable: Complex numbers, elementary point set topology, Cauchy-Riemann conditions, integration, Cauchy's Theorem and applications, residue calculus and applications, Fourier series.
Prerequisite: Mathematics 34. 3 hours— 9

HONOURS COURSES

260. Algebra: Finite dimensional vector spaces, linear transformations and matrices, linear equations, quadratic forms, eigenvalues and eigenvectors, vector spaces over the complex numbers.
Prerequisite: Mathematics 20 or 24 or 27. 2 hours—19

250. Algebra and Geometry: Vector and matrix algebra, determinants, linear transformations, linear equations, canonical forms. Applications to bilinear forms, quadratic forms, geometry, systems of linear differential equations.
Prerequisite: Mathematics 24 or 27. 3 hours—14

253. Mathematics of Finance: Compound interest, annuities certain, amortization, sinking-funds, bonds; the mortality table; life annuities, standard forms of life insurance; commutation functions.
Prerequisite: Mathematics 24 or 27. 3 hours—17

256. Analysis I: Elementary point set topology, sequences, limits, continuity, uniform continuity, basic properties of the Riemann integral. Series: tests for convergence, rearrangements, uniform convergence, multiplication of series, power series. Differentiation, mean value theorems. The above topics to be discussed with reference to Euclidean n-space where appropriate.
Prerequisite: Mathematics 24 or 27. 3 hours— 2

277. (Not offered 1968-69).

278. Advanced Calculus: Sequences and series; Indeterminate forms; Taylor's formula; Functions of several variables; Partial differentiation; Coordinate transformations; Extrema; Vectors; Integral as a function of a parameter; Improper integral; Multiple integration; Line and surface integrals; Integral theorems; Uniform convergence; Ordinary differential equations.
Prerequisite: Mathematics 24 or 27. 3 hours—30

For each 300 course, the prerequisites are Mathematics 230 or 250 and 256 and 278, or the consent of the instructor. For each 400 course consent of the instructor 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 and vector spaces; establishment of real and complex 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; non-parametric methods; sequential analysis.
3 hours—20

356. Analysis II: Real variables; sequences, improper integrals, series, Fourier series, Fourier integral, Fourier transform, Riemann-Stieltjes integral. Complex variables; integration and differentiation of a function of a complex variable, Taylor and Laurent series, conformal mapping, residues. 4 hours—31

363. Numerical Methods: Accuracy of approximate calculations, interpolation, summation of series, numerical differentiation and integration, solution of numeri-

cal 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

Differential Equations: Ordinary differential equations, solution in series, Green's functions for second order equations. Eigenvalue problems, simple eigenfunction expansions. Partial differential equations, method of characteristics. 3 hours— 1

Theory of Probability: Probability measure, Lebesque-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

Algebra II: Elementary factorization theorems; field theory; Galois theory; groups with operators, semi-simple rings, general factorization theorem. 3 hours— 8

Geometry II: Algebraic Geometry. Affine and projective varieties; divisors; Riemann-Roch Theorem; additional topics to be selected. 3 hours—~~38~~ 27 28

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 230 or 250, and 256 or 278. 3 hours—17

Statistics II: Distributions in Rn; 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

Analysis III: Basic point set topology, advanced real variable theory, introduction to measure and integration theory. 3 hours—~~17~~ 10

Introductory Topology: Metric spaces, topological spaces, connectedness, compactness, separation axioms, Tietze extension theorem; simplicial complexes, classifications of compact 2-manifolds. 3 hours—18

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

Ordinary Differential Equations: Existence theorems; general linear equation, matrix systems, adjoint systems, Green's function, expansion problems; stability theory. 3 hours—33

Multivariate Statistical Analysis: Matrix theory; Normal distributions; Correlation and regression; Significance tests; Analysis of variance; Canonical correlations. 3 hours—13

Differential Geometry and Tensor Calculus: Theory of curves, Serret-Frenet formulae; curvilinear co-ordinates, first and second fundamental forms, geodesics, Codazzi equations, Gauss-Bonnet theorem. Introduction to differential geometry in the large. Introduction to *n*-dimensional Riemannian geometry, tensor analysis and general relativity. 3 hours—27

476. Foundations of Mathematics: Implicational Propositional, and Predicate logics. Formalizations of mathematical systems, including precise definitions of Proof and Deduction. Extensions, completions, and models of formal systems. Application of Boolean techniques to Propositional logics. Discussion of Formalist, Intuitionist, and Logicist schools of thought.

3 hours—~~2~~

477. Linear Operators: Continuous operators in normed spaces, linear functionals, contraction mappings, Hilbert space, adjoint 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 Riemann surface of a function. 3 hours—~~2~~

498. Selected Topics: (Not offered 1968-69)

COLLEGE OF MUSIC

Dean and Professor:

Clifford von Kuster, Mus.Bac., L.R.C.T.; Piano and Piano Paedagogy

Faculty:

Professors:

Donald McKellar, A.R.C.T., A.Mus., Mus.Bac., M.Mus.; Head of Music Education, Conductor of University Concert Band

Alfred Rosé, B.A.; Voice, Music History

Dawson Woodburn, B.A., M.A.; Choral Music, Director of Choral Ensemble

Visiting Professor:

Tsuyoshi Tsutsumi, Graduate of To Ho Conservatory, Tokyo, Artist Diploma, University of Indiana; Cello

Associate Professors:

Gordon K. Greene, A.Mus., B.A., B.Ed., M.A.; Music History, Conductor of University Choir

Carl Haenselman, B.Mus.Ed., M.Mus., Ph.D.; Head of Theory and Composition

Assistant Professors:

Ralph Aldrich, Mus.Bac., L.R.S.M., L.G.S.M.; Viola, Chamber Music and Theory

Damiana Bratuz, Master's diploma in Piano (Trieste, Italy), M.M., Mus.Doc.; Piano, Piano Literature and Theory

Paul Green, A.R.C.T., Mus.Bac., M.Mus.; Music Education and Theory; Coordinator of Ensembles

John S. McIntosh, A.R.C.T., Mus.Bac., M.Mus., A.A.G.O.; Organ and Theory (on leave 1968-69)

Howard Munn, Piano and Piano Teaching Materials, Principal of Western Ontario Conservatory of Music

Robert Skelton, A.R.C.T., Mus.Bac., M.M.; Violin, String Classes, Chamber Music, Conductor of University Symphony Orchestra
James A. Stark, B.A., Mus.M.; Voice, History and Theory
Earle Terry, B.A., B.Paed., M.Mus., F.R.S.A.; Choral Music

Lecturers:

Peter J. Clements, Mus.Bac., M.M.; Theory and Composition
James Ford; Brass Instruments

Instructors:

Pauline Aldrich, L.T.C.L., L.R.S.M., Premier Prix; Piano
H. Barrie Cabena, A.R.C.M., F.T.C.L., F.R.C.C.O., F.R.C.O.; Organ
Larry Cortner, Mus.Bac., Mus.M.; Organ and Theory
Robert Head, Mus.Bac.; Bassoon
Joan Hysen; Viola
Wesanne McKellar, A.Mus.A., A.R.C.T., L.R.S.M., Mus.Bac.; Piano
Marian MacLennan, B.A., R.C.A.D. (Artist's Diploma); Piano
Alma Madill, A.T.C.M.; Piano and Theory
Antonia Mazan, B.A., L.Mus., Graduate of Vienna Academy; Piano
G. J. Meyer, Graduate of Royal Conservatory, Amsterdam; Flute
Phillip Murphy, B.A., Mus.G.Paed.; Clarinet
Betty Tracy, A.T.C.M.; Cello
Ian Turnbull; Percussion
Stanley Wood; Principal Oboe, Toronto Symphony Orchestra

COURSES

10. For Arts and Science Students: This course is divided into three parts. To obtain credit, two of the three parts must be taken. If a student chooses performance. he must pay for the individual lessons.

~~10H.~~ **History of Music:** The art of music and how to *listen to it; instrumental* and musical forms; emphasis on music of the late Baroque and Classic periods (1700-1830); Bach, Handel, Haydn, Mozart, Beethoven. No prerequisite is required.
One hour (half course)—~~4~~ 21

~~10T.~~ **Theory:** Musical rudiments, ear training, elementary form and analysis.
One hour (half course)—~~21~~ 6

10P. Performance: Individual lessons arranged by the College of Music. Credit for this course will be determined by the student's progress during the year
One hour (half course)

20. For Arts and Science Students: This course is divided into three parts. To obtain credit, two of the three parts must be taken. If a student chooses performance he must pay for the individual lessons.

~~20H.~~ **History of Music:** Music of the Romantic era and the Twentieth Century; Opera, Nationalism in music, Impressionism, Contemporary trends.
1 hour (half course)—~~16~~ 21

20T. Theory: Elementary harmony, part writing, form and analysis.
Prerequisite: Music 10T or equivalent. One hour (half course)— 6

20P. Performance: Individual lessons arranged by the College 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 VI level in some instrument or voice.
One hour (half course)

20S. Summer School only.

Part A: Music History, Theory and Literature.

Part B: Choral Music Education or Instrumental Music Education.

A. Introduction to music history, theory and literature with special emphasis on the larger forms, i.e., symphony, sonata, concerto, quartet, opera, and the large choral forms.

B Choral Music Education: Psychology and philosophy of music education; teaching materials, literature for classroom and choir; choral techniques and choral style. Organization and training of school choirs.

or

Instrumental Music Education: A course for beginners on a brass or woodwind instrument. The course has three objectives:

1. To master the fundamentals of performance on one of the instruments.
2. To learn teaching techniques and materials of instrumental music.
3. To study basic conducting of instrumental groups.

Instruments and music will be supplied by the College of Music.
No prerequisite is required, though minimal musical literacy is expected.
Texts: Joseph Machlis, The Enjoyment of Music, (Norton)
Horwood, The Basis of Music, (John Thompson)

20T. 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. No prerequisite. Two hours—~~18~~ 21

21. Individual lessons in the student's major applied music subject.
1 hour

21A. Piano minor: Individual piano lessons for those students majoring in another applied music subject. ½ hour

22. Piano paedagogy: Teaching approach to all phases of technique, tone production, phrasing, style and interpretation, memorizing, practise methods.
1 hour

23. Piano teaching materials: Assignments in compiling, listing and performing teaching material. Practise teaching. 1 hour

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. 1 hour

25. Theoretical Studies: Analysis, sight-singing, dictation and four-part writing based on triads, dominant seventh chords and their inversions. Rhythmic reading and dictation. Keyboard harmony. 5 hours

26. Music History I: A study of the history and literature of music up to 1750. The first half of a two year survey. 3 hours

27. Choral Technique: Basic elements of voice production and choral singing. Elementary choral conducting. Study of rehearsal techniques through the performance of selected repertoire. 1 hour

28, 38, 48. Ensembles: Band, orchestra, chorus 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. 3 hours

30. For Arts and Science Students: This course is divided into three parts. To obtain credit, two of the three parts must be taken. If a student chooses performance he must pay for the individual lessons.

30H. History of Music: Music of the Renaissance and Baroque eras (1400-1700).

One hour (half course)—~~34~~ 16

30T. Theory: Advanced harmony, part writing, form and analysis, free counterpoint.

Prerequisite: Music 20T or equivalent. One hour (half course)—34

30P. Performance: Individual lessons arranged by the College 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 some instrument or voice.
One hour (half course)

30S. Summer School only. Ten hours

Part A: Music History, Theory and Literature

Part B: Choral Music Education II.

A. An analysis of music literature stressing the development of the musical practice that is background to the familiar nineteenth century style. The history and theory related to this musical practice will also be emphasized.

B. Choral Music Education II: Advanced development of choral techniques; sight singing; study of choral literature; teaching materials.

Texts: Joseph Machlis, The Enjoyment of Music, (Norton)

Prerequisite: Music 20S or Music 20, or equivalent.

30Y. A continuation of Music 20Y. Will include a detailed study of at least three large scale compositions from a listener's viewpoint, with attention to the life, social background and other works of the composer.

Prerequisite: Music 20Y or equivalent. Two hours—18

31. Individual lessons in the student's major applied music subject.
1 hour

31A. Piano minor: Individual piano lessons for those students majoring in another applied music subject. ½ hour

35. Theoretical Studies: Analysis, sight singing, dictation and writing using diatonic seventh chords, chromatic harmony and extended modulation. Advanced rhythmic reading and dictation. Keyboard harmony.

Prerequisite: Music 25. 5 hours

36. Music History II: A survey from 1750 to the present time.

Prerequisite: Music 26. 3 hours

37. Choral Technique: Continuation of Music 27. 1 hour

40S. Summer School only. Ten hours
The course will explore twentieth century music in breadth with correlated reading. Parallels and contrasts between the music, its creation, and other aspects of contemporary life and thought will be drawn. The evolution of music art forms will be traced.
Texts: Joseph Machlis, An Introduction to Contemporary Music, (Norton)

41. Individual lessons in the student's major applied music subject. 1 hour

45. Counterpoint: First term—the contrapuntal style of the 16th century, including analysis of works of Palestrina and Lassus. Writing in two, three and four parts. Second term—contrapuntal techniques of the 20th century.
Prerequisite: Music 25 and 35. 3 hours

47. Choral methods and materials. 2 hours

HONOURS COURSES

Music 306, 316, 326, 336, 346A, 356 and 366 are music electives for third and fourth year students. They will not be offered every year but a selection of two or three will be offered on an alternating basis.

117, 217, 317, 417. Woodwind and brass class. Instruction in instruments to acquire a general proficiency in one of each group and a general playing knowledge of the others. 1 hour

231, 341, 451. Individual lessons in the student's major applied music subject. 1 hour

231A. Piano minor: Piano lessons for students majoring in another instrument or voice. ½ hour

232, 332, 432. Music Education Ensemble: Performance of band and orchestral literature applicable to high school performing ensembles. 1 hour

235. Theoretical Studies: Analysis, sight-singing, dictation and writing using diatonic seventh chords, chromatic harmony and extended modulation. Advanced rhythmic reading and dictation. Keyboard harmony.
Prerequisite: Music 25. 5 hours

236. Music History II: A survey from 1750 to the present time.
Prerequisite: Music 26. 3 hours

237, 337. Choral Technique: Continuation of Music 27. 1 hour

238, 348, 458. Ensembles: 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. 3 hours

239. Composition: Fundamentals. Writing for the smaller forms of piano, voice, or solo instrument. Analysis of works in the traditional literature. 2 hours

247, 347, 447. Class instruction in the string instruments. 1 hour

247A, 447A. String Repertoire: A survey of string literature for school orchestras and ensembles through performance. 1 hour

252, 352, 452. Music History Seminar: A study of Mediaeval, Renaissance and Baroque Music (vocal and instrumental) through performance. 2 hours

306. History of Mediaeval and Renaissance Music. A seminar on music from ancient Greece to circa 1600.
Prerequisite: Music 36 or equivalent. 2 hours

307, 407. Music Education: Instrumental. 1 hour

316. History of Music in the Baroque Era: A seminar on music from approximately 1600 to 1750.
Prerequisite: Music 36 or 236. 2 hours

326. History of the Symphony: A seminar on music composed for orchestra.
Prerequisite: Music 36 or 236. 2 hours

327, 427. Music Education: Choral. 1 hour

336. History of Chamber Music: A seminar on music composed for chamber ensembles from the 16th century to the present time.
Prerequisite: Music 36 or 236. 2 hours

342. Conducting: Basic conducting techniques. 2 hours

345. Counterpoint: First term—the contrapuntal style of the 16th 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 235. 3 hours

346. History of Music in the Romantic era.
Prerequisite: Music 36 or 236. 2 hours

346A. History of the Art Song and Oratorio: A seminar devoted to the study of the literature of song and oratorio.
Prerequisite: Music 36 or 236. 2 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 performed throughout the year. 3 hours

350. Music Education Seminar: Teaching techniques of the wind and string instruments. The psychology of the musical mind. Tests and measurements of musical ability. Care and maintenance of the wind and string instruments.
1 hour

351, 461. Chamber music: Duos, trios, quartets, etc., with and without piano.
1-2 hours

353, 463. Church Music: Materials, methods and techniques of service.
1-2 hours

354P. Piano Literature: A study of the literature for piano solo. For piano majors in the third year.
Prerequisite: Music 36 or 236. 1 hour

354O. Organ Literature: A study of the literature for organ. For organ majors in the third year.
Prerequisite: Music 36 or 236. 1 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. 2 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. A different composer will be selected each year.
Prerequisite: Music 36 or 236 2 hours

376. Contemporary Music: A seminar in music of the Twentieth Century.
Prerequisite: Music 36 or 236.

437. Choral Methods and Materials: A survey of choral repertoire suitable for use in the high schools. Advanced choral conducting. The practical aspects of teaching choral music in the schools.
Prerequisite: Music 337. 2 hours

442. Conducting: Advanced choral and orchestral conducting techniques.
2 hours

450. Music Education Seminar: School music administration. Classroom teaching techniques. School music library. Methods and materials of school wind, string and percussion classes. Band and orchestra performing materials. Conducting. Psychology of the musical mind, tests and measurements of musical ability.
2 hours

455. Orchestration: Instruments of the orchestra: range, tone colours, transpositions. Practical scoring for individual choirs, chamber orchestra and full orchestra.
Prerequisite: Music 345. 2 hours

456. History of Contemporary Music. 1 hour

467 Percussion Class: Learning fundamentals of percussion instruments.
½ hour

PHARMACOLOGY

College of Science

Professors:

Charles Willis Gowdey, B.A., M.Sc.; D.Phil. Oxon.; Head of the Department
John Mulvin Parker, M.D. Manitoba; D.P.H., Ph.D. Toronto

Associate Professors:

Ernest Howard Colhoun, B.S.A. Toronto; Ph.D. Cantab.
John Thomas Hamilton, B.Sc., Ph.D. Edinburgh
Richard Blain Philp, D.V.M. Guelph; Ph.D.

Assistant Professor:

Maurice Hirst, B.Sc., Ph.D. Liverpool

HONOURS COURSES

Prerequisites for Fourth Year courses: Successful completion of previous year's programme or permission of the Head of the Department.

~~305~~ 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 and Method: (Given in collaboration with other Departments.) A survey of the history of science and of the methods of physiology and pharmacology. 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: The origin, structure-activity relationships, metabolism, pharmacodynamic action and toxicology of drug classes. 2 lectures— 9

480. Laboratory and Tutorial: A course of training in the techniques employed in modern phamacological investigations. Opportunity for original projects will be provided. The tutorial will supplement both lecture and laboratory work. Minimum of 10 hours.

PHILOSOPHY

Talbot College

Professor and Chairman of the Department:
Robert Earl Butts, A.B., A.M. Syracuse; Ph.D. Pennsylvania

Senior Professor:
Allison Heartz Johnson, B.A. Mt. Allison; M.A., Ph.D. Toronto; F.R.S.C.

Professor:
John Whitney Davis, B.A., M.A., Ph.D. Boston

Associate Professors:
Peter Adam Angeles, B.A., M.A., Ph.D. Columbia
Robert Williams Binkley, B.A. Colorado; Ph.D Minnesota.
Irving Block, B.A. Vanderbilt; M.A., Ph.D. Harvard
Stanley George French, B.A. Carleton; M.A. Rochester; Ph.D. Virginia
Wilbert Cameron Henry, B.A., M.A., Ph.D. Toronto
Harold Joseph Johnson, B.A. Alfred; Ph.D. Chicago
James John Leach, B.A. Heilderberg; M.A. Trinity; Ph.D. Michigan State

Assistant Profesors:

Edward Beaman, B.A. Cincinnati
Richard Norton Bronaugh, B. A. Oregon; M. S., Ph.D. Wisconsin
Donald James Hockney, B. A. McMaster; Ph.D. Cornell
Ausonio Marras, B. A. Colgate; Ph D. Duke
Patrick Maynard, B.A. Chicago
Glenn Pearce, B.A. Wiliam and Mary
Anne Martin Shrecker, B.A. Kalamazoo; M.A. Wellesley; Ph.D. Bryn Mawr
Martha Elaine Wiliams, B.S. William and Mary; MA., Ph.D. Bryn Mawr
W. Kent Wilson, B.S. Marietta; M.A. Pittsburgh

Instructors:

Margaret Steel, B.A., M.A.

Visiting Professors:

Lewis White Beck, Ph.D. Duke; Rochester (1967-68, part time)
J. Sayer Minas, Ph.D. Illinois; Waterloo (1967-68, part time)
Calvin D. Rollins, D. Phil. Oxford; Australian National University (1967-68)
Romane Clark, Ph.D. Iowa; Duke University (1968-69)

COURSES

Introduction to Philosophy: A survey of selected philosophical problems, in the context of clasical 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

Basic Philosophical Literature: A critcal survey of selected philosophical classics, ancient and modern. Specimen texts include: Plato's Theaetetus, Aristotle's De Anima, Descartes' *Meditations*, Hume's *Enquiry Concerning Human* Understanding. 3 hours— 1

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—2

Philosophical Theory. (Not offered in 1968-69) —2

Introduction to Philosophy of Science: A crtical examination of philosophical issues involved in scientific method, confirmation of scientific hypotheses, scientific explanation, concept formation and theory construction. 2 hours— 9

Aesthetics: Conceptual problems relating to the production and appreciation of the fine arts. Specimen topics include: the analysis of "work of art", "artistic expression", the logic of value judgments, the nature of artistic criticism, fiction, metaphor, appreciation.

Prerequisite: One course in Philosophy. 2 hours—3

Ancient Philosophy: A survey of the principal developments, from the Presocratics (600 B.C.) to Plotinus (250 A.D.) and of their contribution to our cultural heritage. Primary emphasis wil be placed on the critical reading of selected original sources.
Prerequisite: One course in Philosophy. 2 hours—28

Introductory Ethics: Conceptual problems relating to personal and social morality. *Specimen topics include: the nature and justification of ethical rules* and standards, the analysis of "good" and "right" and "ought", the meaning of ethical knowledge.
Prerequisite: One course in Philosophy. 2 hours—31

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.
Prerequisite: One course in Philosophy. 2 hours—~~12~~ 4

Principles and Problems of Philosophy: Selected philosophical problems, accommodating the special interests of enrolled students.
Prerequisite: Two courses in Philosophy. (Not offered 1968-69) 2 hours—22

Early Modern Philosophy: A critical examination of basic philosophical literature of the 16th, 17th and 18th centuries.
Prerequisite: One course in Philosophy. 2 hours—~~25~~ 27

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.
Prerequisite: Philosophy 20 or 30. 2 hours—14

HONOURS COURSES

Introduction to Problems in Theory of Knowledge: Intensive seminar and tutorial study of major problems in epistemology. For Honours students in any department. 2 hours— 3

Ancient Philosophy: A critical examination of the major philosophers and philosophical schools from the Presocratics to Plotinus. 2 hours—15

Early Modern Philosophy: A critcal examination of the philosophical literature of the 16th and 18th centuries, with particular emphasis on such figures as Descartes, Leibniz, Locke, Berkeley, Hume. 2 hours—31

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. 2 hours—22

Philosophical Texts: An examination of specified source materials in Greek and Modern Philosophy; critical works will also be studied. 2 hours—13

Logic and Problems of Philosophical Analysis: First term: formal logic—propositional calculus; quantification theory. Second term: modal logic, problems of meaning and ontology. 2 hours—~~2~~ 18

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 4
(Not offered 1968-69)

Aesthetics and Value Theory: Conceptual problems relating to the production and appreciation of the fine arts Specimen topics include: the analysis of "work of art", "artistic expression", the logic of value judgments, the nature of artistic criticism, fiction, metaphor, appreciation. 2 hours—34

Modern Philosophy: Later modern philosophy with particular emphasis on the philosophy of the 19th century.
Prerequisite: Philosophy 257. 2 hours—5

Ethics: A critical study of moral problems and theories. The course will be based an readings selected from the classics and ethical literature from Aristotle to the present. 2 hours—29

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

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. 2 hours—32

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 programmes with consent of instructor. 2 hours—4

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. 2 hours—36 28

Dewey, Bergson and Whitehead: A critical study of these 20th century philosophers. 2 hours—14

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. 2 hours—25

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. 2 hours—18

Rationialism/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. 2 hours—22

Problems of Philosophy. 2 hours—1

~~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. 2 hours—~~24~~ 16

PHYSICAL AND HEALTH EDUCATION

University College

Professors:

Willard Joseph L'Heureux, B.A.; M.A. Michigan; LL.D. Univ. of N.B.; Head of Department

Michael Yuhasz, B.A., M.S., Ph.D. Illinois

Associate Professors:

Elfrida Berzins (Mrs.), M.M. Riga

Robert Barrie Eynon, B.A., M.S. Illinois

John Russell Fairs, B.Sc., M.A. Columbia

George Arthur Wearring, B.A., M.S. Southern California

Assistant Professors:

Glynn Arthur Leyshon, B.A., M.S. Illinois

John R. Richardson, B.P.H.E. M.Sc. Alberta

Mary Lou Dresser, B.A., M.A. Stanford

Gerald I. Gonser, B.A. M.A. Michigan

Garth Paton, B.A., M.A. Michigan

Lecturers

Helen Vieno Kunkel (Mrs.), B.A.

Margaret Joy Taylor, B.A., B.P.H.E. Toronto

Ronald C. Watson, B.A., B.P.E. M.Sc. Alberta

Garry John Smith, B.A.

Instructors

Ulle-Reet Palmer (Mrs.), B.A.

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** Prerequisites: P.E. 20. 1 lecture and 3 laboratory hours—4

HONOURS COURSES

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.
3 hours—21

254. Functional Human Anatomy: To be given by the Department of Anatomy, Faculty of Medicine. 1 lecture and 1 laboratory hour (½ course)—29

350. 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

342. Human Physiology: Trends in investigation of the physiology of physical activity, with implications for physical and health education. To be given by the Department of Physiology, Medical School.
2 lectures and 3 laboratory hours—4

351. Team Games and Individual Activities: The theory and mechanics of activities in addition to those studied in P.H.E. 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 programmes; scheduling and management of athletic contests.
3 lectures—8

353. Kinesiology and Motor Learning: Essential facts of human anatomy and physiology applied to corrective exercise and analysis of motor skills, principles of motor learning. 2 lectures, 2 laboratory hours—31

442a. Physiology of Exercise: To be given by the Department of Physiology, Medical School. One term: 2 lectures, 2 laboratory hours— 1

442b. 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: P.H.E. 251, 351. 6 hours (lecture or laboratory as required)

456. Seminar: The interpretation of physical education in its relationship to education; principles underlying programmes; 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~~. **Historical—Cultural Studies of Leisure, Work, Play, and Sport.** 3 lecture hours—27

PHYSICS

College of Science

Professors:

Eric Brannen, B.A., M.A. Toronto; Ph.D. McGill; Senior Professor
A.M.I.A.W. Durnford, B.A., M.A.; Ph.D. Toronto
Peter Allan Forsyth. B.A., M.A. Saskatchewan; Ph.D. McGill; F.R S.C.,
Peter Arthur Fraser, B.Sc.; M.S. Wisconsin; Ph.D.
Acting Head of the Department
Donald Ross Hay, B.Sc., M.Sc.; Ph.D. McGill; Senior Professor
Eric Lloyd Vogan, B.Sc., M.Sc.; Ph.D. McGill

Associate Professors:

Harry Ian Symons Ferguson, B.Sc., M.Sc., Ph.D.
James Arthur Fulford. B.Sc., Ph.D.
Gordon Frederick Lyon, B.A., M.A., Ph.D. Saskatchewan
Donald Ross Moorcroft, B.A.Sc. Toronto; Ph.D. Saskatchewan
Graham Stewart Rose, B.Sc., Ph.D. Birmingham
Thomas William Wallace Stewart, B.Sc.. M.Sc.; Ph.D. London

Assistant Professors:

Y. F. Bow, B.S. National Chakiang; M.S., Ph.D. Michigan State
Heinrich Roman Froelich, B.Sc. Berlin; M.Sc., Ph.D.
William Ross Jarmain, B.A.; M.A. Wisconsin
P. K. John, B.Sc. Kerala; M.Sc. Madras; Ph.D. Ohio State
J. Jones, B.Sc., Ph.D. Sheffield
Chung-Heng Liu, B.S. Peiping Normal; Ph.D. California (Berkeley)
Robert Peter Lowe, B.Sc., Ph.D.
Romas Mitalas, B A., M.A. Toronto; Ph.D. Cornell
Rama Murty, B.Sc. Andhra; M.Sc., Dip. Lib. Bombay; Ph.D.; A. Inst. P.
B. Y. Tong, B.Sc. Hong Kong; M.L.S., M.A., Ph.D. California (San Diego)

Lecturer:

Derek Lane-Smith, B.Sc., M.Sc. Manchester

Honorary Lecturers:

Alan Edward Beck. B.Sc., London; Ph.D. Australian National University,
(Professor and Head of Geophysics)
John Henry Blackwell, B.Sc. Melbourne; M.Sc., Ph.D.
(Professor and Head of Applied Mathematics)

Charles Murray Carmichael, B.Sc., M.Sc., Ph.D. (Professor of Geophysics)
John Campbell Forrester MacDonald. B.A., M.A. British Columbia; Ph.D. Toronto
Robert Frank Mereu, B.Sc.; M.A. Toronto; Ph.D. (Associate Professor of Geophysics)
William Henry Wehlau, A.B., Ph.D. California (Professor and Head of Astronomy)

COURSES

20, 21, 22. 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.

~~20.~~ For students who are intending to specialize in the natural sciences. All students must have taken or be taking mathematics 24, 27 or applied mathematics 20. 2 lectures, 3 laboratory hours—22

~~21.~~ For students who do not intend to proceed to any honours course in physics. No prerequisites. 3 lecture-laboratory hours—31

~~22.~~ For students who are intending to specialize in the natural sciences but who have not taken or are not taking mathematics 24, 27 or applied mathematics 20. All students must have standing in grade XIII mathematics A.
2 lectures, 3 laboratory hours—22

~~30.~~ **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 College of Music and those students with some formal musical training who are not pursuing a major in physics.
3 lecture-laboratory hours— 7

~~124.~~ **General Physics:** An introductory study of the laws and principles of light, sound, electricity, magnetism, and thermionics.
Prerequisite: Physics 20 or 22. (Or 21 if completed before 1968-69)
2 lectures a week—27

~~125.~~ **Vibrations and Waves:** A course dealing with the formulation and elaboration of the concept of waves including energy transport. The following topics are discussed: sound waves and other mechanical waves, electromagnetic waves, introduction to wave-particle duality.
Prerequisite: Physics 20 or 22. (Or 21 if completed before 1968-69.)
2 lectures—~~14~~ 10

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 or 22. (Or 21 if completed before 1968-69)
2 discussion hours per week

†39. **Practical Physics:** A course in laboratory physics designed to stress the physical concepts of wave and particle properties of light and matter, energy quantization and the interaction of electric and magnetic fields with matter.

Prerequisite: Physics 20 or 22. (Or 21 if completed before 1968-69)

3 laboratory hours

~~43.~~ **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 or 22. (Or 21 if completed before 1968-69) Applied Mathematics 20 or Mathematics 24 or 27. 2 lectures—18

†46. **Atomic Physics:** (1) A review of the laws and theories of classical physics; (2) The development of physical science from the late 19th century to the present.

Prerequisites: Physics 34 or 204 and Applied Mathematics 20 or Mathematics 24 or 27 (this may be taken concurrently). 3 lectures—34

†Not to be offered after 1968-69.

HONOURS COURSES

~~204.~~ Introductory material in electricity and magnetism, atomic and nuclear physics, directed where possible towards an understanding of current usefulness to man. This leads into a detailed study of radiation physics, with emphasis on biological applications.

Prerequisite: Physics 20 or 22. 2 lectures, 3 laboratory hours—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 and ending with the Special Theory of Relativity (to the level of the Lorentz transformations and relativistic equations of motion).

Prerequisite: Physics 20 or 22 and Applied Mathematics 20 or Mathematics 24 or 27. 2 lectures—~~12~~ 4

~~251.~~ **Introductory Numerical Analysis:** Emphasizes a standard statistical treatment of the theory of error. Methods of computation; graphical techniques; approximate interpolation; differentiation and integration; series approximations; solutions of equations; curve fitting. Limited practice in the use of these methods is provided in Physics 259.

Prerequisite: Applied Mathematics 20 or Mathematics 24 or 27.

2 lectures—28

~~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 or 22 and Applied Mathematics 20 or Mathematics 24 or 27. 2 lectures—~~36~~ 34

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 or 22 and Applied Mathematics 20 or Mathematics 24 or 27. 2 lectures—8

256. Light, Acoustics, Electricity and Magnetism. An introductory course in geometrical and physical optics; acoustics; electrostatics; magnetism; and electromagnetism.

Prerequisite: Physics 20 or 22 and Applied Mathematics 20 or Mathematics 24 or 27. 3 lectures, 3 laboratory hours—31

257. Special course for students of Mathematics.
The material of Physics 254, 255, 259.

Prerequisite: Physics 20 or 22 and Applied Mathematics 20 or Mathematics 24 or 27. 4 lectures, 3 laboratory hours—~~36~~ 28

259. Laboratory: The experiments in this course stress the physical concepts of wave and particle properties of light and matter, energy quantization and the interaction of electric and magnetic fields with matter.

Prerequisite: Physics 20 or 22. 3 laboratory 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.

2 lectures—~~12~~ 4

~~352.~~ Electromagnetic Theory: A vector treatment of the theory of static and dynamic electromagnetic fields leading to Maxwell's equations and the solutions describing propagation of plane electromagnetic waves.

Prerequisites: Physics 250 and 255. 2 lectures—~~36~~ 28

~~356.~~ Applied Electronics: A study of the operation and properties of circuits in which vacuum tube, gaseous tube, and semi-conductor devices are employed. The laboratory work of this course is part of Physics 359. If Physics 359 is not taken, a separate laboratory (3 hours) is required.

Prerequisite: Physics 255 or equivalent. 2 lectures—13

~~357.~~ Atomic Physics: Charged particle motion in electric and magnetic fields and applications; the physics of atoms, molecules, electrons and light quanta, with emphasis on the experimental facts that led to the quantum theories.

Prerequisites: Physics 250, 254 and 255 or equivalent. 2 lectures—19

359. Laboratory and Tutorial: Designed to familiarize the student with some of the more detailed phenomena and effects of classical physics together with the fundamentals of electronic circuits and some of the basic concepts of modern physics.

Prerequisite: Physics 259. 6 laboratory 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).

Prerequisites: Applied Mathematics 270, Physics 250 and 256 (or equivalent), or permission of Head of Department. 3 lectures—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 system modulation and detection and introduction to radio noise theory. For engineering Students. 3 lectures—25

450. Theoretical Physics: The discussion of a selection of topics in physics at a senior level, with emphasis on the application of the techniques for the solution of the differential equations of mathematical physics, including boundary value problems.
Prerequisites: Physics 350, 355 and Applied Mathematics 300 or equivalent.
2 lectures—7

457. Matter in Bulk: A study of the properties of matter including states of matter; followed by an elementary treatment of solid state physics covering the thermal, electric, and magnetic properties of crystalline matter.
Prerequisites: Physics 350, 355 and 357 or equivalent. 2 lectures—35 27

453. Thermodynamics and Statistical Mechanics: Introductory course beginning with the basic concepts of probability. then applying these ideas to systems of particles in equilibrium, the general statements of microscopic thermodynamics, followed by a treatment of macroscopic thermodynamics.
Prerequisites: Physics 350 and 357 or equivalent. 2 lectures—29

457. Quantum Mechanics and Nuclear Physics: The first half of the course is an introduction to quantum mechanics, drawing on the experimental evidence of Physics 357. The second half is an introduction to nuclear and particle physics.
Prerequisites: Physics 350, 357 and Applied Mathematics 300 or equivalent.
2 lectures—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 hours

464. Advanced Spectroscopy: An empirical discussion of diatomic molecular spectra is followed by the theory of the origin of such spectra through a wave mechanical treatment of the classical model of a diatomic molecule. Spectroscopic instrumentation and experimental method are also covered.
Prerequisite: Physics 254. 2 lectures—3

466. Advanced Radio Physics: A discussion of selected topics in circuit analysis, transmission line theory and the propagation of radio waves.
2 lectures—2 1/6

479. Laboratory: Designed to accompany the lecture work of Physics 417.
6 hours per week

PHYSIOLOGY

College of Science

Professors:

James Alexander Franklin Stevenson, B.S., M.S.. M.D , C.M. McGill; Head of the Department

George Waldemar Stavraky, M.D. Odessa; M.Sc., M.D., C.M. McGill

Associate Professors:

Donald Clarence Bondy, M.D., F.R.C.P. (C)

Franco Romano Calaresu, M.D. Milan; Ph.D. Alberta

Jerry Burdette Critz, B.Sc. in Ed., M.A., Ph.D. Missouri

Peter Glynn Dellow, B.D.S., M.B., B.S. Adelaide; F.A.C.D.S.

Gordon James Mogenson, B.A., M.A., Saskatchewan; Ph.D. McGill

Jerome Joseph Seguin, B.S., M.Sc., Ph.D.

Cornelius Hendrik Vanderwolf. B.Sc., Alberta; M.Sc., Ph.D. McGill

Assistant Professors:

George Greenough Hinton, B.Sc., M.D.,C.M. McGill; D.C.H., F.R.C.P.(C)

Paul George Richard Harding, M.D., M.Sc., F.R.C.S.(C)

Paul Frederick Mercer, D.V.M. Toronto; Ph.D. Cornell

Andrew Arthur Monjan, B.Sc., Rensselaer Polytechnic Inst., Ph.D. Rochester

Bruce Paul Squires, B.A.. M.D., Ph.D.

Lecturer:

James Hunter Ferguson, M.B., Ch.B. Glasgow

Instructor:

Esme Helen Walker, B.A., M.A. Toronto

Honorary Appointments:

Lecturers:

Jackson Sandford Hart, B.A., M.A., Ph.D. Toronto; F.R.S.C.

George William Manning, M.A.. M.D., Ph.D. Toronto; F.R.C.P.(C)

Postdoctoral Fellows:

Norman Abraham Assad, M.D.

Larry William Belbeck, D.V.M. Guelph

James Percy Lund, B.D.S. Adelaide

Alena Novakova, M.D. Carolina-Prague

COURSES

22. Human Physiology: The principles of mammalian and human physiology. Enrolment is Limited. 2 lectures; 3 laboratory hours—4

30. Human Physiology: The principles of mammalian and human physiology with emphasis on control and regulatory systems for students in Honours Computer science and others. Enrolment is limited.

2 lectures, 1 hour conference—4

AFFILIATED COLLEGES

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 principal's 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 programme:

For admission to First Year General Programme (Humanities or Social Sciences) or to Secretarial Science:

English 10

Another language 10

Any three of: History 14, Geography 20, Mathematics 15, Religious Knowledge 10x, another language 1, 10, 1-10, Music 10 or Home Economics 25x.

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
History 14: History of the Americas.	3 hours—14
Latin 10. Intermediate Latin. Prerequisite: Grade 12 Latin.	3 hours—26
Mathematics 15: Introduction to Analysis.	5 hours— 5

HURON COLLEGE

London, Ontario

(Founded in 1863; affiliated in 1878)

OFFICERS OF ADMINISTRATION

Principal:

The Reverend J. Grant Morden, B.A. Toronto; L.Th., B.D., D.D. Wycliffe; S.T.M. Union Theological Seminary; D.Th. General Theological Seminary, New York

Dean of Arts:
Rodney Poisson, M.A. British Columbia; Ph.D. University of Washington

Registrar:
J. Catharine Ridley

FACULTY

Business Administration

Lecturer:
H. B. Rooney, B.A., M.B.A.

Classics

Associate Professor:
The Reverend F. H. Allen, M.A., B.D. Oxon.

Economics

Lecturers:
Mark K. Inman, B.A. Acadia; M.A., Ph.D. Harvard; D.Litt. Acadia
H. Thomas Johnson, A.B. Harvard; M.B.A. Rutgers; M.A. Wisconsin
H. B. Rooney, B.A., M.B.A.
D. R. Williamson, B.A. Liverpool; M.A.

English

Professors:
Rodney Poisson, B.A., M.A. British Columbia; Ph.D. Washington; Head of the English Department
Eleanor Croysdale Jared, B.A., M.A. Toronto; A.M., Ph.D. Radcliffe

Assistant Professors:
Elaine Campbell Bowe, B.A. Mills College; M.A. Indiana
Elizabeth Revell, B.A. Toronto; M.A., B.Litt. Oxon.
E. D. McVey, M.A. Queen's

Lecturers:
Sister M. Corona Sharp, B.A., M.A., Ph.D. Notre Dame
D. Jackel, B.A., M.A. Toronto

French

Assistant Professors:
G. A. Black, M.A. Toronto; Acting Head of the French Department
Deborah Metford, B.A., M.A. British Columbia; D. de l'U de Paris

Lecturers:

Christa Burghardt, B.A., M.A. Toronto

Valentine Miller, B.A., M.A., B.Litt. Oxon.

C. M. Van der Wel, B.A. London; M.A.

Hebrew

Professor:

The Reverend Geoffrey Howard Parke-Taylor, B.A., M.A. Toronto; L.Th., B.D., D.D. Wycliffe

Lecturer:

The Reverend Harold Kay, B.A. Dalhousie; L.Th. King's; B.D. Trinity; M.A. Temple

History

Professors:

The Reverend J. G. Rowe, S.B. Harvard; B.D. Episcopal Theological School, Cambridge, Mass.; M.A., Ph.D. Toronto; Head of the Department of History

The Reverend J. L. H. Henderson, B.A., B.D., D.D.

Assistant Professors:

G. L. Owens, B.A. Nebraska; M.A. Wisconsin

J. N. Thompson, B.A. McMaster; M.A., Ph.D. Princeton

Mathematics

Lecturers:

R. H. Lee, B.A.

D. Weichman, B.A., M.A.

Politics:

Lecturer:

Helen Dawson, B.A. McGill; M.A. Queen's; B.Litt. Oxon.

Philosophy

Professor:

The Reverend W. S. Morris, B.A. Bristol; Ph.D. Chicago

Assistant Professors:

R. P. Miller, B.A. Cornell; B.Phil. Oxon.; M.A. Michigan

Jean-Pierre Schaster, B.A. City College of New York; M.A. City University of New York

Psychology

Associate Professor:

F. W. Burd, M.A. Toronto; Head of the Psychology Department

Assistant Professor:

Moira Sansom, B.A. Mount Allison; B.A. New Brunswick; B.L.S. Toronto; Ph.D. London

Lecturers:

The Reverend Thomas Harris, B.A. Toronto; L.Th. Wycliffe; M.A. Columbia; B.D. Union Theological Seminary

F. G. Munn, B.A. Waterloo Lutheran; M.A.

Religious Knowledge

Professors:

The Reverend J. Grant Morden, B.A. Toronto; L.Th., B.D., D.D. Wycliffe; S.T.M. Union Theological Seminary; D.Th. General Theological Seminary, New York

The Reverend W. S. Morris, B.A. Bristol; Ph.D. Chicago

Associate Professor:

The Reverend F. H. Allen, M.A., B.D. Oxon.

Lecturer:

The Reverend G. E. Rousom, B.A., M.A. Toronto; B.D. Emmanuel

PROGRAMMES

The General Programme in Humanities and Social Science, all Honours Programmes which include English, History and Philosophy, and the first two years of Honours Business Administration are offered by Huron College. All laboratory courses in Science are taught in the College of Science.

Through its Department of Religious Knowledge, Huron College offers courses open to all students of the University.

Religious Knowledge

30. Religious Knowledge: An introduction to the Living Religions of the World: A study of the history, faith, and practices of the major living religions. 2 hours

35. Religious Knowledge: Great Ideas of the Old and New Testament: A survey of the development of the Judeo-Christian tradition from Pre-Mosaic Period to the Church of the First Century. 2 hours

40. Religious Knowledge: New Testament Greek. 2 hours

42. Religious Knowledge: Christian Ethics: A consideration of some principles of morals and of Biblical ethics in relation to contemporary problems. 2 hours

BRESCIA COLLEGE

London, Ontario
(Affiliated in 1919)

OFFICERS OF ADMINISTRATION

Dean: Sister Dominica, B.A., M.A.
Registrar: Sister St. Paul, B.A., M.A.
Librarian: Sister Pierina Caverzan, B.A., M A.L.S. (Rosary College)
Assistant Librarian: Christine Suokaite, B.A., M.A.L.S. (Rosary College)

FACULTY

Classics

Associate Professor:
Sister Margaret, B.A.; M A. Detroit

Economics

Lecturer:
R. K. Sharma, M.A. Delhi; M.A. (part time)

English

Professor:
Sister Corona Sharp, B.A.; M A., Ph.D. Notre Dame

Lecturers:
M. Brock, B A., M.A. (part time)
Sister Mary Louise McKenzie, B A.; M.A. (on leave)
Sister Phyllis Wright, B.A.; B Ed. Alberta
N. Zwart, B.A. Hope; M.Phil. Yale

German

Lecturer:
Sister Teresa, B.A.

History

Lecturer:
Sister St. Paul, B.A.; M.A. Notre Dame

Instructor:
James Ryan, B.A. Ottawa (part-time)

Home Economics

Professor:
Sister Dominica, B.A., M.A. Toronto

Associate Professors:
Isabel Hodgkinson (Mrs. G. J.), B.A., M.A. Toronto (part-time)
Sister Lorraine, A.B., M.A. St. Louis

Lecturers:
N. Mercer (Mrs. P.), B.S. Nebraska; M.S. Cornell (part-time)
L. Rickman (Mrs. F. H.), S.B. Chicago; R.P.Dt.
E. Triggs (Mrs. D.), B.A. Manitoba
W. Washington (Mrs. J. B.), B.S., M.S. Alabama (part-time)

Mathematics

Instructor:
M. A. Dow, B.A., M.A. (part-time)

Philosophy

Professor:
Sister St. Michael, B.A.; M.A. Catholic U of America; Ph.L., Ph.D. Laval

Political Science

Instructor:
H. I. Dawson, B.A. McGill; M.A. Queens

Psychology

Professors:
Sister Dolores Kuntz, B.A.; M.A. Detroit; Dip.Psych. Queens
Sister St. Michael, B.A.; M.A. Catholic U of America; Ph.L., Ph.D. Laval
John Paul, B.A., M.A., Ph.D. Toronto (part-time)

Assistant Professor:
M. Howe (Mrs. J. L.) B.A. Acadia; M.A. Toronto (part-time)

Religious Knowledge

Lecturer:
Rev. G. Quenneville, B.A.

Romance Languages

Professor:
Sister Marie, B.A., M.A.; Ph.D. Toronto

Associate Professor:
Sister Yvonne St. Pierre, B.A. Ottawa; M.A., Ph.D. Laval

Sociology

Professor:
Sister Arleene Walker, B.A.; M.A. Catholic U. of America

PROGRAMMES

The General Programmes and some of the Honours Programmes are available in Brescia College. All laboratory courses in the Natural Sciences are taught entirely in the College of Science.

For the outline of the programme in Home Economics offered jointly by Brescia and University Colleges, see the General Programmes section — page 46.

Home Economics

23x. Applied Art: Fundamentals of design and colour. 2 hours—13

25x. Household Administration: General principles of home construction and planning, problems of home management and equipment. 2 hours—31

30x. Textiles: A study of textiles; pattern drafting and clothing construction. 1 lecture, 3 laboratory hours—13

31x. Normal Nutrition: Normal requirements of the body; food nutrients and their functions; deficiencies.
2 lectures, both terms; 2 laboratory hours, one term—21

32x Food Science: Experimental approach to the study of factors influencing behaviour of foods.
1 lecture, 3 laboratory hours—31

33x. Interior Decoration: Elements of interior decoration and design.
Prerequisite: Home Economics 23x. 1 hour, half course—35

40x. Clothing and Designing: Art of costume and personal appearance; history of costume; pattern designing; care of fabric; problems in clothing construction.
Prerequisite: Home Economics 30x. 2 lectures, 3 laboratory hours— 7

41x. Advanced Nutrition: Nutritional needs during infancy; the adolescent. Diet therapy. Seminars. 3 hours—14

42x. Principles of Food Science.
Prerequisite: Home Economics 32x. 1 lecture, 3 laboratory hours—19

45x. Consumer Economics: Marketing and consumer problems. Demonstration Techniques. Meal Service. 1 lecture, one afternoon a week—23 2

48x. Quantity Food Production and Management: Work design, layout and equipment. 2 lectures, 3 laboratory hours—29

49x. Institutional Administration: Financial control, personnel relations, administration and management. Clinical studies. 3 hours—33

Philosophy

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

Basic Philosophical Literature: A critical survey of a selected group of philosophical classics, ancient and modern. 3 hours— 1

Logic and the Problems of Knowledge: This course deals with the problems of definition, formal logic, verification of knowledge, and other problems related to the scientific method. 2 hours—20

Aesthetics: A study of aesthetical theory of classic and modern points of view. 2 hours— 3

***Introductory* Ethics:** A critical inquiry into the nature of ethical standards and behaviour, and their application to concrete personal and social problems of morality. 2 hours—31

Principles and Problems of Philosophy: Selected philosophical problems. accommodating the special interests of enrolled students. 2 hours—22

Early Modern Philosophy: A critical study of selected readings in Post-Renaissance philosophy, from 16th to 19th centuries. 2 hours—35

Contemporary Philosophy: A critical study of selected 20th century philosophers and movements. Emphasis on figures and schools varies from year to year according to students' needs and background. 2 hours—14

OTHER COURSES AVAILABLE AT KING'S COLLEGE

Honours courses in Philosophy correspond in number and subject matter to those listed in the Philosophy section of the University and are available as needed.

Psychology

Psychology 20 is ordinarily prerequisite to all other courses in Psychology.

Introduction to Psychology: The nature, faculties and functions of man; sensation, perception, intellection, motivation, emotion, volition, habits, the human soul, personality, the relative importance of heredity, environment and the self-structure. 3 hours—19

Psychology of Personality: A critical examination of the major personality theories. 2 hours—6

Child Psychology: Ages, stages, and factors involved in the development to a mature personality; introduction to theory, research and problems in selected areas of child behaviour, especially learning, maturation and socialization. 2 hours—16

Exceptional Children: Problems and methods in work with the gifted, mentally deficient, physically handicapped, emotionally disturbed and brain damaged children related to the rights of the child and the duties of society. 2 hours—22

Applied Psychology: Psychological principles applied to practical problems in education, industry and vocational guidance; relevance of the Encyclicals to current problems-solving techniques. 2 hours—27

48x. Abnormal Psychology: Abnormal personality theory; the abnormal sensation; perception, memory, emotions, thought and behaviour; mental dificiency; causes and symptoms of neuroses and major disorders; therapy techniques with ethical norms. 2 hours—6

49x. Social Psychology: Social environment and human response; role of family, church group, etc. in personality growth; attitudes and prejudice; leadership and status; crowd, mob, propaganda and public opinion; Social Psychology of the Encyclicals. 2 hours—33

Religious Knowledge

10x. Introduction to Theology. 2 hours

31x. The Old Testament: Its content viewed as Salvation History. 2 hours

32x. Moral Theology: Christian Revelation as applied to man's actions. 2 hours

33x. History of Liturgy: Survey of expressions of special conciousness in worship from Apostolic to modern times. Lectures, readings, seminars on the Encyclicals. 2 hours

35x. Comparative Religion: Ecumenism — a study of contemporary religions under various aspects. 2 hours

2 hours

41x. Biblical Theology: Emphasis on New Testament. 2 hours

Sociology

Prerequisite: Sociology 20 or permission of Instructor.

39x. The Family: Sociological, pychological, and other research perspectives on family structure and functioning. 3 hours—28

40. Social Problems: Study of theories of deviant behaviour and of social disorganization, with particular attention to certain specific problems of the contemporary period. 3 hours— 4

KING'S COLLEGE

London, Ontario

(Founded in 1912; affiliated in 1939; name changed in 1966)

OFFICERS OF ADMINISTRATION

Principal and Dean of Arts: D. Owen Carrigan, B.A. St. F-X; M.A. Boston; Ph.D. Maine

Registrar: E. M. Arnold (Mrs.)

Librarian: P. D. Mitchell, B.A., B.L.S. (McGill)

Comptroller: W. W. Henderson, R.I.A.

FACULTY

Classics

Professor:

Charles Jeremiah Treacy, B.A., M.A., Ph.D. Toronto; Chairman of the Department

Instructor:

Peter Schroeder, B.A. (part-time)

Economics

Lecturer:

Joseph Kushner, B.A., M.A. (part-time)

English

Assistant Professors:

Rev. Carl E. Keane, B.A., M.A. Notre Dame

Jerome A. Kramer, A.B. John Carroll; Ph.D. Ohio State

Lecturer:

Judith Sloman, B.A. Radcliffe; M.A. Tufts

Instructor:

Roger Spalding, C.R., B.A. Waterloo; M.A. St. Louis (part-time)

History

Professor:

D. Owen Carrigan, B.A. St. F-X; M.A. Boston; Ph.D. Maine

Assistant Professor:

Rev. Paul E. Crunican, B.A., M.A. Toronto; Chairman of the Department

Lecturer:

Frank E. Burke, B.A. Windsor; M.A. Carlton (part-time)

Carolyn K. McNamara, B.A. Hunter; M.A. Toronto

Gerald W. Olsen, B.A., M.A. Windsor

Mathematics

Lecturer:

Gordon Edwards, B.S. Toronto; M.A. Chicago (part-time)

Philosophy

Professor:

Rev. William J. Ring, B.A., Ph.L. Laval

Associate Professor:

Rev. Robert A. Graveline, B.A., Ph.L. S.T.L. Laval

Assistant Professors:

Rev. Patrick E. Cavanagh, B.A., M.A. Toronto; Ph.D. Notre Dame

Rev. Michael T. Ryan, B.A., M.A., Ph.D. Notre Dame; Chairman of the Department of Pre-Theology

John J. Snyder, B.A. Notre Dame; M.A.; Chairman of the Department

Instructors:

Francis Martin, B.A. Ottawa; M.S.W. Ottawa (part-time)
Rev. Arthur L. Meloche, B.A. (part-time)
Grace A. Twohey, B.A. Toronto; M.S.W. Ottawa (part-time)

Psychology

Professor:

Rev. William J. Ring, B.A., Ph.L. Laval

Assistant Professor:

Nicholas Tines, B.A., M.A. Windsor

Religious Knowledge

Professor:

V. Rev. Richard T. A. Murphy, O.P., S.T.D. Angelicum; S.S.D. Biblical Commission; S.T.M. Dominican Order (part-time)

Associate Professor:

Rev. Robert A. Graveline, B.A., Ph.L., S.T.L. Laval

Assistant Professor:

Rev. Mareal A. Gervais, B.A., S.T.L. Angelicum; S.S.L. Biblical Commission

Lecturer:

Rev. John J. Donahue, B.A., S.T.L. Gregorianum

PROGRAMMES

The General Programme and Honours Programmes including English, French, Latin, History or Philosophy and the first two years of Honours Business Administration are available at King's College. All laboratory courses in Science are taught in the College of Science.

Through its Department of Pre-Theology at St. Peter's Seminary, King's College offers courses leading to a B.A. with Pre-Theology (Philosophy) options for students preparing for the Priesthood.

Pre-Theology B.A. Programme

The present programme in Pre-Theology is being phased out in favour of a General B.A. Programme (with a major in Philosophy).

Note: For graduation in this programme half the courses of the final year must be passed with grades of 'C' or better.

Third Year

Philosophy 41x, 47x, 45x	One of: Another Philosophy
Psychology 40x	Another Senior English
	Another language other than English
	Religious Knowledge

Philosophy

20X. Introduction to Philosophy: An historical introduction to some of the basic problems in philosophy. Problems such as knowledge and certitude, the existence of God, freedom and determination, and human immorality will be considered from their classical beginnings to contemporary times. 3 hours— 1

Basic Philosophical Literature: A critical survey of a selected group of philosophical classics, ancient and modern. (Not offered in 1968-69.) 3 hours— 1

Logic: An introduction to Aristotelian logic. This course deals primarily with questions of definition and reasoning. 2 hours—20

Aesthetics: A study of classic and modern aesthetical theory. The general theory of art: useful arts and fine arts. 2 hours— 3

Ancient and Mediaeval Philosophy: Selected readings from the Ancient Greeks to the late Mediaeval period. (Not offered in 1968-69) 3 hours—28

Philosophy of Social Work: Principles underlying the study of Social Work with applications to various problems. 2 hours—~~17~~ 10

Metaphysics: A consideration of being, its transcendental aspects, and its causes. (Not offered in 1968-69) 3 hours—19

Introductory Ethics: A rational approach to human conduct. This course is not concerned with drawing up a series of laws or rules of conduct, but rather it attempts to assist the student in the making of sound moral judgments for himself. As a philosophy course, it restricts itself to the area of human reason alone and makes no appeal to religious faith. 2 hours—31

The Philosophy of Religion: Philosophical problems relating to religion. Specimen topics include: the origin and nature of religious experience; traditional and contemporary approaches to God; the problem of evil; immortality and eschatology. 2 hours—~~12~~ 4

Political Philosophy: Critical readings from selected original sources of the political thought of ancient, modern, and contemporary thinkers. 3 hours— 5

Modern Philosophy: Readings in the works of selected philosophers from the Renaissance to the present day. 3 hours—35

Contemporary Philosophy: A critical study of selected 20th century philosophers. Movements and figures discussed vary from year to year. (In 1968-69, the Phenomenological and Existentialist movements will be considered.) 2 hours—14

Philosophy of Education: An inquiry into the classical and modern philosophies of education. 2 hours—32

Honours courses in Philosophy, equivalent in content and weight to University courses, will be arranged according to demand.

Psychology

Introduction to Psychology: Problems and Methods: individual differences and their assessment; learning; memory; thinking; sensation and preception; motivation; emotion; personality. 3 hours—19

The Nature of Man: Man's soul and its essential qualities; the union of soul and body in man; personality; the origin and the immortality of the human soul. 3 hours—13

Psychology of Personality: (Offered at Brescia College.) 2 hours— 6

Motivation and Learning: (For course description see page 174.) 2 hours—29

Child Psychology: The Thomistic "person" and Child Development; native equipment and environment; maturation and learning; character and personality; child management; familial and other social relationships. (Offered at Brescia College.) 2 hours—16

Exceptional Children: (Offered at Brescia College.) 2 hours—22

Dynamology: Vegetative powers; sensation and perception; internal senses, feeling and emotion; reflex behaviour; intellectual operations; the unconscious; abnormal phenomena; the faculty theory and modern psychological research. 3 hours—25

Abnormal Psychology: A consideration of abnormal activities in sensation, perception, memory, emotion. thought and behaviour, mental deficiency; the causes and symptoms of psychonueroses; some reference to major mental disorders; psycho-therapeutic techniques. Prerequisite: Psychology 31 or permission of the instructor. 2 hours— 6

Social Psychology: The activities of living beings in response to their social environment. The conditioning of personality by the family and other groups; types of prejudice; leadership and prestige in social life; the mob; mental epidemics; propaganda; public opinion. 2 hours—33

Religious Knowledge

Salvation History: The story of the Covenant people, from Abraham to the eve of the Christian era, followed by the history of the New Israel from pre- and early-Christian expectations, up to the end of the 1st century A.D. The approach combines history, literary analysis, archaeology, and biblical theology. 3 hours—18

Contemporary 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

Comparative Christian Religions: A study of the theological issues at stake in the division of Christendom; approaches to Christian unity; Ecumenism. 2 hours—26

The Theology of Marriage: A study of marriage considered from the psychological, moral, social, and theological points of view. 2 hours—28

Biblical Theology: The theology of the Bible; inspiration; revelation; special problems concerning history and interpretation. 2 hours—18

SUMMARY OF REGISTRATION IN WHOLE UNIVERSITY — 1967-68

	Althouse	Arts	Science	Business	Engineering	Law	Medicine	Nursing	Dentistry	Library		TOTALS
UNDERGRADUATE												
Full-time Students												
Preliminary Year	—	21	—	—	—	—	—	—	—	—	21	
First Year	—	1,817	563	—	124	81	78	30	8	—	2,701	
Second Year	—	1,597	431	—	68	60	76	31	7	—	2,270	
Third Year	—	1,132	292	73	54	63	74	1	—	—	1,689	
Fourth Year	—	207	98	71	47	—	55	109	—	—	587	
Part-time Students	—	2,293	82	—	11	—	—	56	—	—	2,442	
Sub-total	—	7,067	1,466	144	304	204	283	227	15	—		9,710
GRADUATE												
Full-time Students	—	326	279	325	52	—	90	12	—	45	1,129	
Part-time Students	—	77	14	—	12	—	5	—	—	25	133	
Sub-total	—	403	293	325	64	—	95	12	—	70		1,262
SUMMER 1967												
Althouse College	1,764	—	—	—	—	—	—	—	—	—	1,764	
Undergraduate	—	1,982	131	27	11	—	—	37	—	—	2,188	
Graduate Full-time	—	144	196	1	24	—	72	2	—	1	440	
Graduate Part-time	—	6	4	—	—	—	2	1	—	1	14	
Sub-total	1,764	2,132	331	28	35	—	74	40	—	2		4,406
ALTHOUSE COLLEGE REGULAR SESSION												
Full-time Students	303											
Part-time Students	7											
Sub-total	310											310
TOTAL	2,074	9,602	2,090	497	403	204	452	279	15	72		15,688

UNIVERSITY TOTAL ENROLLMENT						
Constituent University	14,573	Men	10,044	Full-time	9,140	Graduate 1,716
Affiliated Colleges	1,115	Women	5,644	Part-time	6,548	Undergraduate 13,972
	15,688		15,688		15,688	15,688

REGISTRATION IN THE FACULTY OF ARTS AND SCIENCE — 1967-68

	University College	Middlesex College	Talbot College	College of Science	College of Music	Huron College	Brescia College	King's College	Sub-Totals	TOTAL
FULL-TIME STUDENTS										
Preliminary Year	—	—	—	—	—	—	21	—	21	
First Year	462	428	433	563	57	193	137	107	2,380	
Second Year	560	334	321	431	43	161	97	81	2,028	
Third Year	477	383	3	292	29	130	53	57	1,424	
Fourth Year	102	75	—	98	19	4	3	4	305	
Sub-total	1,601	1,220	757	1,384	148	488	311	249		6,158
PART-TIME STUDENTS										
Intramural	58	23	12	36	5	8	13	7	162	
Correspondence									145	
Extension									2,068	2,375
Totals										8,533
SUMMER SCHOOL										2,113
TOTAL										10,646

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Information about the academic year 1968-69
may be obtained from the following official publications of
The University of Western Ontario:

General Information
Faculty of Arts and Science
School of Business Administration
Faculty of Dentistry
Faculty of Engineering Science
Faculty of Law
Faculty of Graduate Studies
School of Library and Information Science
Faculty of Medicine
College of Music
School of Nursing
Summer School 1968
French Summer School / Cours d'anglais
Extension Programme
Continuing Education Classes
Althouse College of Education
ACE / Business and Commerce Courses
ACE / Technical Courses
ACE / Summer School

These publications are available on request from
the Registrar's Office, or the Office of the Dean of the Faculty,
College or School concerned.

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