1988

University of Windsor Graduate Calendar 1988-1990

University of Windsor

UNIVERSITY OF

WINDSOR

GRADUATE CALENDAR

1988-1990

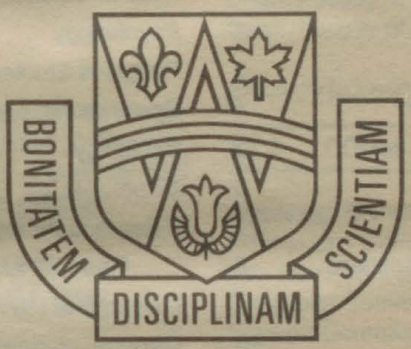
STATEMENT OF RESPONSIBILITY

1. The content of this document is provided for the information of the student. It is accurate at the time of printing but is subject to change from time to time as deemed appropriate by the University of Windsor in order to fulfill its role and mission or to accommodate circumstances beyond its control. Any such changes may be implemented without prior notice and without obligation and, unless specified otherwise, are effective when made.
2. This Calendar represents the University of Windsor's best judgment and projection of the course of conduct of the University of Windsor during the periods addressed therein. It is subject to change due to forces beyond the University of Windsor's control or as deemed necessary by the University of Windsor in order to fulfill its educational objectives.
3. Advisors are provided to assist you in planning your academic program. They are not authorized to change established policy of the University of Windsor. You are solely responsible for assuring that your academic program complies with the policies of the University of Windsor. Any advice which is at variance with established policy must be confirmed by the appropriate Dean's Office.
4. Any tuition, fees and other charges described herein are good faith projections for the academic year. They are, however, subject to change from one academic term to the next as deemed necessary by the University of Windsor in order to meet its financial committments and to fulfill its role and mission.
5. There are other fees and charges which are attendant upon a student's matriculation at the University of Windsor. These fees or charges may be determined by contacting the University offices which administer the programs or activities in which the student intends to enroll or engage.
6. The University of Windsor reserves the right to terminate or modify program requirements, content, and the sequence of programs offerings from semester to semester for educational reasons which it deems sufficient to warrant such actions.

Further, the University of Windsor reserves the right to terminate programs from semester to semester for financial or other reasons which it determines warrant such action. The content, schedule, requirements and means of presentation of course may be changed at any time by the University of Windsor for educational reasons which it determines are sufficient to warrant such action. Programs, services, or other activities of the University of Windsor may be terminated at any time due to reasons beyond the control of the University of Windsor including, but not limited to, acts of God, natural disasters, destruction of premises, labor disturbances, governmental orders, financial insolvency, or other reasons or circumstances beyond the control of the University of Windsor.
7. The course descriptions herein are based upon reasonable projections of faculty and faculty availability and appropriate curriculum considerations. The matters described are subject to change based upon changes in circumstances upon which these projections were based and as deemed necessary by the University of Windsor to fulfill its role and mission.

UNIVERSITY OF WINDSOR

FACULTY OF GRADUATE STUDIES AND RESEARCH



GRADUATE CALENDAR

1988 - 1990

Federated and Affiliated Institutions

ASSUMPTION UNIVERSITY
HOLY REDEEMER COLLEGE
CANTERBURY COLLEGE
IONA COLLEGE

The University is a full member of

THE ASSOCIATION OF UNIVERSITIES AND COLLEGES OF CANADA
THE ASSOCIATION OF COMMONWEALTH UNIVERSITIES
THE INTERNATIONAL ASSOCIATION OF UNIVERSITIES

Published by the Office of the Registrar

Windsor, Ontario, Canada N9B 3P4

TABLE OF CONTENTS

1 FACULTY OF GRADUATE STUDIES AND RESEARCH

LOCATION:
Graduate Studies, Room 325
Research Services, Room 418
Windsor Hall Tower

TELEPHONE:
(519) 253-4232

Note: Some Faculties are not departmentalized. In such cases, reference to "Department" or "Department Head" should be read as "Faculty" or "Dean of the Faculty."

1.1 Structure of the Faculty

1.1.1 OFFICERS OF ADMINISTRATION

Dean, Faculty of Graduate Studies and Research, (Ext. 2109), Lois K. Smedick; B.A. (Wilson), M.S.L. (Pontifical Institute of Mediaeval Studies, Toronto), Ph.D. (Bryn Mawr)

Associate Dean, Research, (Ext. 2150), David A. Cotter; B.S. (Penn State), M.S., Ph.D. (Wisconsin)

FLUID DYNAMICS RESEARCH INSTITUTE

Director: Dr. Ronald M. Barron

GREAT LAKES INSTITUTE

Interim Director: Dr. Paul D. H. Hebert
Founding Director: Dr. Marie Sanderson

INSTITUTE FOR INTERNATIONAL AND DEVELOPMENT STUDIES

Director: (To be appointed.)

1.1.2 GRADUATE COUNCIL

Ex-officio Members (with vote) :
Dean, Chair, *ex officio*
Associate Dean, Research
University Librarian
President, Graduate Student Society
Dean, Faculty of Arts
Dean, Faculty of Business Administration
Dean, Faculty of Education
Dean, Faculty of Engineering
Dean, Faculty of Human Kinetics
Dean, Faculty of Science
Dean, Faculty of Social Science

Elected Representatives from each Faculty

1.1.3 COMMITTEES

Academic Standing Committee
Admissions Committee
Awards Committee
Executive Committee
Support Committee

Chair:
Dean of Graduate Studies and Research
Other Members:
Elected annually from Graduate Council and graduate faculty

1.1.4 RESEARCH BOARD

Chair: elected
Executive Secretary: Associate Dean, Research, *ex officio*
Six faculty members elected by the Research Board
Two appointees of the Board of Governors

The Research Board also includes these committees:
Animal Care Committee
Biohazards Committee
Ethics Committee

(For the chairs of these committees, contact the Office of Research Services.)

1.2 Programs Offered

The Faculty of Graduate Studies and Research offers programs leading to the following degrees:

Master of Arts in Communication Studies, Economics, English, English and Creative Writing, Geography, History, Philosophy, Political Science, Psychology, Religious Studies, Sociology;

Master of Science in Biology, Chemistry, Geology, Mathematics, Statistics, Physics;

Master of Applied Science in Chemical, Civil, Electrical, Geological, Industrial, and Mechanical Engineering, and Engineering Materials;

Master of Business Administration; Integrated M.B.A./ LL.B.;

Master of Education;

Master of Fine Arts in Visual Arts;

Master of Human Kinetics;

Master of Social Work;

Doctor of Philosophy in Biology, Chemical Engineering, Chemistry, Civil Engineering, Electrical Engineering, Engineering Materials, Industrial Engineering, Mathematics, Statistics, Mechanical Engineering, Physics, Psychology;

Postdoctoral Diploma in Clinical Chemistry;

Postdoctoral Certificate in Clinical Psychology.

1.3 Application Procedures

An application for admission may be obtained from the Faculty of Graduate Studies and Research, University of Windsor, Windsor, Ontario, Canada N9B 3P4.

Applications, transcripts, and confidential reports should be submitted to the Faculty of Graduate Studies and Research by July 1 for September admission, November 1 for January admission, and March 1 for May admission, unless an earlier deadline date is specified in the departmental listings.

All documents received become the property of the University and will not be returned.

All applications must be complete by the last date of registration.

1.3.1 DEFERRED APPLICATIONS

Offers of admission are made for a specific term, and acceptance may be deferred for one term only. Students wishing to be considered for admission at a later date will normally be required to complete a new application and to resubmit their documents.

1.3.2 DOCUMENTATION REQUIRED

All documents received become the property of the University and will not be returned.

Action will be taken on an application for admission when all the documents listed below have been received:

1) The form "Application for Admission to the Faculty of Graduate Studies and Research" properly filled out.

2) Two official transcripts of all undergraduate and graduate work from all colleges or universities attended. The term "official" means that the transcripts are sent directly from the college or university concerned to this University.

3) Two Confidential Report forms as indicated on the application form; three forms are required from applicants to the Psychology Department.

4) *Graduate Record Examination (GRE):* Applicants whose academic credentials are difficult to assess may be required to write the Graduate Record Examination administered by the Educational Testing Service, Princeton, New Jersey, U.S.A. 08541. Information on the GRE may be obtained from the Office of Graduate Studies and Research.

5) *Graduate Management Admission Test (GMAT):* M.B.A. applicants are required to take the Graduate Management Admission Test prior to admission. Information on the

GMAT may be obtained from the Office of Graduate Studies and Research.

6) All applicants whose native language is not English are required to take an English proficiency test administered by one of the following institutions:

(a) *The English Language Institute (ELI) of the University of Michigan:* The applicant is expected to make arrangements for taking this test in his or her own locale by contacting the regional centre or by writing to the English Language Institute of the University of Michigan, Testing and Certification, North University Building, Ann Arbor, Michigan, U.S.A. 48109.

(b) *The Educational Testing Service, Test of English As a Foreign Language (TOEFL):* For information on arranging for this test the applicant should write to Educational Testing Service, Princeton, New Jersey, U.S.A. 08540.

An applicant who is unable to take one of these tests must present satisfactory alternative evidence of English proficiency. Exemption from this requirement may be requested by writing to the Dean of Graduate Studies and Research and presenting supporting documentation of English proficiency.

1.3.3 ADMISSION LEVELS

The two routes for admission to II Master's (Candidate) or I Ph.D. status each require four years (eight terms). The I Master's (Qualifying) designation is thus equivalent to Level IV of an honours Bachelor's program.

Students holding an honours degree in another discipline may be admitted to a two-year II Master's (Candidate) program.

Only students who have been admitted to a graduate program may receive graduate credit at the University of Windsor for courses taken.

1.3.4 POSTGRADUATE AWARDS

For information regarding graduate scholarships and other awards, see 30.

1.4 Faculty Regulations

1.4.1 REGISTRATION

Students whose applications for admission to graduate study have been approved for full- or part- time study should present themselves to their Department for registration on the dates recorded in the Calendar of the Academic Year (*see* 31). Part-time students may register by mail on the forms provided by mail from the Office of the Registrar or the Office of Graduate Studies and Research.

Categories of Registration

The University designates graduate students as full- or part-time:

1) *Full-Time Student:* A student who is admitted to a program on a full-time basis and who meets the following criteria will be registered as a full-time student:

(a) is geographically available and visits the campus regularly. It is understood that a graduate student may be absent from the University while still under supervision, e.g., visiting libraries, attending a graduate course at another institution, doing field work, etc. If such period of absence exceeds four weeks in any term, written evidence must be available in the Graduate Studies Office to the effect that the absence has the approval of the Department Head and of the Dean of Graduate Studies and Research.

(b) is regularly employed on other work, or by the University, for not more than an average of ten hours a week. It should be noted that if a student is employed as a teaching assistant or demonstrator, the ten hours a week should represent the total time spent by the student in connection with the appointment, in-

cluding time spent on preparative work, reading set assignments, marking examinations, etc.

2) *Part-Time Student:* Some graduate programs are available on a part-time basis. Students interested in part-time studies should first consult the Department Head. If the particular program is not one in which graduate students are accepted on a part-time basis at their first registration, a student must petition the Faculty of Graduate Studies and Research for permission to register in a given term or terms as a part-time student. Such petitions will not normally be granted to students meeting criteria (a) and (b) above for full-time students. However, petitions based on domestic responsibilities which demand more than ten hours a week will be considered.

Note: Part-time students may not take more than two courses in any term. Registration in any given term for a major paper, thesis, or dissertation is counted as the equivalent of one course.

Resident/Post-Resident Student: See the academic regulations concerning Residence in 1.5.2 and 1.6.2. For purposes of assigning fees, the residence period is defined as three terms of full-time study at the Master's level or nine terms of full- time study at the doctoral level (six terms after Master's level). Graduate students must apply to the Faculty of Graduate Studies and Research to establish post-resident status for fee purposes.

Graduate Registration Regulations

1) Graduate students must register before the proper deadline or they will not receive credit for academic work they may be doing during the term. *Note:* Registration is not complete until the appropriate fees have been paid.

2) Graduate students wishing to graduate in the spring or fall must be registered in the term preceding the proper deadline in order to be permitted to graduate. Students must also file an "Application for Graduation" in the Registrar's Office.

3) Full-time students are required to maintain continuous registration through all terms of their graduate program. Failure to do so will require application for readmission to their program and payment for all terms missed up to a maximum of three terms.

4) In case of illness or other exceptional circumstances, a full-time student may apply to the Dean of Graduate Studies and Research for, and may be granted, a leave of absence. In the case of financial necessity, primarily as evidenced by the support awarded through the University, a student shall be granted a leave of absence for employment for no more than one term out of three upon application. Applications may be filed at any time and shall be processed within three weeks of receipt by the Faculty of Graduate Studies and Research. Permission may be granted only if the facilities of the University, including consultation with members of the faculty, are not to be utilized and if, upon return, the student will still be able to complete the degree program requirements within the allowed time. A student on leave of absence will be assessed a fee of fifty dollars ($50.00) per term. Appeals against any decision shall be heard promptly by the Graduate Appeals Committee.

5) Part-time students must register in every session in which the facilities of the University are to be utilized, whether in residence or off campus. This includes those who are consulting with members of the Faculty while working on a major paper, thesis, or dissertation. Part-time students who have not registered in two consecutive terms will be required to re-apply for admission, and their applications will be considered on their merits in the light of the then prevailing conditions and circumstances.

6) Students are reminded that they will not receive credit for courses for which they are not properly enrolled or for courses completed during terms in which the student has not paid fees.

Once a student has registered, course changes or withdrawal require permission from the Dean of Graduate Studies and Research. Subjects dropped without permis-

sion from the Dean will be regarded as failures.

Provisional and Non-Degree Registration: A provisional registrant is one who is allowed to attend classes while the application is still under consideration. A student whose application is not complete by the regular registration period may be allowed to register provisionally. All required forms and documents must be submitted before the last day of registration.

A student who is not eligible for admission as a degree student may be allowed to register for individual courses on a non-degree basis. Only students who have been admitted to a graduate program may receive graduate credit at the University of Windsor for courses taken.

Audit Student: An audit student in any course is one who attends the course without credit toward a degree or program, and who is not entered or registered on the official University records or lists for purposes of academic or degree credit or transcripts. Such a student will not be allowed to write examinations and cannot be graded in any way. The student will normally pay the regular fees for the course(s).

1.4.2 POLICY ON AUTHORSHIP AND PLAGIARISM

The University expects that all researchers will adhere to the proper standards of intellectual honesty in the written or spoken presentation of their work and will at all times acknowledge in a suitable manner the contribution made by other researchers to their work, as outlined in the Senate Policy on Authorship.

Plagiarism is defined as:

The act of appropriating the literary composition of another, or parts of passages of his/her writing, or the ideas or language of the same, and passing them off as the products of one's own mind. (*Black's Law Dictionary*).

It is expected that all graduate students will be evaluated and graded on their individual merit, and all work submitted for evaluation should clearly indicate that it is the student's own contribution.

Graduate students often have to use the ideas of others as expressed in written or published work in preparing essays, papers, reports, theses and publications. It is imperative that both the data and ideas obtained from any and all published or unpublished material be properly acknowledged and their sources disclosed. Failure to follow this practice constitutes plagiarism and is considered to be a serious offence by this Faculty. Thus, anyone who knowingly or recklessly uses the work of another person and creates an impression that it is his or her own is guilty of plagiarism.

It is not permissible for an essay or other paper to be submitted twice. It is expected that a thesis, essay, paper or report has not been, and is not concurrently being, submitted to any other faculty or university for credit toward any degree, or to this Faculty for any other course. In exceptional circumstances and with the prior agreement of the instructor, a student may use research completed for one course as part of his or her written work for a second course.

Where plagiarized work has been submitted or where a student has submitted a paper for double credit, an F grade shall be assigned by the instructor both to that assignment and to the course. The student has the right to appeal this grade to the Dean of Graduate Studies and Research, in accordance with the Graduate Appeals Policy as stated in Senate Bylaw 51.B. In more serious cases, e.g., breach of the above regulation on more than one occasion, and upon recommendation by the Dean of Graduate Studies and Research that disciplinary action be taken, the matter will be submitted to the University Committee on Student Affairs for appropriate sanctions, which include admonition, censure, disciplinary probation, restitution, suspension or expulsion, as set out in Senate Bylaw 31.

In case of any doubt, students are strongly urged to consult with the instructor or thesis supervisor. In cases where students feel that their intellectual property or copyrighted material has been plagiarized, complaints

should be made to the Dean of Graduate Studies and Research.

1.4.3 GRADING AND DROPPING COURSES

For the standards which are required in specific degree programs, see 1.5 (Ph.D.) and 1.6 (Master's).

Letter Grades:

A+, A, A-, B+, B, C+, C, F,

F-NR (Failure, No Record)

INC (Incomplete - course work only)

IP (In Progress - major paper, thesis, or dissertation)

P or NP (Pass or Non-Pass)

S or U (Satisfactory or Unsatisfactory)

The final deadline for dropping graduate courses without a grade being assigned is five weeks from the start of each of the three terms. After the withdrawal deadline, courses dropped will require the assignment of a grade of "Withdrew-Passing" or "Withdrew-Failing". Prior to the deadline, courses dropped will be recorded as "Voluntary Withdrawal".

The granting of an Incomplete grade must follow discussion between the student and the course instructor concerning the nature of the work to be completed and the time period for completion. Courses recorded as Incomplete must be completed and a grade reported within twelve months of the original due date, unless an earlier deadline has been established. If such courses are not completed within twelve months, they will remain designated as Incomplete on the student's transcript. Normally, a student may carry only one Incomplete grade at a time. Graduate students carrying more than one Incomplete grade at the end of a semester will have their progress reviewed by their Department, and a recommendation will be forwarded in each case to the Faculty of Graduate Studies and Research.

The Faculty of Graduate Studies and Research requires that students maintain at least a B average at all times.

Courses in which a grade of B or higher is received will be accepted for graduate credit. In addition, upon the positive recommendation of the Department concerned, the Faculty of Graduate Studies and Research may grant credit for not more than two semester courses in which a grade of C or C+ has been obtained. The regulations of individual departments should be consulted for their particular policies on Incomplete and C grades.

If a student fails to obtain credit in a course, the course may be repeated once only, at the discretion of the Department concerned and the Dean of Graduate Studies and Research. No student may repeat, or replace with another course, more than two semester courses in which credit was not obtained.

Theses and major papers, for which a letter grade is assigned, must be graded B or better to receive credit.

1.4.4 EXAMINATIONS AND APPEALS

A Department may require either oral or written examinations in graduate courses.

Each instructor must inform his or her students, by the end of the second week of each course, concerning the following:

(a) the basis for determining the final grade in the course;
(b) the approximate dates for tests, essays, etc.

Alterations in the announced procedure may be made by the instructor with the consent of the majority of the registered class.

A student who misses an examination or wishes to receive consideration on account of a serious illness, a bereavement, or other grave reason prior to or during the examination period should communicate with the Head of the Department concerned as soon as possible, and must submit supporting documents (e.g., a medical certificate) before or during the examination period but no later than one week after the scheduled examination. In such cases, the Dean of Graduate Studies and Research, on recommendation of the Department and the

Academic Standing Committee, may grant aegrotat standing in the subject or subjects concerned on the basis of the term mark, or approve an Incomplete grade or a supplemental examination.

Graduate appeals must be made in writing to the Dean of Graduate Studies and Research, in accordance with the Graduate Appeals Policy as stated in Senate Bylaw 51.B. Appeals must be received no later than one month after the grade or decision has been released.

1.4.5 GRADUATION

In order to allow the necessary time for the printing of the diploma and the Convocation program, the candidate's completed work must be approved by the Faculty of Graduate Studies and Research and the thesis or dissertation, if one is presented, must be received by the Library at least two weeks before Convocation.

Students wishing to graduate in the spring or fall must be registered in the term preceding the proper deadline in order to be permitted to graduate.

Registration in any program does not constitute an application for a degree or diploma. An official application to graduate must be completed and filed in the Registrar's Office by the specified date prior to the Convocation at which the applicant expects to graduate.

1.5 THE DEGREE OF DOCTOR OF PHILOSOPHY

For levels of study, see 1.3.3.

1.5.1 ADMISSION REQUIREMENTS

Graduates of the University of Windsor or of other recognized colleges or universities may apply for admission. In general, admission to graduate study is granted only to those students who have good acadmic records and who are adequately prepared to undertake graduate work in their field of specialization. In particular, an applicant for admission to a graduate program leading to the degree of Doctor of Philosophy must have either a Master's degree or an honours Bachelor's degree, or the equivalent; his or her academic standing should be unquestionably superior.

Possession of the minimum requirements does not ensure acceptance.

Applications will be received from students in their final undergraduate year, but acceptance will be conditional until a satisfactorily completed undergraduate record is submitted.

Candidacy: Admission to graduate study does not imply admission to candidacy for a degree. Admission to candidacy for the degree of Doctor of Philosophy is granted by the Dean of Graduate Studies and Research, upon recommendation of the Department concerned, when a student has satisfied the requirements for candidacy of the Faculty of Graduate Studies and Research and of the department, as these may be specified in departmental listings in the calendar. Admission to candidacy is normally to be regarded as recognition that a student has given adequate evidence of superior capability and achievement in graduate study. A student may not be admitted to candidacy for the degree of Doctor of Philosophy before passing a comprehensive examination in the field of specialization.

1.5.2 PROGRAM REQUIREMENTS

Residence: Residence requirements are intended to provide for each student an adequate contact with the University, with the faculty in the field of specialization, and with the library, laboratories, and other facilities for graduate study and research. Every student in a program leading to the degree of Doctor of Philosophy must be registered in a full-time program of study for a minimum of three calendar years, normally in succession. Credit for one of these years may be given for the time spent in proceeding to a Master's degree in this University.

Credit for one of the three years of residence, but not more than one year, may be given for

work done at another institution. In no case shall the student spend fewer than two of the three required years of residence in full-time attendance at this University.

A full-time residence year indicates that a student is in full-time work under the direction of the Department at the University of Windsor. Persons who teach more that three hours a week or who demonstrate in laboratories to such an extent that the total time spent in preparation, demonstration and working exceeds ten hours a week cannot qualify for residence credit. Candidates working part-time outside the University must also stay under the ten hour limit if residence credit is desired.

Time Limit: A student admitted to a Ph.D. program requiring full-time attendance for three years must complete all requirements for the Ph.D. within seven consecutive years.

A student admitted with one year's advanced standing (e.g., holders of Master's degrees) must complete all requirements within six consecutive years.

If an extension of the time limit becomes necessary, the student should address a petition to the Dean of Graduate Studies and Research giving reasons for the request and plans for the completion of the work. A student who exceeds the time limit may be required to take additional qualifying examinations or additional course work, or both.

Language Requirements: Some programs require reading knowledge of a language or languages other than English. Consult the departmental listings for specific language requirements.

Course of Study: Course requirements are specified in the departmental listings. Planning and direction of the student's course of study are the responsibility of the Head of the Department or a designated departmental advisor. A specific program of study should be worked out at the time of the student's first registration, in consultation with the Head of the Department or an advisor.

Since in several departments only a few courses listed will be offered each year, students are advised to inquire from the Department Head or academic advisor as to which courses will be offered in any given year.

Training in methodology may be required, at the discretion of the Department. It is expected that students working toward the degree of Doctor of Philosophy will maintain a superior average in all course work. Normally, graduate credit will be given only for A or B standing in a course. Concerning credit for C grades, see 1.4.3.

After consultation between student and professor and authorization by the latter's Department Head, a graduate course may be recorded INC (Incomplete) when:

1) The student has completed the class work but is unable to take the end of course examination because of illness or other acceptable reason or

2)

(a) the student is unable to complete the work for the course because of illness or other acceptable reason, and
(b) the student has done satisfactory work in the course, and
(c) in the opinion of the professor, the student can complete the normally required work of the course without repeating the course in class.

The granting of an Incomplete grade must follow discussion between the student and the course instructor concerning the nature of the work to be completed and the time period for completion. Courses recorded as Incomplete must be completed and a grade reported within twelve months of the original due date, unless an earlier deadline has been established. If such courses are not completed within twelve months, they will remain designated as Incomplete on the student's transcript. Normally, a student may carry only one Incomplete grade at a time. Graduate students carrying more than one Incomplete grade at the end of a semester will have their progress reviewed by their Department, and a recommendation will be forwarded in each case to the Faculty of Graduate Studies and Research.

Incomplete grades are not granted for dissertations (*see* 1.4.3).

Committees: Research undertaken as part of a doctoral program is normally directed and supervised by a doctoral committee. The Head of the Department will appoint the doctoral committee, which must be approved by the Executive Committee of the Faculty Council of Graduate Studies and Research.

Within one month after registration each student will be assigned a committee consisting of at least a research advisor and two other faculty members in the Department. Additional members may be added with the approval of the Department Head and the Executive Committee of the Faculty of Graduate Studies and Research. This committee will, from time to time, review the student's progress.

For the defence of dissertation (final oral examination), the committee will be supplemented by one professor from another Department and an external examiner who, as an expert in the field in which the candidate's research is carried out, will appraise the dissertation and ordinarily will also be present at the final oral examination.

The doctoral committee is also charged with conduct of the final examination of the doctoral candidate (*see below*).

The external examiner will be selected by the doctoral committee, subject to the approval of the Department Head and the Dean of Graduate Studies and Research. The external examiner must not be involved in the preparation of the dissertation before it is submitted to him or her for final evaulation.

If the research involves human ethics, animal care, or biohazards, the supervisor of the dissertation is responsible for obtaining prior approval from the respective committees governing the above topics. (Consult the office of Research Services.)

1.5.3. THE DISSERTATION

A dissertation embodying the results of an original investigation in the field of specialization is required of all candidates for the degree of Doctor of Philosophy. Before beginning the dissertation, the candidate should submit a prospectus, outlining the problem proposed. Copies of this prospectus should be filed with the doctoral committee not later than four weeks after the student is admitted to candidacy. At the same time, the candidate will be required to validate a document supplied by the department, a Copyright Licence, authorizing the University to make a single copy of the prospective dissertation, or substantial parts of it, at any given time at the request of a library user at this university or a library user at another university for actual cost of reproduction only. The regulations of individual departments or faculties should be consulted for details of their dissertation procedures.

The general format is prescribed in the Guidelines for Dissertations and Theses, obtainable in the Office of Graduate Studies and Research. Within the dissertation, the student should use forms approved for scholarly publication in the field of specialization and approved by the Department. Final checking of the general format of the dissertation is the responsibility of the Office of Graduate Studies and Research, but the student should consult the committee for instructions as to the internal form of the dissertation.

Five copies of the completed dissertation must be submitted to the Department at least three weeks before the oral presentation of the dissertation. The oral presentation must be completed at least three weeks prior to the Convocation for which the candidate has applied to receive the degree. Copies of the corrected dissertation must be deposited with the University Librarian at least two weeks prior to Convocation.

The candidate must also submit at this time six copies of an abstract of no more that 350 words and five copies of a *vita*, which will be bound with the dissertation. The additional copy of the abstract is for publication in *Dissertation Abstracts International.* The *verso* of the title page of the dissertation, or a separate page immediately following the title page, must bear the Universal Copyright Convention symbol ©, plus the full name of the author and the year the doctoral degree was granted. Arrangements for binding the

dissertation and payment of fees connected with binding and mircrofilming should be made with the University Librarian. At such time as the Department gives approval, the University Library will transmit the original copy of the dissertation to the National Library, accompanied by Form NL-91, supplied by the Library and validated by the candidate, which authorizes the National Library to produce single positive microfilm copies for a nominal sum to cover costs, in response to a written request from an individual, a research institute, or a library.

If approved, the dissertation becomes the property of the University. Two copies, the original (after return from the National Library) and one other, will be filed in the University library, and the third copy in the Department.

After the granting of the degree, and at such time as the Department gives approval, the University will have the dissertation microfilmed. One microfilm copy will be deposited in the University Library and will be available for interlibrary loan. The availability of the dissertation in film form will be announced by the published abstract sent to various libraries.

Dissertation Requirements Synopsis:

1) Dissertation format must be as prescribed by Guidelines for Dissertations and Theses.

2) Five copies of Dissertation must be submitted to Department at least three weeks before oral presentation prior to Convocation at which candidate has applied to receive degree.

3) Six copies of Abstract (no more than 350 words) are to be filed, one to be bound with each copy of Dissertation. The extra copy of Abstract is for *Dissertation Abstracts International.* In addition, five copies of *vita* are required.

4) Following successful defence, the candidate will deposit three copies of Dissertation, Abstract, and *vita* in the Office of the University Librarian for binding and distribution (two for the Library, one for the Department).

5) The candidate will validate Form NL-91, supplied by the Library, authorizing the National Library to produce single positive microfiche copies. *Verso* of title page of Dissertation, or separate page following, must bear the Universal Copyright Convention symbol ©, plus full name of author and year doctoral degree was granted.

6) Fees for above are to be paid at time of deposit of Dissertation in the Library.

Examinations: In addition to the usual examinations on course work, there are three types of special examinations which may be required (see departmental regulations) in the program leading to the degree of Doctor of Philosophy.

1) *Qualifying Examinations:* A qualifying examination is one in which the student is asked to demonstrate a reasonable mastery of the fundamentals in the major subject; it is designed to test the student's preparation for advanced graduate work. If such an examination is required, it must be administered and passed within one year after a student enters a graduate program.

2) *Comprehensive Examinations:* The comprehensive examination is one in which the student is asked to demonstrate a reasonable mastery of the field of specialization; it is designed to test the student's command of knowledge and ability to integrate that knowledge, after completion of all or most of the graduate course work. Normally, this examination is completed at the end of the second year of graduate study and is a prerequisite to admission to candidacy.

3) *Final Examinations:* Traditionally, the final examination of a doctoral candidate is an oral defence of the dissertation. A Department may, however, permit as a substitute for this oral examination the delivery of a public lecture by the candidate for members of the Faculty and graduate students, on the subject of the research. In any case, the passing of this examination is taken to require a sufficient degree of attainment that grading is not necessary. Candidates who are found to lack a suitably high level of achievement may be required to repeat this examination. External examiners shall be invited to this examination, whatever form it may take.

1.6 THE MASTER'S DEGREE

For levels of study, see 1.3.3.

1.6.1 ADMISSION REQUIREMENTS

Graduates of the University of Windsor or of other recognized colleges or universities may be admitted to programs leading to the Master's degree. A student with an honours Bachelor's or its equivalent, with at least B standing in the final year and in the major subject, may be admitted to a one-year Master's program (II Master's Candidate). A student with a general Bachelor's degree, with at least B standing in the final year and in the major subject, may be admitted to a two-year Master's program (I Master's Qualifying followed by II Master's Candidate).

Applicants are urged to apply as early as possible to enable the graduate committee to evaluate qualifications and work out a program.

Possession of the minimum requirements does not ensure acceptance.

Candidacy: A student in a one-year Master's program (II Master's Candidate program) is also a candidate for the Master's degree. Students in the two-year Master's program are not admitted to candidacy until they have satisfactorily completed the I Master's Qualifying program. A positive recommendation from a Department is required for a student to proceed to the II Master's Candidate program.

1.6.2 PROGRAM REQUIREMENTS

Residence: Residence requirements are intended to provide for each student an adequate contact with the University, with the faculty in the field of specialization, and with the library, laboratories, and other facilities for graduate study and research. It is expected, therefore, that every student in a program leading to the Master's degree will undertake a full program of study for a minimum of one calendar year or its equivalent. Application and interpretation of the residence requirement is the responsibility of the Dean of Graduate Studies and Research. If a student does not expect to fulfill the residence requirement in the normal way, reasons for departing from the norm should be submitted in writing to the Dean and approval secured for the plan before beginning the graduate program. See also the section on "Duration of Study" below.

This requirement is not intended to apply to students admitted to graduate programs on a part-time basis.

Duration of Study: The normal minimum duration of study for the Master's degree is one calendar year beyond the honours Bachelor's degree, or its equivalent. Credit for graduate study previously undertaken may be given, but the duration of study at this University may not be reduced beyond the minimum of one year.

Time Limit: Work on a Master's degree must be completed within three consecutive calendar years after the student's first registration, except for certain Master's programs available on a part-time basis. In these latter programs, the time limit will depend on the nature of the program, but will not generally exceed five consecutive years. Please consult individual departmental regulations for information concerning the time limit of programs given on a part-time basis.

If a student seeks an extension of these time limits, a petition should be addressed to the Dean of Graduate Studies and Research, giving reasons for the request and plans for the completion of the work. A student who exceeds the time limit may be required to take additional qualifying examinations or additional course work or both.

Language Requirements: Some programs require reading knowledge of a language or languages other than English. Consult the departmental listings below for specific language requirements.

Course of Study: Course requirements are specified in the departmental listings. Planning and direction of the student's course of study are the responsibility of the Head of the Department or a designated advisor. A

specific program of study should be worked out at the time of the student's first registration, in consultation with the Head of the Department or an advisor. Students are directed to obtain the approval of the Head or designated advisor for changes in the program of study.

Training in methodology may be required at the discretion of the Department. Students working toward the Master's degree must maintain at least a B average in all course work. A candidate for the Master's degree who does not obtain graduate credit in any course may repeat the course once only, and not more than one course may be repeated. Normally, graduate credit will be given only for A or B standing in a course. Concerning credit for C grades, see 1.4.3. Letter grades will be assigned for theses and major papers.

After consultation between student and professor, and authorization by the latter's Department Head, a graduate course may be recorded as INC (Incomplete) when:

1) the student has completed the class work but is unable to take the end of course examination because of illness or other acceptable reason or

2)

(a) the student is unable to complete the work for the course because of illness or other acceptable reason, and
(b) the student has done satisfactory work in the course, and
(c) in the opinion of the professor, the student can complete the normally required work in the course without repeating the course in class.

The granting of an Incomplete grade must follow discussion between the student and the course instructor concerning the nature of the work to be completed and the time period for completion. Courses recorded as Incomplete must be completed and a grade reported within twelve months of the original due date, unless an earlier deadline has been established. If such courses are not completed within twelve months, they will remain designated as Incomplete on the student's transcript. Normally, a student may carry only one Incomplete grade at a time. Graduate students carrying more than one Incomplete grade at the end of a semester will have their progress reviewed by their Department, and a recommendation will be forwarded in each case to the Faculty of Graduate Studies and Research.

Incomplete grades are not granted for theses or major papers (*see* 1.4.3).

Committees: Research undertaken as part of a Master's program is normally directed and supervised by a Master's committee. The Head of the Department will appoint the chairperson of this committee not later than one month after registration in the student's final Candidate year, and the remaining members of the committee some time before the end of the first semester of study. The committee is subject to approval by the Executive Committee of the Faculty Council of Graduate Studies and Research. The Master's Committee will include as a minimum the chief advisor as chairperson, and two others, one of whom shall belong to a Department within the University of Windsor other than the one in which the student is obtaining the degree. Additional members may be added with the approval of the Department Head and the Executive Committee of the Faculty of Graduate Studies and Research. The member(s) from outside the Department need not participate in the direction of research but shall contribute a judgment on its completion.

The Master's committee is also charged with conduct of the final examination of the Master's candidate.

If the research involves human ethics, animal care, or biohazards, the supervisor of the thesis is responsible for obtaining prior approval from the respective committees governing the above topics. (Consult the Office of Research Services.)

1.6.3 THESIS OR MAJOR PAPER

A thesis incorporating the results of an investigation in the field of the major subject may be required of candidates for the Master's degree.

Candidates for some Master's programs may choose, instead of the course of study including a thesis, a program requiring additional course work and/or the submission of a major paper on which there will be a final evaluation. Candidates for the M.B.A. degree are required to prepare and defend a major paper. The regulations of indiviual departments or faculties should be consulted for details of their thesis or major paper requirements. Letter grades will be assigned for theses and major papers.

With the exception of the general format prescribed in the style manual cited below, regulations concerning full library binding, copyright application, and microfilming by the National Library, do not apply for the candidate who has elected the major paper program. One copy of the major paper may be required for library deposit by the Department, School or non-departmentalized Faculty. Major papers are available to library users for examination in the Reserve Reading Room.

Although in some cases it may be acceptable for more than one candidate to make use of a common set of data or research findings, each candidate is responsible for a single-authored thesis/major paper.

Not later than one month after registration in the student's final year, the candidate will be required to validate a document supplied by the Department, a Copyright Licence, authorizing the University to make a single copy of the prospective thesis, or substantial parts of it, at any given time at the request of a library user at this University or a library user at another university for actual cost of reproduction only.

The general format is prescribed in the Guidelines for Dissertations and Theses, obtainable in the Office of Graduate Studies and Research. Within the thesis, the student should use forms approved for scholarly publication in the field of specialization. Final checking of the general format of the thesis is the responsibility of the Office of Graduate Studies and Research, but the student should consult the committee for instructions as to the internal form of the thesis.

Three copies of the completed thesis (four for M.Sc. candidates) must be submitted to the Department at least three weeks before the oral presentation of the thesis. The oral presentation must be completed at least three weeks prior to the Convocation at which the candidate expects to receive the degree. Copies of the corrected thesis must be deposited with the University Librarian at least two weeks prior to convocation. The candidate must also submit at this time three (or four) copies of an abstract of not more than 300 words, and three (or four) copies of a *vita*, which will be bound with the thesis. The *verso* of the title page of the thesis, or a separate page immediately following the title page, must bear the Universal Copyright Convention symbol ©, plus the full name of the author and the year the degree was granted. Arrangements for binding the thesis and payment of fees connected with binding and microfilming should be made with the University Librarian. At such time as the Department gives approval, the University Library will transmit the original copy of the thesis to the National Library, accompanied by Form NL-91, supplied by the Library and validated by the candidate, which authorizes the National Library to produce single microfilm copies for a nominal sum to cover costs, in response to a written request from an individual, a research institute, or a library.

If approved, the thesis becomes the property of the University. Two copies, the original (after return from the National Library) and one other, will be filed in the University Library, and one copy (or two copies) in the Department.

Thesis/Major Paper Requirements Synopsis

1) Thesis format must be as prescribed by Guidelines for Dissertations and Theses.

2) Three copies of Thesis for Master's degree (four for M.Sc. degree) must be submitted to Department at least three weeks before oral presentation prior to Convocation at which candidate has applied to receive degree.

3) Three or four copies of Abstract (no more than 300 words) and of *vita* are to be filed, one to be bound with each copy of Thesis.

4) Following successful defence, candidate will deposit all copies of Thesis, Abstract, and *vita* in the Office of the University Librarian for binding and distributing (two for the Library, and one or two for the Department).

5) The candidate will validate Form NL-91, supplied by the Library, authorizing the National Library to produce single positive microfiche copies. *Verso* of title page of Thesis, or separate page following, must bear the Universal Copyright Convention symbol ©, plus full name of author and year Master's degree was granted.

6) Copyright application and microproduction by the National Library do not apply for the major paper program. Only one copy is required for library deposit, the type of binding to be specified by the Department. Major papers are available to library users for examination in the Reserve Reading Room.

7) Fees for the above are to be paid at the time of deposit of Thesis or major paper in the Library.

Examinations: In addition to the usual examinations on course work, there are three types of special examinations in the program leading to the Master's degree:

1) *Qualifying Examinations:* A qualifying examination is one in which the student is asked to demonstrate a reasonable mastery of the fundamentals in the major subject; it is designed to test the student's preparation for advanced graduate work. If such an examination is required, it must be administered and passed before the student registers for the final year of Master's work.

2) *Comprehensive Examinations:* The comprehensive examination is one in which the student is asked to demonstrate a resonable mastery of the field of specialization; it is designed to test the student's command of knowledge and ability to integrate that knowledge, after completion of all or most of the graduate course work. Normally, this examination is written at the end of the student's final year of study for the Master's degree.

3) *Final Examinations:* Traditionally, the final examination of a candidate for a Master's degree is an oral defence of the thesis or major paper. A Department may, however, permit as a substitute for this oral examination an open seminar to be conducted by the candidate for graduate students and faculty in the Department on the subject of the research.

1.7 Research Institutes

1.7.1 THE GREAT LAKES INSTITUTE

The Great Lakes Institute of the University of Windsor is the only university-based agency in Canada devoted to Great Lakes studies. Its primary purpose is to solve environmental problems in the Lakes' ecosystem and to increase public awareness of environmental issues in the Great Lakes Basin.

The Great Lakes Institute provides opportunities for graduate study and participation in an interdisciplinary research program. Students enroll in the Faculty of Graduate Studies and Research, as degree candidates in the appropriate departments, and carry out their research in the Institute in close collaboration with its research staff with expertise in the following fields:

Biology: phytoplankton and zooplankton ecology, algal physiology, ecology of aquatic bacteria, biotoxicity studies;

Chemical Engineering: studies of pollutant emission rates, modelling of long and short range transport of atmospheric gases;

Chemistry: atmospheric sources and sinks of atmospheric gases, concentrations of organic pollutants;

Civil Engineering: disposal of municipal and industrial waste waters, experimental and theoretical studies of hydraulic structures, river ice mechanics;

Geography: water balance studies, beach erosion and shoreline management, lake ice, precipitation chemistry;

Geology: subsurface waste disposal, groundwater studies, heavy metal analysis;

Social Sciences and Law: public finance and development economics, macroeconomic modelling, evironmental policies and administration, planning and management of public recreational sites, environmental law.

Institute Staff

P. D. N. Hebert, Ph.D. (Cantab.), Professor of Biological Sciences (Interim Director)
M. E. Sanderson, Ph.D. (Michigan), Professor of Geography (Founding Director)
C. J. Ball, Associate Professor of Education
J. K. Bewtra, Ph.D. (Iowa), Professor of Civil Engineering
N. Billington, Postdoctoral Fellow, Department of Biological Sciences
D. A. Cotter, Ph.D. (Wisconsin), Professor of Biological Sciences
W. J. I. Crawford, Ed. D. (Wayne State), Associate Professor of Education
K. V. Fung, Ph.D. (U.C.L.A.), Professor of Mathematics and Statistics
J. E. Gannon, Limnologist, International Joint Commission
S. Graham, Associate Professor of Civil Engineering, University of Detroit
G. D. Haffner, Ph.D. (London), Associate Professor of Biological Sciences (Associate Director)
J. H. Hartig, Environmental Scientist, International Joint Commission
T. M. Heidke, Associate Professor of Civil Engineering, Wayne State University
M. Holder-Franklin, Ph.D. (McGill), Adjunct Associate Professor of Biological Sciences
F. C. Innes, Ph.D. (McGill), Professor of Geography
J. D. Jacobs, Ph.D. (Colorado), Associate Professor of Geography
P. LaValle, Ph.D. (State U. of Iowa), Associate Professor of Geography
J. Leach, Ph.D. (Aberdeen), Research Scientist, Ontario Ministry of Natural Resources
J. G. W. Manzig, Lic.Jur, Dr.iur. (Cologne), Professor of Law
J. A. McCorquodale, Ph.D. (Windsor), Professor of Civil Engineering
J. D. McKenney, Ph.D. (Ottawa), Associate Professor of Chemistry and Biochemistry
R. Mendels, Ph.D. (Wisconsin), Associate Professor of Economics
S. Nepszy, Fisheries Biologist, Ontario Ministry of Natural Resources
T. Price, Ph.D. (Queens's), Associate Professor of Political Science
K. G. Pryke, Ph.D. (Duke), Professor of History
F. Simpson, Dr. Nat. Sc. (Jagiellonian U., Krakow), Professor of Geology
M. G. Sklash, Ph.D. (Waterloo), Associate Professor of Geology
P. Sonnenfeld, Dr. Rer. Nat. (Charles U., Prague), Professor of Geology
D. G. Wallen, Ph.D. (Simon Fraser), Associate Professor of Biological Sciences
A. E. P. Watson, Ph.D. (Bristol), Scientist-Research Manager, International Joint Commission
I. M. Weis, Ph.D. (Iowa), Assistant Professor of Biological Sciences
L. Wong, Ph.D. (Toronto), Adjunct Professor of Civil Engineering

1.7.2 FLUID DYNAMICS RESEARCH INSTITUTE

The Fluid Dynamics Research Institute was founded with the object of fostering inter-departmental and inter-faculty research and postgraduate teaching related to the dynamics of fluids in the most general sense of the term. The founding members are drawn from six different departments with expertise in the fields listed below. Graduate students affiliated with Institute members in their research will complete the degree programs through these departments.

Chemical Engineering: rheology and flow of polymers;

Civil Engineering: hydraulics, water resources;

Computer Science: computational fluid dynamics;

Electrical Engineering: electro- and magnetohydrodynamics;

Mechanical Engineering: fluid control, aerodynamics, and turbulent flow;

Mathematics and Statistics: computational fluid dynamics, magnetohydrodynamics, mechanics of suspensions.

Institute Staff

R. M. Barron, Ph.D. (Carleton), Professor of Mathematics & Statistics (Director)
G. W. Rankin, Ph.D. (Windsor), Associate Professor of Mechanical Engineering
O. P. Chandna, Ph.D. (Windsor), Professor of Mathematics & Statistics
K. L. Duggal, Ph.D. (Windsor), Professor of Mathematics & Statistics
E. N. Glass, Ph.D. (Syracuse), Professor of Physics
P. N. Kaloni, Ph.D. (Indian Inst. of Tech.), Professor of Mathematics & Statistics
J. A. McCorquodale, Ph.D. (Windsor), Professor of Civil Engineering
T. W. McDonald, Ph.D. (Purdue), Professor of Mechanical Engineering
A. C. Smith, Ph.D. (Dublin), Professor of Mathematics & Statistics
K. Sridhar, Ph.D. (Toronto), Professor of Mechanical Engineering
H. Towes, Ph.D. (Windsor), Assistant Professor of Computer Science
H. J. Tucker, Ph.D. (McGill), Associate Professor of Mechanical Engineering
A. Watson, Dr. Rer. Nat. (Kassel, W. Germany), Professor of Electrical Engineering
N. G. Zamani, Ph.D. (Brown), Professor of Mathematics & Statistics

2 BIOLOGICAL SCIENCES

2.1.1 OFFICERS OF INSTRUCTION

Professor Emeritus

Benedict, Winfred Gerald; C.D., M.Phil. (Leeds), B.A. (Windsor), B.S.A., Ph.D. (Toronto), F.L.S. - 1957.

Professors

Doyle, Robert Joseph; B.A., M.A. (Western Ontario), M.S. (Michigan State), Ph.D. (Wayne State), R.M. (C.C.M.) - 1948.

Petras, Michael Luke; B.Sc. (Assumption), M.Sc. (Notre Dame), Ph.D. (Michigan) - 1956.

McCurdy, Howard Douglas; B.A. (Western Ontario), B.Sc. (Assumption), M.Sc., Ph.D. (Michigan State), R.M. (C.C.M.) - 1959. (On leave).

Pillay, Dathathry T. N.; B.Sc. Ag. (Osmania), M.S., Ph.D. (Cornell) - 1963. (Dean, Faculty of Science).

Habowsky, Joseph E. J.; Diplom-Landwirt (Munich), M.S.A., Ph.D. (Toronto) - 1964.

Sabina, Leslie Robert; A.B. (Cornell), M.S., Ph.D. (Nebraska), R.M. (C.C.M.)(A.A.M.) - 1965.

Warner, Alden Howard; B.A. (Maine), M.A., Ph.D. (Southern Illinois) - 1965.

Thomas, Donovan des Sauges; B.S. (Natal), M.S., Ph.D. (Florida) - 1968.

Fackrell, Hugh B.; B.Sc., M.Sc. (Western Ontario), Ph.D. (Manitoba) - 1974. (Head of the Department).

Cotter, David Allen; B.S. (Penn State), M.S., Ph.D. (Wisconsin) - 1975. (Associate Dean, Research).

Hebert, Paul D. N.; B.Sc. (Queen's), Ph.D. (Cantab) - 1976.

Franklin, Mervyn; B.Sc. (Reading, England), Ph.D. (McGill) - 1978.

Associate Professors

M'Closkey, Robert T.; B.A. (U.C.L.A.), M.A. (California State), Ph.D. (U. of California) - 1970.

Wallen, Donald G.; B.Sc., B. Ed. (Dalhousie), M.Sc., Ph.D. (Simon Fraser) - 1970.

Taylor, Paul; B.S. (George Williams, Chicago), M.Ed., Ph.D. (Toledo) - 1975.

Virgo, Bruce Barton; B.Sc., M.Sc., Ph.D. (British Columbia) - 1975.

Dufresne, Michael J. P.; B.Sc. (York), Ph.D. (Alberta) - 1976.

Weis, Ivan Michael; B.Sc. (Syracuse), M.Sc., Ph.D. (Iowa) - 1976.

Haffner, Gordon Douglas; B.Sc. (Queen's) Ph.D. (London) - 1986. (Associate Director, Great Lakes Institute).

Assistant Professor

Ciborowski, Jan J. H.; B.Sc., M.Sc.(Toronto), Ph.D. (Alberta) - 1984.

Adjunct Associate Professors

Holder-Franklin, Maxine A.; B.Sc., M.Sc. (Dalhousie), Ph.D. (McGill) - 1978.

Tu, Jui-Chang; B.Sc., M.Sc. (National Taiwan U.), Ph.D. (Washington State) - 1982.

Corkum, Lynda D.; B.A., M.A. (Drake), Ph.D. (Toronto) - 1987.

Kolaza, Jerzy; M.Sc. (A. Mickiewicz U., Poznan), Ph.D. (Scuola Normale Superiore, Pisa, and A. Mickiewicz U., Poznan) - 1987.

2.2 Programs of Study

2.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

In addition to the general requirements outlined in 1.5, the following requirements must be met by all students proceeding to the Ph.D. degree.

Admission Requirements

Applicants with an honours degree in Biology or related field and who have been judged to be outstanding students may be admitted directly into the Ph.D. program. Applicants holding an M.Sc. degree or equivalent from the University of Windsor or from another recognized university or college may be admitted to the Ph.D. program with advanced standing in course work as described below.

Program Requirements

Course Work: Students proceeding toward the Ph.D. degree will follow one of the programs given below:

1) Students proceeding directly to the Ph.D. from an Honours B.Sc. degree will be expected to:

(a) comply with the general regulations outlined in 1.5;
(b) present a seminar in Biology 55-600 each year of full-time registration;
(c) attend and participate in a Selected Readings course in each year of full-time registration;
(d) successfully complete a minimum of six additional graduate courses, two of which may be in a cognate area. Mathematics 65-453 (Statistics for Life Sciences) may be allowed as a cognate course;
(e) complete a dissertation embodying the results of an original investigation;
(f) defend the dissertation at a public lecture or seminar.

(2) Students entering into a Ph.D. program with an M.Sc. degree will be expected to:

(a) comply with the general requirements outlined in 1.5;
(b) present a seminar in Biology 55-600 each year of full-time registration;
(c) attend and participate in a Selected Readings course in each year of full-time registration;
(d) successfully complete a minimum of three additional graduate courses, one of which may be taken in a cognate area;
(e) complete a dissertation embodying the results of an original investigation;
(f) defend the dissertation at a public lecture or seminar.

Grading: A student must maintain at least B standing in each course in Biology and at least a B average in any non-Biology courses. Any student whose performance is deemed unsatisfactory in course work or research will be asked to withdraw.

Doctoral Committee: Within two weeks of the student's arrival on campus, the Department Head will, in consultation with the Dean of Graduate Studies and Research, assign a temporary advisor to assist the student in planning the program. Within nine months of the student's arrival on campus the doctoral committee will be formed except for the external examiner who is to be appointed during the student's final year of study/research. The full committee will consist of at least five members; one must be from outside the University, one from the University faculty but outside the Department, and three must be members of the Department of Biological Sciences. The research advisor will act as chairperson of this committee.

The doctoral committee must meet for the following:

(a) to prepare and administer the qualifying examination within the first twelve to fifteen months of the student's registration in the program;
(b) to discuss the student's course work within two months after the qualifying examination. (The extramural committee member need not participate);
(c) to review and approve the research proposal no less than six months before the comprehensive examination is written;
(d) To set the comprehensive examinations which must be given at least six months before the student's final oral examination. (The extramural committee member need not participate);
(e) to discuss the student's research and dissertation at least two months before the anticipated time of the final oral examination;
(f) the final oral examination.

Dissertation: At least six months prior to the comprehensive examination, a candidate must submit a Research Progress Report to the doctoral committee and at least two months before the anticipated date of the final oral examination the student must review the research and dissertation in a meeting with the committee.

A dissertation embodying the results of an original investigation in the student's major field is required of all candidates. The dissertation is expected to be of a quality suitable for publication in a refereed biological journal.

5) *Examinations:*

(a) *Qualifing Examinations:* The student in the Ph.D. program will be required to write a qualifying examination before the end of the first year of registration in this program. The student must complete successfully the qualifying examination to continue in the doctoral program.
(b) *Comprehensive Examinations:* A comprehensive examination also will be administered in both major and minor fields by the doctoral committee at least six months prior to the expected date of the final oral examination. This examination must be passed successfully before the student will be permitted to complete the dissertation.
(c) Finally, the student will be requested to defend the dissertation orally at a public lecture or seminar (final oral examination).

2.2.2 MASTER OF SCIENCE DEGREE

Admission Requirements

1) Applicants with an honours degree in Biology or a related field may be admitted into a one-year (minimum duration) Master's program.

2) Applicants with a general B.Sc. degree in Biology or a related field may be admitted to a two-year (minimum duration) Master's program.

Program Requirements

1) Students admitted to the one-year Master's program will be expected to:

(a) comply with the general requirements outlined in 1.6;
(b) present a seminar in Biology 55-600 each year of full-time registration;
(c) attend and participate in a Selected Readings Course in each year of full-time registration;
(d) successfully complete a minimum of two additional graduate courses, one of which may be in a cognate field;
(e) complete an original research project and embody it in a thesis;
(f) defend the thesis orally at a public lecture or seminar.

2) Students admitted to the two-year Master's program, besides meeting the minimum requirements of the one-year program, are expected in the first year of the two-year program to achieve a level of qualification equivalent to an honours degree through research and a minimum of four courses.

3) *Grading:* A student must maintain at least a B average in each course in Biology and at least a B average in any non-Biology courses.

2.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered each year.

55-515. Genetic Engineering and Its Applications

An advanced lecture and laboratory course dealing with current aspects of molecular biology and biochemistry. Topics include the manipulation of genes using recombinant DNA technology, cloning vehicles including T1 plasmids, genomic libraries, sequencing specific gene fragments, R-DNA and T-DNA. (Prerequisite: consent of instructor). (2 lecture, 3 laboratory hours a week).

55-516. Methods in Biology and Biochemistry

A course designed to introduce the student to a variety of biochemical and biophysical techniques. This course is composed of seven topics: chromatography I, chromatography II, centrifugation, electrophoresis, radioisotope methods, spectroscopy and tissue culture. (Students are required to participate in a minimum of four of the above topics which should be chosen in consultation with his/her major advisor). (Prerequisite: consent of instructors). (2 lecture, 16 laboratory hours for selected experiments during the year, both semesters). (One semester course credit). (Same as 59-566).

55-517. Electronmicroscopy

Mainly a laboratory course to learn and apply the methodology and analysis necessary to examine biological material. (Prerequisites: 55-228 and consent of instructor). (2 lecture, 4 laboratory hours a week, second semester).

55-520. Selected Readings in Molecular and Developmental Biology

Current journal articles of potential significance in Molecular/Developmental Biology and in the student's area of study will be chosen for oral presentation and discussion. (1 hour a week for two semesters). This course is intended for graduate students in Biology only and is required during each year of full-time registration in both the M.Sc. and Ph.D. programs. (Offered on a Pass/Non-Pass basis).

55-528. Molecular Biology of Growth and Development I

An analysis at the molecular level of the growth and development of prokaryotes, lower eukaryotes, and their plasmids. (3 lecture, 1 hour demonstration/seminar a week). (Team taught).

55-529. Molecular Biology of Growth and Development II

An analysis at the molecular level of the growth and development of plants and animals. (3 lecture, 1 hour demonstration/seminar a week). (Team taught).

55-533. Plant Biochemistry
A general course in intermediary metabolism in plants with emphasis on enzyme induction, protein synthesis, photosynthesis and secondary metabolites. (Prerequisites: 59-360 and/or consent of instructor). (2 lecture hours a week).

55-534. Plant Hormones
Nature, physiological effects and mechanism of action of plant hormones. (Prerequisite: consent of instructor). (2 lecture hours a week). (Student must complete a term paper or a laboratory project of about 15 hours total).

55-540. Microbial Physiology
Cytochemistry, nutrition, metabolism and population kinetics of micro-organisms. (2 lecture, 4 laboratory hours a week).

55-542. Virology and Cell Culture
An advanced course to acquaint students in cell culture methodology, evaluation of culture dynamics, virus production and purification, and emphasis on the design and critical evaluation of antiviral compounds. (1 lecture, 6 laboratory hours a week).

55-546. Advanced Immunoiogy
Detailed discussion of the structure and formation of immunoglobulins, immunological disorders, transplantation immunity and hypersensitivity. (Prerequisites: 57-226 and 57-227; corequisite: 59-360). (2 lecture, 3 laboratory hours a week).

55-547. Advanced General Microbiology
An exploration of the biological activities and interrelationships of micro-organisms in their natural environments with emphasis on procaryotes. (Prerequisite: consent of instructor). (2 lecture, 3 laboratory hours a week).

55-552. Mammalian Genetics
The genetic control of morphological and biochemical variants, quantitative traits and certain developmental phenomena in mammals. (Prerequisite: 55-229 and consent of instructor). (3 lecture hours a week).

55-554. Tumor Biology
This course deals with the cellular and molecular (including genetic and biochemical) basis of tumorigenesis in humans; topics include epidemiological and etiological studies of cancer as well as the biochemistry of treatment. (2 lecture, 1 tutorial seminar hour a week).

55-555. Foreign Chemicals and Physiological Processes
The principles of pharmacology/toxicology will be presented using selected drugs, industrial chemicals, and environmental contaminants as model compounds. The emphasis will be placed on absorption, distribution, mechanism of action, biotransformation, and excretion in mammalian systems. (Prerequisite: consent of instructor) (3 lecture hours a week).

55-556. Endocrinology
Hormonal integration and regulation in animals; mechanisms of hormone action at the molecular level; biosynthesis and metabolism of hormones; particular emphasis on human endocrinology. (Prerequisite: consent of instructor). (Same as 59-480). (3 lecture hours a week).

55-560. Selected Readings in Environmental and Population Biology
Current journal articles of potential significance in Environmental/Population Biology and in the student's area of study will be chosen for oral presentation and discussion (1 hour a week for two semesters). This course is intended for graduate students in Biology only and is required during each year of full-time registration in both the M.Sc. and Ph.D. program. (Offered on a Pass/Non-Pass basis).

55-561. Plant Pathology
Biology of parasitism with emphasis on physiological ecology and biochemistry of infectious plant diseases. (Prerequisite: consent of instructor). (2 lecture, 3 laboratory hours a week).

55-563. Algal Physiological Ecology
Recent advances in the understanding of algal photosynthesis, metabolism, and growth. The subject matter includes the light and dark reaction of photosynthesis, respiration, and photorepiration, nitrogen metabolism, nutrient uptake kinetics, the relationship between assimilation and growth, and adaptation of the metabolic parameters to en-

vironmental change. (2 lecture, 3 laboratory hours a week).

55-570. Population Genetics
The genetics of populations composed of diploid organisms. (Prerequisites: 55-341 and consent of instructor). (3 lecture hours a week).

55-571. Advanced Topics in Genetics
Topics of current interest in genetics. (3 lecture/ discussion hours a week).

55-580. Stream Ecology
The physical and biotic structure of running water systems including morphometry, energy processing, morphological/behavioural adaptations of organsism to life in running water, and interactions among biota at the microhabitat level. (2 lecture, 3 laboratory hours a week, 1 to 2 weekend field trips).

55-581. Community Ecology
Major topics include niche and diversity theory, trophic complexity and community stability, and assembly of guilds. (3 lecture/discussion hours a week).

55-583. Advanced Topics in Biogeography
Topics of current interest including species equilibrium, species turnover, colonization-extinction probabilities and combination rules. (3 lecture/discussion hours a week).

55-588. Population Ecology
Major topics will include demography, life history theory, and the theory of optimal resource use. (3 lecture/discussion hours a week).

55-590. Advanced Topics in Population and Community Ecology
Topics of current interest and controversy in ecology, including competition and community structure, random and deterministic processes in the species composition of communities. (3 lecture/discussion hours a week).

55-595. Evolutionary Ecology
Major topics include the evolution of breeding systems, genetic variation in ecological parameters and the relationship between niche width and genetic variation. (Prerequisite: 55-341). (3 lectures a week).

55-600. Graduate Seminar
Oral presentation or discussion of current problems in the Biological Sciences. (1 hour a week over two semesters; one semester course credit). This course will be required during each full year of registration in either the M.Sc. or Ph.D. program.

55-601. Special Topics in Biology I

55-602. Special Topics in Biology II

55-603. Special Topics in Biology III

55-604. Special Topics in Biology IV

55-797. Thesis Research
An original research project embodied into a concisely written thesis which conforms to the style and format of a recognized journal in the field of specialization. The student should register for this course during each semester (including summer) of residency at the University; however, this course cannot be used for credit toward fulfilling the course requirements in the Master's program.

55-798. Dissertation Research
An original research investigation the results of which will be embodied in a concisely written dissertation conforming in style and format to a recognized journal in the field of specialization. The final paper should be of the highest quality possible and suitable for publication. The doctoral student should register for this course commencing the summer semester of the first year of residency and subsequently for each semester during which dissertation research will be carried out. In no case, however, may this course be used for credit toward fulfilling the course requirements in the Ph.D. program.

3 FACULTY OF BUSINESS ADMINISTRATION

3.1.1 OFFICERS OF INSTRUCTION

Professors

Cowan, Ralph K.; B.A. (Western Ontario), A.M., Ph.D. (Michigan) - 1954.

Zin, Michael; B. Comm. (Assumption), M.B.A. (Michigan), Ph.D. (Michigan State), F.C.G.A. - 1956.

Brownlie, J. Maxwell; B.A. (Western Ontario), M.B.A. (Michigan) - 1958.

Ragab, Megeed Ali; B. Comm. (Cairo), M.B.A. (Boston), Ph.D. (American U.) - 1969.

Rosenbaum, Edward; B.A. (Wayne State), M.S., Ph.D. (Wisconsin), J.D. (Detroit College of Law), C.F.A. - 1969.

Lam, Wai P.; B. Comm. (St. Mary's), M.B.A., Ph.D. (Michigan State), C.A. - 1973.

Crocker, Olga Lillian; B.Ed., M.B.A. (Alberta), Ph.D. (U. of Washington, Seattle) - 1976.

Lau, C.; B. Comm. (Sir George Williams), M.B.A. (McMaster), Ph.D. (Oregon) - 1978.

Andiappan, Palaniappan; B.A., M.A., M. Litt. (Madras), M.S. (Massachussetts), Ph.D. (Iowa) - 1980.

West, Eric; B.Sc. (Royal Military College of Canada), M.Sc., Ph.D. (Iowa State University) - 1983. (Dean of the Faculty).

Aneja, Yash Paul; M.S., B.S. (Indian Statistical Inst.), Ph.D. (Johns Hopkins) - 1984.

Bart, John T.; B. Eng. (The Royal Military College of Canada), M.B.A., Ph.D. (Western Ontario) - 1984.

Associate Professors

Haque, Mohd. Razaul; B.Sc., M.Sc. (Aligarh Muslim U.), M.Sc. (Southern Illinois), Ph.D. (Wayne State) - 1967.

Johnston, D. Ross; B. Comm. (Alberta), M.B.A. (McMaster), F.C.A. - 1968.

Musson, Harold Douglas; B. Comm. (Windsor), M.B.A. (Michigan State) - 1968.

Neal, George H.; B.S., M.A. (Memphis State) D.B.A. (Michigan State) - 1970.

Freeman, Jack L.; B.S. (Michigan State), M.B.A. (Wayne State), Ph.D. (Michigan State) - 1972.

Faria, Anthony John; B.S., M.B.A. (Wayne State), Ph.D. (Michigan State) - 1975.

Henrie, Edward E.; B.A. (Trinity), M.B.A. (Oregon) - 1975.

Dickinson, John R.; B.S.B.A., M.B.A., D.B.A. (Indiana) - 1980.

Cattaneo, R. Julian; Licenciado (Buenos Aires), Ph.D. (Michigan) - 1980.

Shastri, T.; B. Comm. (Osmania), LL.B (Bombay), Dip. Mgmt. (McGill), M.B.A. (McMaster), C.A. (Quebec & Ontario), R.I.A. - 1982.

Solomon, Norman A.; B.S. (Cornell), M.A., Ph.D. (Wisconsin) - 1982. (Associate Dean).

Thacker, James W.; B.A. (Winnipeg), M.A. (Wayne State), Ph.D. (Wayne State) - 1982.

Kantor, Jeffrey; B. Bus. Sc., B. Comm. (Hons.) (Capetown), C.P.A., C.A. (Ontario), Ph.D. (Bradford, England) - 1983.

Chandra, Ramesh; B.S. (Bihar Institute of Tech.), M.S. (Mississippi), M.S., Ph.D. (Union College) - 1984.

Estrin, Teviah L.; B. Comm. (British Columbia), M.S., Ph.D (California) -1984.

Templer, Andrew; B.A. (Hons.), M.A. (South Africa), M.Sc. (London), Ph.D. (Witwatersrand) - 1984.

Fields, Mitchell; B.A. (Maryland), M.A., Ph.D. (Wayne State) - 1985.

Withane, Sirinimal; B.Sc. (Sri Jayawardenpura), M.Sc. (Moratuwa University), M.A. (Carleton), Ph.D. (Rockefeller College, SUNY) - 1986.

Uegama, Walter; B. Comm. (British Columbia), M.B.A. (University of California-Berkley), Ph.D. (Oregon) - 1987. (Director of Continuing Education).

Assistant Professors

Miller, Peter; B.Eng. (McGill), M.B.A. (Toronto) - 1977.

Lui, Kui-On; Dip. (Madrid), M.S. (Illinois State), Ph.D. (Michigan), B. Comm., M.B.A. (Windsor) - 1980.

Gunay, Erdal; B.S. (Middle East Technical University), M.B.A. (Syracuse) - 1984.

Rieger, Fritz; B.S. (Manhattan), M.B.A. (Columbia), Ph.D. (McGill) - 1984.

Whiteley, Rick; B. Comm. (Sir George Williams), Dipl. in Retailing (S.G.W. School of Retailing) M.B.A. (McMaster), Ph.D. (Penn. State) - 1984.

Jacob, Satish; B. Eng. (Jabalpur), B. Comm., M.B.A. (Windsor) - 1985.

Forrest, Anne; B.Sc., M.I.R. (Toronto) - 1985.

Punnett, Betty-Jane; B.A. (McGill), M.B.A. (Marist College), Ph.D. (New York University) - 1985.

van Kooten, Ignatius; Cand., Drs. (Tilburg), M.B.A., Ph.D (York) - 1985.

Chaouch, A.; B.Sc. (Algiers), M.Sc. (Stanford), Ph.D. (Waterloo) - 1986.

Okechuku, Chike; B.A.Sc., M.A.Sc. (Toronto), M.B.A., Ph.D. (York) - 1986.

Singh, Jang; B.A. (Toronto), M.A. (College of St. Thomas), M.A., Ph.D. (Toronto) - 1986.

Wellington, William; B.Sc. (Western), M.B.A. (Windsor), A.B.D. (Michigan State) - 1986.

MacIntosh, John C. C.; B.Sc. Agric, Cert. in Acct. (Natal), M.Comm. (Capetown), D.Comm. (South Africa) - 1987.

3.2 Programs of Study

3.2.1 THE MASTER OF BUSINESS ADMINISTRATION DEGREE

The purpose of the Master of Business Administration program is to provide broad graduate study in the general field of business administration.

Graduate students have the opportunity of expanding their accounting, administrative, finance, marketing, and management science expertise. The program emphasizes knowledge that prepares students for careers in private industry and business, for the public service, and for doctoral studies.

Admission Requirements

1) Applicants who have secured satisfactory standing (at least a B average) in their undergraduate work may be admitted. Major consideration is given to the performance during the last two years of the undergraduate program. Possession of the minimum requirements for admission does not ensure acceptance.

Other factors such as graduate courses taken elsewhere, suitable business experience, and Graduate Management Admission Test (GMAT) scores are considered.

Students must write the GMAT before applying for admission to the Faculty. (Details of the Test may be obtained from The Educational Testing Service, Princeton, New Jersey, 08540.) The order form for the Bulletin of Information for the GMAT is available in the Office of Graduate Studies.

2) Graduates from a four-year Honours program in Commerce or Business Administration who, in the opinion of the Faculty of Business Administration, have covered an adequate program of studies, may be admitted to the candidate year of the program provided they have obtained satisfactory standing in their undergraduate degree.

3) Graduates from other four-year programs may be given advanced standing for courses taken within the degree program which are equivalent to 500-level courses.

4) Students will be admitted to the candidate year if they have maintained a B average or better in the first year of the program.

5) Students in the candidate year who maintain a B average or better and satisfactorily complete a major paper will qualify for the M.B.A. degree.

Prerequisites:

(a) at least two semesters of university-level Economics;
(b) at least one semester of university-level Mathematics

Students lacking prerequisites may be admitted and permitted to complete the appropriate undergraduate courses in their first semester.

Part-time Students

Provision is made for students in full-time employment to spread the work for the degree over a number of years. There is no time limit for the courses in the qualifying year of the program, but the candidate year must be completed in not more than five consecutive calendar years.

Professional Accounting Designation

Students who are interested in pursuing both a professional accounting designation (i.e. C.A., C.M.A., or C.G.A.) and the M.B.A. are advised to complete their accounting course requirements while being registered in the Bachelor of Commerce for University Graduates program and then to apply for admission directly to the candidate year of the M.B.A. program.

Course Requirements and Term Planning

Each Qualifying Year course will be worth four credits; each Candidate Year course will be worth three credits.

No student may take more than six courses a semester while enrolled in the M.B.A. program, nor may a student be registered for the Major Paper (75-796) and take more than five courses.

QUALIFYING YEAR

First Semester

70-550.

71-540.

72-570.

73-500.

74-530.

Second Semester

Courses from at least 3 areas must be taken, including:

73-501.

and four 500-level courses to be selected from the following areas:

Accounting

70-551.

70-552.

Administrative Studies

71-541.

71-542.

Finance

72-571.

72-572.

Management Science

73-502.

Marketing

74-531.

74-532.

Policy and Strategy

75-590.

CANDIDATE YEAR

First Semester

four 600-level courses

Second Semester

75-698.

three 600-level courses, and

75-796. Major Paper

THE MAJOR PAPER

Topic

An appropriate topic is one which is of revelance to business administration and one that can be investigated by methods the student's committee deem to be of graduate level rigour.

Major papers may take various forms including: survey, experiment, source data analysis, field study, model development, and feasibility study. The paper may not be merely a reading report which reports and repeats ideas developed elsewhere.

Administration

All students must have a detailed major paper approved by at least two Faculty members. These two Faculty members will have primary responsibility for supervising the student's work. The approved proposal must be submitted to the Assistant to the Dean in order to register for the Major Paper (75-796).

The major paper will be graded and will receive nine credits.

3.2.2 COOPERATIVE (WORK-STUDY) M.B.A.

This program integrates the four study semesters required in the full-time non-Co-op M.B.A. program with three work semesters. All study semesters coincide with normally-scheduled class semester times. This program design allows students in the co-op option the same course selection as regular M.B.A. students.

The first work semester placement begins immediately following the completion of the first ten 500-level courses. Students have the opportunity to experiment with various areas of interest in a generalist capacity, or to focus on a specific area of interest. Although the Faculty will make every effort to match students with suitable employment, students are not guaranteed positions, and the availability of positions may vary with the state of the labour market.

Following the completion of each work semester, a work report is required. These reports focus on a problem or problems at work as analyzed by the student in a significant academic analysis. These reports serve to develop solid communication skills. The specific content and format of the reports are decided upon by the students' Faculty advisors and the Faculty Co-op coordinator, in consultation with the student. One report is required for each completed work semester for a total of three reports. The reports may be used as a substitute for the major paper requirement of the M.B.A. program upon the recommendation of the Graduate Program Committee.

In addition to the normal admission requirements, students seeking admission to the Co-op program will be required to have an interview with the representatives from the Faculty of Business Administration.

WORK-STUDY PROGRAM SEQUENCE

The scheduling of work terms will be subject to the availability of suitable employment placements.

Year 1

Fall Semester: Study

Winter Semester: Study

Summer Semester: Work

Year 2

Fall Semester: Work

Winter Semester: Study

Summer Semester: Work

Year 3

Fall Semester: Study

3.2.3 INTEGRATED M.B.A./LL.B. PROGRAM

This special program provides students interested in a career which combines legal and business management skills with an opportunity to complete both the M.B.A. and the LL.B. degrees in four years.

It is administered by a Committee of Directors composed of the Deans of the Faculties of Business Administration and Law, and three members of each Faculty.

Admission Requirements

The admissions procedure for the integrated program consists of two stages. At the first stage, students applying to the program must meet the admission requirements of both faculties. Therefore separate applications must be submitted to the Faculty of Law and the Faculty of Business Administration for admission to their regular degree programs. To facilitate academic and career planning, it is strongly suggested that these applications be made simultaneously. Students who are accepted to both the M.B.A. and LL.B. programs, and have indicated a desire to follow the integrated program, will proceed to attend first year in either Faculty. Such students will be granted a deferred admission to the other Faculty in the program contingent upon acceptance to the integrated program after the first year of study.

While attending first year, the student must apply to the Committee of Directors for admission to the M.B.A./ LL.B. program. The intensity of the program demands a committed and highly motivated student, and according-

ly, certain minimum academic requirements have been established. Students applying to the program at this stage must achieve standing in the top one third of the first-year class in the school in which they have enrolled and must meet the grade standards set out below. Students who do not meet this requirement will not be considered for the integrated program, but are free to complete their studies in the Faculty attended, or reapply for admission to the second Faculty for the regular course of study.

The Committee of Directors will interview all eligible applicants and selection of candidates will be made on the basis of the following criteria:

(a) Career plan and its appropriateness to the program.
(b) An assessment of the applicant's ability to complete a rigorous course of study successfully.
(c) All relevant elements of the applicant's profile compared with those of all other candidates.

Successful candidates will receive an acceptance to the integrated program subject to the condition that to remain in the program he or she must complete the second year of the program with a standing in the top one third of the class and meet the grade standard.

The Committee of Directors will also consider the applications of persons for entry to the program who have not earlier complied with the foregoing procedures, and who are enrolled in either of the Faculties of Business Administration or Law; these persons will have demonstrated high academic achievement and appropriate vocational and personal commitment.

Application Deadlines

Faculty of Business Administration - June 1 (M.B.A.)

Faculty of Law - February 1 (LL.B.)

For application materials please contact each faculty separately at the following addresses:

Admissions
Faculty of Law
University of Windsor
Windsor, Ontario
N9B 3P4

Faculty of Graduate Studies and Research
MBA Admissions
University of Windsor
Windsor, Ontario
N9B 3P4

TERM PLANNING

First and Second Years

The first two years of study of the integrated program will consist of the regular first-year programs of each faculty.

Third and Fourth Years

The third and fourth years of the integrated program will be devoted to required and elective courses offered in both the Faculty of Law and the Faculty of Business Administration.

In the Faculty of Business Administration program students will be required to take five candidate-level courses. These must include Business Policy 75-698 and four courses selected from a minimum of two of the following areas: Accounting, Administrative Studies, Finance, Management Science, Marketing, and Policy and Strategy. In addition, the M.B.A. major paper must have a substantial legal component.

In the Faculty of Law, the student will enroll in courses for a minimum of forty credits. These must include Torts, Civil Procedure, one course from the Legal Perspectives Group, and one course requiring a substantial paper that must account for at least 50% of the student's grade in the course. The M.B.A. paper will ordinarily satisfy this requirement, subject to the approval of the Faculty of Law Academic Programs Committee.

In additon to the requirements outlined above, the candidate must choose three additional candidate-level M.B.A. courses or a further three law courses totaling at least nine credit hours or any equivalent combina-

tions. The student's elective choices shall be reviewed by the Committee of Directors in light of the student's personal and career objectives, and the necessity of scheduling core business and law courses.

ADVANCEMENT

First and Second Year: Standing in the top third of the class; no Faculty of Law course grade lower than C.

Third and Fourth Year: In courses taken in the Faculty of Business Administration, candidates must attain at least one A- grade and not receive any grades below B. In courses taken in the Faculty of Law, candidates must attain in each year at least one grade of B or above and must not receive any grade lower than C.

Candidates who fail to meet the above standards may be advanced upon the approval of the Committee of Directors if such action is warranted. Candidates who either fail to advance from Second Year to Third Year or who choose to leave the program will be free to continue on for both degrees, but within normal degree requirements, and subject to any conditions set out by the two Faculties. Students leaving the program after Third Year and who have taken the appropriate electives, may petition the Faculty of Business Administration for the M.B.A. degree.

YEAR	LAW STREAM	BUSINESS STREAM
I	Law I	Qualifying Year - MBA
II	Qualifying Year - MBA	Law I
III*	Candidate Year - MBA Law II & III	Candidate Year - MBA Law II & III
IV*	Candidate Year - MBA Law II & III	Candidate Year - MBA Law II & III

* During Stages III and IV, students will be registered in the Faculty of Law.

Students with an Honours Bachelor of Commerce Degree

Students holding an Honours B.Comm. degree may obtain both the LL.B. and M.B.A. degrees without the assistance of a special integrated program. However, by submitting applications simultaneously to both faculties and indicating an interest in the program, such students may be granted a deferred admission to whichever degree program he or she elects to take second. This special deferred admission will be revoked if the applicant's performance in the first program fails to meet the first-year academic standards of the program. In such case the applicant may re-apply for regular admission to the second degree program.

Note: The University reserves the right to make changes in the integrated program and any rules or regulations applying to it.

3.3 Course Descriptions

Courses below are listed according to the informal administrative units of the Faculty.

All courses listed will not necessarily be offered in a particular semester or year.

Special permission to enter courses without the stated prerequisites must be arranged with the Dean and the instructor involved.

All 500-level courses are four lecture hours per week. All 600-level courses are three lecture hours per week.

3.3.1 ACCOUNTING

70-550. Financial Accounting - Introductory

An introduction to the accounting process emphasizing accounting concepts, standards and procedures that guide the preparation, intepretation and reporting of financial accounting information. The specific purposes of the course are to:

1) examine the objectives and characteristics of financial information reports;

2) gain an understanding of accounting control systems necessary in order to generate accounting information reports that are use-

ful to internal and external users, taking into consideration the costs vs. the benefits, and;

3) provide a strong foundation for subsequent courses in accounting and finance. (4 lecture hours a week).

70-551. Financial Accounting - Intermediate

An intermediate financial accounting course covering the theory and practice of financial statement preparation and reporting. The emphasis will be on asset valuation and the related impact on income measurement, problems related to the movement of liabilities and the accounting for income taxes, and the measuring and reporting of shareholders' equities. (Prerequisite: 70-550 or 70-152 or equivalent with a minimum C grade). (4 lecture hours a week).

70-552. Managerial Accounting

The development and use of accounting information in performing the managerial functions of planning, controlling, decision-making and performance evaluation. Emphasis is on the practical applications of cost accumulative sysstems in the decision making process. (Prerequisite: 70-550 or 70-256 or equivalent with a minimum C grade). (4 lecture hours a week).

70-650. Contemporary Thought in Accounting

Evaluation of contemporary accounting thought. (Prerequisite: 70-552 or equivalent with a minimum B grade.)

70-651. Accounting Theory Development

An examination of the nature, objectives, methodology, and problems of accounting theory instruction and verification, and the objectives of financial statements in order to provide a frame of reference with which to evaluate current developments in accounting theory. (Prerequisite: 70-551 or equivalent with minimum B grade).

70-652. Assets and Equities

An analysis of the properties of accounting data and an examination of accounting concepts and standards within the capital markets relating to the determination, measurement, classification, and reporting of assets, equitites, and income. (Prerequisite: 70-551 or equivalent with a minimum B grade).

70-653. Contemporary Accounting Theory

Evaluation of contemporary theory in the measurement and reporting of income. Coverage includes an examination of various valuation concepts and arguments related to their use. Related topics also included are general price-level accounting and capital maintenance concepts. (Prerequisite: 70-551 or equivalent with a minimum B grade).

70-654. Auditing I

An introductory course in auditing which encompasses theoretical and practical approaches to auditing. Study is given to generally accepted auditing standards, internal control, audit procedures and reports, other related auditing topics, as well as the legal and professional responsibilities of the auditor. (Prerequisite: 70-551 or 70-352 or equivalent with a minimum C grade).

70-655. Auditing II

The study of the auditing profession and the general concepts of auditing. Emphasis is placed on theory rather than practice. (Prerequisite: 70-654 or 70-460 or equivalent with a minimum B grade).

70-656. Taxation I

Designed to provide the student with a knowledge and understanding of the Canadian federal income tax structure with respect to personal and corporate taxation and other tax topics. The course examines both the theoretical aspects and practical problems in these areas. (Prerequisite: 70-550 or 70-152 or equivalent with a minimum C grade).

70-657. Taxation II

Theory and practice of Canadian income tax. Special emphasis is placed on the taxation of corporations. (Prerequisite: 70-656 or 70-461 or equivalent with a minimum B grade).

70-658. Contemporary Throught in Management Accounting

Evaluation of contemporary accounting thought as a basis for planning and control. (Prerequisite: 70-552 or equivalent with a minimum B grade).

3.3.2 ADMINISTRATIVE STUDIES

71-540. Management and Organizational Behaviour
A contingency view of management as the process of organizing resources to set and accomplish organizational goals. Three approaches are emphasized and integrated: the systems approach (environmental issues); the process approach (the functions of planning, organizing, controlling and leading); and the behavioural approach (individual and group performance in organizations). Cases and readings are used, especially in the behavioural approach. (4 lecture hours a week).

71-541. Personnel Management
This course is concerned with the management of human resources in the organization and the role of the personnel function in this task. The emphasis is on imparting an overall understanding of the personnel function and on discovering ways of increasing the contribution of human resource management towards the achivement of organizational effectiveness. Class discussion and exercises will cover such topics as human resource planning, recruitment and selection, orientation and development, performance appraisal, compensation and employee services. (Prerequisite: 71-540). (4 lecture hours a week).

71-542. Labour-Management Relations
This course is concerned with the most important issues of labour-management relations. Particular attention is given to the history and structure of labour unions, labour legislation, the development and administration of labour agreements (including contract negotiation through collective bargaining, grievance procedures, and arbitration), and the resolution of labour-management conflicts. (Prerequisite: 71-540). (4 lecture hours a week).

71-640. Organization Theory and Design
This course examines structures and processes within organizational systems and organization/environment systems. It includes the following topics: the nature of organizatons; the impact of external factors such as environment and technology; the impact of internal factors such as size, goals, social structure, differentiation, integration, professionalism and control. (Prerequisite: 71-540 or equivalent).

71-641. Organizational Behaviour and Development
The course uses theoretical and practical frameworks to analyze the behaviour of individuals and groups within organizations. Special emphasis is placed on the management of change and organizational development. (Prerequisite: 71-540 or equivalent).

71-642. Interpersonal Dynamics in Administration
A wide range of readings (both business and non-business) are used to develop insights into human resource problems encountered at the middle and upper levels of management. Each problem is illustrated with a case, and the insights from the readings are applied to the case to make recommendations in a situation where there is no single answer. (Prerequisite: 71-540 or equivalent).

71-643. Cross-Cultural Issues in Management
The course focuses on the cross-cultural problems and issues that confront North American managers both at home and in the environment of international business. Background material, readings, cases, and exercises will involve the student in the issues tha confront the international manager. A major objective is to develop a sensitivity that will enhance the student's ability to operate in the complex environment of multi-cultural business. (Prerequisite: 71-540 or equivalent).

71-644. Personnel Selection and Criterion Development
The objectives of this course are to provide the advanced student with a thorough understanding of the various selection processes and methods of measuring performance. Topics will include: recruitment; various selection methods such as paper and pencil tests; work performance, subjective and objective; job analysis; validity issues; testing issues; affirmative action and discrimination as they relate to the Canadian Human Rights legislation. Emphasis will be on class discussion and group exercises to facilitate under-

standing. (Prerequisite: 71-541 or equivalent).

71-645. Reward Administration and Planning

The course focuses on the application of current behavioural research to the management of reward systems within organizations. Special emphasis is given to the administration and planning of salaries, wages, contingent pay, benefit and non-financial rewards and to the clarification of the linkages between rewards and desired behaviours. (Prerequisite: 71-541 or equivalent).

71-646. Labour Relations and Public Policy

A graduate seminar concerned with the role of government in union-management relations. Review and evaluation of agencies established by the state to implement those social policies which are designed to promote industrial peace. (Prerequisite: 71-541 or equivalent).

71-647. Discrimination in Employment

This course will include lectures and cases on discrimination in employment on the basis of sex, race, age, religion, handicap and other protected categories. The role ofthe union and management in dealing with issues such as discrimination in hiring, affirmative action, equal pay, discrimination in training and promotion will be discussed. The human rights legislation in Canada and the U.S. will provide the framework for examining these issues. (Prerequisite: 71-541 or 71-542 or equivalent).

71-648. Topics in Administrative Studies

A reading and research seminar dealing with major concepts and important current problems in the areas covered by Administrative Studies, *viz.* Industrial Relations, Organizational Behaviour and Personnel Management. The precise topic to be covered in a particular semester will vary according to current interest and faculty availability, and will be announced in the previous semester. Interested students should consult the Administrative Studies Area Head to identify the particular offering for a given semester. (Prerequisite: Consent of Instructor).

71-649. Research Methods in Administrative Studies

The course focuses on the role of behavioura research in personnel and industrial relations management decision-making. Emphasis is placed on the definition of information needs research design, and the evaluation of research results. This course is strongly recommended for students who wish to do an empirical study in the Administrative Studies area. (Prerequisite: 71-443 or equivalent).

3.3.3 FINANCE

72-570. Introduction to Financial Management

Basic requirement of all students enrolled in MBA program. Topics include the institutional environment; long-term investment decisions; long-term sources of funds; short and intermediate-term sources of funds dividends and valuation; financial analysis and control; working capital management external expansion and risk-return relationships in finance. (4 lecture hours per week)

72-571. Financial Management and Policy

An intermediate-level course incorporating short- and long-term considerations. Topics include working capital management; capital and budgeting; rish and uncertainty; long-term financial decisions. (Prerequisite: 72-570). (4 lecture hours a week).

72-572. Investment Principles

A course covering financial markets, investment alternatives, the concepts of risk and return, market efficiency; and an introduction to portfolio theory and management. (Prerequisite: 72-570). (4 lecture hours a week).

72-670. Investment Analysis and Management

Economic background to securities analysis types of corporate securities for investment theory and mechanics of investment; general analysis and valuation procedures; valuation of fixed income securities and common stocks; procedures in analysis of goverment industrial, financial and public utility securities; portfolio management. (Prerequisite: 72-572).

72-671. Portfolio Management
Objectives of individual and institutional portfolios. Security selection, diversificiation, marketability, risk, and return in portfolio construcion. Timing and formula plans, bond portfolio problems, performance measurement, trading problems, tax planning, supervision, quantitative techniques for portfolio management, regulations. (Prerequisite: 72-572).

72-672. Financial Management (Short- and Intermediate-Term)
The working capital problems of business enterprises; function and theory of working, capital; sources of working capital; factors determining working capital needs; techniques of forecasting needs. (Prerequisite: 72-571).

72-673. Corporate Financial Strategy and Policy
The course incorporates a conceptual and practical evaluation of the long-term financial decisions of the firm. Emphasis is placed on the implications of various long-term decisions on the value of investors' wealth. Questions such as the efficient allocation of scarce resources, optimal capital structure, and divident policy among others will be discussed from both a corporate and capital market perspective. Market response and whether the market is efficient with respect to corporate financial decisions will also be considered. (Prerequisite: 72- 571).

3.3.4 MANAGEMENT SCIENCE

73-500. Quantitative Methods For Business
This course is designed to equip students with some of the analytic tools which are necessary for the study of decision-making processes in a business organization. Topics include statistical tools such as the presentation of data, probability and probability distributions, estimation, hypothesis testing, analysis of variance, regression, correlation, and operations research techniques such as linear programming, decision analysis and inventory control. (4 lecture hours a week).

73-501. Introduction to Computers for Management
An introduction to the computer and its role in the management of organizations. Topics include computer software, hardware, and their integration into effective management information systems. Students will be instructed in a programming language and be introduced to common computerized applications such as statistical packages, work processing, spreadsheets, linear programming, transportation, PERT/ CPM and simulation. (Prerequisite: 73-500). (4 lecture hours a week).

73-502. Production Management
A study of problems in and managerial techniques for designing and operating production and operations systems. Topics may include capacity planning, location and layout of faciltites, production planning, scheduling, quality control, materials management, MRP and forecasting. (Prerequisite: 73-500). (4 lecture hours a week).

73-600. Advanced Statistical Techniques in Management
An advanced course in statistical tools of decision making. Topics include non-parametric statistics, multiple regression analysis and other multivariate techniques, and forecasting. (Prerequisite: 73-500 or equivalent).

73-601. Advanced Management Science
A study of quantitative techniques for management decision- making and their applications. Topics include non-linear programming, dynamic programming, integer programming, goal programming, network models, inventory models, queueing models and Markov decision processes. Individual presentations from students may be required. (Prerequisites: 73-501 and 73-502 or equivalents).

73-602. Current Topics in Operations Management
A study of the more recent issues in operations management and their impact on the traditional production/operations management. The course will examine the role of manufacturing in the corporate strategy; the corporate, national and international environments of operations management. Topics

discussed may include such recent developments as Group Technology (GT), Just- in-Time Production (JIT), Factory-of-the-Future (FOF), Computer-Integreted-Manufacturing and Manufacturing Strategy. The emphasis is on competing through manufacturing. Individual reports from students may be required. (Prerequisite: 73-502 or equivalent).

3.3.5 MARKETING

74-530. Introduction to Marketing Management
An introduction to the macro and micro environment of marketing. The course will review marketing's role in the economy as well as marketing's function within the business firm. Emphasis will be placed on the major elements of the marketing mix (i.e., product, price, place and promotion). Objectives of the course are to provide an overview of the marketing process and an introduction to management decision-making in marketing. (4 lecture hours a week).

74-531. Consumer Behaviour
An analysis of the concepts and theories of human behaviour as they relate to the purchase and consumption of products and services and their implications for marketing decisions. (Prerequisite: 74-530). (4 lecture hours a week).

74-532. Research Methods in Marketing
An introduction to the theory and methods of marketing research with the aim of supporting marketing strategy decision-making. Stressing the philosophy of science, the course addresses research design and planning, data collection, and data analysis techniques. (Prerequisites: 74-503 and 73-500 or equivalent). (4 lecture hours a week).

74-631. Seminar in Consumer Behaviour
A study of analytical concepts and research techniques derived from the behavioural sciences or developed from consumer behaviour research. A significant objective of the course is the application of such concepts and techniques to the solution of marketing problems. (Prerequisite: 74-531).

74-632. Seminar in Marketing Research
An advanced course assuming familiarity with the conceptual research process, characteristics of basic data collection modes an measurement, hypothesis testing, regression analysis, and analysis of variance. Utilizing a discussion format, the course offers a review of current marketing research literature concerning:
1) examinations of properties of familiar data collection and analysis techniques;
2) examples of their application, and;
3) introduction to more advanced data collection and analysis methods. (Prerequisite: 74-532).

74-633. Marketing Channels and Logistics Management
A seminar covering all major issues relating to distribution activities at a micro and macro level. Topics covered include the development of channel systems, the behavioural and legal aspects of channel relationshps, and approaches to total distribution system management. (Prerequisite: 74-530).

74-635. International Marketing Strategy
A study of the problems faced by Canadian businesses when exploring and distributing to foreign markets. A significant objective of the course is to explore, through research findings, strategies that would improve Canada's international marketing efforts. (Prerequisite: 74-530).

74-636. Advanced Advertising Management
An advanced study of the mangement of the advertising function. Topics for discussion will include the development of the overall promotional plan, determination of the advertising budget, formulation of the advertising campaign, media selection, timing of expenditures, and evaluating advertising effeciveness. Consideration is also given to public policy issues including the legal, social and ethical aspects of advertising. (Prerequisite: 74-530).

74-638. Special Topics in Marketing
This course is of varying content dealing with topical issues in marketing. The course might focus on a specific functional area in marketing or a particular environment for the application of marketing concepts. Administration of the course varies as appropriate with its content and might take on a literature survey, research project, ex-

periential, or other format. (Prerequisite: Candidate-year standing and permission of the instructor).

74-639. Seminar in Marketing Strategy and Planning

An analysis of the formation of marketing strategies and plans. Topics covered will include business definitions, developing marketing objectives, selecting market targets, developing all aspects of the marketing mix, and evaluating marketing performance. Marketing decision models, portfolio techniques, generic strategies, PIMS, and related topics will also be covered. (Prerequisite: Candiate-year standing and a minimum of four previous marketing courses).

3.3.6 BUSINESS POLICY AND STRATEGY

75-590. The Legal Environment of Business

A survey of the law as it applies to business administration in Canada. Lectures and case discussions are utilized to cover the key areas of the law including; the role of the courts, torts, contracts, special types of contracts, real property, forms of business organization, and credit transactions. (4 lecture hours a week).

75-680. Managing the International Enterprise

A strategic management approach to the analyses and integration of cultural, legal, political, economic, environmental and institutional factors as they relate to the problems of administering viable multinational and transnational enterprises. Particular emphasis is given to developing managerial perspective in international payments, technology, trade and investment areas through the use of models and case studies. (Prerequisite: Candidate-year standing).

75-681. Global Business Strategy

A critical evaluation of contemporary models, theories and processes as they apply to the international linkages of functional, business-unit and corporate levels in global strategic management and operational decision making. Special attention is given to case studies regarding the process of developing and maintaining an effective strategic capability in a dynamic global environment. (Prerequisite: 75-680).

75-682. Seminar in International Business

An advanced research seminar in key problem areas of international business. Selected problems typical of those confronting contemporary multinational and transnational enterprises will be researched using models, theories, secondary information and empirical data collecated from the inter-regional and international communities of the Windsor-Detroit area. Proposed solutions and recommendations will be presented for class discussion. (Prerequisite: 75-680).

75-685. Strategic Planning

A study of business strategic planning for an uncertain future. Utilizing a combination of case studies, lectures and research seminars, these topics will be covered; environmental analysis, scenario construction, strategic issues analysis, strategic plan development, strategic planning techniques, strategic planning systems and the politics of strategic planning in the context of the single business firms and the diversified corporation. (Prerequisite: Candidate-year standing).

75-686. Industry Analysis and Competitive Strategy

An in-depth study of business strategy for developing a profitable position in a given product-market segment that is defensible against competitors. The course aims at developing a working understanding of the fundamental determinants of competition in industries and the factors that shape the competitive success or failure of firms. It develops a framework for analyzing an industry and its array of competitors and provides anlalytic techniques for making the strategic decisions concerning capacity expansion, vertical integration, divestment and entry into new industries. (Prerequisite: Candidate-year standing).

75-687. Strategies for Firms in Crisis in Mature and in Declining Industries

As North America moves into the post-industrial era, many firms face crises brought on by declining growth rates, increased

foreign competition, product substituion or rapid technological change. This course begins with a structural analysis of competititon in hostile environments (e.g., mature and declining industries) and examines such topics as exit barriers, wars of attrition and organizational implications of maturity. The focus then shifts to the strategic alternatives available to firms including turnaround, retrenchment, merger, managed decline and divestiture.

75-688. Strategic Management in Not-for-Profit Organizations

This course is designed for the career manager (or those planning such) in public sector or private voluntary organizations. It begins with an examination of the overall process of strategic decision making and strategy formation and then pursues in detail the following topics: Structural problems of Services, the behavioural theory of not-for-profit organizations (NPO's), the community network of NPO's, strategic planning process, organization design, control system and their impact on strategy, financial management, power and politics in and around NPO's. The course will include case analysis, seminar discussions with managers of community organizations, site visits, and a community project. (Prerequisite: Candidate-year standing).

75-689. Managing the Business-Government Interface

An advanced study of administrative systems and processes linking public and private business sectors. This includes strategic use of relationships between private business firms and governments. Complex business-government systems and relationships are analyzed using information readily available from governmental sources, trade associations and case histories. (Prerequiste: Candidate-year standing).

75-690. Small Business: New Venture Formation and Management

A course designed for those who are contemplating a career in small business as entrepreneurs or consultants to the smaller firm. The course combines hands-on experience (through an internship in consulting at the Business Resource Centre) and field research. (Prerequisite: Permission of Instructor and all required M.B.A. courses).

75-691. Research Methodology for Managers

Research methodology and its role in business problem solving. Topics include: problem formultion, research strategy and design, data analysis and report writing. The course also includes a user-friendly introduction to multivariate methods. (Prerequisite: Candidate-year standing).

75-692. Independent Study

An independent study course designed to allow students to pursue their own interests in important business areas which are not thoroughly covered in existing courses. The student will undertake an original paper or research project on a topic which would enhance his or her program of study. This independent study and the major paper must not substantially be one and the same. (Prerequisite: Candidate-year standing and permission of the respective instructor).

75-698. Business Policy and Strategy

As the capstone of the M.B.A. program this course integrates the knowledge of prior courses and focuses them on strategy making as the central function of general management. Concepts, theory, and current practice coordinated with selected cases from dynamic business situations are combined to study in depth the strategy formulation and implementation processes in the context of the single and multi-business firms. (Prerequisite: Candidate-year standing and all other required M.B.A. courses).

75-796. Major Paper

4 CHEMISTRY AND BIOCHEMISTRY

4.1.1 OFFICERS OF INSTRUCTION

University Professor

Tuck, Dennis G.; B.Sc., Ph.D., D.Sc. (Durham), F.C.I.C., F.R.S.C. (U.K.) - 1972.

Professors

Thibert, Roger J.; B.A. (Western Ontario), M.S. (Detroit), Ph.D. (Wayne State), F.C.I.C. - 1953.

Rutherford, Kenneth G.; B.A. (Western Ontario), Ph.D. (Wayne), F.C.I.C. - 1958.

Wood, Gordon W.; B.Sc., M.Sc. (Mount Allison), Ph.D. (Syracuse), F.C.I.C. - 1963. (Vice-President, Academic).

McKenney, Donald J.; B.Sc., M.Sc. (Western Ontario), Ph.D. (Ottawa) - 1964.

Lin, Che Shung; B.Sc., M.Sc. (National Taiwan), Ph.D. (Saskatchewan), - 1967.

McIntosh, John M.; B.Sc. (Queen's), Ph.D. (M.I.T.), F.C.I.C. - 1968.

Drake, John E.; B.Sc., Ph.D., D.Sc. (Southampton), F.C.I.C. - 1969. (Head of the Department).

McGarvey, Bruce R.; B.A. (Carleton College), M.A., Ph.D. (Illinois), F.C.I.C. - 1972.

Taylor, Norman F.; B.A., M.A., D. Phil. (Oxford), F.R.S.C. (U.K.) - 1973.

Aroca, Ricardo; B.Sc. (Chile), Ph.D. (Moscow State) - 1985.

Associate Professors

Rumfeldt, Robert C.; B.Sc. (Loyola, Montreal), Ph.D. (Alberta) - 1965.

Hencher, J. Lawrence; B.A., Ph.D. (McMaster) - 1967.

Taylor, Keith E.; B.Sc., Ph.D. (Toronto) - 1976.

Mutus, Bulent; B.Sc., M.Sc. (Waterloo), Ph.D. (Manitoba) - 1982.

Stephan, Douglas W.; B.Sc. (McMaster), Ph.D. (Western Ontario) - 1982.

Assistant Professors

Keay, Brian A.; B.Sc., Ph.D. (Waterloo) - 1985.

Lee, Lana; A.B. (Mount Holyoke), Ph.D. (Alberta) - 1986.

Adjunct Professors

Asselstine, Harold S.; B.Sc., M.D. (McGill), Medical Director, Medical Laboratories of Windsor - 1969.

Draisey, Thomas F.; M.B., Ch.B. (Bristol), Department of Pathology, Salvation Army Grace Hospital and Windsor Western Hospital Centre - 1969.

Zak, Bennie; B.S., Ph.D. (Wayne), Department of Pathology. Wayne State University School of Medicine - 1975.

Spitz, Werner U.; M.D. (Hadassah), Wayne County Medical Examiner - 1978.

Hyde, Trevor; M.B., Ch.B., M.D. (Liverpool), M.C. Path. (United Kingdom), Department of Pathology, Hotel Dieu Hospital, Windsor 1969.

Findlay, Wallace I.; B.Sc. (Dalhousie), M.Sc., Ph.D. (McGill), Soil Scientist, Research Station, Harrow - 1986.

Adjunct Associate Professors

Monforte, Joseph R.; B.A. (Rutgers), Ph.D. (Maryland); Wayne County Toxicologist - 1978.

Foreback, Craig C.; B.A., Ph.D. (South Florida), Director of Clinical Chemistry, Henry Ford Hospital - 1986.

Yee, George E.; M.D. (Manitoba), F.R.C. Path., Director of Pathology Laboratories, Metropolitan General Hospital - 1986.

Adjunct Assistant Professor

Caines, Patrick S.; B.Sc., Ph.D. (Windsor), Clinical Biochemist, Metropolitan General Hospital and Leamington District Memorial Hospital - 1987.

4.2 Programs of Study

The Department provides facilities for students wishing to proceed to the degrees of Master of Science and Doctor of Philosophy. Included in the offerings of the Department of Chemistry and Biochemistry are programs in Clinical Chemistry.

4.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

In addition to the general requirements outlined in 1.5.2, the following requirements must be met by all students proceeding to the Ph.D. degree:

1) *Course Work:* Candidates must complete successfully at least eight and not more than twenty courses.

2) *Recommended Courses:* the sequence 59-550, 59-570, 59-655, 59-650, or the sequence 59-560 or 59-562, 59-520, 59-620, 59-680, 59-682 depending upon the area of specialization.

The remaining courses will be chosen from the available graduate offerings in the student's field or from related and cognate courses, with the approval of the Department. In addition to the above, all students in the Clinical Chemistry program must take 59-589 and 59-689. Advanced credit up to a maximum of four courses may be given for graduate courses completed elsewhere. Advanced credit up to a maximum of two courses may also be given for equivalent courses taken as an undergraduate, provided that a grade of at least A- was achieved in the courses.

3) *Seminars:* In addition to the above course work, students must attend the regular department Seminar (59-795) throughout their Ph.D. studies and present at least one seminar on their research as a fulfillment of this requirement.

4) *Dissertation:* The principal requirement for the Ph.D. degree is the presentation of a dissertation which embodies the results of an original investigation (59-798). For general requirements of the dissertation, see 1.5.3.

A student who fails to achieve satisfactory performance in all aspects of the program (e.g., course work, seminars and dissertation work) may be required to withdraw.

5) *Doctoral Committee:* Within one year after registration, the Head of the Department will in consultation with the Dean of Graduate Studies and Research, establish the graduate student's doctoral committee. This committee will consist of the student's supervisor as chairperson, and at least two other members of the Chemistry and Biochemistry Department; at least one faculty member of another department must be invited to join the committee. This committee will meet with the student at least once to review his or her progress.

6) *Examinations:* In addition to examinations connected with course work, all students proceeding to the Ph.D. degree must meet the following requirements:

(a) *Comprehensive Examination:* A reasonable mastery of the field of specialization will be tested by an examination which will normally be given not later than the end of May of a student's second year of graduate study.

(b) *Final Examination:* Each candidate will take a final oral examination in defence of the dissertation on the recommendation of the doctoral committee. An external examiner, chosen for acknowledged scholarship in the appropriate field of chemistry, will normally be present during the oral examination. The external examiner will be selected by the doctoral committee, subject to the approval of the Head of the Department and the Dean of Graduate Studies and Research. The examination will be public and will involve a short seminar presentation by the candidate. The examination will be chaired by the Head of the Department or delegate.

4.2.2 DOCTORAL PROGRAM IN CLINICAL CHEMISTRY

The Ph.D. program in Clinical Chemistry is approved by the certification committee of the Canadian Society of Clinical Chemists as fulfilling all of the academic requirements, and one year of the required practical experience. The Doctoral Program is accredited by the Commission on Accreditation in Clinical Chemistry (U.S.A.).

4.2.3 THE MASTER OF SCIENCE DEGREE

In addition to the general requirements and stipulations outlined in 1.6.2 for the Master's degree, the following requirements must be met by students proceeding to the M.Sc. degree.

1) *Course Work:* Candidates must complete successfully at least four and not more than ten courses to be chosen from the available offerings in the student's field, or from related and cognate courses, with the approval of the Department. In addition to the above, all students in the Clinical Chemistry program must take 59-589. Advanced credit up to a maximum of two courses may be given for equivalent courses taken as an undergraduate, provided a grade of at least A- was achieved in the course.

2) *Seminars:* In addition to the above course work, students must attend the regular departmental Seminar (59-795) throughout their M.Sc. studies. Those who have not previously taken 59-400, or its equivalent, must also register in 59-500.

3) *Thesis:* A student must undertake original research and embody the results in a Thesis (59-797). With the permission of the Department, a student in the Clinical Chemistry program may substitute for the thesis a Major Clinical Chemistry Critique (59-796) upon which the student will be examined by the Committee.

A student who fails to achieve satisfactory performance in all aspects of the program (e.g., course work, seminars, thesis work or major critique) may be required to withdraw.

4) *Master's Committee and Final Examinations:* The Master's committee is chosen in the manner described in 1.6.2. The final examination will take the form of an open seminar in the presence of the Master's committee (*see* 1.6.2). The examination will be open to the public.

4.2.4 MASTER OF SCIENCE PROGRAM (CLINICAL CHEMISTRY)

A Master of Science Program in Clinical Chemistry is offered by the Department. In addition to the usual requirements for a M.Sc. degree, the students must complete 59-589. The remaining courses will be chosen from the available graduate courses in the students' field and from related and cognate courses with the approval of the Department. The Master of Science (Clinical Chemistry) Program is accredited by the Commission on accreditation in Clinical Chemistry (U.S.A.).

4.2.5 POSTDOCTORAL DIPLOMA PROGRAM IN CLINICAL CHEMISTRY

Admission Requirements

Postdoctoral trainees will be selected from candidates who hold a Doctor of Philosophy in Biochemistry or Chemistry. Trainees may also be chosen from graduates in the field of medicine, provided that their training in chemistry and biochemistry is demonstrably adequate.

Program Requirements

1) *Residence Requirements:* The postdoctoral diploma program is of two years duration on a full-time basis, i.e., twenty-four months. This period may not be counted as residence for a Ph.D. program at the University of Windsor.

2) *Course Work:* Trainees in this program must successfully complete the following minimum course work:

(a) Clinical Chemistry (59-680/681), Clinical Biochemistry (59-682/683), Principles of Disease (59-684) and

Diagnosis of Disease (59-685) or Analytical Toxicology (59-581).

(b) Seminar (59-795) to be taken each year in which the trainee is registered.

(c) Clinical Chemistry Laboratory Methodoiogy (59-589) and Clinical Chemistry Research and Development (59-689) for a total of 1500 hours. These courses will be in the form of practical laboratory experience at one or more of the following hospitals in Windsor: Grace Hospital; Windsor Western Hospital Centre; Hotel Dieu Hospital; Metropolitan General Hospital, and Henry Ford Hospital (Detroit, Michigan).

Trainees will be expected to undertake an original piece of research of publishable standard and to be prepared to present it at a scientific meeting. The research may be in the fields of Clinical Chemistry, Biochemistry of Disease, or Biochemistry.

3) *Additional Course Requirements:* A trainee may be required to take a minimum of six courses from the list given below. These courses will be assigned to the trainees as required in order to given them a thorough background in the appropriate areas of Chemistry, Biochemistry, and Biology. Advanced standing will normally be granted for courses previously taken.

58-302. Mammalian Physiology I
58-303. Mammalian Physiology II
59-321. Principles of Instrumental Analysis
59-365. Protein and Nucleic Acid Chemistry
59-520. Radiochemistry
59-560. Intermediary Metabolism I
59-561. Intermediary Metabolism II
59-563. Intermediary Metabolism II
59-564. Biochemical Lesions and Lethal Synthesis
59-565. Biological Transport and Membranes
59-566. Methods in Biology and Biochemistry
59-568. Enzymology
59-580. Endocrinology
59-660. Regulation and Control of Metabolism
59-661. Special Topics in Biochemistry
60-105. Introduction to Programming in FORTRAN
65-253. Statistics for the Sciences
71-540. Management and Organizational Behaviour

Any trainee who fails to maintain satisfactory standing in course work, Clinical Chemistry Laboratory Methodology (59-589) and Clinical Chemistry Research and Development (59-689), or research, may be required to withdraw.

4) *Diploma Committee:* The Head of the Department will establish the trainee's diploma committee in consultation with the Dean of Graduate Studies and Research. This committee will consist of four members, three of whom will be chosen from the Chemistry Department, and will include the Adjunct Professor at the appropriate hospital. The committee will meet with the trainee to review his or her progress as necessary.

Plan of Work for Postdoctoral Training Program

First Year (12 months)

September - April: course work and initiation of a research project. May - August: Clinical Chemistry Laboratory Methodology (59-589), 700 Hours minimum. This latter portion of time (17 weeks) will be spent obtaining practical experience in a hospital laboratory under the joint direction of a faculty member of the University and the pathologist, who is an Adjunct Professor in the Chemistry and Biochemistry Department at the University. During this period the trainee will be required to obtain a reasonable mastery of the various operations of a clinical chemistry laboratory. Rotation through the various areas of the laboratory, as well as various sections of the clinical chemistry laboratory, will be required. At this stage orientation regarding administration of the laboratory will be carried out.

Second Year (12 months) September - August

Remaining course work, if any, will be completed during the second year, and research will be continued. The time distribution between the hospital experience and University/Hospital research (59-689) will be on a 40%/ 60% basis in all the following periods:

1) Two months will be spent in special and developmental chemistry, and further experience in laboratory administration will be gained.

2) Four months will be spent in developmental chemistry, and the administration of a section of the clinical chemistry laboratory will be undertaken.

3) Six months will be spent in the administration of the clinical chemistry laboratory (gradually taking over the major administrative function of the entire clinical chemistry laboratory) under the supervision of the Adjunct Professor.

In order to ensure that the trainees obtain maximum experience in all the phases of clinical chemistry available in Windsor, rotation from hospital to hospital will occur as required during the latter training period.

Participation in Professional Meetings: During the second year, trainees will be strongly encouraged to attend a meeting of clinical chemists (e.g. Canadian Society of Clinical Chemists, American Association for Clinical Chemistry) and present a paper on the subject of their research. The subject of this paper will, if possible, be submitted for publication.

Trainees will also be required to participate in and give conferences dealing with Clinical Chemistry or Clinical Biochemistry on a regular basis along with other clinical chemists, graduate students in Clinical Chemistry and the Adjunct Professors from the affiliated hospitals.

The Postdoctoral Diploma is approved as fulfilling all of the academic requirements and the required practical experience by the certification committee of the Canadian Society of Clinical Chemists. The Postdoctoral Program is accredited by the Canadian Society of Clinical Chemists and the Commission on accreditation in Clinical Chemistry (U.S.A.).

4.3.1 COURSE DESCRIPTIONS

All of the courses listed will not necessarily be offered in any one year. Special topics courses may be taken several times provided the course content is different. Where prerequisites are not stated, consent of the instructor is required.

59-500. Seminar
Discussion of selected topics from current literature. (1 hour a week, both semesters; one semester course credit). (This course must be taken by all students unless they have credit for 59-400 or its equivalent).

59-520. Radiochemistry
Application of radiochemical techniques to various aspects of chemistry and related sciences. (3 lecture hours a week).

59-521. Special Topics in Analytical Chemistry
(Prerequisite: 59-321. (2 lecture hours a week).

59-531. Organic Chemistry of High Polymers
Condensation and addition polymers. Stereospecific polymerization. (Prerequisite: 59-230, 59-232, and consent of instructor). (2 lecture hours a week).

59-535. Special Topics in Organic Chemistry
(Prerequisite: 59-331, 59-333, and consent of instructor). (2 lecture hours a week).

59-541. Advanced Thermodynamics
Principles of thermodynamics and their application to chemical problems. (2 lecture hours a week).

59-542. Magnetic Resonance Spectroscopy
Theoretical and experimental aspects of nuclear magnetic resonance, electron spin resonance, nuclear quadrupole resonance and Moessbauer spectroscopy. (2 lecture hours a week).

59-543. X-ray Crystallography
Theoretical and experimental aspects of X-ray diffraction methods for the determination of molecular structures. Emphasis will be on single crystal techniques. (2 lecture hours a week).

59-545. Special Topics in Physical Chemistry
(2 lecture hours a week).

59-546. Advanced Topics in Spectroscopy
Theoretical and experimental aspects of microwave, infrared, visible and ultra-violet spectroscopy. (2 lecture hours a week).

59-550. Applications of Group Theory
Various applications of group theory to the study of inorganic and organometallic systems. (3 lecture hours a week).

59-551. Mechanisms of Inorganic Reactions
Applications of thermodynamics and kinetics to inorganic reaction mechanisms. (2 lecture hours a week).

59-560. Intermediary Metabolism I
Catabolism and the generation of phosphate bond energy. Laboratory exercises are associated with the analytical and preparative procedures of biochemistry. (Prerequsite: 59-231). (3 lecture, 3 laboratory hours a week).

59-561. Intermediary Metabolism II
Biosynthesis and the utilization of phosphate bond energy. Emphasis will be given to the biosynthesis of carbohydrates and lipids. (Prerequisite: 59-560). (2 lecture, 3 laboratory hours a week). (Limited enrollment).

59-562. Intermediary Metabolism I
The same as 59-560 but without laboratory. (Prerequisite: 59-231 or equivalent.) (3 lecture hours a week).

59-563. Intermediary Metabolism II
The same as 59-561 but without laboratory periods. (Prerequisite: 59-560 or 59-562). (2 lecture hours a week).

59-564. Biochemical Lesions and Lethal Synthesis
The consequences of important co-factors and vitamin deficiency in the whole animal. The biochemical mode and toxic actions of naturally occurring fluorinated fatty acids and related compounds. (Prerequisite: 59-560/561, or 59-562/563 or equivalent). (2 lecture hours a week).

59-565. Biological Transport and Membranes
Emphasis will be placed on the structure and functions of bacterial and mammalian membranes. Special consideration will be given to cations, carbohydrate and aminoacid transport mechanisms across cellular membranes. (Prerequisite: 59-560/561 or 59-562/563 or equivalent). (2 lecture hours a week).

59-566. Methods in Biology and Biochemistry
This course is designed to introduce the student to a variety of biochemical and biophysical techniques, and is composed of seven topics: chromatography I, chromatography II, centrifugation, electrophoresis, radioisotope methods, spectroscopy and tissue culture. (Students are required to participate in a minimum of four of the above topics which should be chosen in consultation with their major advisor). (Prerequisite consent of instructors). (2 lecture hours a week, 16 laboratory hours for selected experiments during the year, both semesters, one semester course credit). (Same as Biology 55-516).

59-568. Enzymology
The study of enzymes with special emphasis on enzyme mechanisms as determined from enzyme kinetics and protein modifications (Prerequisite: 59- 560/561 or 59-562/563 or equivalent, 59-464 or consent of instructor) (2 lectures a week).

59-570. Advanced Quantum Chemistry I
Schroedinger wave mechanics, atomic wave functions, rotational and vibrational spectroscopy of diatomic molecules. (Prerequisite: 59-341). (2 lecture hours a week).

59-571. Advanced Quantum Chemistry II
Treatment of many-electron atoms and simple molecules. (2 lecture hours a week)

59-572. Statistical Thermodynamics
Development of statistical thermodynamics and its application to theories of gases, condensed states and chemical equilibria. (2 lecture hours a week).

59-580. Endocrinology
Hormonal integration and regulation in animals; mechanisms of hormone action a

the molecular level; biosynthesis and metabolism of hormones; particular emphasis on human endocrinology. (Prerequisite: consent of instructor). (Same as Biology 55-556). (3 lecture hours a week).

59-581. Analytical Toxicology
Analysis of drugs and other toxic substances in biological fluids. The metabolism of drugs as well as the symptomology of poisoning of common therapeutic drugs and the more common industrial chemicals will be discussed. (Prerequisite: 59-562/563 or 59-360/361 or consent of instructor). (2 lecture hours a week).

59-589. Clinical Chemistry Laboratory Methodology
A detailed study of the existing clinical chemistry laboratory procedures. Seminars, papers, and field trips will be required. (Minimum 700 hours).

59-600. Directed Special Studies
A special course of studies with content and direction approved by the student's Research Advisor and Supervisory Committee. Although there may be no formal lecture requirements, the course will be equivalent to three one-hour lectures a week for one semester. The student will be required (a) to produce a critical review which will be assessed by his or her Supervisory Committee; the presentation and standard of the review must be appropriate for publication in a scientific journal; or (b) to spend one semester working in an agreed industrial setting; the quality of work will be assessed by the Supervisory Committee. (Prerequisite: approval of the Department).

Only Doctoral students may register for this course under (a) above; the course cannot be repeated for credit under this condition. Under normal circumstances, M.Sc. students may take this course only once; (b) Ph.D. students may register for two semesters of this industrial experience.

59-620. Advanced Analytical Chemistry
Special topics in the analysis of complex materials. (Prerequisite: 59-321). (2 lecture, 3 laboratory hours a week). (This course may be repeated for additonal credit provided that the subject material of the laboratory is different.)

59-621. Mass Spectrometry: Techniques and Applications
Practical considerations in achieving maximum selectivity and sensitivity of this analytical technique, including sample preparation, front-end separations and computerized data handling. Applications will be selected from current environmental, biochemical, and chemical literature. (2 lecture hours a week).

59-630. Synthetic Organic Chemistry I
A study of some important organic reactions with emphasis on their practical application in synthesis. (Prerequisite: 59-330/331). (2 lecture hours a week).

59-631. Synthetic Organic Chemistry II
A detailed study of organic reactions with particular reference to execution of multistage stereospecific synthesis and elaboration of complex structures. (Prerequisite: 59-330/331). (2 lecture hours a week).

59-633. Advanced Topics in Organic Chemistry
(2 lecture hours a week).

59-634. Advanced Topics in Organic Chemistry
(2 lecture hours a week).

59-636. Physical Organic Chemistry
A survey of structure and mechanism. (Prerequiste: 59-330/331, 59-440). (2 lecture hours a week).

59-640. Advanced Chemical Kinetics
Theoretical and experimental aspects of chemical kinetics in gas, liquid and solid phases. (2 lecture hours a week).

59-645. Advanced Topics in Physical Chemistry
Selected topics of current interest. (2 lecture hours a week).

59-650. Organometallic Chemistry I
Introduction to the synthesis, structure and bonding of organometallic compounds, their reactivity and applications. (2 lecture hours a week).

59-651. Organometallic Chemistry II
A detailed study of selected advanced topics in organometallic chemistry. Typical subjects include (at the discretion of the instructors)

main group organometallic chemistry; thermochemical methods in organometallic chemistry; catalysis by organometallics, detailed structural studies. (Prerequisite: 59-650). (2 lecture hours a week).

59-652. Advanced Topics in Inorganic Chemistry and Organometallic Chemistry I

Topics to be arranged by the instructor, based primarily upon new developments in the field as illustrated by the current research interests of the faculty, as well as by a study of the current literature. (2 lecture hours a week).

59-653. Advanced Topics in Inorganic Chemistry and Organometallic Chemistry II

Topics to be arranged by the instructor, based primarily upon new developments in the field as illustrated by the current research interests of the faculty, as well as by a study of the current literature. (2 lecture hours a week).

59-655. Selected Topics in Inorganic Chemistry

Spectroscopic applications to inorganic systems. Typical of topics covered from year to year are optical spectroscopy, vibrational spectroscopy and normal coordinate analysis, e.s.r. and n.m.r. spectroscopy, and photoelectron spectroscopy. (2 lecture hours a week).

59-657. Ligand Field Theory

Discussion of crystal field theory and molecular orbital theory and their applications in the interpretation of spectral and magnetic properties of transition metal complexes. (Prerequisite: 59-550). (3 lecture hours a week).

59-660. Regulation and Control of Metabolism

Long term (genetic) and short term (allosteric) factors which control intracellular metabolism. (Prerequisite: 59-560/561 or 59-562/563 or equivalent). (2 lecture hours a week).

59-661. Special Topics in Biochemistry

(Prerequisite: 59-560/561 or 59-562/563 or equivalent). (2 lecture hours a week).

59-663. Protein Chemistry

Selected topics in protein chemistry. Alternate offerings of this course will focus on (a) glycoprotein structure and biological function and (b) thiol-disulfide chemistry as related to structure and biological function. (Prerequisite: 59-560/561 or 59-562/563, or equivalent, 59-365 or consent of instructor). (2 lecture hours a week).

59-670. Applied Quantum Chemistry

Discussion of topics such as Woodward-Hoffman rules, rotational and inversion barriers, hydrogen-bonding, and photochemistry. (Prerequisite: an introductory course in quantum chemistry). (2 lecture hours a week).

59-671. Special Topics in Theoretical Chemistry

Topics to be selected by request; e.g. molecular orbital calculations for organic and inorganic chemists. (2 lecture hours a week).

59-680. Clinical Chemistry I

A study of the chemistry, significance, and applications of current techniques in clinical chemistry. Term paper, field trips, and seminars will be required. (Prerequisite: 59-560/562 or equivalent and 59-321 or equivalent). (2 lectures a week).

59-681. Clinical Chemistry II

The continuation of Clinical Chemistry I. (Prerequisite: 59-680). (2 lecture hours a week).

59-682. Clinical Biochemistry I

A discussion of the biochemistry of human disease, including various aspects of physiological chemistry. Term paper and/or seminars will be required. (Prerequisite: 59-560/561 or 59-562/563 or equivalent). (2 lecture hours a week).

59-683. Clinical Biochemistry II

The continuation of Clinical Biochemistry I. (Prerequisite: 59-682). (2 lecture hours a week).

59-684. Principles of Disease

Introductory course in human pathology with special emphasis on chemical aspects of disease. An examination of the interrelationships and homeostatic control of the major biochemical parameters in health, and the cause and nature of the anomalies of these

parameters occurring in disease. (Prerequisite: Biology 55-110/111, 59-560/562 or equivalent and the consent of the instructor). (2 lecture hours a week and demonstrations).

59-685. Diagnosis of Disease
An advanced course in human pathology with special emphasis on the chemical aspects of disease. A case-oriented approach to the diagnosis of disease based primarily on examination of the biochemical parameters, with the aim not only of identifying the disease, but also of explaining the significance of the pertinent biochemical parameters. (Prerequisite: 59-684 and/or consent of instructor). (2 lecture hours a week).

59-686. Special Topics in Clinical Chemistry
(Prerequisite: 59-560/562 or equivalent). (2 lecture hours a week).

59-689. Clinical Chemistry Research and Development
Original research and comparative studies leading to the development of new clinical chemistry methods. Seminars and papers will be required. (Prerequisite: 59-589). (Minimum 800 hours).

59-795. Seminar

59-796. Major Clinical Chemistry Critique

59-797. Master's Thesis

59-798. Doctoral Dissertation

The Department strongly recommends the following cognate courses in the area of Biochemistry.

55-528. Molecular Biology of Growth and Development
An analysis at the molecular level of the growth and development of prkaryotes, lower eukaryotes, and their plasmids. (3 lecture and 1 hour demonstration/ seminar a week). (Team-taught).

55-529. Molecular Biology of Growth and Development
An analysis at the molecular level of the growth and development of plants and animals. (3 lecture and 1 hour demonstration/seminar a week). (Team-taught).

55-533. Plant Biochemistry
A general course in intermediary metabolism in plants, with emphasis on enzyme, protein synthesis, photosynthesis and secondary plant metabolites. (Prerequisite: 59-560/561 or 59-562/563, or equivalent). (2 lecture hours a week).

5 COMMUNICATION STUDIES

5.1.1 OFFICERS OF INSTRUCTION

Professors

Cunningham, Stanley B.; B.A. (Manitoba), M.S.L. (Pontif. Inst.), M.A., Ph.D. (Toronto) - 1961.

Romanow, Walter I.; B.A. (Saskatchewan), M.A. (Windsor), Ph.D. (Wayne State) - 1965.

Selby, Stuart A.; B.A. (Hamilton College, N.Y.), M.A., Ed.D. (Columbia) - 1970.

Edmunds, Hugh H.; B.A., B.Ed. (Saskatchewan), M.Ed. (Wayne State) - 1971.

Carney, Thomas F.; B.A., Ph.D. (London), D.Litt.et Phil. (UNISA) -1977.

Surlin, Stuart H.; B.S. (Roosevelt), M.S. (Illinois), Ph.D. (Michigan State) - 1977.

Associate Professors

Gerace, Mary; B.A., M.A. (Windsor), M.A. (Wayne State), J.D. (Detroit) - 1967.

Linton, James M.; B.A. (York), M.A. (Pennsylvania) - 1972. (Head of the Department).

King, Christopher R.; B.A. (Grinnell College), M.A., Ph.D. (Wisconsin) M.B.A. (York) - 1974.

Baer, Douglas; B.E.S., M.A., Ph.D. (Waterloo), - 1977.

Winter, James P.; B.J., M.J. (Carleton), Ph.D. (Syracuse) - 1981.

Lewis, Richard F., B.S. (Loyola College), M.S., Ph.D. (Syracuse) - 1983.

Cuthbert, Marlene; B.A. (Queen's), M.A. (Columbia), Ph.D. (Syracuse) - 1984.

Assistant Professor

Goldman, Irvin; B.A. (Winnipeg), M.S. (Purdue), Ph.D. (Iowa) - 1981.

Adjunct Assistant Professor

Marzotto, Esio J.; B.S.I.E., M.S.I.E. (Wayne State), Ed.D. (Wayne State) - 1973.

5.2 Programs of Study

5.2.1 THE MASTER OF ARTS DEGREE

In addition to the general requirements outlined in 1.6.2, the following requirements must be met by all students proceeding to the Master's degree.

Admission Requirements

Admission to the final year of the program is from an honours Bachelor's degree in Communication Studies or its equivalent from another university, including evidence of familiarity with basic quantitative research methods and communication theory. Students with a general degree, or an honours degree in another discipline, may be admitted to a minimum two-year Master's program requiring selected make-up courses.

In addition to the requirements given in 1.3, complete application for admission includes the following:

(a) three Confidential Report Forms;
(b) a statement of purpose in pursuing graduate studies of about 250 words;
(c) on request, acceptable performance in the Graduate Record Examination (GRE);
(d) for students whose native language is not English, a score of at least 550 on the TOEFL (Test of English as a Foreign Language).

Program Requirements

1) After receiving counselling within the Department, the candidate may proceed toward the degree in one of the following programs of study:

(a) six courses including Communication Studies 40-500, a graduate-level research methods course, a graduate-level theory course, plus a thesis or thesis media production. At least four courses must be at the 500 level in Communication Studies; the others may be at the

400 level and/or in a cognate field;

(b) eight courses including Communication Studies 40-500, a graduate-level research methods course, a graduate-level theory course, plus a major project. At least six courses must be at the 500 level in Communication Studies; the others may be at the 400 level and/or in a cognate field.

2) The thesis or thesis media production will be the normal requirement, but in place of a Thesis students may apply, with departmental permission, to substitute two additional courses and a major project, which they must defend. The thesis media production will be a social sciences production equivalent to a research thesis, but may be submitted primarily in non-print form with appropriate scholarly documentation.

5.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year.

40-500. Graduate Proseminar
A survey of the discipline of communication studies, and of current theory and research in the field. Required of all graduate students. (2 lecture hours, 1 laboratory hour a week).

40-505. Production Research and Design
An advanced practical study of production methods and problems examined in the context of recent theoretical developments. (2 seminar hours, laboratory hours to be arranged).

40-520. Theory and Practice in Facilitating Small Group Communication
An examination of current theory, research, and methods in behavioural and communication modes within small group settings. (3 hours a week).

40-521. Theory and Practice in Designing Organizational Communication
An examinaton of theory, research, and methods analyzing interactional and communication flow within an organizational setting. (3 hours a week).

40-522. Mass Media Marketing Communication and Consumer Behaviour
An examination of consumer reactions to marketing communication strategies. Particular attention will be paid to the development of "consumerism" in the light of mass media behaviour. (2 hours a week).

40-526. Theories and Principles of Instructional Communication
An examination of current informational, social and behavioural theories of instruction, with emphasis on the principles of systems design. (Prerequisite: consent of the Department). (3 hours a week).

40-527. Instructional Communication Design
The design, application, and testing of instructional audiovisual modules. (Prerequisite: 40-326, 40-526 or permission of instructor). (3 hours a week).

40-530. Mass Media and the Public Interest
An examination of the role of the mass media in current public issues. Case studies vary from year to year. (2 hours a week).

40-535. Communication Research Methodology
An examination of the role of quantitative approaches to the study of communication and mass communication, including such topics as content analysis, experimental and survey research, and the use of bivariate and multivariate statistics. (3 hours a week).

40-536. Topics in Advanced Communication Research Methods
The use of advanced quantitative multivariate analytical methods appropriate to communication research. Procedures discussed will include regression/general linear model approaches, factor analysis (exploratory and confirmatory), the analysis of qualitative data

(e.g. log-linear techniques), and techniques for dealing with errors in measurement in structural equation models. These will be applied to problems in communication research. (3 hours a week).

40-537. Qualitative Approaches to Communication Research
An examination of humanistic and critical approaches to the study of communication and mass communication. Topics will be selected from a range of cultural studies and interpretive sources. (3 hours a week).

40-552. The Press and Global Newsflow
An examination of the social effects of the global flow of press news information in the context of technological innovations. The efforts and experiments in various countries, especially in the Third World, to adapt Western news concepts and technologies to local and regional requirements are studied. (2 hours a week).

40-555. The Development of Canadian Communication Policy
An examination, in an historical context, of the factors influencing the development of policy toward the mass media. (2 hours a week).

40-557. Current Problems in Canadian Communication Policy
An examination of the interaction of governmental, corporate, and public interests in telecommunication, viewed in a legal and constitutional framework. (2 hours a week).

40-560. Communication and Development
A study of the economic, social, and political factors which determine the structure and modify the content of the mass media and telecommunications industries. (2 hours a week).

40-561. International Communications Policy
A study of communication policy issues and processes at the international level with particular reference to the implications of transnational data flows. Relevant international organizations, as well as national/regional/international constraints impinging upon the formation of policy, are also discussed. (2 hours a week).

40-562. Intercultural Communication
An investigation into communication, nationally and internationally, between people of different cultures in mediated and personal, non-verbal and verbal contexts. Drawing on communication theory and other insights, it examines film, literature, historical documents, business case studies and other data, and emphasizes practical as well as theoretical approaches. (2 lecture, 1 laboratory hour a week).

40-565. Mass Persuasion and the Propaganda Process
An examination of the operation and effects of propaganda and persuasion strategies in mass society. (3 hours a week).

40-570. New Technologies in Telecommunication
An inquiry into the effects and policy implications of emerging telecommunication technologies. (2 hours a week).

40-575. Advanced Communication Theory
An examination of current theories of mass communication. (2 hours a week).

40-585. The Structure of Communication Industries
A study of the economic, social, and political factors which determine the structure and modify the content of the mass media and telecommunications industries. (2 hours a week).

40-595. Directed Research and Readings
An individual tutorial in a topic not already covered in other graduate course listings. (By consent of Department only). (3 hours a week).

40-795. Thesis Media Production

40-796. Major Project

40-797. Thesis

6 ECONOMICS

6.1.1 OFFICERS OF INSTRUCTION

Professor Emeritus

Phillips, William Gregory; B.A., M.A., Ph.D. (Toronto) - 1950.

Professors

Fallenbuchl, Zbigniew Marian; B.Sc. (Econ.) (London), M.A. (Montreal), Ph.D. (McGill), D. hon. causa (Aix-Marseille-III) - 1959. (Dean of the Faculty of Social Science).

Gillen, William John; B.A. (Assumption), M.A. (Toronto) - 1959.

Kovacs, Aranka Eve; B.A. (McMaster), M.A. (Toronto), Ph.D. (Bryn Mawr) - 1961.

Strick, John Charles; B.A. (Manitoba), M.A. (Assumption), Ph.D. (Alberta) - 1965.

Guccione, Antonio; Laurea (Palermo), Ph.D. (California) - 1967.

Fortune, J. Neill; B.Sc.A. (Toronto), M.A. (Western Ontario), Ph.D. (Indiana) - 1969.

Brown, Alan Andrew; B.A. (City College of New York), M.A., Ph.D. (Harvard) - 1971.

Primorac, Emile; B.A., M.Comm. (Toronto), Ph.D. (London) - 1971.

Associate Professors

Callaghan, Rev. John Francis, C.S.B.; B.A., M.A. (Toronto) - 1957.

Burrell, Peter R.; B.A. (Assumption), M.A. (Pennsylvania) - 1965.

Kolinski, Ralph; B.S. (Marquette), M.A., Ph.D. (Wayne State) - 1966.

Green, Reuben; B.A., M.A. (Windsor), Ph.D. (London) - 1968.

Mendels, Roger P.; B.Comm., M.A. (McGill), M.Sc., Ph.D. (Wisconsin) - 1969.

Meyer, Benjamin S.; B.A. (City College of New York), M.A., Ph.D. (State U. of New York, Buffalo) - 1970.

Sydor, L.P.; B.A. (Western Ontario), Ph.D. (Princeton) - 1972.

Charette, Michael F.; B.A., M.A. (Windsor), Ph.D. (Western Ontario) - 1976. (Head of the Department).

Bajic, Vladimir; B.A., M.A. (Belgrade), M.A. (Williams College), Ph.D. (Toronto) - 1984.

Assistant Professors

Barbiero, T.; B.A., M.A., Ph.D. (Toronto) - 1985.

Meng, Ronald; B.Sc. (Trent), M.A., Ph.D. (Carleton) - 1987.

Rawana, Dev; B.A., M.A. (York), Ph.D. (McMaster) - 1987.

Yeung, David; B.Soc.Sci. (Hong Kong), M.A., Ph.D. (York) - 1987.

Lecturers

Weiss-Goldman, Marianna; B.A. (Windsor), M.A. (Western Ontario) - 1986.

Hill, Roderick; B.A. (Toronto), M.A. (Western Ontario) - 1987.

6.2 Programs of Study

6.2.1 THE MASTER OF ARTS DEGREE

Admission Requirements

1) A student with an honours Bachelor's degree in Economics or its equivalent, with at least a major average of B, may be admitted to a one-year Master's program.

2) A student with a general degree, or an honours graduate in another discipline, with at least a B standing, may be admitted to a minimum two-year Master's program.

Program Requirements

1) Students in the two-year program are required to take a make-up or qualifying year in their first year of the M.A. program. Selection of courses is to be made in consultation with a graduate student counsellor.

2) Students in the one-year M.A. program (Candidate year) are required to complete:

(a) eight graduate courses and a major paper normally to be in conjunction with one of the courses, *or* six graduate courses and a thesis on a research subject approved by the Department;

(b) at least one course in micro-economics, one in macro-

economics and one in quantitative economics. Students intending to enter a Ph.D. program are advised to take 41-541 and 41-582;

(c) an oral examination in basic macro- and micro-economic theory, and a selected field in economics.

6.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any one semester. Courses are normally three hours a week.

41-501. Micro Economics
An intensive review of the theory of the firm and consumer theory. An introduction to general equilibrium.

41-502. Macro Economics
An intensive review of theories of the determination of aggregate output, employment and price level.

41-510. Theory of International Trade
A survey of classical and modern trade theories.

41-511. International Monetary Economics
A survey of balance-of-payments and exchange-rate theories, problems, and policies.

41-514. Canadian Labour Relations
Selected seminar topics dealing with industrial relations, international unionism, impact of technological change, comparable worth, strikes and collective bargaining issues. Emphasis will be on current institutional research and quantitative analysis.

41-515. Canadian Labour Problems and Policies.
Selected seminar topics covering public sector organization, quality of working life plans, flexible working time, labour force, worker participation, labour- management consultation. Focus will be on current research and analysis.

41-516. Labour Economics I
The demand and supply analysis; human capital; trade unions and collective bargaining; wage structures, labour mobility.

41-517. Labour Economics II
Employment and unemployment; wage a justment; distribution of income; selecti policy issues.

41-518. Labour Problems in Developin Countries
Selected topics examining such areas labour force composition, employme wage structures, productivity.

41-519. Cost-Benefit Analysis
This course covers the theory and practice social cost-benefit analysis. Attention is giv to "shadow pricing", externalities, discou rates, and other issues arising from evalu tion of public sector projects. Examples such projects are the construction of infr structures (e.g., roads, bridges, pow projects) and social policy measures (e product regulation, traffic regulation, airli deregulation).

41-531. Industrial Organization
A theoretical and empirical analysis of fir and markets.

41-532. Selected Topics in the Organization of Industry and Government
Depending upon the instructor this course w cover such topics as social regulation, mic economic policy and industry studies.

41-541. Econometric Methods
The general linear model, selected sing equation problems, and an introduction simultaneous equations methods.

41-542. Applied Econometrics
Applications of the techniques studies in 4 541 to selected data and equations. (Pre quisite: 41-541).

41-543. Quantitative Methods
Selected readings in quantitatively orient economic literatuare. The emphasis is on t statement of problems and heuristic e planation of results rather than on form proofs. This course is not intended for st dents who take 41-541 and/or 41-581.

41-550. Monetary Theory
A survey of advanced topics and rece developments in the theory of money.

41-551. Monetary Policy
A survey of the theory and practice of monetary policy and the effectiveness of the various instruments of monetary control.

41-560. Public Sector Expenditure
Selected topics in public expenditure theory such as public goods, externalities, public choice, and bureaucratic behaviour.

41-561. Public Sector Finance
Optimal taxation, efficiency, equity, and fiscal effects of taxes; tax structure, user charges, government debt and borrowing.

41-564. Economic Development: Theory
The macroeconomics of growth and instability in the less developed countries; the stages of economic growth; dualism; industrialization and agricultural development; foreign trade and the balance of payments problems; international investment and aid; technology transfer; economic integration and economic development.

41-565. Economic Development: Policy, Planning and Project Evaluation
Types of development planning; plan strategy; organization of planning; construction of development plans; control of plan implementation; project evaluation.

41-575. Economic Development Problems in the USSR
The background: economic development until the end of the 1960's, the functioning of the Soviet economic system and the traditional Soviet development strategy; current problems, including; macroeconomic analysis of the recent growth performance; demographic factors; natural resources; transport; agriculture; technology; consumption; investment planning; recent systemic modifications.

41-576. Development Problems in Eastern Europe
The working of the Soviet-type model in Eastern Europe; systemic modifications; industrialization policies; recent development problems; the Council for Mutual Economic Assistance and economic integration in Eastern Europe; Eastern Europe in east-west economic relations.

41-577. Development Problems in Selected Countries
An in-depth study of some less developed countries. Different countries may be selected in different years. They are chosen from one or several of the following areas: Africa, the Carribean, Latin America and South East Asia.

41-581. Mathematical Economics
The formal properties of selected economic models. Includes an examination of the problems of existence, uniqueness and stability of solutions.

41-582. Selected Topics in Advanced Theory
An examination of the most recent literature on one or two selected topics in theory.

41-590. Regional Economics
Theoretical and policy issues relating to large regions, including, for example, distribution of wealth, distribution of productive resources, and migration.

41-591. Urban Economics
Theoretical and policy issues relating to urban areas, including, for example, urban growth and land use.

41-593. Selected Canadian Economic Problems and Policies
Depending upon the instructor this course will deal with such topics as macro economic performance and policy, micro economic performance and policy, regional economic policy, income distribution and other current economic issues.

41-594. Special Studies in Economics
Research and reading course in a selected field approved by the Department.

41-796. Major Paper

41-797. Thesis

Undergraduate senior courses, which may be assigned at the discretion of the Department Head to form part or all of the requirements for the first year of the two-year graduate program, may be found in the Undergraduate Calendar, *see* 4.5.3.

7 EDUCATION

7.1.1 OFFICERS OF INSTRUCTION

Professors

Nease, A. Stuart; B.A., M.A. (Toronto), F.C.C.T. - 1972.

Crawford, W. J. Ian; B.Sc. (Windsor), M.A. (Ed.) (Ottawa), M.Ed., Ed.D. (Wayne State) - 1973.

Awender, Michael A.; B.A., M.A. (Windsor), M.Ed. (Toronto), Ph.D. (Claremont) - 1975. Co-ordinator of Graduate Studies.

Associate Professors

Innerd, Wilfred L.; B.A., Dip. Ed., M.Ed. (Durham), Ph.D. (Pittsburgh) - 1976. (Dean of the Faculty of Education).

Laing, Donald A.; B.A., M.A., Ph.D. (Toronto) - 1976.

Meyer, John R.; A.B. (St. John's, Minn.), M.A. (Strasbourg), Ph.D. (Iowa) - 1976.

Williams, Noel H.; B.A. (Sir George Williams), M.Ed. (McGill), Ph.D. (Alberta) - 1976.

Kuendiger, Erika; Staatsexamen (Aachen), D. Phil. (Saarbrucken) - 1984.

Assistant Professor

Halpern, Honey G.; B.A., M.Ed. (McGill), Ed.D. (British Columbia) - 1984.

7.2 Programs of Study

7.2.1 THE MASTER OF EDUCATION DEGREE

The courses and programs leading to the academic professional degree of Master of Education are designed with two objectives: first, to provide the candidate with an opportunity to acquire advanced knowledge of the theoretical bases of education as expressed in philosophical concepts and elucidated by research findings and, secondly, to bridge the gap between theory and practice through increased understanding of educational issues and problems.

Admission Requirements

1) An applicant for the degree of Master Education must satisfy the general admission regulations of the Faculty of Gradua Studies and Research. Applicants who ha secured an overall second-class or B stan ing in their undergraduate work may be a mitted; major consideration, however, will given to the performance of the last two ye of undergraduate study. In exceptio cases, the Faculty of Education is prepar to consider other factors, such as gradua courses taken elsewhere or suitable profe sional experience. Admission requireme include one of the following:

(a) a Bachelor's degree from an a credited institution and a B.Ed. d gree or equivalent teacher trainin with a minimum of B standing in t final two years of study;

(b) a three-year Bachelor's degree fro an accredited institution with mi mum of B standing in the final t years, and two years of successf teaching or administrative e perience in a related professio occupation as determined by t Graduate Studies Committee of t Faculty of Education;

(c) a four-year (honours) Bachelor's d gree with a major in a related fie of study from an accredited insti tion with a minimum of B standing the final two years.

2) *Statement of Personal Objectives:* Th preparation of a statement of personal obje tives by the applicant is required. It shou reveal significant information about previo experience as well as current activities, cluding professional, civic, vocational, a avocational interests. It will be of interest the faculty to know something about th candidate's professional activity includi membership in professional organizatio publications, and the like. The statem should also explicitly elaborate th applicant's interest in the proposed area specialization, reasons for seeking graduate degree in education, as well

professional and personal goals and aspirations.

3) *Admission Interview:* An admission interview is required. The interview, which will be arranged by the Coordinator of Graduate Studies or a designate, will not be granted until all transcripts, references, and other professional credentials including a statement of personal objectives have been received and satisfy the requirements. A plan of work must be approved during the interview. In addition to the student'sfulfilling admission requirements, a qualified member of the Faculty of Education in the appropriate area of study also must agree to serve as advisor.

4) Enrollment in each of the concentrations is limited and early application is recommended.

5) Any applicant whose academic credentials are difficult to assess may be required to submit appropriate Graduate Record Examination scores.

Program Requirements

1) An applicant will be admitted to one of two areas of concentration:

(a) Curriculum Studies
(b) Educational Administration.

With the approval of the advisor, a candidate may take graduate courses relevant to his or her program offered by another Department in the University in lieu of two courses listed below or as agreed upon by the Graduate Studies Committee of the Faculty of Education.

2) *Program Approval:* Prior approval of course registration must be obtained from an authorized agent of the Faculty.

3) *Course Load For Part-Time Students:* Part-time students may not carry more than two courses in any term.

4) *Residence Requirements:* The candidate for the degree must satisfy general residence regulations of the Faculty of Graduate Studies and Research.

5) A minimum of ten courses is required for graduation.

6) Up to two courses may normally be accepted in transfer from another accredited institution. Such courses are subject to prior approval by the Faculty. Only grades of B or higher are acceptable in transfer.

7) All studies must be completed within a period of three years for full-time students and five years for part-time students from commencement of candidature.

8) Each candidate must become actively involved in a practicum or a research project under the guidance of an appropriate advisor. This requirement may be satisfied by successfully completing one of the following:

(a) a practicum (83-513, 83-514, 83-516, 82-522, or 80-584);
(b) a written research report (80-583);
(c) a Major Paper (80-796), with the value of two courses;
(d) a Thesis (80-797), with the value of four courses.

9) By petition to the Graduate Studies Committee of the Faculty of Education, a candidate may request that the program of work include a thesis in lieu of a maximum of four courses in the area of concentration. Although a candidate may state a preference to write a thesis at the time of planning a program of work with his or her advisor, normally the Education Graduate Studies Committee will not consider the request until four courses have been completed. The thesis component will satisfy the requirement of one course from Applied Studies. The thesis will be evaluated by a committee consisting of the candidate's advisor, one member from the graduate faculty in Education, and one member from another department, school or faculty in the University.

Detailed information concerning the procedures for major papers and theses is available from the Coordinator of Graduate Studies or members of the graduate faculty.

10) *Grading: see* 1.4.3.

11) *Comprehensive Examination:* In addition to any examinations required as part of course work, all candidates must successfully complete a comprehensive examination.

STUDIES IN THE AREA OF CONCENTRATION

At least four courses will be selected in consultation with the candidate's advisor from the Curriculum Studies or Educational Administration listings.

Curriculum Studies

80-534. Individual Reading
81-503. Human Growth and Development
81-521. Seminar in Special Education
81-526. Educating the Exceptional Person
81-528. Theories and Practices of Reading Instruction
81-530. Cognitive Development in Relation to the Exceptional Individual
81-537. Reading Education in the Elementary School
81-539. Applications of Modern Linguistic Theory to Second Language Teaching
81-540. Advanced Methods of Second Language Teaching
81-547. Curriculum Planning in Elementary and Secondary School Science
81-550. Issues in Education
81-551. Microcomputers for Educators
81-552. Learning Outcomes in Mathematics
81-553. The Mathematical Learning Environment
81-556. Approaches to Literacy Development
81-557. Theories and Issues in Language Arts and English Education
81-558. Psychology of Learning Problems
81-572. Theory and Practice in Early Childhood Education
81-573. Problems in Early Childhood Education
81-574. Play in Early Childhood
81-575. Pre-School Programs
81-593. English in the Multi-Ethnic Classroom

Educational Administration

80-531. Supervision of the Instructional Process
80-534. Individual Reading
80-555. Strategies for Implementation of Changes in Education
82-529. Theories of Educational Administration
82-532. Organization and Administration the School
82-560. Politics of Education
82-561. Legal Aspects of Education
82-562. Educational Finance
82-563. School Systems Management
82-565. Sociological Aspects of Educatio Administration
82-566. Interpersonal Relationships in Education
82-592. Organization and Administration Post-Secondary Institutions

APPLIED STUDIES

All candidates are required to successfu complete 80-510 (Statistics in Educatio and 80-527 (Research in Education). O course will be selected in consultation w the candidate's advisor from the following ing:

80-583. Field Research Report
80-584. Practicum
80-796. Major Paper
80-797. Thesis

7.3.1 COURSE DESCRIPTIONS

All courses will not necessarily be offer each year.

80-510. Statistics in Education
This course enables students to acquire understanding of statistical procedures us in education. The most frequently used te and their applications, including compu applications, will be considered. (3 lectu hours a week).

80-527. Research in Education
Fundamental skills of conducting researc Students are expected to develop skills in terpreting research literature, conducti

literature research and review, planning and presenting research proposals, selecting among analysis procedures. (3 lecture hours a week, plus laboratory experiences by arrangement).

80-531. Supervision of the Instructional Process

A practice-oriented course designed to develop administrative competency in the supervision of instruction. The focus will be threefold: (1) awareness and recognition of specific teaching skills (use of micro-teaching), (2) the development of competence in supervisory, interpersonal and group skills, and (3) an examination of approaches to program evaluation. (3 lecture hours a week).

80-534. Individual Reading

The Individual Reading course is intended to permit students with special interests in, and knowledge of, particular areas of Education not covered in sufficient depth in other courses to pursue those interests through independent, supervised study. With prior approval of an appropriate member of the graduate panel, the student will undertake an original paper or research project on a topic which would enhance his or her program of study. This course and any course listed in the Applied Studies component of the degree must not be substantially one and the same. (Permission of an advisor and a subcommittee of the Graduate Studies Committee is required.)

80-555. Strategies for Implementation of Changes in Education

Procedures for dissemination, adoption, implementation, and integration of changes for teachers, administrators, and leaders of professional organizations. Attention will be given to theoretical models and their applications, change agency, and modification of organizational climate and structure. (3 hours a week).

80-583. Field Research Report

A written research report will be planned and completed in consultation with staff. The report should be the embodiment of the learning experiences germane to the practical investigation undertaken by the candidate. The evaluation of the research report will be done by the candidate's advisor. (Hours arranged).

80-584. Practicum

A project involving design, application, and evaluation of an instructional program in some area related to the candidate's graduate studies in education, to be arranged in consultation with staff. (Hours to be arranged).

80-796. Major Paper

This paper may take the form of a critical essay, an analysis and evaluation of the literature on a particular subject, or a description and evaluation of a project. Although independent thought and judgment are an integral part of such a document, secondary sources are acceptable foundations upon which the candidate may build. (*See* Program Requirements, 7.2.1.)

80-797. Thesis

(*See* Program Requirements, 7.2.1.)

81-503. Human Growth and Development

An intensive study of the nature and needs of people at all developmental levels. Emphasis is placed on psychological, sociological, and physiological approaches to understanding human behaviour, personality theory and learning theory. (3 lecture hours a week).

81-521. Seminar in Special Education

Seminar to discuss problems encountered in applying skills and understandings developed in the area of Special Education. (3 lecture hours a week, field hours to be arranged).

81-526. Educating the Exceptional Person

Development and structural provisions for the exceptional person in education; remedial procedures in care, treatment, and education. (3 lecture hours a week).

81-528. Theories and Practices of Instruction

An investigation of the major approaches to reading instruction. (3 lecture hours a week).

81-530. Cognitive Development in Relation to the Exceptional Individual

This course will examine the effect of various exceptionalities on cognitive development.

Emphasis will be placed on the nature of the learning problems which arise from cognitive deficits. Educational solutions will also be considered. (3 lecture hours a week).

81-537. Reading Education in the Elementary Schools

This course will examine problems in reading education in the elementary school, methods of instruction, diagnostic procedures, program design and implementation. Knowledge of current theories and classroom practice is recommended. (Prerequisite: 81-528 or consent of the instructor.) (3 lecture hours a week).

81-539. Applications of Modern Linguistic Theory to Second Language Teaching

A course designed to offer general linguistic studies as applied to the language specialty and theory of second language teaching. The course will also include studies in the development of second language teaching theory and current trends in methodology. (3 lecture hours a week).

81-540. Advanced Methods of Second Language Teaching

A course concerned with the objectives, materials, procedures, and evaluation of second language curricula. Second language programs in elementary, secondary and higher education will be examined. (3 lecture hours a week).

81-547. Curriculum Planning in Elementary and Secondary School Science

Curriculum study experiences for in-service teachers, principals, and coordinators in developing science curricula. Goals and objectives of a K-13 program; selection of appropriate teaching-learning experiences and materials; evaluation and preparation of curriculum materials; preparation and evaluation of activities. Analysis of recent research in science education (K-13), and consideration of implications for curriculum designing in science and for improvement of classroom teaching. Consideration of research tools needed by teachers of science. (3 lecture hours a week).

81-550. Issues in Education

A study of some major philosophical and cial issues affecting modern Canad education. (3 lecture hours a week).

81-551. Microcomputers for Educato

A comprehensive survey of the uses microcomputers in the classroom; co seware evaluation; computer-managed struction; implementing computer educat current issues in the use of microcomput by educators. (3 lecture hours a week).

81-552. Learning Outcomes in Mathematics

An investigation of recent theoretical mod and research studies focussing on the co tive and attitudinal learning outcomes mathematics students. (3 lecture hour week).

81-553. The Mathematical Learning Environment

This course examines the variables relate parents, peers, and, in particular, teach that have been found important for the lea ing of mathematics. Particular attention be given to general beliefs such as those lated to sex roles. (3 lecture hours a week

81-556. Approaches to Literacy Development

This course will consider current resea and theory in the development of read and writing abilities, and will examine so major difficulties in assessing litera development. (3 lecture hours a week).

81-557. Theories and Issues in Langua Arts and English Education

This course will offer a critical survey several recent theories and issues in La guage Arts and English Education. The foc will be on their implications for curricul and practice at the classroom level. Curr issues at the local or provincial level, det mined by the group, will be examined detail. (3 lecture hours a week).

81-558. Psychology of Learning Problems

This course reviews current theories of lea ing disabilities and learning problem Various approaches to diagnosis a remediation are presented. Students are pected to present case study examp

during the course, and to develop a particular interest area to great depth. (Prerequisite: 81-503 or permission of instructor). (3 lecture hours a week).

81-572. Theory and Practice in Early Childhood Education

An examination of theory and current practice in Early Childhood Education. The emphasis will be on the translation of theory into sound educational practice. Organization and management of Early Childhood programs will be of concern as well as teaching procedures. (3 lecture hours a week).

81-573. Problems in Early Childhood Education

An investigation of current issues and problems facing Early Childhood Education. Possible solutions and practical intervention procedures will be generated. (Prerequisite: 81-572 or permission of instructor). (3 lecture hours a week).

81-574. Play in Early Childhood

An analysis of the structure and function of children's play. Theories of play will be related to the play of early childhood. Attention will be paid to the practical aspects of organizing play in the home and pre-schools, as well as in the primary grades through an analysis of play situations and environments. Special attention will be given to play intervention techniques, the therapeutic values of play, and the role of dramatic play, as well as the relationships between play and creativity and between play and vandalism. (Prerequisite: 81-572 or permission of the instructor). (3 lecture hours a week).

81-575. Pre-School Programs

This course will be concerned with infant, toddler, and pre- school programs and the particular emphasis which each places upon the psycho-motor, cognitive, and affective aspects of development. Home and centre-based programs, both formal and informal, will be considered. Special attention will be paid to the roles and functions of parents and other non-professional adults in pre-school settings and to the relationship between pre-school and kindergarten curricula. (Prerequisite: 81-572 or permission of the instructor). (3 lecture hours a week).

81-593. English in the Multi-Ethnic Classroom

A course designed for teachers facing the challenges of teaching students whose language and culture are not Anglo-Canadian; investigation of current techniques, materials, and approaches used in varying situations for teaching English to non-English speakers; linguistic principles involved in Teaching English as a Second Language; consideration of non-verbal communication and its effect upon learning efficiency; investigation of cultural systems of different ethnic groups and their influence upon the teaching-learning process in a multilingual classroom. It is recommended that students have a sound background in the English language and, preferably, familiarity with another language. (3 lecture hours a week).

82-529. Theories of Educational Administration

This course is designed to examine and contrast the traditional and organizational administrative patterns of management and to discuss their application to the institutions of education. Focus will also be placed on a problem-solving approach in dealing with actual administrative problems such as morale, leadership, staff development, and decision making. (3 lecture hours a week).

82-532. Organization and Administration of the School

An analysis of the laws and regulations governing the administration of schools. Focus will be placed upon the problems of day-to-day operation, and the processes of change. (3 lecture hours a week).

82-560. Politics of Education

This course will examine the administration of education from a political perspective. Both the legal and extra-legal factors that influence educational outcomes will be examined. Their roles will be viewed in terms of comparative forms of educational administration. Finally, several administrative decisions will be analyzed using the perspectives gained throughout the course. (3 lecture hours a week).

82-561. Legal Aspects of Education
This course will focus on legislation and court decisions dealing specifically with the educational process. Both the historical and philosophical basis of these and the practical application of the same in a contemporary setting will form the primary emphasis for the course. (3 lecture hours a week).

82-562. Educational Finance
This course will concern itself with the application of principles of public fiscal policy to education. It will examine the sources and methods of distribution of public school revenue at the various levels of government. Provincial and state school grant systems, school budgeting, and salary scheduling will be major areas of focus for the course. (3 lecture hours a week).

82-563. School Systems Management
A study of principles and practices of school business administration focusing on the relationship between educational planning and educational financing, personnel management, school plant planning and development, operation and maintenance of school facilities and services, and system-wide budgeting. (3 lecture hours a week).

82-565. Sociological Aspects of Educational Administration
This course will examine the school and its occupants and their relationship to the contemporary social order. Analysis of topics such as student culture, learning and social class, roles within the school setting will occur. The focus will be on theoretical positions, representative research findings and representative research methods. (3 lecture hours a week).

82-566. Interpersonal Relationships in Education
This course will analyze the importance and dynamics of interpersonal behaviour. Students will be given the opportunity to develop their own skills in this area. Emphasis will also be placed upon a practical orientation toward influencing change. (3 lecture hours a week).

82-592. Organization and Administratio of Post-Secondary Institutions in Ontario
An overview of the development of unive sities and community colleges in Onta combined with an analysis of the issues th face each of these institutions. (3 lectu hours a week).

8 ENGINEERING

8.1 Programs of Study

The Ph.D. and M.A.Sc. degrees are offered in the Departments of Chemical, Civil, Electrical, Engineering Materials, Industrial, and Mechanical Engineering. The M.A.Sc. degree is offered in Geological Engineering.

Program requirements common to these Departments and supplementary to the general requirements of the Faculty of Graduate Studies and Research are listed below.

8.1.1 THE DEGREE OF DOCTOR OF PHILOSOPHY

Areas of Specialization

The areas of specialization are listed by Department.

Admission Requirements

An applicant for admission to a course of graduate studies leading to the Doctor of Philosophy degree in Engineering must normally be a graduate of a recognized university with a Master's degree in Engineering or Applied Science. Applicants with degrees in related fields will be considered but will normally require strengthening of their background in Engineering. At the discretion of the Department, Graduate Record Examinations (GRE) will be required.

All applicants whose native language is not English are normally required to take an English proficiency test as described in 1.3.

Possession of the minimum requirements does not automatically ensure acceptance.

Candidacy: Admission to graduate study does not imply admission to candidacy for a degree. The candidacy of a student normally will be determined within the second year after initial registration in the doctoral program.

Candidacy will be granted to students who meet all of the following requirements:

(a) satisfactory completion of the comprehensive examination;
(b) demonstration to the doctoral committee of ability to conduct independent research;
(c) acceptance by the doctoral committee of the research proposal.

The doctoral committee will assess the student's competence to continue research on the basis of (a), (b), and (c), and make a recommendation to the Department Head.

Program Requirements

The specific minimum program requirements for the Ph.D. include the successful completion of:

1) *Course requirements:* Satisfactory completion of at least four courses, comprising a minimum of eight semester hours, beyond the courses required for the Master's degree.

2) A comprehensive examination.

3) Satisfactory progress in research within each review period. The doctoral committee will establish by periodic review, which will include at least one formal seminar a year, that adequate progress in research has been accomplished by the candidate. The doctoral committee will also grant permission to write the dissertation when it decides the candidate has achieved sufficient competence in carrying out research, and when the candidate has done substantial research.

4) A dissertation on the research. Each candidate will be required to make an oral presentation of the dissertation research and will be examined orally on the subject of the dissertation and related fields.

Residence and Time Limits: Every student will undertake a full program of study for a minimum of three years beyond the Baccalaureate of Engineering or its equivalent. Credit for one of three years may be given for the time spent in proceeding to a Master's degree. Credit for one of these years may also be given for work done at another institution. However, in no case shall the student spend fewer than two of the three required years of

residence in full-time attendance at the University of Windsor.

A student admitted to a Ph.D. program, requiring the student's attendance for a minimum of three years must complete all requirements within seven years. Students admitted to a program requiring a minimum of two years' residence must complete all requirements within six years.

Committees: Research undertaken as part of a doctoral program is normally directed and supervised by a doctoral committee. Whereas the student's advisor provides day-to-day guidance and direction, the committee is ultimately reponsible for the overall supervision to ensure that adequate progress is being maintained. The doctoral committee will consist of at least four members, with the student's advisor as chairperson. At least one member shall be from another department within the University of Windsor other than the one in which the student is majoring.

The student's advisor will propose the names of members for the doctoral committee, and these will be subject to the approval of the departmental Graduate Committee and the Executive Committee of the Faculty Council of Graduate Studies and Research. Within one month after initial registration, each student will be assigned to a doctoral committee.

The final appraisal of the dissertation and the conduct of the final oral examination of the dissertation will be carried out by an examining committee. The examining committee will consist of the doctoral committee, the Dean of Engineering (or designate) as chairperson (non-voting), and an external examiner.

Examinations: At the discretion of the doctoral committee a qualifying examination may be required. A qualifying examination is one in which the student is asked to demonstrate a reasonable mastery of the fundamentals in the major subject; it is designed to test the student's preparation for advanced graduate work. If such an examination is required, it must be administered and passed before the student registers for the second year of Ph.D. work.

In addition to the usual examinations o course work, all students must meet the fo lowing requirements:

1) *Review of Progress on Research:* With the first year, the student will present in th form of a seminar an outline of his or h proposed thesis research. This will b presented to the doctoral committee wh must approve, with or without modification or reject the proposal. Thereafter, at lea once a year the student will report his or h progress in the form of a seminar.

2) *Comprehensive Examination:* Studen who have previously obtained a Master's de gree must attempt this examination with twelve months of registering for the Ph.D program. Other students must take it with twenty-four months of registration for th Ph.D. program. This set of examinations re quires the students to demonstrate an ade quate background in the general discipline engineering, and an advanced knowledge their fields of specialization. The comprehe sive examination will be conducted by departmental comprehensive committee two sections:

(a) a scheduled, supervised written por tion, of at least three hour's dura tion, designed to test the student general knowledge on core sub jects in the field of study, with ques tions set and answers evaluated b the departmental comprehensiv committee;

(b) an oral examination to be evaluate by the departmental comprehe sive committee. The objective o this part of the examination is to tes the student's ability to integrat general knowledge from differen areas of the field of study in order t solve problems the student has no previously encountered.

The student's overall success on the com prehensive examination will be determine by the departmental comprehensive commi tee. If the student is unsuccessful, the com mittee may require that:

(a) the student repeat all or part of the comprehensive examination at a specified time,
(b) the student take and pass remedial coursework before repeating all or part of the examination, or
(c) after consultation with and approval by the doctoral committee, the student may be required to withdraw from the program.

3) *Final Examination:* The passing of the final oral examination of the dissertation requires both an adequate dissertation and a satisfactory defence of the dissertation. This examination will be conducted by the examining committee. Following the acceptance and provisional approval of the dissertation by the doctoral committee, a date for the oral examination can be set. Except under very unusual circumstances, the external examiner must be present at the oral examinaion. If the examining committee cannot arrive at a unanimous decision to award a passing grade, the majority decision will be accepted provided that there is no more than one dissenting vote. However, if the dissenting vote is that of the external examiner, a new external examiner will be appointed and another oral examination required. If the new examiner also gives a dissenting vote, the dissertation will not be accepted.

8.1.2 THE DEGREE OF MASTER OF APPLIED SCIENCE

Areas of Specialization

The areas of specialization are listed by Department.

Admission Requirements

A candidate for the degree of Master of Applied Science shall hold the degree of Bachelor of Applied Science from this University or an equivalent degree in Engineering or Applied Science. In addition, the applicant must have at least second- class standing or its equivalent in the final year and be recommended by the department in which the candidate plans to undertake studies.

Applicants with degrees in related fields will be considered but will normally require strengthening of their background in Engineering. At the discretion of the Department, Graduate Record Examinations (GRE) will be required.

All applicants whose native language is not English are normally required to take an English proficiency test as described in 1.3.

Possession of the minimum requirements does not automatically ensure acceptance.

Degree Requirements

The specific minimum program requirements for the M.A.Sc. include the successful completion of:

1) *Course Requirements:* Satisfactory completion of courses comprising between twelve and twenty-four semester hours, depending on the semester hour equivalence assigned to the mandatory thesis or major paper. A thesis may be equivalent to as many as eighteen semester hours, and a major paper to as many as six semester hours of the total minimum requirement of thirty semester hours.

2) Either a thesis or a major paper as specified below:

(a) *Thesis:* A thesis incorporating the results of an original investigation is required of all candidates except those students who are doing non-thesis research toward a major paper. Before writing the thesis the student must meet with the Master's committee to obtain permission to write the thesis. The Master's committee will grant this permission when the student has shown sufficient competence and has accomplished substantial research. After completion of the thesis, each candidate will be required to make a satisfactory oral presentation and defence of the thesis as described below.
(b) *Major Paper:* For those candidates doing non-thesis research, a major paper is required. The topic of the major paper is normally research based on the existing literature in

the field of study. The candidate will be required to make an acceptable oral presentation to the Master's committee based on the major paper. (*See* below).

Residence and Time Limits: The minimum period of study for a Master's candidate is twelve months. The maximum duration of full-time study as a Master's candidate is three years. Part-time Master's candidates will undertake the equivalent of a minimum of one year of full-time study. For a part-time Master's candidate the maximum time limit generally will not exceed five calendar years. Master's candidates who expect to require an extension of these time limits must petition their Department Head, giving reasons for the request and plans for completion of the work. The Department Head will then make a recommendation to the Dean of Graduate Studies and Research.

Committees: Research untertaken as part of a Master's program is normally directed and supervised by a Master's committee. Whereas the student's advisor provides day-to-day guidance and direction, the committee is ultimately repsonsible for the overall supervision to ensure that adequate progress is maintained. The Master's committee will consist of at least three members with the student's advisor as chairperson. At least one member shall be from another department within the University of Windsor other than the one in which the student is majoring. The student's advisor will propose the names of the Master's committee and these will be subject to the approval of the departmental Graduate Committee and the Executive Committee of the Faculty Council of Graduate Studies and Research. Within one month after registration, each student will be assigned to a Master's committee.

The final appraisal of the thesis and the conduct of the final oral examination of the dissertation will be carried out by the examining committee. The examining committee will consist of the Master's committee and the Department Head (or designate) as chairperson (non-voting).

Examinations: At the discretion of th departmental Graduate Committee a quali ing examination may be required.. qualifying examination is one in which t student is asked to demonstrate a reasonab mastery of the fundamentals in the maj subject; it is designed to test the studen preparation for advanced graduate work such an examination is required, it must b administered and passed before the stude registers for the final candidate year Master's work.

In addition to the usual examination c course work, all students must meet the fo lowing requirements:

1) *Review of Progress on Research or Ma Paper:* Within the first year a full-time stude will present in the form of a seminar an ou line of his or her proposed thesis research outline the content of his or her major pape This will be presented to the Master's co mittee, who must approve, with or witho modifications, or reject the proposal. Ther after, at least once a year, the student w report his or her progress in the form of seminar.

2) *Final Examinations:* The passing of th final oral examination on the thesis (or th major paper) requires both an adequa thesis (or major paper) and a satisfacto defence. The examination will be conducte by the examining committee and the thes defence will be chaired by the Departme Head or appointed designate. If the exami ing committee cannot arrive at a unanimo decision to award a passing grade, a majori decision will be accepted provided there is n more than one dissenting vote. If there more than one dissenting vote, the studen may be required to carry out additional wo if the thesis is judged to be adequate in other respects, or the student may be re quired to withdraw.

Grading: The grading system is outlined 1.4.3.

The Faculty of Engineering requires that st dents maintain at least a B average at times.

Courses in which a grade of B or higher received will be accepted for graduate cred

In addition, upon the positive recommendation of the Department Head and advisor concerned, credit may be granted by the Faculty of Graduate Studies and Research for not more than two semester courses in which a grade of C or C+ has been obtained.

If a student fails to obtain credit in a course, the course may be repeated only once, at the discretion of the department concerned and the Dean of Graduate Studies and Research. No student may repeat, or replace with another course, more than two semester courses in which credit was not obtained.

All research work for which a letter grade is assigned must be graded B or better to receive credit.

Make-up courses will not count for graduate credit. Make-up courses are those courses required to compensate for deficiencies in the student's academic background.

In exceptional cases, at the discretion of the Department Head and the advisor, a graduate student may take one undergraduate course for credit.

8.1.3 RESEARCH IN OUTSIDE INSTITUTIONS

Research for the Ph.D. or M.A.Sc. degree, in part or in whole, may be carried out in an outside institution (e.g., industrial, governmental, or university). A student who does research at an outside institution must fulfill the same requirements as a student doing on-campus research. The only exception is that the time spent doing the off-campus research relevant to the thesis or dissertation will be credited toward the residence requirement. In addition to the general requirements, a student applying for permission to do research at an outside institution must provide:

1) A detailed statement of the research proposal, including arrangements for supervision and of the circumstances under which the research is to be carried out.

2) Evidence that the institution has adequate facilities for the research; and that the applicant will be able to pursue independent research.

3) A proposed time schedule.

4) A letter of support from a responsible person in the outside institution giving approval of the proposal and accepting these regulations.

9 CHEMICAL ENGINEERING

9.1.1 OFFICERS OF INSTRUCTION

Professor Emeritus

DeMarco, Frank A.; B.A.Sc., M.A.Sc., Ph.D. (Toronto), F.C.I.C., P.Eng. - 1946.

Professors

Gnyp, Alex William; B.A.Sc., M.A.Sc., Ph.D. (Toronto), P.Eng. - 1958.

Stager, Robert A.; B.A.Sc., M.A.Sc. (Toronto), Ph.D. (Illinois) - 1963.

St. Pierre, Carl Clifford: B.A.Sc., M.A.Sc. (Assumption), Ph.D. (Northwestern), P.Eng. - 1964. (Head of the Department).

Schlesinger, Mordechay; M.S., Ph.D. (Jerusalem) - 1968. (Cross-Appointee from the Department of Physics).

DeKee, Daniel C.R.; B.A.Sc. (Antwerp), M.A.Sc. (Ottawa), Ph.D. (Montreal), F.C.I.C., F.B.I.S., P.Eng. - 1980.

Associate Professors

Powley, Maurice Bruce; B.A.Sc., M.A.Sc. (British Columbia), P.Eng. - 1968.

Asfour, Abdul-Fattah Aly; B.Sc. (Hons.), M.A.Sc. (Alexandria), Ph.D. (Waterloo), P.Eng. - 1981.

Adjunct Professors

Viswanathan, S.; B.Tech. (Madras), M.A.Sc., Ph.D. (Windsor) - 1983. (Assistant Vice-President, Clayton Environmental Consultants Ltd.).

9.2.1 AREAS OF SPECIALIZATION

The Department of Chemical Engineering offers Ph.D. and M.A.Sc. degree programs with specialization in the general areas of Transport Phenomena and Air Quality. Faculty interests include ambient and source sampling and monitoring, design of pollution control equipment, odor sampling and analysis, meteorological transport, membrane processes, three-phase fluidization diffusion in liquid systems, rheologic properties of polymers, foods and gels.

9.3.1 COURSE DESCRIPTIONS

Courses offered by Chemical Engineering the graduate level are listed below. Studen may, with the permission of the Departme Head and the advisor, take courses fro departments other than the one in which t student is registered. This is often advisab in order to obtain a well-rounded program study.

All courses listed will not necessarily be o fered in any given year.

86-501. Transport Phenomena
Rate equations for mass, momentum, a heat transfer. Governing conservation equ tions for mass, momentum, and heat tra fer. Dimensional analysis and desig equations. Typical engineering process a plications. (3 lecture hours a week).

86-502. Chemical Engineering Thermodynamics
An advanced study of application of classi thermodynamic principles to chemical e gineering practice; flow systems; compo tion relationships between equilibriu phases; systems involving surface effec electric or magnetic fields; Third Law. (3 le ture hours a week).

86-503. Process Control
A study of the important principles automatic control with particular emphas on process control, beginning with proce analysis and continuing into generalized b haviour of closed- loop systems. The theo selection and application of control eleme are also studied, employing practical syst problems encountered in Chemical E gineering. (3 lecture hours a week).

86-504. Kinetics
Basic concepts of chemical reaction kineti characterization of chemical and biochemi systems, parametric estimation procedur reactor flow models and consideration non- ideality. (Prerequisite: 86-404 equivalent). (3 lecture hours a week).

86-506. Mathematical Methods in Chemical Engineering

Application of ordinary differential equations to chemical engineering problems; series solution; Bessel's equation, Legendre's equation, formulation and solution of partial differential equations, Fourier series. (3 lecture hours a week).

86-509. Multiphase, Multicomponent Flows

A thorough treatment of the basic techniques for analyzing one- dimensional multiphase, multicomponent flows in order to predict flow regimes, pressure drop, etc. Practical applications in fluidization, sedimentation and boiling heat transfer. (3 lecture hours a week).

86-512. Thermodynamics of Irreversible Processes

Fluctuation theory and Onsager's reciprocal relations; phenomenological treatment of irreversible processes; entropy production rate and conjugation of fluxes and forces; coupling of irreversible processes and Curie's symmetry principles; linear transformation of fluxes and forces; stationary states of various orders and minimum entropy production rate; determination of phenomeological relations and coefficients for various processes. Chemical and thermal diffusion, chemical reactions, heat and electrical conduction. Thermoelectric phenomena, etc. (3 lecture hours a week).

86-514. Heterogeneous Reactor Design

Rate phenomena in catalytic and non-catalytic systems, significance of physical transfer equations in catalytic reactor design. (3 lecture hours a week).

86-516. Process Design Principles

The place of modelling in process design, techniques for the development of mathematical models and simulation of a process of the student's interest, introduction to numerical methods and optimization. (3 lecture hours a week).

86-522. Engineering and the Environment

Man and his environment; evaluation of biosphere; ecological balances; pollution and environment; impacts of engineering activities on the environment - land, air, water, vegetation and other living beings; criteria, standards, and goals; environmental factors to be considered in engineering designs. Consideration and discussion of typical examples. (3 lecture hours a week).

86-590. Selected Topics in Chemical Engineering

A study of topics of current interest to chemical engineering. (3 hours a week).

86-796. Major Paper

86-797. Thesis

86-798. Dissertation

10 CIVIL ENGINEERING

10.1.1 OFFICERS OF INSTRUCTION

University Professor

Kennedy, John B.; B.Sc. (Hons.) (Cardiff), Ph.D. (Toronto), D.Sc. (Wales), F.A.S.C.E. P.Eng. - 1963.

Professors

Laba, Jan Tadeusz; Dip. Ing. (London), M.A.Sc., Ph.D. (Windsor), P. Eng. - 1961.

Monforton, Gerard R.; B.A.Sc. (Assumption), M.A.Sc. (Windsor), Ph.D. (Case Inst.), F.C.S.C.E., P.Eng. - 1962. (Head of the Department).

MacInnis, Cameron; B.Sc. (Dalhousie), B.E. (Hons.) (Nova Scotia Technical College), Ph.D. (Durham), F.E.I.C., F.A.C.I., P.Eng. - 1963. (Dean of the Faculty of Engineering).

McCorquodale, John Alexander; B.E.Sc. (Western Ontario), M.Sc. (Glasgow), Ph.D. (Windsor), P.Eng. - 1966.

Abdel-Sayed, George; B.Sc., M.Sc. (Cairo), Dr. Ing. (T. U. Karlsruhe), P. Eng. - 1967.

Chee, Sek Por; B.C.E. (Melbourne), Ph.D. (Aberdeen), P. Eng., C. Eng. - 1967.

Bewtra, Jatinder K.; B.E. (Roorkee), M.S., Ph.D. (Iowa), P. Eng. - 1968.

Temple, Murray Clarence; Diploma (R.M.C., Kingston), B.A.Sc. (Toronto), S.M. (M.I.T.), Ph.D. (Toronto), F.E.I.C., F.C.S.C.E., P.Eng. - 1969. (Associate Dean of the Faculty of Engineering).

Madugula, Murty K.S.; B.E. (Hons.), M. Tech., Ph.D. (I.I.T., Kharagpur), P.Eng. - 1979.

Associate Professor

Biswas, Nihar; B.E. (Calcutta), M.A.Sc., Ph.D. (Ottawa), P.Eng. - 1981.

Adjunct Professors

Becker, Norbert Karl; B.A.Sc., Ph.D. (Windsor), P.Eng. - 1981.

Wong, Lawrence T.; B.Sc. (Windsor), M.Sc. (Indiana), Ph.D. (Toronto) - 1985.

10.2.1 AREAS OF SPECIALIZATION

The Department of Civil Engineering offers a program of graduate studies and research leading to the degree of Doctor of Philosophy and Master of Applied Science. Both the Ph.D. and M.A.Sc. degrees may be obtained in the areas of Structures and Water Resources which are the fields of specialization. In Water Resources, research is in hydraulics, hydrology, water quality and wastewater treatment. In Structures, research encompasses steel, concrete, and timber structures, concrete technology, soil mechanics, foundations and soil-metal structures.

10.3.1 COURSE DESCRIPTIONS

Courses offered by Civil Engineering at the graduate level are listed below. Students may, with the permisson of the Department Head and the advisor, take courses from departments other than the one in which the student is registered.

All courses listed will not necessarily be offered in any given year.

87-500. Theory of Elasticity and Plasticity

Analysis of stress and strain; elastic and plastic stress- strain relations; general equations of elasticity; yield criteria; applications to elastoplastic problems, including rotating disks, thick-walled tubes, reinforced disks, torsion of various shaped bars; stress concentration. (3 lecture hours a week).

87-501. Advanced Analysis of Structures

Matrix methods for various deformable bodies and structural systems; direct and energy formulations; finite element method computer oriented solution techniques. (3 lecture hours a week).

87-502. Analysis and Design of Shell Structures

General theory of thin shells. Membrane stresses in shells of revolution and shells of double curvature. Bending stresses in shells of revolution, cylindrical shells and folded plates. Design of cylindrical shell roofs. (Prerequisite: 87-500 or equivalent). (3 lecture hours a week).

87-504. Theory of Plates
Small deflection of laterally loaded rectangular and circular, isotropic and orthotropic plates with various edge conditions, Navier and Levy solutions, energy methods, finite difference approximation, plates under combined action of lateral loading and forces in its plane, local buckling of column elements, buckling of plates under pure shear and under bending stresses, post-buckling strength in plates. (3 lecture hours a week).

87-505. Theory of Stability
This course is designed to give an insight into the basic phenomenon of structural stability. Elastic and plastic flexural-buckling of columns with axial and eccentric loads are studied. Energy and numerical methods are used. Stability functions are introduced and used to study trusses and rectangular frames, with and without sidesway. Some discussion of torsional and torsional-flexural buckling, lateral buckling of beams. (3 lecture hours a week).

87-506. Advanced Structural Steel Design
This course is designed to develop and expand the design concepts in steel structures; multiple-storey frames, sway and non-sway frame systems; beam-columns; laterally unbraced beams; local buckling of flanges and webs; plate girders; plastic analysis and design; characteristics of light gauge steel components; design of cold-formed steel structures. (3 lecture hours a week)

87-510. Reinforced Concrete Structures
Critical examination of design Code requirements for: flexure, shear, bond, eccentrically loaded columns; yield line theory, strip method, and design of slabs. Design of hyperbolic paraboloid shells, domes, cylindrical tanks and rigid-frame structures. (3 lecture hours a week).

87-511. Prestressed Concrete
Materials, principles of prestressing systems; prestressing losses; analytical treatment of the effect of shrinkage, creep of concrete, and cable friction on stresses; analysis and design of statically determinate and indeterminate structures; design codes; research background; introduction to prefabricated concrete structures. (3 lecture hours a week).

87-512. Concrete Technology
Cementing materials - basic constituents and manufacture, hydration of cement, structure of hydrated cement paste, physical properties of fresh and hardened paste. Aggregate materials - geology and petrography of concrete aggregates, aggregate problems, e.g., alkali-aggregate reactivity. Admixtures-accelerators, air-entraining, set-retarding and water-reducing agents. Concrete mix design. Properties and tests of fresh and hardened concretes. Statistics applied to the control of concrete quality and the design of experiments. Special concretes, e.g., lightweight and heavy-weight concretes. (3 lecture hours a week).

87-519. Advanced Soil Mechanics and Applications
Properties of soils, stresses, consolidation, settlements, bearing capacity, flownets and seepage, stability of slopes with drained and undrained conditions, special foundation problems. (3 lecture hours a week).

87-520. Multiphase, Multicomponent Flows
A thorough treatment of the basic techniques for analyzing one- dimensional multiphase, multicomponent flows in order to predict flow regimes, pressure drop, etc. Practical applications in fluidization, sedimentation and boiling heat transfer. (3 lecture hours a week).

87-521. Hydrology
Analysis and synthesis of the hydrograph. Streamflow routing. The hydrograph as a function of drainage characteristics; estimation of runoff from meteorological data. Snowmelt. Flow in rivers with an ice cover. Infiltration theory. Sea water intrusion in coastal aquifers. Application of hydrologic techniques including statistical methods. (3 lecture hours a week).

87-522. River Mechanics
Theory and analysis of uniform, gradually varied, rapidly varied and steady and unsteady flow in open channels; fluvial processes; design of channels; design of hydraulic control structures. (3 lecture hours a week).

87-523. Ground Water and Seepage
Theory and analysis of flow through porous media. Application to ground water flow problems. Confined and unconfined flow. Seepage below dams. Well problems. Theory of models. (3 lecture hours a week).

87-524. Advanced Hydromechanics
Dimensional analysis, similarity and model testing in hydraulic structures and hydraulic machinery; special model laws and practical applications. (3 lecture hours a week).

87-525. Hydraulic Analyses
This course deals with advanced methods of analyzing hydraulics and water resource systems. Exact and approximate methods are reviewed. The formulation and solution of problems by finite difference and finite element methods is a major part of the course. Typical examples from open channel and ground water flows are included. The method of characteristics is applied to transient flow in open channels and closed conduits. (3 lecture hours a week).

87-526. Sediment Transport
Regime approach; turbulence theories; suspended sediment; tractive force method; bedforms and bedload transport; the Einstein method; modified Einstein method; reservoir siltation; recent developments; design of mobile bed channels; design of sedimentation basins; channel degradation. (3 lecture hours a week).

87-527. Coastal Engineering
Introduction to linear and nonlinear wave theory. Wave transformation: shoaling, refraction, defraction, reflection and breaking. Wave interaction with piles, walls and rubble mounds. Computation of forces and moments. Stability analysis. Wave generation and prediction. Computation of design water levels. Statistical nature of wind generated waves in deep and shallow waters. Littoral zone processes. Computation of longshore transport. Effect of shore structures on Littoral processes. Design of shore protections. Design of small harbours. This course involves the use of microcomputers and physical models. (3 lecture hours a week).

87-530. Water Pollution Control
Water quality criteria; methods of wastewater disposal and their effects on ecology; theory and design of different unit operations and processes for water purification; theory and design of different design operations and processes of wastewater treatment; reuse and recycling of wastewater. (3 lecture hours a week).

87-531. Advanced Water Pollution Control
Discussion on recent advances in the design of water and wastewater treatment plants and new developments in water pollution control practices. (Prerequisite: 87-530 or equivalent). (3 lecture hours a week).

87-532. Engineering and the Environment
Man and his environment; evaluation of biosphere; ecological balances; pollution and environment; impacts of engineering activities on the environment - land, air, water, vegetation and other living beings; criteria, standards and goals; environmental factors to be considered in the engineering designs. Consideration and discussion of typical examples. (3 lecture hours a week).

87-533. Solid Wastes Handling and Disposal
A study of municipal and industrial solid wastes, quantities, composition, methods of disposal or reclamation, and the economic viability of the various methods related to the quantities involved. (3 lecture hours a week).

87-540. Traffic Engineering
Basic characteristics of traffic, road users, vehicles, speeds, volumes, etc.; traffic surveys; basic considerations in traffic regulation; control devices and aids; factors in traffic design; traffic engineering functions and organizations. (3 lecture hours a week).

87-590. Special Topics
Selected advanced topics in the field of civil engineering. (3 hours a week).

87-796. Major Paper

87-797. Thesis

87-798. Dissertation

11 ELECTRICAL ENGINEERING

11.1.1 OFFICERS OF INSTRUCTION

Professors

Miller, William C.; B.S.E. (Michigan), M.A.Sc., Ph.D. (Waterloo), P.Eng. - 1968. (Director of the CAD/CAM Centre).

Jullien, Graham A.; B.Tech. (Loughborough), M.Sc. (Birmingham), Ph.D. (Aston), P.Eng. - 1969.

Hackam, Reuben; B.Sc. (Technion, Israel), Ph.D. (Liverpool), P. Eng. - 1978.

Raju, G.R. Govinda; B.E. (Mysore), Ph.D. (Liverpool), P. Eng. - 1980.

Watson, Alan; B.Sc., M.Sc.Tech. (Manchester), D.U.S. (Southampton), Dr. rer. nat. (Kassel, W. Germany), P.Eng. - 1977.

Ahmadi, Majid; B.Sc. (Tehran, Iran), D.I.C., Ph.D. (Imperial College) - 1981.

Associate Professors

Alexander, Philip H.; B.A.Sc. (Assumption), M.A.Sc. (Windsor), P.Eng. - 1964. (Head of the Department).

Soltis, James; B.Sc. (Windsor), M.Sc., Ph.D. (Michigan), P.Eng. - 1974.

Sid-Ahmed, Maher A.; B.Sc. (Alexandria, Egypt); M.A.Sc., Ph.D. (Windsor) - 1978.

Kwan, Hon K.; B.Sc. (London), M. Phil. (Chinese U. of Hong Kong), D.I.C., Ph.D. (London) - 1988.

Research Professor

Perz, Matthias Casimir; M.Sc. (Poznan, Poland), Dipl. Eng. (Ecole Sup. d'Elect., Paris), P. Eng. - 1968.

Adjunct Professors

Loh, Nan K.; B.S.E. (Taiwan), M.A.Sc., Ph.D. (Waterloo) - 1979. (Professor, School of Engineering, Oakland University).

Ramachandran, V.; B.Sc. (Mysore), D.I.I.Sc., M.E., Ph.D. (Indian Institute of Science) - 1983. (Professor of Electrical Engineering, Concordia University).

Cherney, E.A.; B.Sc., Ph.D. (Waterloo), M.Sc. (McMaster), P.Eng. - 1981. (Special Projects Engineer, Ontario Hydro).

Chikhani, Aziz Y.; B. Sc., M. Sc. (Cairo), Ph.D. (Waterloo), P. Eng. - 1985. (Royal Military College, Kingston).

Shridhar, Malayappan; B.Sc. (Bombay), D.M.I.T., M.S. (Brooklyn), Ph.D. (Aston), P.Eng. - 1969. (Head, Electrical Engineering Department, University of Michigan, Dearborn).

11.2.1 AREAS OF SPECIALIZATION

The Department of Electrical Engineering offers graduate programs leading to the degrees of Doctor of Philosophy (Ph.D.) and Master of Applied Science (M.A.Sc.). Research is carried out in the two broadly defined areas of (a) Digital Signal Processing and (b) Power and High Voltage Engineering.

Within the area of Digital Signal Processing such research topics as speech processing, image processing, digital filtering, discrete transforms, number theory and hardware realizations of signal processing related devices are investigated. Within this research area the VLSI Research Group investigates modern VLSI implementations of high speed digital signal processing algorithms.

Research within the Power and High Voltage area deals with such topics as power systems, high voltage technology, electrical arcs, insulation and electric and magnetic field calculations.

11.3.1 COURSE DESCRIPTIONS

The graduate course offerings in the Department of Electrical Engineering are designed to complement the two major areas that define the research orientation of the department. Course requirements for the Ph.D. and M.A.Sc. degrees in Electrical Engineering will be selected from the courses listed below and related courses in other departments.

Graduate students in the Department will be associated with one of the two major areas of research and their program of studies will

be formulated in consultation with the departmental graduate advisors and approved by the Department Head.

Only a selected number of the courses listed below will be available each year and the current list will be provided by the departmental Coordinator of Graduate Studies. The following are all two hours a week for one semester.

88-510. Advanced Electromagnetic Theory
Advanced theory and applications of electromagnetic fields and wave propagation.

88-511. Electrical and Magnetic Materials
Selected topics in the properties of electrical, electronic, dielectric and magnetic materials. Measurements techniques of the properties and applications of the materials.

88-513. High Voltage Technology
Generation and measurement of high voltages, non-destructive and destructive testing techniques.

88-514. Advanced Power Systems
High voltage surges, origins, propagation and reflections; transients in power equipment; protection of substations.

88-515. Electric and Magnetic Field Calculations
Development and application of analytic and numerical techniques for calculating electromagnetic and electrostatic fields. Computer-oriented approaches are emphasized and a project is required.

88-516. High Voltage Phenomena
Ionization and decay processes, electrical breakdown mechanisms in gaseous, liquid and solid insulation.

88-517. Electrical Arcs in Power Apparatus
Thermodynamics of gaseous plasmas. Elenbass-Heller description of the steady state arc. Current zero phenomena in power circuit interruption. Theory of unsteady and transient arc columns. Low and high pressure arcs and their radiative properties. Cathode, anode and wall phenomena. Vacuum arcs in rectifiers and circuit breakers. Arc gas heaters and plasma torches. Thermionic arcs in searchlights and thyratrons. Glow to arc transition.

88-518. Electric Machine Dynamics
Generalized theory of electric machines based on coupled circuit theory, transformation from three-phase to the d-q-o reference frame. Analysis of the performance of electric machines, including the effect of exciter, governor and stabilizer control loops. State-of-the-art digital computer methods for time domain analysis of machines.

88-521. Digital Signal Processing
Discrete processes, z-transform, recursive and non-recursive digital filters, quantization effects, hardware implementation.

88-522. Applied Time Series Analysis
Sampling theorem, statistical concepts Fourier transforms, power density spectrum correlation functions, convolution.

88-523. System Theory
Continuous and discrete time systems, state formulation techniques, controlability and observability concepts.

88-524. Stochastic Processes
Development and applications of probability models in the analysis of stochastic systems review of probability, random variables and stochastic processes; correlation functions applications to filtering, prediction, estimation and system identification.

88-525. 2-Dimensional Digital Signal Processing
Fundamental of 2-D signals and transforms Laplace, Z, Fourier, etc. Design, stability stabilization and implementation of 2-D LS systems. Reconstruction of signals from their projections.

88-526. Computer Graphics
2-Dimensional transformation: translation scaling, rotation. Clipping and windowing Transformation system. Interactive graphics 3-D Computer Graphic 3-D Transformation Wire frame perspective display. Hidden line and shading. Display devices, vector generators, display files.

88-527. Speech Processing
Physiology of human speech production and hearing; mathematical models for vocal tract; estimation of speech parameters; computer synthesis of speech; machine recogn

tion of speech and speakers through speech analysis, applications.

88-528. Image Processing
Digital image representation, elements of image processing system, image transform, image enhancement, pseudo-colour image processing, image restoration, image segmentation.

88-529. Discrete Transforms and Number Theoretical Methods
Properties of the discrete Fourier transforms, FFT algorithms and convolution, application of finite algebras, generalized DFT's, polynomial transforms, the Winograd DFT algorithm, applications of residue number systems to digital signal processing hardware.

88-530. Selected Topics in Digital Signal Processing
Selected topics in the analysis and design of digital systems and sub-systems and their applications in the area of signal processing. (May be repeated more than once for credit if the topics are different).

88-531. VLSI Design
Very large scale integration (VLSI): fundamentals, concepts and applications, MOS devices characteristics; layout methodology and rules; colour codes, stick diagram, design rules; integrated circuits fabrication; implementation aids; languages, simulation and available packages, combinatorial and sequential circuit implementation; VLSI architectures; custom design. A term project is required.

88-590. Special Topics
Selected advanced topics in a field of research in the Department. (May be repeated more than once for credit if the topics are different).

88-796. Major Paper

88-797. Thesis

88-798. Dissertation

12 ENGINEERING MATERIALS

12.1.1 OFFICERS OF INSTRUCTION

Professors

Youdelis, William V.; B.Sc. (Alberta), M.Eng., Ph.D. (McGill), P.Eng. - 1965.

Watt, Daniel Frank; B.Sc. (Alberta), Ph.D. (McMaster), P.Eng. - 1969.

Northwood, Derek Owen; B.Sc. (Eng.), A.R.S.M. (London), M.Sc. (Part I), Ph.D. (Surrey), F.I.M, F.A.S.M., P. Eng. - 1976. (Head of the Department).

Yamauchi, Hisao; B.Eng. (Tokyo), M.S., Ph.D. (Northwestern), P.Eng. - 1980.

12.2.1 AREAS OF SPECIALIZATION

The Department offers Ph.D. and M.A.Sc. degrees in Engineering Materials, specializing in the physical and mechanical aspects. There is ongoing research in the areas of phase transformations, deformation and fracture at ambient and elevated temperatures, microstructure-property relationships, corrosion and hydrogen- metal interactions. This work is applied to the development of steels, aluminum alloys, zirconium alloys, electronic materials, dental materials and hydrogen (energy) storage materials.

12.3.1 COURSE DESCRIPTIONS

Course requirements for the Ph.D. and M.A.Sc. degrees in Engineering Materials will be selected from the courses listed below and related courses in other departments. A student's course program will be formulated in consultation with the departmental graduate committee and requires approval of the research advisor and Department Head.

All courses listed will not necessarily be offered in any given year.

89-501. Advanced Crystallography
Application of X-ray diffraction principles to the study of materials, application of Fourier

series, single crystal techniques, studies of preferred orientation, imperfections. (3 lecture hours a week).

89-502. Transformations in Metals
Phenomenological treatment of transformation processes; diffusion controlled and diffusionless (martensitic) transformations; application of thermodynamic and phenomenological rate laws to transformations: nucleation, recrystallization, precipitation, spinoidal decomposition, ordering, eutectoid decomposition, etc. (3 lecture hours a week).

89-504. Thermodynamics of Irreversible Processes
Fluctuation theory and Onsager's reciprocal relations, phenomenological treatment of irreversible processes, entropy production rate and conjugation of fluxes and forces, coupling of irreversible processes and Curie's symmetry principles, linear transformation of fluxes and forces, stationary states of various orders and minimum entropy production rate, determination of phenomenological relations and coefficients for various processes; chemical and thermal diffusion, chemical reactions, heat and electrical conduction, thermoelectric phenomena, etc. (3 lecture hours a week).

89-505. Strengthening Methods in Crystals
Dislocation-particle interactions, strengthening by dislocation substructures, particle and fiber reinforcement, strong microstructures from the melt, strong microstructures from the solid. (3 lecture hours a week).

89-506. Microscopy of Materials
The theoretical and technical aspects of the study of microstructure and composition of materials, optical microscopy, electron microscopy (scanning and transmission) including electron diffraction and image analysis principles, electron microanalysis, x-ray topography, field-ion microscopy, relationship of observed microstructures to the macroscopic properties of materials. (2 lecture, 2 laboratory hours a week).

89-507. Fracture Mechanics
The fracture mechanics approach to design; physical significance of fracture toughness; measurement of fracture mechanics parameters; non-destructive inspection techniques; principles of fracture-safe design; the relation between the microscopic and macroscopic aspects of plane-strain fracture; fracture of specific metallic and nonmetallic materials. (3 lecture hours a week).

89-508. Radiation Damage in Metals
Theory of radiation induced defect production; observation of defect production by energetic particle bombardment; defect annealing processes; radiation enhanced diffusion; defect clustering and void formation; simulation experiments in HVEM; irradiation strengthening, embrittlement, growth and creep. (3 lecture hours a week).

89-509. Configuration and Properties of Materials
Anisotropic crystals - elasticity, dielectricity, piezoelectricity, pyroelectricity, thermoelastic effects, ferroelectricity, sonicwave propagation; amorphous solids - structure, stability, magnetic properties, mechanical properties; mixtures - local atomic arrangements, order-disorder transformations.

89-590. Special Topics in Materials
Selected advanced topics in the fields of engineered materials and materials engineering. (3 lecture hours a week).

89-796. Major Paper

89-797. Thesis

89-798. Dissertation

13 GEOLOGICAL ENGINEERING

13.1.1 OFFICERS OF INSTRUCTION

Professors

Sonnenfeld, Peter; Absolut. Rer. Nat. (Comenius U., Bratislava), Dr. Rer. Nat (Charles U., Prague), P. Geol. - 1966.

Smith, Terence E.; B.Sc., Ph.D. (Wales) - 1969.

Hudec, Peter P.; B.Sc. (Western Ontario), M.S., Ph.D. (Rensselaer Polytech. Inst.), A.I.P.G. - 1970.

Symons, David T. A.; A. M. (Harvard), B.A.Sc., Ph.D. (Toronto), P.Eng. - 1970.

Turek, Andrew; B.Sc. (Edinburgh), M.Sc. (Alberta), Ph.D. (Australian National U.), P.Eng. - 1971.

Simpson, Frank; B.Sc. (Edinburgh), Dr. Nat. Sc. (Jagiellonian U., Krakow), P.Eng. - 1974. (Head of the Department).

Associate Professors

Sklash, Michael G.; B.A.Sc. (Windsor), M.Sc., Ph.D. (Waterloo), P.Eng. - 1977.

Holm, Paul E.; A.B. (Augustana), M.S., Ph.D. (Illinois) - 1979.

Rodrigues, Cyril G.I.; B.Sc. (British Columbia), M.Sc., Ph.D. (Carleton) - 1979.

Assistant Professors

Samson, Iain M.: B.Sc., Ph.D. (Strathclyde) - 1986.

13.2.1 AREAS OF SPECIALIZATION

The Department of Geology offers programs leading to the M.Sc. and M.A.Sc. degrees. The main areas of research specialization in the Department are: Applied Sedimentology, Engineering Geology, Applied Geochemistry and Applied Geophysics.

13.3.1 COURSE DESCRIPTIONS

Courses offered in Geological Engineering at the graduate level are listed below. Students may, with the permission of the Department Head and the advisor, take courses from departments other than the one in which the student is registered.

All courses listed will not necessarily be offered in any given year.

90-550. Valuation of Ore Deposits
Ore reserve calculation methods; supply and demand factors and their projection; capitalization, discounting, and amortization of ore deposits; marketing including cartels, taxation, legislation, and national interest. (3 lecture hours a week).

90-552. Geologic Origin and Properties of Industrial Rocks and Minerals
Occurrence, origin, exploration and exploitation methods; physical and chemical properties of industrial minerals and their uses; economics of industrial rocks and minerals. (3 lecture hours a week).

90-553. Physical Properties and Causes of Deterioration of Construction Materials
Geologic and physio-chemical factors affecting the stability of construction materials (rock aggregate, expanded aggregate, tile, brick, etc.) under conditions of natural weathering and exposure to salts and other pollutants. (3 lecture hours a week).

90-554. Advanced Petroleum Geology
Detailed geological considerations of oil and gas accumulations concentrating on topics such as host rocks, paleoenvironments and structures. (3 lecture hours a week).

90-555. Hydrocarbon Reservoirs
Hydrodynamic and geologic factors in the migration of oil and gas into reservoirs, the characteristics of reservoirs, and reservoir engineering associated with the extraction of the hydrocarbons. (3 lecture hours a week).

90-556. Geotechnical Geophysics
Application of geophysical methods in engineering geology emphasizing blast vibration analysis; near-surface seismic and electrical methods. (3 lecture hours a week).

90-557. Applied Hydrogeology
Advanced topics in hydrogeology related to disposal effects on groundwater. Topics include: groundwater contaminants, groundwater monitoring strategies, site

evaluation, site remediation, and case histories. (Prerequisite: 90-436, or equivalent, or permission of instructor). (3 lecture hours a week).

90-558. Advanced Hydrogeology
Advanced topics in hydrogeology, including: applied isotope hydrogeology, groundwater flow in fractured rocks, theory of contaminant transport in groundwater systems, evaluation of hydraulic conductivity, tracer tests, modelling of hydrogeologic systems, and case histories. (3 lecture hours a week).

90-559. Underground Storage
Exploitation of subsurface space for storage of industrial products and wastes. Possible environmental impact of poorly planned underground storage. Economics of subsurface *vs.* surface storage. Emphasis on Canadian case histories. (3 lecture hours a week).

90-580. Graduate Seminar

90-590. Special Topics
Selected advanced topics in a field of research in the Department.

90-797. Thesis

14 INDUSTRIAL ENGINEERING

14.1.1 OFFICERS OF INSTRUCTION

Associate Professors

Dutta, Sourin P.; B.E., M.Tech. (Durgapur), Ph.D. (I.I. Sc.), P. Eng. - 1984. (Head of the Department).

Lashkari, Reza S.; B.Sc. (Tehran), M.S.I.E., Ph.D. (Kansas State) - 1977.

Singh, Nanua; B.E., M.E., Ph.D. (Rajasthan) - 1986.

Assistant Professor

Abdou, George; B.Sc. (Cairo), M.Sc., Ph.D. (Iowa State) - 1987.

Adjunct Professors

Raouf, Abdul; M.S.I.E. (Toledo), Ph.D. (Windsor), P. Eng. - 1966.

Morooka, Kozi; Ph.D. (Tokai) - 1979.

14.2.1 AREAS OF SPECIALIZATION

The Industrial Engineering Department offers Ph.D. and M.A.Sc. graduate programs in the area of Production Management and Control. The emphasis is on the application of the principles of Operations Research and Man-Machine Interface in the design of production systems.

14.3.1 COURSE DESCRIPTIONS

Courses offered by Industrial Engineering at the graduate level are listed below. Students may, with the permission of the Department Head and the advisor, take courses from departments other than the one in which the student is registered.

All courses listed will not necessarily be offered in any given year.

91-500. Optimization
Classical Theory of Optimization. Kuhn-Tucker Conditions. Unconstrained optimization: gradient methods, conjugate gradient methods, variable metric methods, search

techniques. Constrained Optimization. Approximation methods, projection methods, reduced gradient methods; penalty function methods; computational algorithms. Recent advances in Optimization. Use of computer software packages. (3 lecture hours a week).

91-501. Industrial Experimentation and Applied Statistics

Distributions of functions of variables, estimations and tests of hypotheses, power of tests, non-parametric tests, sampling techniques, analysis of variance, randomized blocks. Latin squares and factorial experiments. (3 lecture hours a week).

91-502. Simulation Principles and Techniques

Discrete-Event System Simulation. Random number generation. Stochastic variate generation. Input parameters; identification and estimation. Output Analysis. Static and dynamic output analysis; initial and final conditions; measures of performance and their variance estimation; confidence interval. Design of experiments. Various sampling techniques. Single and multifactor designs. Fractional designs. Response surfaces. Regeneration method for simulation analysis; Monte Carlo optimization. (3 lecture hours a week).

91-503. Production and Inventory Control Systems

Analysis of Production-Inventory Systems. Inventory Systems; deterministic, single-item and multi-item models; quantity discounts; stochastic, single-period models; periodic review and continuous review models. Production Planning. Static demand models; product mix and process selection problems; multi-stage planning problems. Dynamic demand models; multi product and multistage models. Operations scheduling; job shop scheduling; line balancing. New directions in Production Systems Research. (3 lecture hours a week).

91-504. Advanced Operations Research I

Theory and computational techniques for solving linear and integer programming problems. Theoretical foundations of the Simplex Algorithm. Duality, sensitivity analysis and parametric programming. Network flow methods. Integer programming problems. Cut algorithms, branch and bound methods, and implicit enumeration methods. Dynamic programming. (3 lecture hours a week).

91-505. Advanced Operations Research II

Probabilistic O.R. Models. Decision theory and games. Markovian decision process. Queueing theory. Single channel and multi-channel queueing systems. Queues with general arrival and service patterns. Bulk queues and priority queues. Applications of queuing models. Probabilistic dynamic programming. (3 lecture hours a week).

91-506. Prediction and Measurement of Industrial Work Performance (Special Emphasis on Mental Work)

Job and skill profiles; workload definition and measurement; workload and performance modelling; information theory applications, models of the process operator; optimal control models of human response; queuing models for monitoring and supervisory behaviour; manual control skills and automation; signal-flow graphs and their uses in operations design and planning. (3 lecture hours a week).

91-507. Advances in Industrial Ergonomics

Ergonomics and work design; human workload measurement in industry; visual display terminals at the workplace; signal detection and visual inspection; user-computer interaction; human factors aspects of flexible manufacturing systems; effects of individual and combined environmental stressors on human performance. (Prerequisites: 91-415 or equivalent). (3 lecture hours a week).

91-508. Reliability Engineering

Design for System Effectiveness; Reliability program; failure patterns for complex products; reliability measures; static reliability models; mathematical concepts of reliability; interference theory and reliability computation; reliability bounds in probabilistic design; dynamic reliability models; sequential life testing. (3 lecture hours a week).

91-509. Computer-Integrated Manufacturing

Development of CIM; the CIM pyramid - key functions. System integration; standards for communications - MAP. Data base as the hub of CIM - types of data base. Role of simulation and support systems - decision support systems and expert systems. Sensor technology, robot vision, and group technology. Impact of CIM. Factory of the future. (Prerequisites: 91-411 or equivalent). (3 lecture hours a week).

91-510. Advanced Engineering Economy

Principles and methods for engineering analysis of industrial projects and operations. Criteria for economic decisions, project investment analysis, gain and loss estimating and techniques for economic optimization under constraint are included. Emphasis is placed on the construction and use of analytical models in the solution of engineering economy problems. Elements of risk and uncertainty are included through use of probabilistic techniques. (3 lecture hours a week).

91-511. Stochastic Processes

Stochastic processes. The Poisson process-relationship to exponential, Erlang and uniform probability distributions. Markov chains - basic limit theorem. Continuous time Markov chains - birth-and-death processes, time-dependent probabilities, limiting probabilities, relationship to the exponential distribution, uniformization. Renewal theory - the renewal function, stopping times, Wald's equation, the key renewal theorem, alternating processes, age, remaining life and total life distributions at an arbitrary time-point. Brownian motion. Random Walks. Martingales. (Prerequisite: Math 65-542 or equivalent). (3 lecture hours a week).

91-512. Flexible Manufacturing Systems

FMS as CIM - implemented at the shop floor. Hierarchial network of computers, programmable controllers and work centres. Data base for parts and factory status. Manufacturing Automation Protocol. Tool management system - acoustic emission. Signature analysis. Planning, design and implementation of FMS - role of management commitment. Impact of FMS on manufacturing industry - Job specification of FMS engineers. (Prerequisite: 91-321, or equivalent) (3 lecture hours a week).

91-513. Advanced Manufacturing Technology

Recent developments in manufacturing processes; newer materials including plastics, optical fibres and composites. Micromanufacturing - integrated circuits. Laser machining. Developments in nontraditional methods, in EDM and ECM. Trends in automation. Computer-aided technologies. Manufacture in and for space. (3 lecture hours a week).

91-590. Special Topics

Selected advanced topics in the field of Industrial Engineering. (3 lecture hours a week).

91-796. Major Paper

91-797. Thesis

91-798. Dissertation

15 MECHANICAL ENGINEERING

15.1.1 OFFICERS OF INSTRUCTION

Professors

Colborne, William George; B.Sc., M.Sc. (Queen's), P.Eng. - 1958.

Sridhar, Krishnaswamy; B.Sc. (Madras U.) D.M.I.T. (Madras Inst. of Technology), M.A.Sc., Ph.D. (Toronto), P.Eng. - 1963.

North, Walter P.T.; B.Sc. (Queen's), M.Sc. (Saskatchewan), Ph.D. (Illinois), P.Eng. - 1965.

McDonald, Thomas William; B.Sc., M.Sc. (Queen's), Ph.D. (Purdue), P.Eng. - 1968.

Reif, Zygmunt Francis; B.Sc. (Eng.), Ph.D. (London), P.Eng. - 1969.

Wilson, Norman W.; B.Eng., M.Eng. (McMaster), Ph.D. (Wales), P.Eng. - 1980. (Head of the Department).

Associate Professors

Tucker, Henry Joseph; B.Eng., M.Eng., Ph.D. (McGill) - 1960.

Kierkus, Witold T.; B.Eng., M.Sc., Ph.D. (Tech. U. of Warsaw) - 1972.

Rankin, Gary W.; B.A.Sc., M.A.Sc., Ph.D. (Windsor), P. Eng. - 1980.

Gaspar, Robert George Stephen; B.A.Sc., M.A.Sc., Ph.D. (Windsor) - 1983.

Huynh, Van Minh, B. Eng. (McGill), M. Eng., Ph.D. (McMaster) - 1983.

Adjunct Professors

Brammer, Anthony J.; B.Sc., Ph.D. (Exeter) - 1972.

Hageniers, Omer L.; B.A.Sc., M.A.Sc., Ph.D. (Windsor), P.Eng. - 1973.

Pryor, Timothy R.; B.E.S. (Johns Hopkins), M.S. (Illinois), Ph.D., D.Sc. (Windsor) - 1973.

Nivi, Hossein; B. Sc., M.S. (Tehran Polytechnique), Ph.D. (London), P. Eng. - 1982.

15.2.1 AREAS OF SPECIALIZATION

Ph.D. and M.A.Sc. graduate programs are offered in the areas of Energy in Buildings, Fluidic Controls, Flow Measurement, Machine Dynamics and Computer-Aided Manufacturing.

15.3.1 COURSE DESCRIPTIONS

Courses offered by Mechanical Engineering at the graduate level are listed below. Students may, with the permission of the Department Head and the advisor, take courses from departments other than the one in which the student is registered. This is often advisable in order to obtain a well-rounded program of study.

With the permission of the advisor and Department Head, Mechanical Engineering courses with numbers greater than 449 and related to the graduate field of study may be taken for graduate credit. Not more than a total of six semester hours of credit shall be allowed for the undergraduate courses offered by any department.

92-501. Transport Phenomena
Rate equations for mass, momentum, and heat transfer. Governing conservation equations for mass, momentum, and heat transfer. Dimensional analysis and design equations. Typical engineering process applications. (3 lecture hours a week).

92-502. Theory of Viscous Fluids
Laminar flow. Navier-Stokes equations with exact and approximate solutions, approximate solution of the boundary layer by momentum theorem. (3 lecture hours a week).

92-503. Turbulent Flow
General turbulence theories, wall turbulence and free turbulence. (3 lecture hours a week).

92-505. Energy Transfer
Application of advanced analysis techniques to problems in the areas of conduction, diffusion, free and forced convection, boiling, condensation and radiation. (3 lecture hours a week).

92-506. Thermal Systems Design
Advanced systems design requiring the application of economics, heat transfer, simulation and optimization. (3 lecture hours a week).

92-507. Experimental Techniques in Flow Measurements
A course covering the theory of flow and velocity measurement. Emphasis will be placed on hot wire instruments and turbulence measurements. (3 lecture hours a week).

92-508. Advanced Fluid Dynamics
Applications and limitations of ideal fluid flow theory. (3 lecture hours a week).

92-509. Multiphase, Multicomponent Flows
A thorough treatment of the basic techniques for analyzing one- dimensional multiphase, multicomponent flows in order to predict flow regimes, pressure drop, etc. Practical applications in fluidization, sedimentation and boiling heat transfer. (3 lecture hours a week).

92-511. Advanced Strength of Materials
Plates, unsymmetrical bending, energy methods, theories of failure, torsion of noncircular sections. (3 lecture hours a week).

92-513. Experimental Stress Analysis
An introduction and analysis of deflection-strain-stress measurements using mechanical, electrical and optical methods. (3 lecture, 3 laboratory hours a week).

92-514. Mechanical Vibration
Vibration of lumped parameter and continuous systems. Exact and approximate methods of solution, stability and self-excited vibration. Non-linear vibration of single degree of freedom systems. (3 lecture hours a week).

92-516. Industrial and Motor Vehicle Noise
Hearing damage risk criteria and in-plant noise regulations; determination of permissible exposure levels due to continuous and intermittent noise. Measurement of machine noise and standard procedures. Fundamentals of noise control. Characteristics and levels of motor vehicle and traffic noise; motor vehicle noise control legislation and standard procedures for measurement. (3 lecture hours a week).

92-522. Engineering and the Environment
Man and his environment; evaluation of biosphere; ecological balances; pollution and environment; impacts of engineering activities on the environment - land, air, water vegetation and other living beings; criteria, standards, and goals; environmental factors to be considered in the engineering designs. Consideration and discussion of typical examples. (3 lecture hours a week).

92-590. Directed Special Studies
A special course of studies with content and direction approved by the student's chief advisor. Although there may not be formal lectures, the course will carry the weight of three lecture hours.

92-796. Major Paper

92-797. Thesis

92-798. Dissertation

16 ENGLISH

16.1.1 OFFICERS OF INSTRUCTION

Professor Emeritus

Sullivan, John Francis; B.S., M.A. (Detroit), Ph.D. (Michigan)- 1958.

Professors

McNamara, Eugene Joseph; B.A., M.A. (DePaul), Ph.D. (Northwestern) - 1959.

Smedick, Lois Katherine; B.A. (Wilson), M.S.L. (Pontifical Institute of Mediaeval Studies, Toronto), Ph.D. (Bryn Mawr) - 1963. (Dean, Faculty of Graduate Studies and Research).

Huang, Roderick; B.A. (Fukien Christian, China), M.A. (Wesleyan), Ph.D. (Northwestern) - 1965.

Stollman, Samuel S.; Rabbi (Yeshiva), B.Sc. (Columbia), M.A., Ph.D. (Wayne State) - 1966.

Watson, Edward A.; B.A. (Howard), M.A. (Chicago), Ph.D. (Toronto) - 1966.

Ditsky, John M.; Ph.B., M.A. (Detroit), Ph.D. (New York) - 1967.

MacLeod, Alistair; B.A., B.Ed. (St. F.X.), M.A. (New Brunswick), Ph.D. (Notre Dame), LL.D. (St. F.X.) - 1969.

Stevens, Peter; B.A. (Nottingham), M.A. (McMaster), Ph.D. (Saskatchewan) - 1969.

MacKendrick, Louis King; B.A., M.A. (Western Ontario), Phil.M., Ph.D. (Toronto) - 1971.

Dilworth, Thomas R.; B.A., M.A., Ph.D. (Toronto) - 1977.

Herendeen, Wyman H.; B.A., M.A. (Brown) Ph.D. (Toronto) - 1984.

Associate Professors

Quinn, Rev. Joseph A., C.S.B.; B.A., M.A. (Boston College), S.T.B. (University of St. Michael's College), Ph.D. (Purdue) - 1965.

Hornsey, Richard F.; B.A. (Assumption), M.A. (Windsor), Ph.D. (Alberta) - 1969. (Head of the Department).

Ducharme, Edward W.; B.A., M.A. (Windsor), Ph.D. (Michigan), LL.B. (Windsor) - 1969.

Murrah, Charles Clay; B.A. (Chicago), M.A., Ph.D. (Harvard) - 1970.

Harder, Bernhard D.; B.A., M.A. (British Columbia), Ph.D. (North Carolina) - 1970.

Janzen, Henry David; B.A. (Assumption), M.A. (Windsor), Ph.D. (Wayne State) - 1970.

Atkinson, Colin B.; B.Eng. (McGill), B.A. (Sir George Williams), M.A. (Columbia), Ph.D. (New York) - 1971.

Assistant Professors

Bebout, Linda J.; B.A. (Central), M.Sc. (San Francisco State), Ph.D. (Cornell) - 1977.

Long, Kenneth; B.A., M.A. (Windsor) - 1968.

Stoneman, William P.; B.A., M.A. (Toronto), B.A., M.A. (University College, Dublin), Ph.D. (Toronto) - 1986.

Research Associate

Cassano, Colleen G.; B.A., M.A. (Windsor) - 1985.

Sessional Instructors

Gamble, Brian; B.A., M.D. (Western), M.A. (Windsor) - 1979.

Dunwoody, Michael; B.A., M.A. (Windsor) - 1980.

Hurwitz, Anita; B.A., M.A. (Windsor) - 1980.

Gerasimoff, E. Mark; B.A., M.A. (Windsor), B.Ed. (Western) - 1983.

16.2 Programs of Study

16.2.1 THE MASTER OF ARTS DEGREE

Admission Requirements

In addition to the requirements set forth in 1.3 and 1.6.1 for admission to the Faculty of Graduate Studies and Research and to programs leading to the Master's degree, applicants for admission to the Candidate year in the programs leading to the Master of Arts degree in English should expect to satisfy the following particular requirements:

1) Two courses, or the equivalent, from the 100- series, or a similar introductory literature course, taken usually in the first undergraduate year.

2) Six undergraduate courses, or the equivalent, distributed as evenly as possible among the following four categories:

(a) Early English and Medieval Literature
(b) Renaissance Literature
(c) Restoration and Eighteenth-Century Literature
(d) Nineteenth-Century British Literature

3) Six undergraduate courses, or the equivalent, from three or more of the following six categories:

(a) Twentieth-Century Literature
(b) Canadian Literature
(c) American Literature
(d) Critical Theory and Practice
(e) Language and Linguistics
(f) Special Topics

4) Two semesters of Studies courses, or the equivalent (honours seminar, directed readings, independent study, honours essay, etc.), in the final undergraduate year.

5) Additional courses from areas in 2) and 3) above to make up the total number of courses required for an honours degree.

Students who are deficient in any of these particular requirements may be asked to register in appropriate undergraduate courses in order to satisfy the requirements. (*See below*, "Qualifying or Placement Examination.")

Students who are admitted to the Faculty of Graduate Studies and Research in the two-year M.A. program will be expected to elect courses in their first year to complete the requirements specified above.

Methodology: Knowledge of the methods and tools of scholarship in English is required. A student who has not had English 26-309 (Scholarship and Bibliography) or its equivalent will be required to take 26-500 on a Pass/Non-Pass basis in addition to the regular course load.

Qualifying or Placement Examination: An applicant for admission to the candidate year for the Master's degree who is deficient in any of the stated requirements for admission to this level of graduate study may be invited to, or may request to write a qualifying examination. A similar examination is available as a placement test, on the basis of which students in the two-year M.A. program may be granted advanced standing.

Students from other universities may arrange to take these examinations in other centres provided the Department is notified well in advance.

Programs

1) *Thesis Program:* Six courses, normally graduate seminars involving independent research, and 26-500 if necessary. In addition, a thesis of at least 20,000 words.

2) *Course Work Program:* Eight courses, normally graduate seminars involving independent research and the presentation of one or more papers, and 26-500 if necessary.

3) *Creative Writing Program:* Candidates for a Master of Arts in English and Creative Writing must take four courses, normally graduate seminars, from the regular academic offerings, and 26-500 if necessary. In addition, they must take two courses in the range 590-595 (the creative writing seminar) and complete a creative project that in the judgment of the candidate's committee is of sufficient merit for the awarding of the degree: a novel, a collection of poems or short stories, a play. Places in this program are reserved for those whose submissions have been approved by the creative writing staff.

Counselling: Students admitted to one of the Master's degree programs in English will be assigned a faculty advisor who will be available to counsel them on all aspects of their work. The Department Head (or a delegate) must approve a student's program of study before registration.

Time Limits: A full-time student should complete work on a Master's degree within three years after the student's first registration as a candidate. Part-time students admitted to candidacy should expect to complete their work within five years after first registration. (*See also* 1.4 and 1.6.2).

Grades: After admission to Candidacy, graduate students in the M.A. program in English must maintain at least a B average, but graduate credit is only given at the A and B level. A student whose grade in a graduate course is less than B may be allowed to repeat the course or to substitute another for it, at the discretion of the Dean of Graduate Studies and Research and the Department Head. The student may not repeat more than one course.

16.3.1 COURSE DESCRIPTIONS

All graduate courses are seminars. Enrollment is limited in these courses, because considerable contribution is expected from each member of the seminar. For such courses, the corresponding undergraduate survey course, or an acceptable equivalent, is ordinarily a prerequisite. This condition may be waived only by agreement of both the Department Head and the professor offering the seminar. The specific topics of individual courses will vary from year to year, depending upon the interests and needs of professors and students. It is thus impossible to list in detail the many topics that may from time to time be offered, and the schedule below lists only the major periods or forms of literature in which special topics courses may be available.

Special topics courses having the same course number may be taken several times, providing the course content is different, and with the permission of both the Department Head and the professor offering the course. More than one seminar or course, numbered in sequence in any of the listed areas, may be offered in a given year.

In the Winter term each year, the Department publishes a booklet giving complete information as to specific topics of the courses to be offered in the coming academic year, with texts, reading assignments, and similar material about requirements of the course wherever possible. Students are welcome to write or call at the Department offices for a copy of this booklet.

All of the following areas will not necessarily be represented by course offerings in any one year.

26-500. Methodology

26-501. Tutorials

26-505. The English Language and Linguistics

26-510. Literature of the Old English Period

26-515. Literature of the Middle English Period

26-520. Literature of the Renaissance

26-525. Renaissance Drama

26-530. Literature of the Restoration Period

26-535. Literature of the Eighteenth Century

26-540. Literature of the Romantic Period

26-545. Literature of the Victorian Period

26-550. Literature of the Twentieth Century

26-555. Literature of the United States

26-560. Literature of Canada

26-565. Literature of the British Commonwealth

26-570. Literary Genres: Poetry

26-575. Literary Genres: Drama

26-580. Literary Genres: Fiction

26-585. Literary Genres: Criticism

26-590. Creative Writing Seminar

26-794. Creative Writing Project

26-797. Thesis

17 GEOGRAPHY

17.1.1 OFFICERS OF INSTRUCTION

Professors

Sanderson, Marie E.; B.A. (Toronto), M.A. (Maryland), Ph.D. (Michigan) - 1965.

Stebelsky, Ihor; B.A., M.A. (Toronto), Ph.D. (Washington) - 1968. (Head of the Department).

Trenhaile, Alan S.; B.Sc., Ph.D. (Wales) - 1969.

Romsa, Gerald H.; B.Sc. (Manitoba), M.A. (Waterloo), Ph.D. (Florida), M.C.I.P. - 1970.

Innes, Frank C.; B.Sc. (Glasgow), M.A., Ph.D. (McGill) - 1972.

Jacobs, John D.; B.A. (Adams State), M.A., Ph.D. (Colorado) - 1974.

Associate Professors

Lall, Amrit; B.A., M.A. (Punjab), Ph.D. (Indiana) - 1967.

LaValle, Placido D.; B.A. (Columbia), M.A. (Southern Illinois), Ph.D. (State U. of Iowa) - 1969.

Blenman, E. H. Morris; B.A. (London), M.A. (Calgary), Ph.D. (McGill) - 1974.

Assistant Professors

Lakhan, V. Chris.; B.A. (Guyana), M.A. (Windsor), Ph.D. (Toronto), F.R.G.S. (U.K.) - 1984.

Adjunct Associate Professor

Caruso, Douglas J.; B.A. (British Columbia), M.A. (Minn.), M.A.I.C.P., M.C.I.P. - 1979.

17.2 Programs of Study

17.2.1 THE MASTER OF ARTS DEGREE

The general admission, residence, and period of study requirements may be found in the regulations of the Faculty of Graduate Studies and Research, see 1.3 and 1.6.

All graduate students will be assigned to an advisory committee and may be examined to determine research capabilities and deficiencies in background courses. Remedial courses or supplemental readings may be required.

Program Requirements

1) After receiving counselling in the Department, candidates may proceed toward the degree in one of the following programs:

(a) a minimum of six courses, one of which may be replaced by a senior undergraduate course with the permission of the Department, and a thesis on an approved research problem, plus an oral examination on the thesis;

(b) a minimum of eight courses, one of which may be replaced by a senior undergraduate course with the permission of the Department, and a major paper on an approved topic. The completion of the major paper will be followed by a comprehensive written examination covering two subject areas of the candidate's choice.

The option to complete program (a) or (b) will be kept open in consultation with the Department.

2) All candidates will take 42-230 and 42-231 as non-credit courses, if they have not taken them or equivalent course(s) at the undergraduate level.

3) All candidates will take 42-500 as a required course.

4) Candidates are required to have reading ability in a language which has significant geographic literature, other than English, or in a language relevant to the thesis topic; or to successfully complete a Computer Science course or 42-403 (Computer Mapping). The language or course is to be chosen in consultation with the major advisor and the Head of the Department. If the student has demonstrated adequate competence in one of these areas at another university, this requirement may be waived with the permission of the Head of the Department.

17.3.1 COURSE DESCRIPTIONS

The following are normally offered for two hours a week. All courses listed will not necessarily be offered in any one year.

42-500. Modern Geographic Thought
Designed to inform the student of rational inquiry by exposing him to modern geographic literature and thought. This would have major impact upon a student's thesis design and proposal. (Prerequisite: 42-230, 42-231 or equivalent).

42-502. Advanced Marketing Geography
Analysis of trends in the spatial development of distribution functions with emphasis upon population, income and transportation.

42-503. Practicum in Geography
Applications of geographical methodology in the analysis of specific problems involving either field investigation, laboratory analysis, or archival research. Students consult and work directly with a faculty advisor on specific geographic research problems. (6 to 12 research hours per week).

42-504. Advanced Spatial Analysis
Techniques of modern spatial analysis including inferential cartography, multivariate analysis of spatial distributions, analysis of spatial series, pattern analysis and stochastic modeling.

42-510. Advanced Medical Geography
A discussion of medical geography based on the concept of ill- health as maladjustment to the environment; world-wide examples of inappropriate development and human disease, with an emphasis on prevention techniques and appropriate amelioration.

42-513. Development Problems in Selected Regions
Readings and discussion of economic, demographic, and cultural basis for development and regional inequalities in a developed or developing region.

42-515. Problems in Modern Climatology
A research seminar on current problems in climatology, selected in consultation with the instructor.

42-516. Problems in Applied Climatology
A seminar designed to acquaint the students with modern research in urban climatology, especially in Canada; and with applied climatology, especially in water balance, agricultural and bioclimatological studies.

42-517. Urban Geography
Marxist, neoclassical, behavioural and systems approaches to urban analyses. Selected theoretical approaches to the understanding of urban processes.

42-518. Urban-Regional Planning
Issues, such as planning for an aging society, are analyzed.

42-519. Geomorphological Theory
Supervised readings and seminars relating to the development of modern geomorphological theory.

42-520. Applied Geomorphology
Supervised readings and seminars on selected problems in applied geomorphology.

42-521. Advanced Resource Geography
A seminar of research and readings on environmental systems, their analysis, and application to the management of natural and human resources.

42-522. Applied Resource Geography
Selected research projects involving the management of resource systems and the planning of resource control schemes, applying concepts evolved in 42-521. Particular emphasis is placed on the discussion of agricultural resource systems.

42-523. Advanced Cultural Geography
A seminar on selected problems in cultural geography such as culture-ecology relationships, cultural landscape analysis, multiculturalism and ethnic communities and their spatial dynamics and impact.

42-524. Advanced Population Geography
Supervised readings and seminars on selected aspects of population distribution and redistribution; migration mechanism, theories and applications; international and internal migrations in Canada or a selected region; population theories and their geographic implications.

42-527. Advanced Regional Geography
Region and problems to be selected in consultation with the instructor.

42-528. Advanced Industrial Geography
An examination of the Canadian spatial economy applying both historical and quantitative techniques to selected problems. The role of multinational corporations and regional interest groups will be examined in Canada and elsewhere.

42-529. Advanced Transportation Geography
The role of transportation in spatial theories of development, modernization theory, export-base theory, growth pole theory, centre periphery theory, transportation as a social overhead; transportation in developing countries.

42-537. Advanced Problems in Geography
Topics to be selected in consultation with the instructor.

42-796. Major Paper

42-797. Thesis

18 GEOLOGY

18.1.1 OFFICERS OF INSTRUCTION

Professors

Sonnenfeld, Peter; Absolut. Rer. Nat. (Comenius U., Bratislava), Dr. Rer. Nat. (Charles U., Prague), P.Geol. - 1966.

Smith, Terence E.; B.Sc., Ph.D. (Wales) - 1969.

Hudec, Peter P.; B.Sc. (Western Ontario), M.S., Ph.D. (Rensselaer Polytech. Inst.) A.I.P.G. - 1970.

Symons, David T.A.; B.A.Sc. (Toronto), A.M. (Harvard), Ph.D. (Toronto), P.Eng. - 1970.

Turek, Andrew; B.Sc. (Edinburgh), M.Sc. (Alberta), Ph.D. (Australian National U.), P.Eng. - 1971.

Simpson, Frank; B.Sc. (Edinburgh), Dr. Nat. Sc. (Jagiellonian U., Krakow), P.Eng. - 1974. (Head of the Department).

Associate Professors

Sklash, Michael G.; B.A.Sc. (Windsor), M.Sc., Ph.D. (Waterloo), P.Eng. - 1977.

Holm, Paul E.; A.B. (Augustana), M.S., Ph.D. (Illinois) - 1979.

Rodrigues, Cyril G.I.; B.Sc. (British Columbia), M.Sc., Ph.D. Carleton) - 1979.

Assistant Professor

Samson, Iain M.; B.Sc., Ph.D. (Strathclyde) - 1986.

18.2 Programs of Study

18.2.1 THE MASTER OF SCIENCE DEGREE

Admission Requirements

In addition to the general requirements and stipulations in 1.6.2 for the Master's degree, the following requirements must be met by all candidates:

1) A student with an honours B.Sc. degree in Geology or its equivalent, with at least B standing in the final year and in the major

subject, may be admitted as a candidate to the one-year Master's program.

2) A student with a general B.Sc. degree with a major in Geology, with at least B standing in the final year and in the major subject may be admitted to the Master's program after a qualifying year.

Program Requirements

1) *Course Requirements:* The candidate for a Master's degree will be required to attain at least a B average in not fewer than four 500-level Geology and/or Geological Engineering courses, and at least a B average in not more than four additional courses as approved by the Department. The additional courses may be required as prerequisite or support courses. The total of all courses taken shall not exceed eight. All courses will be chosen to suit the candidate's major field of study in consultation with, and with the approval of, the Head of the Department (or designate). In addition, original research work must be pursued and embodied in a thesis submitted for degree credit. Credit for graduate study previously undertaken may be given, but the duration of study at the University of Windsor may not be reduced to less than the minimum of one year.

2) *Examination Requirements:* The final examination of a candidate for the Master's degree shall be an oral defence of the thesis at a public lecture or a seminar.

18.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any one year.

GEOLOGY

61-536. Quantitative Methods in Geology
Geological data collection. Treatment, analyses and interpretations of quantitative data in earth sciences. Application of statistical models such as: regression, factor, discriminant, and trend surfaces analyses of geologic data. Computer applications. (Prerequisite: Mathematics 65-253, or equivalent). (3 lecture hours a week).

61-540. Lithostratigraphy
Time in the stratigraphic record; correlation of strata; interpretation of lithofacies associations; trends in basin evolution; stratigraphic aids to exploration strategy. (3 lecture hours a week).

61-541. Oceanography and Marine Micropaleontology
The water masses of the world ocean; marine geological processes; microfossils; their biostratigraphic and paleoecological significance and economic use. (Prerequisite: 61-222, 61-223 or permission of the instructor). (2 lecture, 3 laboratory hours a week).

61-542. Advanced Economic Geology
Ore-forming processes. Physical and chemical characteristics of ore-forming systems: nature and origin of the fluids; transport and deposition of ore minerals. Geology and genesis of selected deposits. (3 lecture hours a week).

61-543. Sedimentary Petrology II
Utility of textural parameters; detailed sedimentary mineralogy; topics in Sedimentary Geochemistry; fluid-flow characteristics of sedimentary rocks; economic applications. (3 lecture hours a week).

61-544. Sedimentology
Hydrodynamic significance of primary sedimentary structures, post-depositional modification of sediments; biostratification and trace fossils; sedimentary environments; sedimentological methods in economic geology. (3 lecture hours a week).

61-545. Igneous Petrology II
A study of the petrology and petrogenesis of igneous rocks emphasizing current concepts and recent developments. (2 lecture, 3 laboratory hours a week).

61-546. Advanced Structural Geology
A detailed study of rock deformation and resulting structures with an emphasis on field relationships and the analysis of structural data. (3 lecture hours a week).

61-547. Glacial Marine and Glaciolacustrine Sedimentation
Analysis of ancient and modern glaciogenic subaqueous sediments and sedimentation. A review of facies models and an assignment

on some aspect of subaqueous glacial sedimentation. (3 lecture hours a week).

61-551. Isotope Geochemistry
Theory, systematics, and application of radioactive and stable isotopes in earth sciences. Current advances in the field. Selected case studies. (3 lecture hours a week).

61-580. Graduate Seminar

61-590. Special Topics
(May be taken for credit more than once).

61-797. M.Sc. Thesis

GEOLOGICAL ENGINEERING

90-550. Valuation of Ore Deposits
Ore reserve calculation methods; supply and demand factors and their projection; capitalization, discounting, and amortization of ore deposits; marketing including cartels, taxation, legislation, and national interest. (3 lecture hours a week).

90-552. Geologic Origin and Properties of Industrial Rocks and Minerals
Occurrence, origin, exploration and exploitation methods; physical and chemical properties of industrial minerals and their uses; economics of industrial rocks and minerals. (3 lecture hours a week).

90-553. Physical Properties and Causes of Deterioration of Construction Materials
Geologic and physio-chemical factors affecting the stability of construction materials (rock aggregate, expanded aggregate, tile, brick, etc.) under conditions of natural weathering and exposure to salts and other pollutants. (3 lecture hours a week).

90-554. Advanced Petroleum Geology
Detailed geological considerations of oil and gas accumulations concentrating on topics such as host rocks, paleoenvironments and structures. (Prerequisite: 61-421 or equivalent, or permission of instructor). (3 lecture hours a week).

90-555. Hydrocarbon Reservoirs
Hydrodynamic and geologic factors in the migration of oil and gas into reservoirs, the characteristics of reservoirs, and reservoir engineering associated with the extraction of the hydrocarbons. (3 lecture hours a week).

90-556. Geotechnical Geophysics
Application of geophysical methods in Engineering Geology, emphasizing blast vibration analysis, near-surface seismic and electrical methods. (3 lecture hours a week).

90-557. Applied Hydrogeology
Advanced topics in hydrogeology related to waste disposal effects on groundwater. Topics include: groundwater contaminants, groundwater monitoring strategies, site evaluation, site remediation, and case histories. (Prerequisite: 90-436, or equivalent, or permission of instructor). (3 lecture hours a week).

90-558. Advanced Hydrogeology
Advanced topics in hydrogeology, including: applied isotope hydroogeology, groundwater flow in fractured rocks, theory of contaminant transport in groundwater systems, evaluation of hydraulic conductivity, tracer tests, modelling of hydrogeologic systems, and case histories. (Prerequisite: 90-436, or equivalent, or permission of instructor). (3 lecture hours a week).

90-559. Underground Storage
Exploitation of subsurface space for storage of industrial products and wastes. Possible environmental impact of poorly planned underground storage. Economics of subsurface *vs.* surface storage. Emphasis on Canadian case histories. (3 lecture hours a week).

19 HISTORY

19.1.1 OFFICERS OF INSTRUCTION

Professors

O'Farrell, John K. A.; K.H.S.; K.L.J., B.A., M.A. (Western Ontario), Ph.D. (Ottawa), F.R.S.A., - 1962.

Pryke, Kenneth G.; B.A. (Carleton), M.A., Ph.D. (Duke) - 1963.

Mouratides, Anastasio; B.Comm., M.A., Ph.D. (McGill) - 1964.

McCrone, Kathleen E.; B.A. (Saskatchewan), M.A., Ph.D. (New York U.) - 1968.

Sautter, Udo; B.Phil., St. E. 1st and 2nd, Ph.D. (U of Tuebingen) - 1969.

Associate Professors

Hoskins, Ronald G.; B.A., M.A. (Windsor) - 1966.

Klinck, David M.; B.A., M.A. (Western Ontario), Ph.D. (Wisconsin) - 1968. (Head of the Department).

Kulisek, Larry L.; B.S. (Northwest Missouri State), M.A. (Omaha), Ph.D. (Wayne State) - 1968.

Pemberton, Ian C.; B.A. (Bishop's), M.A. (Toronto), Ph.D. (Western Ontario) - 1968.

Adjunct Professors

Edwards, Homer F., Jr.; B.A., M.A., Ph.D. (Emory) - 1978.

Mason, Philip P.; B.A. (Boston U.), M.A., Ph.D. (Michigan) - 1985.

19.2 Programs of Study

19.2.1 THE MASTER OF ARTS DEGREE

Program Requirements

1) After receiving counselling from the Department, candidates may proceed toward the degree in one of the two following programs of study:

(a) at least four graduate courses, one of which may be in a cognate field, plus a thesis;

(b) at least six graduate courses, two of which may be in a cognate field, and a separate major paper on a topic selected in conjunction with one of the seminar courses.

2) There shall be an oral examination on the thesis or major paper.

3) All candidates for the M.A. degree are required to take either 43-501 or 43-502.

4) Students who have taken a fourth-year course crosslisted with a graduate course may not repeat the equivalent graduate course for credit.

5) Language requirement: The candidate must have a reading knowledge of at least one language other than English. The language shall be chosen in consultation with the Head of the Department.

With the permission of the Head of the Department, the candidate may substitute for the foreign language requirement two courses in Statistics and Data Processing (e.g., 45-274 and 45-275) in which at least a B standing must be attained.

General Nature of the Program

Graduate courses are conducted as seminars which concentrate on specific major historical issues which are explored in depth. Emphasis is placed upon the sources, the historiography of the subject, and the current state of research.

The seminars will be selected from the following areas:
Canada
United States
Modern England
Modern Europe
Local History
Historical Resource Administration (Public History)*

* Involves the following areas of study: Historical Preservation; Archival Policy and Methods; Museum Administration; Oral History; Preservation and the Law - Legal Regulatory Aspects.

International Exchange

Students enrolled in graduate studies are eligible to do Historical Administration options or other course work relevant to their program at Wayne State University in Detroit, Michigan, including courses in Archival Methods at Wayne's *Walter P. Reuther Archives of Labour and Urban Affairs.*

19.3.1 COURSE DESCRIPTIONS

All the following courses will not necessarily be offered in any one year.

43-501. European Historiography
Aspects of the writing and philosophy of history from ancient Greece to the twentieth century.

43-502. North American Historiography
Study of major historical writers of Canada and the United States from the period of European settlement to the present day.

43-507. Selected Topics in English History I

43-508. Selected Topics in English History II

43-521. Selected Topics in Modern Europe I

43-522. Selected Topics in Modern Europe II

43-543. Selected Topics in Canadian History I

43-544. Selected Topics in Canadian History II

43-547. Selected Topics in Local History I

43-548. Selected Topics in Local History II

43-549. Selected Topics in Historical Resource Administration

43-561. Selected Topics in United States History I

43-562. Selected Topics in United States History II

43-597. Selected Topics in History

43-598. Selected Topics in History

43-796. Major Paper

43-797. Thesis

Undergraduate senior courses, which may be assigned at the discretion of the Department Head to form part or all of the requirements of the first year of the two-year graduate program, may be found in the Undergraduate Calendar, *see* 4.7.3.

20 HUMAN KINETICS: KINESIOLOGY

20.1.1 OFFICERS OF INSTRUCTION

Professors

Moriarty, Richard James; B.A., M.A. (Assumption), M.Ed. (Wayne State), Ph.D. (Ohio State) - 1956.

Galasso, Pasquale J.; B.A., B.P.H.E. (Queen's), M.A., Ph.D. (Michigan) - 1965.

Hermiston, Ray Talbot; B.A., B.P.H.E. (Queen's), M.S., Ph.D. (Michigan) - 1966.

Leavitt, Jack L.; B.Ed. (Alberta), M.S. (Oregon), Ed.D. (California) - 1967.

Metcalfe, Alan; D.L.C. (Loughborough), B.P.E. (British Columbia), M.S., M.A., Ph.D. (Wisconsin) - 1969.

Salter, Michael A.; D.P.E. (Sydney), B.P.E., M.A. Ph.D. (Alberta) - 1972. (Dean of the Faculty of Human Kinetics).

Marino, G. Wayne; B.A., B.P.E. (McMaster), M.P.E. (Windsor), Ph.D. (Illinois) - 1977. (Head of the Department).

Associate Professors

Olafson, Gordon A. A.; B.P.E., M.P.E. (British Columbia), Ph.D. (Illinois) - 1969.

Boucher, Robert L.; B.Sc. (Mankato State), M.Sc. (Illinois State), Ph.D. (Ohio State) - 1974. (Head of the Department of Athletics and Recreational Services).

Assistant Professors

Kenno, Kenji; B.P.H.E. (Lakehead), M.H.K., (Windsor), Ph.D. (Toledo) - 1984.

Paraschak, Victoria; B.P.E. (McMaster), M.H.K. (Windsor), Ph.D. (Alberta) - 1984.

Corlett, John T.; B.Sc. (Brock), M.Sc., Ph.D. (Simon Fraser) - 1986.

20.2 Programs of Study

20.2.1 THE MASTER OF HUMAN KINETICS DEGREE

General Nature of the Program

There are two streams to the program: one includes a thesis and normally will lead to doctoral work; the other, which involves course work is designed to serve as an enrichment experience.

Admission Requirements

1) In addition to the general admission requirements of the Faculty of Graduate Studies and Research outlined in 1.3 and 1.6.1, the following are employed in the determination of a candidate's admission status:

(a) A person who holds a three-year degree or three-year diploma will be required to complete up to a maximum of twelve semester courses to be determined by the student's program committee, as well as to complete successfully the requirements for the Master's degree as outlined in the Graduate Calendar.

(b) A person who holds a four-year degree will be required to complete the requirements for the Master's Degree as outlined in the Graduate Calendar. Courses beyond the minimum requirement may be deemed necessary by the Movement Sciences, Historical/Sociological Study of Sport, or Sport and Lifestyle Management faculty, dependent upon the applicant's specific area of interest. The final program of work shall be determined by the program committee in consultation with the Graduate Admissions Committee.

Program Requirements

1) In addition to the general requirements for the Master's degree, the candidate must:

(a) complete at the minimum the equivalent of five graduate-level courses and a thesis, or substitute

three such courses and a major paper in lieu of the thesis; a maximum of two courses may be in a graduate credit cognate area for students in the major paper stream, one for thesis students;

(b) pass an oral examination based on a thesis, or for major paper students, pass a comprehensive examination;

(c) present a seminar once during the graduate program;

(d) take an area-related Research Design/Methods course during the first year of graduate study.

2) Only one Special Problems may be taken regardless of area in the following Special Problems courses: 97-530 (Historical Study of Sport), 94-510 (Movement Sciences), or 96-520 (Sport and Lifestyle Management). A Research Proposal must be presented to the Research Committee for approval in the first week of the semester in which it is undertaken, and at completion returned to the chairperson of the Research Committee for binding and placement in the Human Kinetics office.

3) *Master's Committee and Advisors:* Within one month after a candidate's registration, the Head of the Department of Kinesiology will assign a program advisor to assist each student.

The program advisor may or may not act as chairperson of the Master's thesis committee, which will include at least two additional members, one of whom must be outside the Faculty of Human Kinetics. An additional member from the graduate faculty of another university may be assigned to the Master's thesis committee.

4) *Examinations*

(a) *Thesis Stream:* The thesis committee will conduct the oral examination of the thesis proposal. When the thesis has been completed, the thesis committee, in consultation with the candidate, will determine whether to proceed with or postpone the final oral examination. The grade on the written thesis shall be submitted prior to the examination and shall be worth sixty percent (60%) of the final grade. For the final oral examination of the thesis, the committee will be supplemented by another member of the Kinesiology graduate faculty who will act as the chairperson. Following the successful defence, the candidate will deposit all copies of the thesis in the Office of the University Librarian for binding and distribution (two copies for the Library, one or two copies to the Faculty).

(b) *Major Paper Stream:* After completing the maximum of eight graduate courses, non-thesis students must pass a comprehensive examination. The examination will be conducted by two professors and an appointed chairperson who shall not be involved in the assessment process.

20.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given semester. All courses are three hours a week unless otherwise noted.

MOVEMENT SCIENCES

94-510. Special Problems
Study of Selected Problems in the Movement Sciences area. (Students may select this course only once). (Consent of instructor and area Graduate Research Committee required). (Hours to be arranged).

94-521. Advanced Physiology of Fitness
The advanced study of physiological systems with respect to fitness. Special attention will be given to skeletal muscle, cardio-vascular and cardio-respiratory physiology. Computer reporting systems will be used in the physiological assessments of both athletes and employee fitness groups.

94-522. Cellular Exercise Physiology
This course will examine cardiac exercise physiology with respect to excitation-contraction coupling, membrance calcium fluxes, intracellular calcium handling and metabolic

regulation of cardiac contractile protein function at the cellular level. Seminars, term papers and laboratory work will be required. (Prerequisite: 94-460 or consent of instructor).

94-523. Biomechanics
A lecture/seminar course focussing on relevant analysis techniques and mechanics concepts as well as current topics of interest in the Biomechanics literature. Primary areas of study include human gait, sport mechanics, biomechanical modeling, and human performance in the workplace.

94-524. Motor Learning
A review and discussion of human performance theory as it is used to study information processing in movement skills. Within this context particular attention is devoted to the preparation and control of movement with specific topics being selected from current research. (Prerequiste: 94-310 or 94-410 or consent of instructor).

94-525. Psychology of Sport and Physical Activity
The influences of psychological attributes of participants on sport and skilled physical activity behaviour will be studied. The interactions of these individual characteristics with stiuational performance factors will also be assessed.

95-561. Research Techniques in Movement Sciences
Review and appraisal of experimental procedures; application of statistical techniques and development of experimental designs. Topics will include methods of investigation of study/research problems; computer utilization; and methods of presentation. (3 lectures a week with an additional one hour optional tutorial).

SPORT AND LIFESTYLE MANAGEMENT

95-562. Research Methods in Sport and Lifestyle Management/Social Science, or Sport
Review and appraisal of research methods and procedures employed in understanding humans and their relationship to sport, physical activity, and lifestyle management.

95-595. Selected Topics in Kinesiology
Topics to be arranged by individual faculty members, based upon new developments in kinesiology.

95-796. Major Paper

95-797. Master's Thesis

96-500. Sport Leadership
This course is intended to be a survey course using the current research and literature relating to leadership in sport environments. The specific focus involves administrative leadership in sport settings. Several leadership theories will be reviewed, analyzed and discussed. The merits of various models will be discussed with respect to their relevance in understanding the leadership phenomenon.

96-501. Organizational Development in Sport and Lifestyle Management
Analysis of research and professional practice related to the establishment, growth, development and potential decline of organizations in the area of sport and physical activity. Intervention techniques and coping strategies of organizational members as agents of change will be studied.

96-502. Sport Management
An analysis of the interactive nature of the social/psychological components of organizational behaviour. Specific reference will be made to the interdependence and the coupling of individual, interpersonal, and group behaviour, and the organizational effectiveness of sport organizations.

96-503. Philosophy of Sport and Physical Activity
A philosophical examination of contemporary issues and perennial problems in sport and physical activity.

96-520. Special Problems
Study of Selected Problems in the Sport and Lifestyle Management area. (Students may select this course only once). (Consent of instructor and area Graduate Research Committee required). (Hours to be arranged).

97-514. Sociological Perspectives of Canadian Sport

An analysis of modern-day Canadian Sport through various sociological perspectives. This examination will include the assessment of sport with respect to both social differentiation and societal institutions.

97-515. Historical Perspectives of Canadian Sport

An analysis of the historical antecedents of Canadian sport. Emphasis will be placed on those forces instrumental in the moulding of nineteenth and twentieth century Canadian sport.

97-530. Special Problems

Study of selected problems in the historical/sociological study of sport. (Students may select this course only once). (Consent of the instructor and area Graduate Research Committee are required). (Hours to be arranged).

Undergraduate courses, which may be assigned at the discretion of the advisor and Head to form part or all of the requirements for admission to candidacy of a student deficient in entrance requirements, may be found in the Undergraduate Calendar, *see* 9.4.

21 MATHEMATICS AND STATISTICS

21.1.1 OFFICERS OF INSTRUCTION

Professors

Smith, Alexander Cormac; B.Sc., M.Sc., Ph.D. (Dublin) - 1963.

Tracy, Derrick Shannon; B.Sc., M.Sc. (Lucknow), M.S., Sc.D. (Michigan) - 1965.

McDonald, James F.; B.S., Ph.D. (Wayne State) - 1967.

Chandna, Om Parkash; B.A. (Panjab), M.A. (Delhi), M.Sc., Ph.D. (Windsor) - 1968.

Duggal, Krishan L.; B.A. (Panjab), M.A. (Agra), M.Sc., Ph.D. (Windsor) - 1968.

Kaloni, Purna N.; M.Sc. (Allahabad), M. Tech. Ph.D. (Indian Inst. of Tech.) - 1970.

Lemire, Francis William; B.Sc. (Windsor), M.Sc., Ph.D. (Queen's) - 1970.

Wigley, Neil M.; B.A., Ph.D. (California) - 1970.

Britten, Daniel J.; B.A. (Merrimack College), M.S., Ph.D. (Iowa) - 1971.

Wong, Chi Song; B.S. (National Taiwan U.), M.S. (Oregon), M.S., Ph.D. (Illinois-Urbana) - 1971.

Barron, Ronald Michael; B.A., M.Sc. (Windsor), M.S. (Stanford), Ph.D. (Carleton) - 1975. (Head of the Department).

Fung, Karen Yuen; B.A., M.S., Ph.D. (UCLA) - 1976.

Associate Professors

Atkinson, Harold R.; B.A. (Western Ontario), M.Sc. (Assumption), Ph.D. (Queen's) - 1964.

Manley, Paul L.; B.Sc.; M.Sc. (Alberta) - 1967.

Gold, Alan John; B.A. (Windsor). Dip. D'Etudes, Doct. de Spec. (Clermont) - 1969.

McPhail, Gerard; B.Sc., M.Sc. (Queen's), Ph.D. (Toronto) - 1969.

Selby, Michael Allen; B.Sc. (Manitoba), M.A., Ph.D. (Cornell) A.S.A. - 1970.

Traynor, Tim Eden; B.A., M.A. (Saskatchewan), Ph.D. (British Columbia) - 1971.

Paul, Sudhir R.; B.Sc., M.Sc. (Dacca), M.Sc., Ph.D. (Wales) - 1982.

Caron, Richard J.; B.M., M.M., Ph.D. (Waterloo) - 1983.

Shoukri, Mohamed M.; B.Sc., M.Sc. (Cairo), M.Sc., Ph.D. (Calgary) - 1983.

Zamani, Nader G.; B.Sc. (Case Western), M.Sc., Ph.D. (Brown - 1986.

Assistant Professors

Hlynka, Myron; B.Sc. (Manitoba), M.A., Ph.D. (Pennsylvania State) - 1986.

Adjunct Professors

Holland, Paul W.; B.A. (Michigan), M.S., Ph.D. (Stanford) - 1979.

Fleischer, Isidore; B.Sc. (Brooklyn), M.Sc., Ph.D. (Chicago) - 1985.

21.2 Programs of Study

21.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

Admission Requirements

For admission requirements and period of study, the general regulations of the Faculty of Graduate Studies and Research should be consulted (*see* 1.5). Qualifying examinations will not normally be required.

Program Requirements for the Ph.D. (Mathematics)

1) *Course Work:* Candidates must complete successfully at least twelve graduate courses, of which up to eight may be transferred from other universities; further graduate courses are left to the discretion of the supervisor and the Head of the Department.

2 *Doctoral Committee:* When a student is deemed ready to begin research, a doctoral committee will be appointed by the Head of the Department upon the advice of the Graduate Studies Committee. The doctoral committee is subject to the approval of the Executive Committee of the Faculty of Graduate Studies and Research. The doctoral committee shall include the student's supervisor as chairperson, at least two other members of the Department, one faculty member from outside the Department, and an external examiner, who shall not be involved in the preparation of the dissertation. The selection of the external examiner is subject to the approval of the Dean of Graduate Studies and Research. Members of other departments may also be invited to join the committee. (*See also* 1.5.2).

3) *Dissertation:* The dissertation shall be defended at an oral examination. (*See also* 1.5.2).

4) *Comprehensive Examinations:* Each student will be required to pass a series of three written comprehensive examinations. These will test the student's background knowledge and preparedness for research in a particular area of Mathematics. These examinations must be completed within twenty- four months of registration in the doctoral program. If a student fails an examination, it may be repeated once, but if the examination is failed a second time, the student must withdraw from the program (*see also* 1.5.3). In any case, these examinations must be successfully completed within twenty- four months of registration in the doctoral program. If this deadline is not met, the student must withdraw from the program.

Program Requirements for the Ph.D. (Statistics)

1) *Course Work:* Candidates must complete successfully at least twelve graduate courses, of which at least eight must be numbered with prefix 65. Up to eight of the twelve courses may be transferred from other universities; further graduate courses are left to the discretion of the supervisor and the Head of the Department. It is strongly recommended that all Ph.D. students in Statistics take a measure theoretic probability course.

2) *Doctoral Committee:* When a student is deemed ready to begin research, a doctoral committee will be appointed by the Head of the Department upon the advice of the Graduate Studies Committee. The doctoral committee must be approved by the Executive Committee of the Faculty of Graduate Studies and Research. The doctoral commit-

tee shall include the student's supervisor as chairperson, at least two other members of the Department, one faculty member from outside the Department, and an external examiner, who shall not be involved in the preparation of the dissertation. The selection of the external examiner is subject to the approval of the Dean of Graduate Studies and Research. Members of other departments may also be invited to join the committee. (*See also* 1.5.1).

3) *Dissertation:* The dissertation shall be defended at an oral examination. (*See also* 1.5.1).

4) *Comprehensive Examinations:* A student must pass a series of three written comprehensive examinations as follows:

(i) Paper I - Mathematical Statistics and Probability
(ii) Paper II - Statistics *OR* Probability
(iii) Paper III - Topics (two topics mutually agreed upon by the supervisor and student).

The examinations must be completed within twenty-four months of registration in the doctoral program. If a student fails an examination it may be repeated once, but if the examination is failed a second time, the student must withdraw from the program. (See *also* 1.5.1). In any case these examinations must be completed within twenty-four months of registration in the doctoral program. If this deadline is not met, the student must withdraw from the program.

21.2.2 THE MASTER OF SCIENCE DEGREE

Program Requirements for the M.Sc. (Mathematics)

The candidate shall successfully complete one of the following courses of study:

(i) eight graduate courses, or
(ii) seven graduate courses and a major paper, or
(iii) six graduate courses and a thesis.

Program Requirements for the M.Sc. (Statistics)

The candidate shall successfully complete one of the following courses of study:

(i) eight graduate courses, of which at least six must be numbered with the prefix 65; or
(ii) seven graduate courses, of which at least five must be numbered with the prefix 65, and a major paper; or
(iii) six graduate courses, of which at least four must be numbered with the prefix 65, and a thesis.

21.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year.

MATHEMATICS

62-500. Mathematical Logic I
62-501. Mathematical Logic II
62-510. Functions of a Real Variable I
62-511. Functions of a Real Variable II
62-512. Functional Analysis I
62-513. Functional Analysis II
62-514. Topological Vector Spaces I
62-515. Topological Vector Spaces II
62-518. Topics in Real Analysis
62-519. Topics in Complex Analysis
62-520. Abstract Algebra I
62-521. Abstract Algebra II
62-522. Homological Algebra
62-523. Non Associative Algebras
62-524. Representation Theory
62-525. Matrix Algebra and Analysis
62-528. Numerical Methods in Algebra
62-529. Topics in Algebra
62-530. General Topology
62-531. Algebraic Topology
62-532. Topics in Topology
62-533. Differential Geometry
62-534. Differential Topology

62-535. Analysis on Manifolds
62-536. Riemannian Geometry
62-539. Topics in Geometry
62-560. Integral Transforms
62-561. Partial Differential Equations
62-562. Nonlinear Partial Differential Equations
62-563. Partial Differential Operators I
62-564. Partial Differential Operators II
62-565. Integral Equations
62-566. Ordinary Differential Equations I
62-567. Ordinary Differential Equations II
62-568. Numerical Analysis I
62-569. Numerical Analysis II
62-570. Fundamentals of Continuum Mechanics I
62-580. Fundamentals of Continuum Mechanics II
62-571. Classical Hydrodynamics I
62-581. Classical Hydrodynamics II
62-572. Fluid Dynamics I
62-582. Fluid Dynamics II
62-573. Perturbation Methods in Fluid Mechanics I
62-583. Perturbation Methods in Fluid Mechanics II
62-574. Aerodynamics I
62-584. Aerodynamics II
62-575. Compressible Flow I
62-585. Compressible Flow II
62-576. Magnetohydrodynamics I
62-586. Magnetohydrodynamics II
62-577. Numerical Techniques in Fluid Dynamics I
62-587. Numerical Techniques in Fluid Dynamics II
62-578. Elasticity I
62-588. Elasticity II
62-579. Visco-elasticity and Plasticity I
62-589. Visco-elasticity and Plasticity II
62-590. General Relativity I
62-591. General Relativity II
62-592. Relativistic Fluid Dynamics
62-593. Introduction to Finite Element Method
62-594. Topics in Finite Element Method
62-595. Mathematical Programming I
62-596. Mathematical Programming II
62-598. Special Topics
62-796. Major Paper
62-797. Thesis (M.Sc.)
62-798. Dissertation (Ph.D.)

STATISTICS

65-540. Theory of Probability I
65-541. Theory of Probability II
65-542. Advanced Mathematical Statistics I
65-543. Advanced Mathematical Statistics II
65-544. Multivariate Analysis I
65-545. Multivariate Analysis II
65-546. Statistical Data Analysis I
65-547. Statistical Data Analysis II
65-548. Non-parametric Statistics I
65-549. Non-parametric Statistics II
65-550. Linear Models I
65-551. Linear Models II
65-552. Experimental Design I
65-553. Experimental Design II
65-554. Theory of Sampling and Surveys
65-555. Theory of Estimation
65-556. Decision Theory
65-557. Bayesian Statistics
65-558. Stochastic Processes
65-559. Topics in Statistics
65-598. Special Topics
65-796. Major Paper
65-797. Thesis (M.Sc.)
65-798. Dissertation (Ph.D.)

22 PHILOSOPHY

22.1.1 OFFICERS OF INSTRUCTION

Professors

Kingston, Rev. Frederick Temple; B.A., M.A. (Toronto), L. Th., B.D. (Trinity), D.Phil. (Christ Church, Oxford) - 1959. (Principal, Canterbury College).

Brown, Jerome V.; B.A. (Iona College, N.Y.), M.A., Ph.D. (Toronto), M.S.L. (Pontif. Inst.) - 1961.

Lewis, John Underwood; A.B. (North Texas State), Ph.D. (Marquette) - 1964.

Johnson, Ralph Henry; B.A. (Xavier), M.A., Ph.D. (Notre Dame) - 1966. (Head of the Department).

Blair, John Anthony; B.A. (McGill), M.A. (Michigan) - 1967.

Nielsen, Harry A.; A.B. (Rutgers), M.A. (Connecticut), Ph.D. (Nebraska) - 1968.

Associate Professors

Wilkinson, Peter Frederick; B.A., M.A. (Toronto), L.Th. (Wycliffe) - 1962.

Pinto, Robert Charles; B.A., M.A., Ph.D. (Toronto) - 1963.

Wright, John P.; B.A., M.A. (Toronto), Ph.D. (York) - 1983.

22.2 Programs of Study

22.2.1 THE MASTER OF ARTS DEGREE

General Nature of the Program

The aim of the program is to give students the opportunity to deepen their philosophical understanding both by broadening their undergraduate background and by allowing them to concentrate their studies on specific areas of philosophy which interest them. The Philosophy M.A. program is structured in such a way as to encourage maximum participation by students in seminars and allow extensive contact with professors outside of formal class time.

Admission Requirements

See 1.6.1 of this calendar for general requirements for admission into an M.A. program at the University of Windsor. The Philosophy Department normally requires the equivalent of twenty one-semester courses in philosophy for admission to the one-year Master's program and the equivalent of ten one-semester courses in philosophy for admission to the two-year Master's program.

Program Requirements

The general requirements for the Master's degree are listed in 1.6.2 of the Graduate Calendar. The following are particular requirements for the M.A. in Philosophy:

1) The student may proceed to the degree in any one of the following ways:

(a) successfully complete at least four and not more than six graduate courses (the fifth and sixth courses may be in a cognate field), and satisfactorily complete a thesis on which there shall be an oral examination;

(b) successfully complete six courses, two of which may be in a cognate field, and satisfactorily complete a major research paper on which there shall be an oral examination;

(c) successfully complete eight courses, two of which may be in a cognate field.

Note:

(i) Students wishing to pursue Ph.D. studies are advised to take option (a) or (b), but not (c).

(ii) Students choosing option (c) should recognize that students in their candidate year normally take two graduate courses each semester and that it will take more than one year to complete their program.

2) All students proceeding to the degree must:

(a) include the departmental seminar (Philosophy 34-590) among their courses for the degree;

(b) successfully complete the Master's examination in Philosophy.

3) *M.A. Qualifying Year:* Students at the I Master's level are required to take either 34-490 (Honour's Essay) or 34-491 (Honour's Seminar). (*See* 3.9.3 of the Undergraduate Calendar).

4) *Counselling:* Each student must have his or her projected program authorized by the chairperson of the Graduate Studies Committee.

22.3.1 COURSE DESCRIPTIONS

GROUP A

In a given academic year at least one course will be offered which will deal with a certain problem or set of problems of concern to contemporary philosophers in the following areas:

34-520. Ethics
34-521. Political Philosophy
34-522. Philosophy of Law
34-540. Philosophy of Religion
34-541. Philosophy of Science
34-542. Philosophy of History
34-543. Philosophy of Language
34-550. Epistemology
35-551. Metaphysics
34-552. Philosophy of Mind
34-560. Formal Logic
34-561. Theory of Argument
34-562. Theory of Informal Fallacies
34-563. Theory and Teaching of Critical Thinking
34-565 to 34-569. Advanced Seminar: Selected Topics in Philosophy

GROUP B

In a given academic year there will be an intensive study of a given philosopher or philosophical issue from each of the following:

34-570. Greek Philosophy
34-571. Medieval Philosophy
34-572. Renaissance Philosophy
34-573. Seventeenth-Century Philosophy
34-574. Eighteenth-Century Philosophy
34-575. Nineteenth-Century Philosophy
34-576. Foundations of Existentialism
34-577. Twentieth-Century Continental Philosophy
34-578. Twentieth-Century Anglo-American Philosophy
34-580 to 34-584. Advanced Seminar: Selected Topics in the History of Philosophy

GROUP C

The following course must be taken by all M.A. students:

34-590. Departmental Seminar: The History of Philosophy in Perspective.
The aim of the seminar is to deepen students' sensitivity to the history of philosophy and help prepare them for the Master's examination in Philosophy. Each year a specific philosophical theme is traced through a number of key figures in the history of thought.

GROUP D

34-796. Major Paper
34-797. Thesis

Note: Students may receive credit for more than one course offered in Groups A and B provided that the emphasis is sufficiently different. Thus, for example, credit may be received for both "34-570 Greek Philosophy: Plato" and "34-570 Greek Philosophy: Aristotle" where these are entirely distinct course offerings.

23 PHYSICS

23.1.1 OFFICERS OF INSTRUCTION

Professors

Krause, Lucjan; B.Sc. (London), M.A., Ph.D. (Toronto), D.Sc. (London, Nicholas Copernicus), F.Inst.P. - 1958.

Holuj, Frank; B.Sc. (London), M.Sc., Ph.D. (McMaster) - 1961.

van Wijngaarden, Arie; B.Sc., Ph.D. (McMaster) - 1961.

Szamosi, Geza; Ph.D., D.Sc. (Budapest) - 1964.

Schlesinger, Mordechay; M.Sc., Ph.D. (Jerusalem) F.Inst.P. - 1968. (Head of the Department).

Baylis, William Eric; B.S. (Duke), M.S. (Illinois), D.Sc. (Technical University of Munich) - 1969.

Drake, Gordon W. F.; B.Sc. (McGill), M.Sc. (Western Ontario), Ph.D. (York), F.Inst.P. - 1969.

McConkey, John William; B.Sc., Ph.D. (Queen's University of Belfast), F.Inst.P. - 1970. (Killam Research Fellow).

Helbing, Reinhard K. B.; Dipl. Phys., Dr. Rer. Nat. (Bonn) - 1972.

Atkinson, John Brian; M.A., D. Phil. (Oxford) - 1972.

Glass, Edward N.; B.S. (Carnegie-Mellon), M.S., Ph.D. (Syracuse) - 1974.

Associate Professors

Huschilt, John; B.A., M.A. (Toronto), Ph.D. (Wayne State) - 1953.

Habib, Edwin Emile; B.Sc. (Birmingham), Ph.D. (McMaster) - 1959.

Hedgecock, Nigel Edward; B.A., M.A. (British Columbia), Ph.D. (McMaster) - 1961.

Ogata, Hisashi; B.S. (Tokyo College of Science), M.S. (Tokyo U. of Education), Ph.D. (Western Reserve) - 1965.

Czajkowski, Mieczyslaw A.; M.Sc., D.Sc. (Nicholas Copernicus) - 1967.

Admission Requirements

The basic qualification for admission consists of a Bachelor's degree with adequate specialization in physics, obtained with first or second class honours with an A or B average. Students with deficiencies may be required to make up these deficiencies by registering in undergraduate courses or by following a program of supervised reading.

Applicants whose academic credentials are difficult to assess may be required to write the Graduate Record Examination administered by the Educational Testing Service. Inquiries should be made at the time of application. Details of the examination may be obtained from the Educational Testing Service, Princeton, New Jersey, U.S.A., 08540.

23.2 Programs of Study

23.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

Program Requirements

1) *Period of Study:* A minimum of three years in full-time graduate studies is required. Credit for one of the three years may be given for a Master's degree obtained in this Department or for graduate work carried out at another institution. Not more than seven years should elapse between registration and completion of the requirements for the degree; an extension of this period may be granted only on recommendation from the Department and approval by the Faculty of Graduate Studies and Research.

2) *Course Work:* Candidates with Master's degrees in Physics (or equivalent) will complete a minimum of eight graduate courses, including 64-610, 64-612 (or 64-613), and at least three of 64-630, 64-631, 64-640, 64-650, or 64-651. Candidates also must take 64-550 and 64-551 if previous equivalent credit has not been obtained.

Candidates who do not have a Master's degree in Physics (or equivalent) will complete a minimum of twelve graduate courses which must include 64-510, 64-550, 64-551, 64-

610, and at least three of 64-630, 64-631, 64-640, 64-650, or 64-651.

3) *Doctoral Committee:* Within one month after registration each student will be assigned to an advisory committee consisting of a research advisor and two other faculty members in the Department. This committee will from time to time, review the student's progress. (*See* 1.5.2).

For the defence of dissertation (final oral examination) the advisory committee will be supplemented by one professor from another department and an external examiner who, as an expert in the field of Physics in which the candidate's research is carried out, will appraise the dissertation and ordinarily will also be present at the final oral examination.

4) *Dissertation:* In order to qualify for the degree each candidate must present a dissertation embodying the results of an original investigation in a branch of physics. Graduate courses form an important but subsidiary part of the program.

The candidate, when requested, shall submit to the chief advisor from time to time portions of the dissertation and a complete draft on a date specified by the advisor, and place four typewritten copies of the completed dissertation in the hands of the advisor at least six weeks before Convocation. Rules governing binding, quality of paper, etc., of the dissertation can be found in the Guidelines for Dissertations and Theses. (*See* 1.5.3).

5) *Examinations:* In addition to the examinations in the courses, all candidates must pass qualifying examinations covering the general field of physics at the level of the honours program given in this Department. The examinations must be passed after the completion of the M.Sc. degree, not later than one year after registration as a graduate student proceeding to the Ph.D. Other examinations (written or oral) may be set at the discretion of the Department.

Each candidate will, on recommendation of the advisory committee, submit to a final oral examination in defence of the dissertation.

23.2.2 THE MASTER OF SCIENCE DEGREE

Program Requirements

1) The requirements for the degree of Master of Science may be satisfied by pursuing a program of studies consisting of either not less than eight and not more than ten graduate courses or at least four and not more than six graduate courses, and a thesis.

2) 64-510, 64-550 and 64-551 will be required of all candidates. Candidates proceeding to the M.Sc. by either of the above options may include in their program, with the approval of the Department, two undergraduate courses.

3) Candidates who are proceeding to the M.Sc. by course work alone may be permitted to include in their programs four courses in Mathematics.

23.3.1 COURSE DESCRIPTIONS

Not all of the courses listed below will necessarily be offered in any one year.

64-510. Seminar for M.Sc. Students
In order to receive credit for this course, a student should attend the weekly departmental seminar throughout M.Sc. studies and during each academic year present one seminar on a topic approved by the Seminar Coordinator.

64-521. Classical Electrodynamics II
Simple radiating systems, radiation by moving charges, Lienard-Wiechert potentials, synchrotron radiation, bremsstrahlung, multipole fields, radiation reaction.

64-524. Introduction to Plasma Physics
Review of atomic collisions and kinetic theory, motion of charged particles, elementary processes in the production and decay of ionization in gases, plasma waves and oscillations, transport processes, elements of magnetohydrodynamic stability theory. Applications of plasma physics.

64-540. Theory of Particle Scattering I
Classical theory of scattering. Formal quantum theory. The definitions of cross sections, transition probabilities and related concepts. The Born approximation, phase shifts.

64-541. Theory of Particle Scattering II
The Green function approach. Elastic scattering of particles with spin. Examples from atomic and nuclear phenomena. (Prerequisite: 64-540).

64-542. Atomic and Molecular Processes I
Atomic/molecular beam methods and techniques. Collision phenomena in atomic and molecular scattering, including elastic, inelastic and reactive scattering, excitation, ionization, and charge exchange. Detailed discussion of the experimental results and their interpretation in terms of interatomic/molecular forces and potentials.

64-543. Atomic and Molecular Processes II
A variety of topics in electron and photon collisions highlighting current advances in these fields and including total and differential elastic and inelastic scattering of electrons and positrons, resonances, polarization, coherence and correlation effects, post collision interactions, photon- stimulation spectroscopy. (Prerequisite: 64-542).

64-544. Theory of Atomic Structure and Atomic Spectra
Rotation matrices, 3n-j coefficients and graphical techniques for angular-momentum coupling, irreducible tensor operators, the Wigner-Eckart theorem and applications, the density matrix, interactions of atoms with external fields.

64-545. Theory of Atomic Structure and Atomic Spectra II
Systems of identical fermions, the central-field approximation, self-consistent-field methods, the Thomas- Fermi model, Hartree-Fock theory, configuration interaction, coefficients of fractional parentage, relativistic effects. (Prerequisite: 64- 554).

64-546. Molecular Spectroscopy I
Diatomic molecules, Born-Oppenheimer approximation, adiabatic potentials, Hund's coupling cases, rotational, vibrational, and electronic states and associated spectra. Applications of group theory to the structure and spectra of polyatomic molecules.

64-547. Molecular Spectroscopy II
Rotational, vibrational, and electronic spectra of polyatomic molecules. Zeeman and Stark effects and hyperfine structure. Laser spectroscopy. Van der Waals molecules. (Prerequisite: 64- 546).

64-548. Atomic Resonance and Relaxation in Gases
Review of classical theory of scattering of radiation; Thomson and Rayleigh scattering, the polarizability and dielectric tensors, polarization and the Hanle effect. Quantum theory of absorption and emission. Applications of density matrix formalism to optical pumping and level crossing, radiation trapping and coherence narrowing, collisional depolarization and fine-structure transitions. Experimental techniques.

64-549. Paramagnetic Resonance
Description of motion of isolated spins by classical and quantum mechanical methods. Bloch equations. Elements of crystal field theory. Magnetic and electric interactions of spins (Zeeman, Hyperfine, Quadrupolar). Spin Hamiltonian, NMR and EPR spectrometers.

64-550. Quantum Mechanics I
General principles, representations and transformation theory. Approximation methods. Many-body problems and identical particles.

64-551. Quantum Mechanics II
Number representations and second quantization. Dirac equation. Scattering theory and the S-matrix. (Prerequisite: 64-550).

64-560. Solid State Physics I
Application of group theory to condensed matter physics: the study of point groups, Bravais lattices and space groups. Inverse lattice with applications to scattering phenomena.

64-561. Solid State Physics II
Electric, magnetic and thermal properties of solids, superconductivity and superfluidity. The effects of imperfections and impurities in crystals. (Prerequisite: 64-560).

64-562. Theory of Semiconductors and Semiconductor Devices I
Quantum theory of semiconductors, dynamics of charge carriers in static and high-frequency electric and magnetic fields.

64-563. Theory of Semiconductors and Semiconductor Devices II
Equilibrium statistics, transport theory, diffusion, drift and thermoelectric effects. Characteristics of p-n functions, heterojunctions and transistor devices. (Prerequisite: 64-562).

64-570. Nuclear Physics I
Nuclear forces. Group theoretical treatment of angular momentum. Nuclear structure; the shell model, the collective model, the Nilsson model, the quasiparticle model.

64-571. Nuclear Physics II
Nuclear decays and angular correlations. Nuclear reactions: resonance theory, the compound nucleus, direct reactions, the optical model. (Prerequisite: 64-570).

64-572. Relativistic Physics I
Review of the special theory of relativity, with applications to dynamics, electrodynamics and thermodynamics. Elements of relativistic statistical mechanics.

64-573. Relativistic Physics II
Relativistic plasmas. Magnetohydrodynamics and its relativistic generalizations. Electrodynamics of moving media. Quantum theory of relativistic systems. Astrophysical applications. (Prerequisite: 64-572).

64-574. General Theory of Relativity I
The principle of equivalence, general covariance. Riemann spacetime Einstein field equations.

64-575. General Theory of Relativity II
Simple solutions to the Einstein field equations, the crucial experiments, applications to cosmology. (Prerequisite: 64-574).

64-576. Astronomical Physics I
A selection of topics from the following: characteristic properties of stars, stellar atmospheres, models of stellar interiors, nuclear reactions in stars.

64-577. Astronomical Physics II
A selection of topics from the following: theory of stellar evolution, pulsars, neutron stars, and phenomena in interstellar space. (Prerequisite: 64-576).

64-581. Theory and Applications of Thin Films
Definition of thin films and their classification; methods of preparation; elements of high-vacuum technology; thin-film formation, structure and methods of investigation; mechanical, optical, electrical properties of thin films and their application in modern technology.

64-584. Design and Application of Lasers
Stimulated emission, rate equation approach to amplification and output power calculations; Gaussian beams, stable and unstable resonators, Q-switching, mode-locking and cavity dumping, ruby, Nd:YAG and other solid state lasers, semi-conductor, gas and dye lasers.

64-585. Atmospheric Processes
Physics of the atmosphere, general description and layering, interactions of incoming and outgoing radiations, greenhouse effect, atmospheric thermodynamics and stability, cloud physics, atmospheric dynamics, gravity waves and turbulence, atmospheric photochemistry, ozone layer, upper atmosphere, plasma and hydromagnetic effects, ionosphere, air glow and aurora.

64-587. Applications of Electron, Ion and Atomic Beams
Non-relativistic theory of charged particles in electric and magnetic fields. Review of matrix optics, electrostatic lenses, magnetic lenses, electrostatic and magnetic vector fields. Applications to energy and mass analysis. The Liouville Theorem and its consequences. Dense electron beams and applications.

64-590. Environmental Physics
A survey of the physical processes involved in man's environment. Nuclear energy generation and radioactive waste disposal.

64-610. Seminar for Ph.D. Students
In order to receive credit for this course, a student should attend the weekly departmental seminar throughout Ph.D. studies and during each academic year present one seminar on a topic approved by the Seminar Coordinator.

64-612, 64-613. Selected Topics in Theoretical and Experimental Physics
These courses consist of two survey lecture series to be selected from among several which will be offered each year. Each lecture series lasts for approximately half a semester. Credit may not be obtained for any survey courses in subjects in which the student has taken another graduate course.

64-630. Statistical Physics I
Review of thermodynamics; information theory. The many-body problem in quantum mechanics, particle number representation. Statistical (density) matrix. The perfect gas, real gases, dense plasma, applications.

64-631. Statistical Physics II
The theory of macroscopic quantum phenomena. (Prerequisite: 64-630).

64-640. Elementary Particles and Their Symmetries
Symmetries and conservation laws, group representations, and particle muliplets; Lie groups and algebras; generators and weights of SU(n); the quark model; quantum chromodynamics; electro-weak interaction theory; supersymmetry; path integrals and Feynman diagrams.

64-650. Classical and Quantum Field Theory I
Variational principles and conservation laws and applications, field equations and their solutions. (Prerequisite: 64-551).

64-651. Classical and Quantum Field Theory II
Quantization of fields; scalar, vector, and spinor fields. Quantum electrodynamics and applications; renormalization and radiative corrections.(Prerequisite: 64-650).

64-660. Advanced Topics in Solid State Physics I
Crystal field theory in the weak and strong coupling schemes. Molecular orbitals; vibronic interactions. Electronic structure and spectra of molecular complexes. (Prerequisite: 64-551).

64-661. Advanced Topics in Solid State Physics II
Paramagnetism of molecular complexes; paramagnetic and nuclear magnetic resonance and applications. (Prerequisite: 64-660).

64-670. Nuclear Reactions I
Kinematics and conservation laws, scattering resonance reactions, direct reactions. (Prerequisite: 64-551).

64-671. Nuclear Reactions II
Formal theory of nuclear reactions, high-energy reactions, hyperons. (Prerequisite: 64-670).

64-797. M.Sc. Thesis

64-798. Ph.D. Dissertation

24 POLITICAL SCIENCE

24.1.1 OFFICERS OF INSTRUCTION

Honorary Professor

Martin, Hon. Paul; P.C., Q.C., C.C., LL.D., Honorary Professor of Law and Political Science - 1974.

Professor Emeritus

Chrypinski, Vincent Casmere; M.L. (Catholic U. of Lublin, Poland), M.A. (Wayne State), Ph.D. (Michigan) - 1957.

Professors

Nelson, Ralph Carl; B.A., M.A. (DePaul), Ph.D. (Notre Dame) - 1961.

Briggs, E. Donald; B.A. (New Brunswick), Ph.D. (London) - 1963.

Wagenberg, Ronald H.; B.A., M.A. (Assumption), Ph.D. (London) - 1964.

Brown-John, C. Lloyd; B.A. (British Columbia), M.A., Ph.D. (Toronto) - 1968.

Soderlund, Walter C.; B.A. (Connecticut), M.A., Ph.D. (Michigan) - 1968.

Wurfel, David; B.A. (San Diego), M.A. (California), Ph.D. (Cornell) - 1968.

Keenleyside, Terence A.; B.A. (Toronto), Ph.D. (London) - 1971.

Price, Richard G.; B.A. (Florida State), M.A. (Wayne State) - 1969. (Head of Department).

Nevitte, Neil; B.A., M.A. (McMaster), Ph.D. (Duke) - 1988.

Associate Professors

Burton, Bruce Edward; M.A. (Oxon.), M.Soc.Sc. (Hague) - 1966.

Price, Trevor; B.Sc. (London School of Economics), M.A. (Windsor), Ph.D. (Queen's) - 1968.

Krause, Robert G.; B.A., M.A. (Windsor) - 1970.

Kubota, Akira; B.A. (Tokyo), M.A., Ph.D. (Michigan) - 1970.

Assistant Professor

Brooks, Stephen; B.A., M.A. (Windsor), Ph.D. (Carleton) - 1985.

24.2 Programs of Study

24.2.1 THE MASTER OF ARTS DEGREE

Admission Requirements

The normal requirement for admission to the one-year M.A. program is an honours degree or combined honours degree in Political Science, or an honours degree in a related discipline, such as International Relations or Public Administration, with a strong, overall B average. Honours graduates in fields other than these will be considered on the basis of their academic background and standing. Those with less than an honours degree, or with minor deficiecies, will be required to take additional courses, or to enter a two-year program.

Program Requirements

After receiving counselling within the Department, the candidate may proceed toward the degree in one of the following programs of study. While initial selection is not irreversible, students may change from one program to another only with the approval of the Department and the Faculty of Graduate Studies and Research.

(a) a minimum of five graduate courses plus a thesis on some research subject approved by the Department. The thesis will be written under the direction of a committee composed of two members of the Department plus a member external to the Department, but from within the University. An oral defence of the thesis will be required (*see* 1.6.2).

(b) seven graduate courses and a major paper on some research subject approved by the Department. The major paper will be written under the direction of a committee normally composed of two members of the Department. An oral defence of the major paper will be required.

(c) nine graduate courses. Under this option, an oral examination is required based on two of the five fields covered in the graduate curriculum (Canadian Government and

Politics, Public Administration, Comparative Politics and Development, International Relations, Political Theory). The three-member examination committee will be appointed by the department, but the student may request the inclusion of up to two specific faculty members. The oral examination will be graded Pass or Non-Pass.

All students in the first year of a two-year program must normally carry a full load of ten undergraduate courses or their equivalent.

24.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year. Courses are normally two hours a week.

45-500. Scope and Approaches to Political Science
A review of the state of the discipline and a survey of approaches to research. Required of all graduate students.

45-511. Canadian Politics and Government
A review of important literature in Canadian politics and government. Readings may be selected from the areas of Canadian institutions, political behaviour and political culture.

45-512. Research in Canadian Politics and Government
Analysis of selected topics in Canadian politics and government. Topics may be selected from the institutional or behavioural areas of the discipline. Students will normally be expected to have taken 45-511 or its equivalent.

45-516. Structure and Politics in Local Government
An examination of the principal government structures found in local governments and of the way in which contemporary urban pressures produce various kinds of political effects.

45-517. Trends in Local Government Administration
A review of the way in which local governments try to cope with contemporary urban problems through the development of their administrative organization. Administrative aspects will include financial, personnel and evaluative procedures.

45-531. Approaches to Comparative Politics
An examination of the theoretical and empirical literature in the field of comparative politics.

45-532. Topics in Comparative Politics
An examination of particular theoretical questions in depth, of particular institutions or processes in comparative perspective, or of the politics of particular countries or groups of countries. Students will normally be expected to have taken 45-531 or its equivalent.

45-541. Seminar in Canadian Public Administration
The contemporary practice of public administration within Canada, with comparisons where appropriate with other developed and developing political systems.

45-542. Seminar in Canadian Public Policy
A review of the applicability of contemporary theories of public policy-making and policy analysis to the Canadian policy process.

45-547. Political Development
A critical analysis of the development of political institutions in the context of rapid socio-economic change.

45-548. Case Studies in the Politics of Developing Areas
The comparative study of selected problems of political development such as integration, stability, or the impact of external forces with reference to particular national experiences in Southeast Asia and other areas of students' special interest.

45-551. Main Tendencies in Contemporary Political Theory
An examination of the literature of twentieth century political theory with emphasis on the period since the Second World War.

45-552. The Problematic of Contemporary Political Theory
Problems, both theoretical and practical, will be examined and responses to them evaluated. Students will normally be expected to have taken 45-551 or its equivalent.

45-561. Approaches to International Politics

A survey of recent literature on theories and methods in the study of international politics.

45-562. Research on Approaches to International Politics

The in-depth analysis of selected methods in the study of international politics. Students will normally be expected to have taken 45-561 or its equivalent.

45-563. Canadian Foreign Policy Decision-Making

An introduction to the case study approach to the exploration of Canadian foreign policy, together with systematic analysis of selected major Canadian foreign policy decisions since the Second World War.

45-564. Current Problems in Canadian Foreign Policy

An examination of selected issues in Canadian foreign policy and of related contemporary research. Students will normally be expected to have taken 45-563 or its equivalent.

45-568. The Third World in International Relations

An examination of the theoretical literature on such topics as the foreign policy of third world states, nonstate actors, structural dependence, North-South conflict, and regional integration.

45-569. Current Problems in the International Relations of the Third World

A research seminar involving in-depth examination of specific theoretical questions or selected aspects of the international relations of a particular region such as Asia, Africa or Latin America or particular issues in North-South relations. Students will normally be expected to have taken 45-568 or its equivalent.

45-570. Quantitative Methods in Political Research

Advanced statistics and research methods in political science, including selected techniques of multivariate analysis.

45-594. Political Behaviour

Advanced reading and research in the political behaviour of mass publics, with attention given to both the substance and methodology of the study of political behaviour at an advanced level. Topics include the formation of political attitudes, political participation and decision-making, and the methods of studying the individual in politics.

45-596. Elite Behaviour

Advanced reading and research in the application of behavioural techniques to the study of public officials and other political elites, and to the linkages between elites and the public. Consideration is given to the behaviour of elites in the Canadian political process as well as in the politics of other countries.

45-599. Readings in an Approved Special Field

Intended for students with a special interest in and knowledge of areas not covered in sufficient depth by other courses. (To be taken only with the permission of the Department).

45-796. Major Paper

45-797. Thesis

25 PSYCHOLOGY

25.1.1 OFFICERS OF INSTRUCTION

Professors

Fehr, Robert C.; B.A. (Toronto), M.A. (Detroit), Ph.D. (Fordham) - 1951.

Rourke, Byron P.; B.A. (Windsor), M.A., Ph.D. (Fordham) - 1965.

Holland, Cornelius J.; B.S. (St. Joseph's Philadelphia), M.A. (Detroit), Ph.D. (Catholic U. of America) - 1967.

Balance, William D.; B.A. (Birmingham Southern College), Ph.D. (Alabama) - 1968.

Cohen, Jerome S.; B.A. (Michigan State), M.A., Ph.D. (Wayne State) - 1968.

La Gaipa, John; B.A. (Hobart College), M.A. (Michigan), Ph.D. (American U.) - 1968.

Namikas, Gediminas A.; B.A. (Northwestern), M.Sc., Ph.D. (Wisconsin) - 1968.

Schneider, Frank W.; B.A. (Ohio Wesleyan), M.S. (Ohio), Ph.D. (Florida) - 1968.

Kaplan, Marvin L.; B.A. (Rochester), Ph.D. (Buffalo) - 1969.

Kobasigawa, Akira; B.A., M.A. (George Peabody College), Ph.D. (Iowa) - 1969.

Reynolds, David V.; A.B. (Massachusetts), Ph.D. (Stanford) - 1969.

Auld, Frank; B.A. (Drew), M.A., Ph.D. (Yale) - 1970.

Libby, William L.; A.B. (Harvard), M.B.A., Ph.D. (Chicago) - 1970.

Minton, Henry L.; B.A. (New York U.), M.A. (Southern Illinois), Ph.D. (Pennsylvania State) - 1970.

McCabe, Ann E.; B.Sc. (St. Norbert College), M.S. (Iowa State), Ph.D. (Wisconsin) - 1973.

Page, Stewart J.; B.A., M.A. (Western Ontario), Ph.D. (Toronto) - 1981.

Associate Professors

Starr, Meyer W.; B.A. (Toronto), M.A. (Princeton), Ph.D. (South Carolina) - 1961.

Daly, Raymond M.; B.S., M.A., Ph.D. (Loyola) - 1967.

Engelhart, Roland; A.B. (Davidson), Ph.D. (Duke) - 1968.

Hirota, Theodore T.; B.A. (British Columbia), M.A., Ph.D. (Toronto) - 1968.

Horvath, Theodore; B.A. (Waterloo Lutheran), M.A., Ph.D. (Windsor) - 1968.

Woodyard, H. Dale; B.A., M.A. (Roosevelt), Ph.D. (Florida) - 1968.

Frisch, Giora Ron; B.A. (City College, N.Y.), Ph.D. (Tennessee) - 1969.

Morf, Martin E.; B.A. (Acadia), M.A. (Dalhousie), Ph.D. (Western Ontario) - 1969.

Orr, Robert R.; B.A. (Valparaiso), M.A., Ph.D. (Iowa) - 1969. (Head of the Department).

Taub, Barry R.; B.A. (S.U.N.Y. Stoney Brook), M.A., Ph.D. (Waterloo) - 1972. (Director, Psychological Services Centre).

Assistant Professors

Porter, James E.; B.A. (Toronto), M.A. (Roosevelt), Ph.D. (Windsor); Psychological Services Centre - 1980.

Voelker, Sylvia L.; B.A. (Indiana), M.A., Ph.D. (Wayne State) - 1984.

Wong-Rieger, Durhane; B.A. (Barnard College), M.A., Ph.D. (McGill) - 1984.

Shore, Douglas L.; B.A., M.A., Ph.D. (Wayne State) - 1985.

Towson, Shelagh M. J.; B.A. (York), M.A. (Wisconsin), Ph.D. (Waterloo) - 1987.

Thomas, Cheryl D; B.A., M.A., Ph.D. (Simon Fraser) - 1987.

Adjunct Professors

McGrory, John; B.A. (St. Francis Xavier), M.A. (Ottawa), Ph.D. (Windsor) Associate Professor - 1977.

Centers, Louise; B.A., Ph.D. (Southern California). L.L.B. (Detroit College of Law). Associate Professor - 1980.

Adams, Kenneth; B.S., M.A., Ph.D. (Wayne State). Associate Professor - 1981.

Avore, Joseph; B.Sc. (College of Holy Cross), M.A., Ph.D. (Windsor). Assistant Professor - 1983.

Leenaars, Antoon; B.A. (Brock); M.A., Ph.D. (Windsor). Assistant Professor, 1983.

Dobson, Lois; A.B. (New York), B.A., M.A., Ph.D. (Windsor). Assistant Professor - 1984.

Miller, Rickey; B.A. (York), M.A., Ph.D. (Waterloo). Assistant Professor - 1984.

Cahill, Robert; A.B. (Detroit), M.A., Ph.D. (Wayne State). Assistant Professor - 1985.

Sanders, Sydney; B.Phil., M.A., Ph.D. (Montreal). Assistant Professor - 1985.

Unger, Rhoda; B.S. (Brooklyn College), M.A., Ph.D. (Harvard). Professor - 1985.

Daignault, Maurice; B.A., M.A. ? (Windsor). Assistant Professor - 1985.

Broga, Mary; B.A. (Waterloo), M.A., Ph.D. (Western). Assistant Professor - 1987.

Gdowski, Charles; B.S. (Loyola), M.A., Ph.D. (Wayne State). Assistant Professor - 1987.

Raskin, Allen; A.B. (Syracuse), M.S., Ph.D. (Illinois). Assistant Professor - 1987.

Lycaki, Helene; M.A. (Athens), M.A., Ph.D. (Wayne State). Assistant Professor - 1987.

Brooker, Harvey; B.A., M.A. (Toronto); Ph.D. (Indiana). Assistant Professor - 1987.

Special Appointments

LuQui, Ivan; B.Sc. (Carleton), M.Sc., Ph.D. (Ottawa). Associate Professor, Part-Time - 1972.

Girash, Martin; B.Sc., M.A., Ph.D. (Windsor). Associate Professor - 1977.

McDermott, William; B.A. (Holy Cross), M.A. (Temple), Ph.D. (Windsor). Assistant Professor - 1977.

Ross, William; B.A. (Windsor), M.A., Ph.D. (Windsor). Assistant Professor - 1977.

Fisk, John; B.A. (Western), M.A., Ph.D. (Windsor). Assistant Professor - 1979.

Bacheyie, Godfrey; M.B., Ch.B. (Ghana). Assistant Professor - 1985.

Consulting Psychologists

Keillor, James; B.A., M.A., Ph.D. (Wayne State) - 1970.

Berek, John; B.A. (Loyola), M.A.; M.Ed. (Xavier), Ph.D. (Windsor) - 1972.

Fellbaum, Anthony; B.A. (Laurentian), M.A., Ph.D. (Windsor) - 1977.

Kleinplatz, Morrie; B.A. (McGill), M.A., Ph.D. (Windsor) - 1981.

Petrimoulx, Catherine; B.A., M.A., Ph.D. (Windsor) - 1984.

Amin, Shukri; B.A., M.A. (Detroit), Ph.D. (Windsor) - 1987.

Joyce, S. Maureen; B.A. (Ottawa), M.A., Ph.D. (Windsor) - 1987.

25.2 Programs of Study

25.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

In addition to the general requirements listed in 1.5, the following requirements must be met by all students proceeding to the Ph.D. degree.

Admission Requirements

Applicants with an Honours degree in Psychology or its equivalent and who have been judged to be outstanding students may be admitted directly into the Ph.D. program. In such cases, the first phase of the doctoral program involves the completion of the Master's degree requirements which must include a thesis. Further advancement in the doctoral program would depend on the quality of performance in fulfilling the requirements for the Master's degree. Students in the doctoral program who did not complete the Master's thesis in the first year might be permitted to take courses toward the doctoral degree for one additional year only. Applicants with an M.A. degree in Psychology from the University of Windsor or from another recognized university or college may be admitted to the Ph.D. program with advanced standing in course work.

Applicants will be assessed with respect to their academic qualifications, letters of recommendation, and career-related achievements. Possession of the minimum academic requirements does not automatically ensure acceptance. The Graduate Record Examinations are required of all students seeking admission to the Department of Psychology. The Department utilizes the GRE scores, Verbal, Quantitative, and Ad-

vanced Test, as supplementary information when a decision is difficult to reach based on the primany cirriteria indicated above. Applications for admission must be completed by February 1.

Program Requirements

1) *Course Work:* Students must complete successfully at least twelve graduate courses after the honours B.A. Up to six courses may be accepted for credit from another university. The course work includes a core curriculum involving a general statistical methodology course, a methodology course in the student's area of specialization, and courses in the biological bases of behaviour, the cognitive bases of behaviour, and the historical and philosophical foundations of psychology. The minimum passing grade in graduate courses is B. A student who fails one course may repeat it once at the discretion of the Dean of Graduate Studies and Research and Head of the Department. The student may not repeat more than one course. Together with the above requirements, students in the areas of clinical psychology, child-clinical psychology, and applied social psychology must complete an internship involving approximately 2000 hours of supervised work.

2) *Academic Advisor:* Each student is assigned an academic advisor at the beginning of his or her first year of graduate studies.

3) *Doctoral Committee:* Research undertaken as part of a doctoral program is directed by a doctoral committee. The membership of the doctoral committee must be appointed by the Head of the Department and approved by the Executive Committee of the Faculty Council of Graduate Studies and Research. When the student is deemed ready to undertake such research, he or she proposes the name of a research advisor and, in consultation with the proposed advisor, the names of other members of the committee consisting of at least two other members of the Psychology Department and one extra-departmental member of faculty. For the defense of the dissertation, an external examiner will be selected by the doctoral committee, subject to the approval of the Department Head and the Dean of Graduate Studies and Research. The external examiner is from outside of the University of Windsor and is nationally or internationally recognized as having expertise in the area of psychology in which the candidate's research is carried out. The external examiner shall not participate in the direction of the research project but will appraise the dissertation and ordinarily will be present at the final oral examination.

4) *Dissertation:* The principal requirement for the Ph.D. degree in psychology is the presentation of a dissertation which embodies the result of an original investigation. The results so presented should constitute a significant and original contribution to knowledge.

5) *Examinations:* In addition to examinations in courses, the student must meet the following requirements:

(a) *Comprehensive Examination:* After completion of all course requirements (with the exception of internship courses), the student must pass a comprehensive examination in his or her area of specialization. Successful completion of the examination admits the student to candidacy for the Ph.D. degree. If a student fails the comprehensive examination he or she may retake the examination once only at the discretion of the Department Head and the Dean of Graduate Studies and Research.

(b) *Final Examination:* Each candidate will, on the recommendation of his or her doctoral committee, submit to a final oral examination in defence of the dissertation.

25.2.2 THE MASTER OF ARTS DEGREE

Admission Requirements

Applicants with an honours degree in Psychology or its equivalent may be admitted into a one-year (minimum) M.A. program. Because of the requirements of specific programs, the length of time necessary for students with an honours B.A. to

complete the M.A. requirements may be two years. Applicants with a general B.A. degree in Psychology or a related field may be admitted into a two-year M.A. program. Students in the first year (Qualifying year) of the two-year M.A. program are expected to achieve a level of qualification equivalent to an honours degree in Psychology.

Applicants will be assessed with respect to their academic qualification, letters of recommendation, and career-related achievements. Possession of the minimum academic requirements does not automatically ensure acceptance. The Graduate Record Examinations are required of all students seeking admission to the Department of Psychology. The Department utilizes the GRE scores, Verbal, Quantitative, and Advanced Test, as supplementary information when a decision is difficult to reach based on the primary criteria indicated above. Applications for admission must be completed by February 1.

Program Requirements

1) After receiving counselling within the Department, the candidate may proceed toward the degree in one of the following programs of Study:

(a) at least four and not more than six graduate credit courses, two of which may be in a cognate field, and a thesis. *Note:* A thesis is required in the first phase of the doctoral program. (*See* 25.2.1);

(b) six graduate courses, two of which must be seminar courses including a major paper upon which there shall be an oral examination.

25.2.3 POSTDOCTORAL CERTIFICATION IN CLINICAL PSYCHOLOGY

The Department of Psychology offers a postdoctoral certification in clinical psychology to provide for psychologists with doctoral degrees in areas other than clinical psychology, the specialized academic and clinical training needed for their working as clinical psychologists.

Admission Requirements

Admission is limited to those already holding a Ph.D. degree in Psychology. An advisory committee, headed by the Coordinator of Clinical Training, will guide the trainee in meeting his or her specific needs, will evaluate his or her progress, and will decide when the trainee has successfully completed the respecialization process. It is expected that the postdoctoral certification will require two years of course work plus an internship.

Recertification trainees will be selected from candidates who hold a Doctor of Philosophy degree in psychology. This program is designed to train a psychologist trained in a non-clinical area to become a specialist in clinical psychology. It is not designed to provide further training for clinical psychology graduates. A committee of three faculty members (including the Coordinator of Clinical Training) will constitute the admission committee.

Program Requirements

1) *Advisement:* The trainee admitted to the Department will be assigned to an advisory committee made up of three clinical area faculty members. The advisory committee will plan the trainee's program of studies and guide his or her work. It will evaluate the trainee's progress and make final determination that he or she has completed the respecialization process successfully.

2) *Course Work:* The following courses, which are required specialty courses for doctoral students in clinical psychology, will be used by the advisory committee as a guide to devising the trainee's program:

46-480/581.Psychopathology
46-582/583.Clinical Assessment
46-584/585.Advanced Clinical Assessment
46-685/686.Introduction to Psychotherapy
(or an equivalent course)
46-610. Special Topics: A Survey of Psychotherapy. (An additional half course, or more, in the field of psychotherapy.)

Courses that are considered equivalent to 46-685/686 are any of the courses on

psychotherapy that include a supervised experience in doing therapy. As the additional required course in psychotherapy the trainee may select 46-696/697 (Advanced Psychotherapy). A basic course in psychotherapy must, however, be taken before the student enrolls in 46-696.

3) *Internship Requirements:* A total of at least 2000 hours of supervised work in a clinical agency is required. The trainee enrolls in the courses numbered 721 to 728 to record his or her fulfillment of the internship requirement. The internship requirement may be fulfilled through a part-time placement at the discretion of the trainee's advisory committee with the advice of the Internship Coordinator.

25.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year.

46-501. Historical and Philosophical Foundations of Psychology
The origin of modern psychology as a science and profession and the philosophy of science underlying psychology. (2 hours a week).

46-503. Biological Bases of Behaviour
Systems and methodologies in the neurosciences including sensory processes, comparative/sociobiology, physiological/human neuropsychology, and psycho-pharmacology. (2 hours a week).

46-505. Cognitive Bases of Behaviour
Systems and methodologies in areas such as attention, perception, learning, memory and thinking. (2 hours a week).

46-510. Research Methods in Psychology
Designed for students in preparation for conducting thesis or dissertation research. Emphasis is on basic principles of general applicability. Specific topics will include review of statistical inference, use of the computer, experimental and quasi-experimental designs, psychological measurement, and introduction to multivariate procedures. (Prerequisite: 46-412). (2 hours a week).

46-511. Evaluation Research
Research methods for evaluating the effects of interventions ranging from specific manipulations to entire programs. Comparison of goal-attainment and systems approaches to evaluation research. Selection and measurement of useful indicators. Traditional methods primarily used in the context of the goal-attainment model: surveys, quasi-experimental designs, correlational methods. Operations research methods primarily used in the context of the systems model: network analysis, Monte Carlo simulations, decision theory, linear programming. (Prerequisite: 46-510 or permission of instructor). (2 hours a week).

46-512. Psychometrics
A survey of test theory, test construction, and test evaluation. The course deals with tests as tools in evaluation research. Its specific focus is on the selection and measurement of personality characteristics in the context of matching personnel and jobs in the context of research on the effectiveness of psychological interventions. (Prerequisite: 46-510). (2 hours a week).

46-513. Multivariate Statistics
Matrix theory applied to the univariate and multivariate general linear model including ANOVA, regression, MANOVA, and multiple discriminant analysis; principal components analysis and factor analysis; categorical linear models; computer analysis of multivariate data. (Prerequisite: 46-412, or 46-510 or equivalent). (3 hours a week).

46-514. Research Methods in Clinical Psychology
(Prerequisite: 46-510). (2 hours a week).

46-515. Research Methods in Developmental Psychology
An introduction to the philosophy of science and a review of methodology in research in child behaviour and human development. (Prerequisite: 46-510). (2 hours a week).

46-516. Advanced Experimental Methodology
Experimental logic, techniques, and apparatus, research in psychology. (Prerequisite: 46-510). (2 hours a week).

46-521. Human Information Processing
Discussion of current theoretical descriptions of information- processing together with relevant experimental findings. (2 hours a week). (Students who wish to explore through a research project some of the questions raised in the seminar should also register for 46-608, either concurrently or sequentially).

46-523. Psychology of Animal Learning
Selected topics of current theoretical descriptions of operant and Pavlovian conditioning in infrahuman organisms together with experimental findings. (2 hours a week). (Students who wish to pursue in a laboratory setting some of the questions raised in the seminar should also register for 46-608 either concurrently or sequentially).

46-525. Advanced Motivation
Seminars in selected areas of motivation. (2 hours a week).

46-528. Advanced Topics in Neuroscience
Structure and function of the central nervous system. Selective study of neurosciences related to arousal, motivation, and cognition. (3 hours a week, combined laboratory and lectures).

46-529. Structure and Function of the Brain
An in-depth study of selected neuro-anatomical and biochemical systems. (Prerequisite: 46-336, 46-337, or equivalent). (2 lecture, 2 laboratory hours a week).

46-530. Neuropathology and Neurological Diagnosis
A critical survey of research findings in neuropathology, emphasizing the diagnostic significance of such data. (Prerequisite: 46-529). (2 hours a week).

46-532. General Perceptual Systems
The senses as perceptual systems; active and passive perception; variants, covariants and invariants. (2 hours a week).

46-533. The Visual System
The optic array; ecological optics and the meaningful environment; the information for perceiving events; pictures and awareness. (2 hours a week).

46-534. Human Ethology
Consideration of human behaviour from the phylogenetic perspective and an examination of the application of ethological and sociobiological theories and methods. (2 hours a week).

46-535. Advanced Comparative Psychology
Discussion of selected topics in animal behaviour. (2 hours a week).

46-539. Infant Development
A review of research and theory in the area of infancy with particular emphasis on the psychological aspects of normal and delayed development. (2 hours a week).

46-540. Theories of Child Psychology
Review and comparison of major theoretical positions in child psychology and a consideration of important research generated from these theories. (2 hours a week).

46-541. Cognitive Development
An introduction to theory and research in cognitive development emphasizing the Developmental Psychology of Jean Piaget. (2 hours a week).

46-542. Advanced Cognitive Development
Critical review of selected areas of research and theory in cognitive development. (2 hours a week).

46-543. Social Development
An examination of theories of the socialization process and research findings concerning social development in children. (2 hours a week).

46-544. Advanced Social Development
A critical evaluation of current theory and research on selected aspects of social development in children. (2 hours a week).

46-545. Learning in Children
A survey of research and theory in children's learning, memory, and problem solving. (2 hours a week).

46-547. Developmental Psychology in Educational Settings
The evaluation of applied problems through the application of research and theory related to Developmental Psychology. (2 hours a week).

46-548. Life-Span Developmental Psychology
A survey of current research and theory concerning development across the life span with particular emphasis on middle and old age. (2 hours a week).

46-549. Language Development
A critical review of current theories and research in the area of children's language acquisition and use. (2 hours a week).

46-560. Social Psychology
A critical survey of substantive areas of social psychology, such as impression formation, interpersonal attraction, attitude formation and change, conformity, aggression, altruism, inter-group relations, and personality and social behaviour. (2 hours a week).

46-561. Small Group Behaviour
Issues and approaches to the study of small groups, individual motives and group membership, effects of cohesiveness, leadership styles, verbal and non-verbal communication, group territory, etc. (3 hours a week).

46-562. Social Learning
Principles of social learning and behaviour modification in group situations. (2 hours a week).

46-563. Theories of Social Psychology
A critical analysis of such theories as attribution, cognitive consistency, systems, equity, social learning, and psychoanalysis. (2 hours a week).

46-565. Symbolism and Human Behaviour
An advanced study of the human communication transaction. Language and behaviour, Non-verbal communication as metaphor. Myths about the communication process. A rule-following, game model of human communication. Paradigms of inquiry and model building in communications research. (2 hours a week).

46-566. Theory and Model Construction in Communication
Four types of communication theory. The structure and substance of analogues. Descriptive, explicative, and simulative models of communication. Theory as metaphor. How to construct substantive theories and models. (2 hours a week).

46-567. Human Sexual Behaviour
Discussion of sexuality, its biology, cultural regulation, role in marriage and in the emotional well-being of partners. Analysis of some sexual problems and the behavioural principles of their prevention and solution. (2 hours a week).

46-570. Differential Psychology
A critical survey of research in areas of individual and group differences, such as intelligence, special abilities, temperament, motivation, interests, sex differences, age differences, social class differences, and race differences. (2 hours a week).

46-571. Psychology of Personality
A critical survey of research in areas of personality, such as biological, environmental, and personal determinants; anxiety, achievement motivation, locus of control, introversion- extroversion, cognitive styles, social learning, personality development, and personality change. (2 hours a week).

46-572. Theories of Personality
An advanced analysis of psychoanalytic, neo- Freudian, existential, holistic, behaviouristic, and other general theories of personality. (2 hours a week).

46-580. Clinical Psychopathology
Survey of basic psychological concepts of psychopathology. Emphasizes adult psychopathologies but includes an introduction to childhood disorders. (2 hours a week).

46-581. Theories and Research in Psychopathology
Presentation of salient theories of psychopathology. Criteria of abnormality; problems and methods of classification; questions of etiology and dynamics of pathological behaviour, research on psychopathology. (2 hours a week).

46-582. Clinical Assessment I
The selection, administration, scoring and integration of a variety of intelligence tests used in clinical settings. (2 lecture, 2 practicum hours a week).

46-583. Clinical Assessment II
The selection, administration, scoring and integration of a variety of personality and

projective techniques used in clinical settings. (Prerequisite: 46-582). (2 lecture, 2 practicum hours a week).

46-584. Advanced Clinical Assessment I
The practical application of assessment procedures to clinical problems of diagnosis, personality evaluation, and treatment in clinical and applied work settings. (Prerequisite: 46-583). (2 lecture, 2 practicum hours a week).

46-585. Advanced Clinical Assessment II
Continuation of Advanced Clinical Assessment I. (Prerequisite: 46-584). (2 practicum hours a week).

46-587. Advanced Projective Techniques I
Interpretation of the Rorschach Test. (Prerequisite: 46-583). (2 lecture, 2 practicum hours a week).

46-588. Advanced Projective Techniques II
Interpretation of the Thematic Apperception Test, Draw-A-Person Test, as well as other projective devices. (Prerequisite: 46-583). (2 practicum hours a week).

46-590. Ethical and Professional Issues in Psychology
Code of ethics and standards of psychological practice and research are reviewed. Legislation, confidentiality, privileged communication, private practice, informed consent, patient rights, and sexism in psychotherapy are among the professional issues and problems discussed. (3 hours a week).

46-602. Selective Readings in Psychology
(2 hours a week).

46-604. Special Projects in Psychological Research
(2 hours a week).

46-606. Special Topics in History and Systems
(2 hours a week).

46-608. Special Topics in Clinical Neuropsychology
(2 hours a week).

46-610. Special Topics in Clinical and Community Psychology
(2 hours a week).

46-611. Special Topics in Developmental Psychology
(2 hours a week).

46-613. Special Topics in Scaling, Statistics or Mathematical Psychology
(2 hours a week).

46-615. Special Topics in Envrionmental Psychology
(2 hours a week).

46-617. Special Topics in Social Psychology
(2 hours a week).

46-619. Special Topics in Personality
(2 hours a week).

46-621. Special Topics in Applied Social Psychology
(2 hours a week).

46-623. Special Topics in Industrial Psychology
(2 hours a week).

46-625. Special Topics in Child-Clinical Psychology
(2 hours a week).

46-640. Child-Clinical Neuropsychology (Theory and Research)
A critical survey of the literature dealing with brain- behaviour relationships in children. Topics emphasized include the following: the effect of brain dysfunction on perception, learning, memory, language, and thinking; learning disabilities; mental subnormality. (Prerequisite: 46-336, 46-337, or equivalent). (2 hours a week).

46-641. Child-Clinical Neuropsychology (Assessment)
An examination of neuropsychological tests currently in use for the assessment of brain-behaviour relationships in children. Topics emphasized include the following: strategies and techniques of assessment; rationales underlying the use of various measures; modes of interpretation; approaches to habilitation and rehabilitation. (Prerequisite: 46-336, 46-337, or equivalent). (2 hours a week).

46-642. Adult Clinical Neuropsychology (Theory and Research)
A critical survey of the literature dealing with brain- behaviour relationships in adults. Topics emphasized include the following: the effect of brain dysfunction of perception, learning, and thinking, memory disorders; personality disorders associated with cerebral dysfunction. (Prerequisite: 46-336, 46- 337, or equivalent). (2 hours a week).

46-643. Adult Clinical Neuropsychology Assessment)
An examination of neuropsychological test batteries currently in use for the assessment of brain-behaviour relationships in adults. Topics emphasized include the following: strategies and techniques of assessment; rationales underlying the use of various measures; modes of interpretation; approaches to rehabilitation. (Prerequisite: 46-336, 46-337, or equivalent). (2 hours a week).

46-644. Neuropsychology of Learning Disabilities
An examination of neuropsychological approaches to the understanding, assessment, and treatment of reading, spelling, arithmetic, and social learning disabilities in children and adults. (Prerequisite: 46-336, 46-337, or equivalent). (2 hours a week).

46-650. Advanced Child Psychopathology
An intensive survey of the literature dealing with child psychopathology. Current theory and research and their implications for clinical practice. (2 hours a week).

46-651. Survey of Child Psychotherapies
Introduction to psychotherapy with children. Fundamental principles and empirical foundations of effective psychotherapy; survey of various treatment approaches. (Prerequisite: 46-650). (2 hours a week).

46-652. Child-Clinical Assessment I
Comprehensive investigation of the construction, selection, evaluation, and use of ability tests. Practicum in assessment of children's intelligence and achievement. (Prerequisite: 46-582 or consent of instructor). (2 lecture hours a week, plus laboratory and practicum).

46-653. Child-Clinical Assessment II
Intensive investigation of the construction, selection, evaluation, and use of tests designed for the assessment of children's personality and behavior. Practicum in administration interpretation, and communication of results of comprehensive test batteries. (Prerequisites: 46-583, 46-652). (2 lecture hours a week, plus laboratory and practicum).

46-654. Child Psychotherapy I
A survey of approaches to psychotherapy with children, including supervised clinical work in psychotherapy with children and their families. (2 lecture, 2 practicum hours a week).

46-655. Child Psychotherapy II
An intensive application of several models of psychotherapy with children and their families, including supervised clinical work. (Prerequisite: 46-654). (2 practicum hours a week).

46-660. Psychology of Work
Draws on industrial and organizational psychology. The objective is to analyze what constitutes occupational competence, i.e., performance on the job. The course has three sections: the motivation to work, the abilities related to work (aptitude and training), and competence as a multiplicative function of motivation and ability. (2 hours a week).

46-661. Personnel Selection
Covers job analysis and occupational testing, i.e., the analysis of what different jobs require and the assessment of relevant abilities, interests, aptitudes, and personality traits. Special attention will be paid to interview techniques and widely used tests that are useful in matching job applicants with jobs to maximize job satisfaction and productivity. (3 hours a week).

46-665. Organizational Psychology
The social psychology of behaviour in organizations. Models for conceptualizing organizations and identifying problems. Methods for analyzing and solving problems in areas such as motivation, leadership, satisfaction, and communication. (3 hours a week).

46-666. Practicum in Applied Social Psychology
Problem solving in work settings, applying methods of organizational psychology, community psychology and other fields of applied social psychology. Students consult and work directly with organizations on projects selected for value to the organization and to the student. (10 hours a week).

46-667. Organization Development
The organization development approach: the consultant and organizational change; consultation techniques: survey feedback, team building, experiential groups; participative management and leadership style. (3 hours a week).

46-668. Intervention and Consultation in Human Systems
Process orientation in facilitating change in business, industry, educational, and service organizations. Design and implementation of field projects. (2 lecture, 2 practicum hours a week).

46-670. Applied Social Psychology
A survey of theory and research in the field of applied social psychology. Topics emphasized include applied research methods, practice skills, organizational psychology, community psychology, social issues and social change, and areas of application such as business and industry, health delivery systems, education, environment and law. (2 hours a week).

46-674. Community Mental Health
A range of community mental health issues are studied from an interactional and systems perspective: behaviour labelling, patienthood, professional role assignment, form and informal services, support networks, community attitudes, social policy. (2 hours a week).

46-675. Community Structure and Processes
Theory and research on the consequences of modern urban development. An emphasis on survey methods of studying human ecology, social epidemiology, power and class, religion, education, and deviancy. (2 hours a week). (This course is offered in the Department of Sociology and Anthropology as 48-575).

46-676. Advanced Environmental Psychology
The micro-environment of immediate physical surroundings at home and work and the macro-environment of the city, region, and world systems as they affect human interaction and well being. Aesthetics and models of the human being in dynamic interaction with technology, population, and natural resources, including energy. Human time perspective and the long range planning of alternative future environments. (3 hours a week).

46-680. Modern Theories of Psychotherapy
A comparative analysis of psychoanalytic, experiential and behavioural approaches to psychotherapy. Emphasis will be placed upon developing an integrated perspective. (2 hours a week).

46-683. Theory of Systems in Relation to Therapeutic Process
A theoretical and applied presentation of a theory of systems and its relevance and application to the understanding of the therapeutic process. Critical analyses of the therapeutic encounter from the theory of systems will constitute the main format of the course. (Prerequisite: 46-580, 46-581 and 46-680). (2 hours a week).

46-684. Application of the Theory of Systems to Psychotherapy and Clinical Research
The student will be supervised and instructed in the application of a theory of systems to specific therapeutic encounters or in selected clinical research projects. (Prerequisite: 46-683). (2 hours a week).

46-685. Introduction to Psychoanalytic Therapy
The theory and technique of psychotherapy; research on psychotherapy. Topics include: Is psychotherapy effective? Is psychotherapy a branch of medicine or of psychology? How should one conduct an initial interview? According to psychoanalysts, what is the purpose of psychotherapy, and what is the process through which change

occurs in psychoanalytic therapy? What other approaches to behavioural change are suggested by psychoanalytic personality theory? How can one go about doing research on psychotherapy? What are the major findings about therapeutic process and outcome? Each student will work with a client under close supervision, in order to learn the rudiments of brief, psychoanalytic therapy. (Prerequisite: 46-580, 46-581 and 46-680). (2 lecture, 2 practicum hours a week).

46-686. Supervised Practice in Psychoanalytic Therapy
A continuation of the supervised psychotherapy begun in Psychology 46-685. (Prerequisite: 46-685). (2 lecture, 2 practicum hours a week).

46-687. Group Processes in Human Relations
Review of literature in group development and group dynamics. Laboratory work including group experiences as a participant and as project designer and leader. (2 lecture, 2 practicum hours a week).

46-688. Group Processes in Clinical Psychology
Theories, issues, and research in groups focusing on personal growth and psychotherapy. Participation in experiential training groups and leadership under supervision. (Prerequisite: 46-580 and 46-581). (2 practicum hours a week).

46-690. Family Therapy I
Review of current theories and techniques. Supervised practicum. (Prerequisites: 46-655 or 46-680). (2 lecture, 2 practicum hours a week).

46-691. Family Therapy II
Continuation of Family Therapy I. Emphasis on recent developments in theory; research in family interaction and family therapy. (Prerequisite: 46-690). (2 lecture, 2 practicum hours a week).

46-692. Behaviour Therapy I
Surveys several behaviour techniques with am emphasis on the principles of cognitive behaviour therapy. Course will include self-application and in-class practicum. (2 hours a week).

46-693. Behaviour Therapy II
Extension of Behaviour Therapy I including supervised clinical practice. (Prerequisite: 46-692). (2 hours a week).

46-694. Gestalt Therapy I
Surveys the basic principles of Gestalt Therapy through experiential procedures in a group setting. (Prerequisite: 46-655 or 46-680). (2 hours a week).

46-695. Gestalt Therapy II
The application of Gestalt principles to individual psychotherapy. (Prerequisite: 46-694). (2 hours a week).

46-696. Advanced Psychotherapy I
Lectures, readings, and supervised clinical work in psychotherapy at an advanced and specialized level. (Prerequisite: another Psychotherapy course with practicum). (2 lecture hours, 2 clients and supervision a week).

46-697. Advanced Psychotherapy II
A continuation of 46-696. This semester focuses on psychotherapy processes through the use of videotaped psychotherapy sessions. (Prerequisite: 46-696). (2 seminar, 2 to 4 practicum hours a week).

46-698. Existential Analysis
The principles of existential psychology. The relationship of existential analysis to other personality theories. A study of the techniques of existential analysis and the modification of therapeutic techniques within the existential context. Each student will work with a client under supervision to learn the application of existential analysis to therapy. (Prerequisites: 46-580, 46-581 and 46-680). (2 lecture, 2 practicum hours a week).

46-699. Supervised Practice in Existential Therapy
A continuation of the supervised psychotherapy begun in 46-581. (Prerequisite: 46-698). (2 lecture, 2 practicum hours a week).

46-711. Supervised Field Work I
(250 hours of supervised practice).

46-712. Supervised Field Work II
(250 hours of supervised practice).

46-721. Doctoral Internship I
250 hours of supervised internship).

46-722. Doctoral Internship II
(250 hours of supervised internship).

46-723. Doctoral Internship III
(250 hours of supervised internship).

46-724. Doctoral Internship IV
(250 hours of supervised internship).

46-725. Doctoral Internship V
(250 hours of supervised internship).

46-726. Doctoral Internship VI
(250 hours of supervised internship).

46-727. Doctoral Internship VII
(250 hours of supervised internship).

46-728. Doctoral Internship VIII
(250 hours of supervised internship).

46-796. Major Paper Research
(Hours to be arranged).

46-797. M.A. Thesis Research
(Hours to be arranged).

46-798. Doctoral Dissertation Research
(Hours to be arranged).

26 RELIGIOUS STUDIES

26.1.1 OFFICERS OF INSTRUCTION

Professor Emeritus

Crowley, Edward J.; B.A. (St. Joseph's, New Brunswick), S.T.L. (Catholic U. of America), S.S.L. (Pontifical Biblical Institute, Rome) - 1957.

Professors

Hoffman, John C.; B.A. (Toronto), B.D., Ph.D., S.T.M. (McGill), Th.D. (Union Theol. Sem.) - 1964. (Dean of Student Affairs).

King, J. Norman; B.A., M.A. (Toronto), S.T.B. (Laval), Ph.D. (U. of St. Michael's College, Toronto) - 1964.

Culliton, Joseph T.,C.S.B.; B.A., B.Ed. (Toronto), S.T.B., M.A. (U. of St. Michael's College, Toronto), Ph.D. (Fordham) - 1965 (Dean of the Faculty of Arts).

Mehta, Mahesh; B.A., M.A., LL.B., Ph.D. (Bombay) - 1969.

Amore, Roy C.; B.A. (Ohio), B.D. (Drew), Ph.D. (Columbia) - 1970. (Head of the Department).

Associate Professors

Crowell, George H.; B.A. (Princeton), B.D., Th.D. (Union Theol. Sem.) - 1968.

Whitney, Barry L.; B.A. (Carleton), Ph.D. (McMaster) - 1976.

Kloppenborg, John S.; B.A. (Lethbridge), M.A., Ph.D. (U. of St. Michael's College, Toronto) - 1984.

Assistant Professors

Lage, Dietmar; B.A. (Manitoba), M.A., Ph.D. (McGill) - 1983.

Milne, Pamela J.; B.A., M.A. (Windsor), Ph.D. (McGill) - 1984.

Muldoon, Maureen H.; B.A. (Queen's), M.A., Ph.D. (U. of St. Michael's College, Toronto) - 1986.

26.2 Programs of Study

26.2.1 THE MASTER OF ARTS DEGREE

In addition to the general requirements and stipulations set out in 1.6.2, the requirements listed below must be met by all candidates.

1) Candidates may proceed toward the degree in one of the following programs of study:

(a) four graduate courses plus a thesis;
(b) six graduate courses plus a major paper upon which there shall be an examination;
(c) eight graduate courses.

Some graduate courses may be taken more than once providing that the course content is different, and permission is given by both the Department Head and the professor offering the course.

2) *Language requirement:* Reading knowledge of either French or German is required. Special arrangements, however, may be required for students concentrating in specific areas, e.g., biblical studies. In such cases the languages shall be chosen in consultation with the Head of the Department.

3) *Part-time Students:* All part-time students should complete their work within four consecutive years after admission to the Candidate year of the M.A. program. Extensions for serious reasons may be granted by request.

4) *Cognate fields:* Candidates may take up to two of their required courses in a cognate field with departmental approval.

26.3.1 COURSE DESCRIPTIONS

35-500. Hebrew Bible: Critical Methods
An investigation of current developments in the literary-critical and historical methods of analyzing the Hebrew bible. The specific course content will vary from year to year as different methods and their applications to specific texts are examined.

35-501. Hebrew Bible: Current Issues
Issues selected according to current scholarly interest, such as the historicity of the patriarchs; the traditions of the Exodus and Settlement; prophets and society; apocalypticism; myth and ritual; the wisdom tradition.

35-502. Method in New Testament Studies
This course is designed to provide the student with a competence in the main methods of New Testament exegesis: Text-criticism; source-criticism and the Synoptic Problem; form-criticism; redaction-criticism and tradition-history.

35-503. Issues in New Testament Interpretation
Critical examination of selected issues: the historical Jesus; miracles; the "Q" document; origins of gnosticism; the resurrection as a historical and theological problem; social description of early Christianity; selected problems in Johannine exegesis; Pauline interpretation; history of New Testament interpretation.

35-504. Theologies of the New Testament
A critical examination of the presuppositions and methods employed in the construction of a "theology of the New Testament." (Recommended background: 35-502. Method in New Testament Studies).

35-510. The Possibility and Meaning of Christian Ethics
An analysis of the distinction between Christian and secular ethics. A comparative study of the philosophical and theological assumptions, the foundations and reasoning used in Protestant and Roman Catholic ethics.

35-511. Ethical Methodologies
An analysis of the inherent connection between one's understanding of personhood, one's method of making moral decisions and the conclusions one draws by studying the approaches of such authors as C. Curran, J. Fletcher, J. Gustafson, P. Lehmann, R. McCormick and P. Ramsey.

35-512. Contemporary Ethical Issues
An examination and critical evaluation of current debate on selected ethical issues. Topics vary from year to year.

35-513. Social Ethics
Origins and development of the discipline of social ethics as a branch of religious and theological studies and as an expression of Church life. Emphasis on current activities in social ethics, especially in Canada.

35-514. History of Christian Ethics
An historical study of selected ethical themes in the writings of major theologians.

35-515. The Sanctity of Life and the Quality of Life
The principles of the sanctity of life and the quality of life are examined in relation to their theological roots and ethical implications.

35-521. The Reformation
An examination of the Lutheran, Calvinist, Anglican, radical and Roman Catholic reformations of the sixteenth century.

35-530. Themes in Systematic Theology
A discussion of selected themes of Christian theology: God, Christ, Trinity, creation, sin, redemption, eschatology.

35-531. Transcendental Theology
A discussion of the Christian vision of the human person as oriented to God in the transcendental theology of Rahner, Lonergan and/or others; its application to selected theological themes.

35-532. Themes in Process Theology
A discussion of selected themes in process theology: God, Christ, sin, death and immortality, freedom, ethics, the Church, theodicy.

35-533. Themes in Philosophy of Religion
A discussion of selected issues in Christian philosophy of religion: the nature of religious language, theodicy, the theistic proofs, the faith-reason debate, etc.

35-534. Modern Christian Theologians
A study of the thought of selected modern Christian theologians.

35-535. Contemporary Theological Anthropology
A study of the attempt to develop a theological understanding of human nature which is both open to the best of secular knowledge and informed by the foundational insights of the Christian faith.

35-536. Contemporary Psychology of Religion
A survey of the major psychological interpretations of religion and their implication for the understanding and articulation of faith.

35-537. What is Theology?
An examination of current attempts to situate theology as a human enterprise in relation to other forms of human endeavour and thought. Theology and science, art, ethics and common sense.

35-540. Buddhist Thought and Practice
Advanced studies in Buddhist psychology, philosophy, ethics and meditation.

35-541. Buddhist-Christian Dialogue
A study of historical interactions of Buddhists and Christians, especially of contemporary dialogue concerning doctrine and meditation. Readings from Merton, Graham, Dumoulin, King and others.

35-542. Phenomenology of Religion
Cross-cultural studies of religious phenomena such as devotion, asceticism, rituals, sacrifice, theophany, androgeny, charisma and celibacy. Readings from Eliade, van der Leeuw, Ricoeur and others.

35-544. The Bhagavad Gita and Its Interpreters
After a contextual and textual study of the Gita, the course will examine critically its major interpretations and integrate them within the context of Hindu thought. Interpreters include Shankara, Ramanuja, Gandhi, Aurobindo and others.

35-545. Ethics and Mysticism of India
A study of the ethical thought of India in the light of philosophical and soteriological perspectives, as well as a study of the varieties of Indian religious mysticism. Questions such as the relationship of mysticism to morality and social action are examined.

35-550. Reading in Approved Special Field
(Permission of the Department Head required)

35-555. Seminar on a Selected Topic

35-796. Major Paper

35-797. Thesis

27 SOCIAL WORK

27.1.1 OFFICERS OF INSTRUCTION

Professors

Kroeker, Bernhard J.; B.Ed. (Alberta), B.S.W., M.S.W. (Toronto) - 1969.

Chacko, James; B.A. (Madras), B.S.W., M.S.W. (Laval), D.S.W. (Toronto) - 1981.

Erickson, Gerald D.; B.A. (Northland College), M.S.W. (Michigan), D. Phil. (York, U.K.) - 1985. (Director of the School).

Associate Professors

Chandler, Robert; B.A., B.S.W., M.S.W. (Toronto) - 1968.

Taylor, Patricia Ann; B.A. (Assumption), B.S.W., M.S.W. (Toronto) - 1968.

Clarke, James P.; A.B., M.S. (Columbia), Ph.D. (New York) - 1969.

Buckley, Lola E.; B.B.A. (Houston), M.S.W. (Denver), D.S.W. (Southern California) - 1970.

Hansen, Forrest C.; B.A. (Alberta), B.S.W., M.S.W., Ph.D. (Toronto) - 1971.

Chatterjee, P. Kumar; B.A., M.A.. (Agra), B.S.W., M.S.W. (Toronto), Ph.D. (Bryn Mawr) - 1972.

Monaghan, Bernard F. S.; Prof. Cert. S.W. (Ottawa), B.A. (Windsor), M.S.W. (Carleton) - 1972.

Meyer, Margrit; B.A. (Wilson, Penn.), M.S.S. (Bryn Mawr) - 1973.

Holosko, Michael J.; B.A. (York), M.S.W. (Toronto), Ph.D. (Pittsburgh) - 1985.

Assistant Professors

Gallant, Wilfred A.; B.A. (St. Francis X), M.S.W. (Maritime School of Social Work), D.Ed. (Wayne State) - 1973.

Cassano, D. Rosemary; B.A., B.S.W., M.S.W., Ph.D. (Toronto) - 1979.

Adjunct Professor

Barnes, John; B.A., M.S.W. (Toronto), D.S.W. (Penn.) - 1968.

Field Education Centres

Assumption High School
Barat House Family Center
Big Brothers Association
F. J. Brennan High School
Canadian Mental Health Association Windsor/Essex
Casa Maria Community Center, Detroit
Cass Methodist Developmentally Disabled Activities Center, Detroit
Catholic Family Services Bureau
Catholic Social Services, Detroit
The Child's Place
Children's Achievement Centre
Children's Aid Society of Essex County
The Children's Center, Detroit
Children's Psychiatric Research Institute
Christ Child House
Citizen Advocacy Windsor/Essex
Correctional Service of Canada
Department of Social Services, Detroit
Detroit Memorial Hospital, Detroit
Developmental Disabilites Institute
Drouillard Place
Emergency Telephone Service, Detroit
Essex County Association for the Mentally Retarded, Essex
Family Service Bureau of Windsor
Glengarda School of Exceptional Children
Harper-Grace Hospitals, Detroit
House of Sophrosyne
The Inn
Interim House, Detroit
International Institute of Metro Detroit
Jewish Home for the Aged, Detroit: Borman Hall, Prentice Hall
Jewish Welfare Federation of Detroit
John Howard Society of Windsor
Legal Assistance of Windsor
Lester B. Pearson Centre, Chatham
London Custody & Access Project, London: Child & Family Centre, Family Court Clinic
Madame Vanier Children's Services
Ministry of Attorney General Provincial Family Court
Ministry of Community and Social Services
Neighborhood Service Organization, Community Mental Health
New Beginnings
New Center Community Mental Health Center, Detroit

Ontario Ministry of Corrections
People's Community Services of Metro Detroit
Reaching Out
Riverview Hospital
Roman Catholic Children's Aid Society
Senior Citizens of Greater Windsor
Separate School Board of Windsor
St. Alphonsus Church
St. Anne's High School
St. Francis Home for Boys, Detroit
St. Leonard's House, Windsor
St. Peter's Home for Boys, Detroit
St. Thomas Psychiatric Hospital
Southwest Detroit Community Mental Health, Detroit
United Way of Windsor/Essex County
Victoria Hospital, Dept. of Psychiatry
Victoria Hospital, Child and Adolescent Centre
Windsor Association for the Mentally Retarded
Windsor Group Therapy
Windsor Police Department
Windsor Separate School Board
Windsor Social Services
Windsor Western Hospital Centre
Bill Wrye, M.P.P.
Y.M.-Y.W.C.A.

27.2 Programs of Study

27.2.1 THE MASTER OF SOCIAL WORK DEGREE

The Master of Social Work degree, which is accredited by the Canadian Association of Schools of Social Work, has been designed to prepare professional social workers as specialists. Graduates of this program are expected to be able to provide professional leadership in the area of specialization. The student has the opportunity to concentrate in intervention, administration or research in child and family services.

The School has established a Graduate Studies Committee to oversee the graduate program. In addition, each student is assigned a faculty sdvisor who also acts a chairperson for the major paper or thesis and field liaison for the practicum.

Admission Requirements

1) Applicants to the Master of Social Work program should apply for admission by March 1.

2) Persons with a B.A. (or equivalent) degree are not eligible for admission to the Master's program. However, a limited number of students with records of outstanding academic achievement in a B.A. (Hons.) program may be considered for a qualifying year. The qualifying year will be made up of a full year of undergraduate courses over Intersession and Summer Session, and the following Fall and Winter semesters, and will not lead to a B.S.W. degree. Students who complete the qualifying year with a cumulative average of B+ or better in those courses taken in the qualifying year program will be able to proceed to the M.S.W. year.

3) Otherwise, an applicant to the Master of Social Work program must have:

(a) satisfactorily completed a B.S.W. program or have equivalent standing from another university;
(b) maintained a general average of B in the final year of undergraduate work;
(c) submitted a preliminary outline of an educational project that will provide direction for particular studies within the area of specialization chosen by the student, the project to include an appropriate focus for program.

4) Persons who have been engaged in professional social work practice will be given special consideration for admission.

5) One undergraduate course in statistics is a prerequisite for admission to the M.S.W. program.

6) Applicants may be admitted to the full-time or to the part-time M.S.W. program. The part-time program is intended for B.S.W. graduates who are employed in the field of social welfare. Please contact the Co-ordinator of Admissions at the School of Social Work for the regulations pertaining to the part-time program. Admissions to the part-time program will take place every other year.

Program Requirements

Unless otherwise stated, the general regulations of the Faculty of Graduate Studies and Research will apply to students in the Master of Social Work program.

1) Students proceed to the M.S.W. degree by following one of these programs:

(a) a total of eight courses, plus the Thesis (47-797);
(b) a total of nine courses, plus the Major Paper (47-796).

2) The following five courses are required of all students:

47-556. Social Work with the Child and Family
47-507. Research I
47-503. Intervention I
47-509. Social Policy Analysis
47-593. Practicum

3) Students are further required to choose two of the following three courses:

47-508. Research II
47-504. Intervention II
47-510. Social Administration

4) Other courses may be taken outside of the School with the approval of the Graduate Studies Committee.

5) The following Social Work courses may not be offered every year:

47-511. Intervention with Children
47-513. Intervention in Mental Health Settings
47-514. Intervention in Medical Settings
47-515. Intervention in Human Justice and Correctional Settings
47-557. Social Work in the Health Services
47-558. Social Work in Human Justice and Corrections
47-560. Supervision and Field Instruction
47-561. Social Work with Individuals
47-563. Social Work with Small Groups
47-564. Community Practice in Social Work

6) *Length of program - Full-Time:* This program is designed to occupy a minimum of one calendar year beginning with the Fall semester and continuing through the following Winter semester, Intersession, and Summer Session. Work will be scheduled in anticipation of graduation at the Fall Convocation.

7) *Length of program - Part-Time:* All classes will be held on Friday evenings and Saturday mornings. Students will be able to complete the program in two to two and one-half calendar years. A practicum is required of all students during the Fall semester of the second year of the program. Students must be available on a full-time basis for this semester only. Work will be scheduled in anticipation of graduation at the Fall Convocation two years after admission to the part-time program.

27.3.1 COURSE DESCRIPTIONS

All courses listed below will not necessarily be offered every year. All courses are three hours a week unless otherwise noted.

47-503. Intervention I
Selected theories and practice modalities applicable to social work with families and children. The student will be expected to develop expertise in the analysis of problems presented by families, the development of interventive strategies, and the evaluation of outcomes of service to families.

47-504. Intervention II
Examines differential practice modalities and theoretical concepts related to the family and children as the units of study and treatment. Tapes and records from practice will be analyzed.

47-507. Research I
Provides students with an overview of research issues and methods appropriate for social work. Focuses on exposing students to a variety of research designs, methodologies and strategies, including qualitative and quantiative approaches. The content is oriented toward enabling students to write a research proposal for their major paper or thesis.

47-508. Research II
Builds upon Research I and is required for students choosing to write a thesis and recommended for students who are collecting qualitative or quantitative data. Topics include data collection strategies and

techniques, measurement, instrumentation, data reduction, data analyses and statistics, and computer use.

47-509. Social Policy Analysis
A comparative examination of a range of frameworks for policy analysis, with emphasis on their underlying assumptions and methods of inquiry. Students are expected to apply these frameworks to specific social policies.

47-510. Social Administration
A review of a range of administrative and organizational theories relevant for human service organizations. Students are expected to apply these theories to central processes and problems in these organizations, such as: decision making, inter-organizational relations, control, communication and the management of cutbacks.

47-511. Intervention with Children
Intervention with children calls for a special set of therapeutic modalities and techniques. The student will be required to analyze, evaluate, and develop interventive strategies for practice with children. Evaluation of outcomes of practice is an important feature of this course.

47-513. Intervention in Mental Health Settings
Focuses upon social work intervention in psychiatric settings, such as clinics, hospitals, after- care programs, and rehabilitation services for the patient and the family. The student will be expected to develop expertise in assessment of needs for service, developing therapeutic strategies and the evaluation of service outcomes.

47-514. Intervention in Medical Settings
Social Work intervention in hospital settings; interdisciplinary practice with treatment team. Versatility of the medical social worker within the medical setting and in collaboration with outside community resources, rehabilitation, clinical and after care services.

47-515. Intervention in Human Justice and Correctional Settings
Intervention in settings such as courts, jails, diversion programs and after-care services related to the offender and the family is analyzed and evaluated in this course. Strategies for effecting change in organization and social work with habitual offenders and juveniles are part of this course.

47-517. Evaluative Research in Social Work
Designed to enable students to learn how to both evaluate clinical practice and also evaluate the effectiveness and efficiency of social programs. Topics will include: issues involved in conducting evaluation research; the processes of evaluation; the practice realities of evaluation; the organizational context of evaluation; clinical *vs.* statistical significance; efficiency *vs.* effectiveness; and the outcomes of evaluative research efforts.

47-556. Social Work with the Child and Family
Provides the student with a foundation for study, at an advanced level, in the specialization on the child and family. Needs, problems, intervention, service delivery and evaluation of outcomes will be the *foci* of an analysis of the field of services to children and families, with an assessment of current theories in the field.

47-557. Social Work in the Health Services
Provides the student with a foundation for advanced study in the field of health services. The health needs of individuals, families, and communities will be assessed as a base for examining the current interventive modalities, issues in the delivery of health services, and means of practice and service evaluation.

47-558. Social Work in Human Justice and Corrections
Provides the student with a foundation for advanced study of the criminal justice system, correctional services and the roles of social workers in justice and corrections. Special attention will be paid to current practices in the field.

47-560. Supervision and Field Instruction
The use of individual and group supervision and consultation, particularly with beginning social workers and students in field teaching centres. Theories, concepts and practices of the various functions of supervision, includ-

ing practice instruction, will be the focus of this course.

47-561. Social Work with Individuals
Examines in depth selected theories of social work practice with individuals as a process for the restoration, maintenance or enhancement of individuals' social functioning. Emphasis will be upon the relationship between personality theories and social work practice in which theoretical material will relate to general helping situations through the use of tapes and case records from students' own field practice.

47-563. Social Work with Small Groups
Examines selected theories of social work practice with small groups and will make use of tapes and records from students' own practice as a basis for analysis.

47-564. Community Practice in Social Work
Examines various theories and models of community practice in social work, with a strong emphasis on social processes of assessment, designing interventive strategies, and measuring outcomes.

47-593. Practicum
An individually planned practicum is arranged for each student to test, refine and expand social work skills which related to working with children and families. Evening and weekend hours may be necessitated, and the use of an automobile is usually required. Some travel costs and times should be anticipated. The Practicum is the equivalent of four days per week for one semester. (Offered on a Pass/Non-Pass basis only).

47-796. Major Paper
A report of a systematic and critical analysis of a topic related to the specialization and concentration of the student.

47-797. Thesis
A research project undertaken by the candidate which is directed and supervised by a Master's committee. The thesis will serve to integrate a knowledge of research methods with the student's area of the specialization and concentration in order to encourage the extension of knowledge and understanding in the specialization.

28 SOCIOLOGY

28.1.1 OFFICERS OF INSTRUCTION

Professors

Dietz, Mary L.; M.A. (Michigan State), B.A., Ph.D. (Wayne State) - 1968.

Ferguson, John D.; B.A., M.A. (Toronto), Ph.D. (Columbia) - 1968.

Whitehurst, Robert N.; B.A. (Butler), M.S., Ph.D. (Purdue) - 1969.

Pradhan, Mahesh Chandra; B.A. (Agra), M.A., LLB. (Lucknow), Ph.D. (London) - 1970.

Ramcharan, Subhas; B.A., M.Sc. (U. of West Indies); Ph.D. (York) - 1971.

Associate Professors

Vincent, Claude L; B.A. (Toronto), M.A. (Loyola), Ph.D. (Wayne State) - 1966.

Faber, Seymour; B.A. (Wayne State), M.A., Ph.D. (Michigan) - 1966.

Signorile, Vito; B.A., M.A. (Catholic U.), Ph.D. (Maryland) - 1969.

Booth, David; B.A. (Chicago), M.A. (Illinois), Ph.D. (Northwestern) - 1970.

Shuraydi, Muhammad; B.A. (American U. of Beirut), Ph.D. (Alberta) - 1973.

Booth, Gerald V.; B.A. (Victoria), M.A., Ph.D. (Southern Illinois) - 1975.

Adam, Barry D.; B.A. (Simon Fraser), M.A., Ph.D. (Toronto) - 1976.

Ehrentraut, Adolf W.; B.A., M.A., Ph.D. (Toronto) - 1976.

Hedley, Max J.; B.A. (York England), M.A., Ph.D. (Alberta) - 1976. (Head of the Department).

28.2 Programs of Study

28.2.1 THE MASTER OF ARTS DEGREE

At the graduate level students in the Department of Sociology and Anthropology will be expected to specialize in one of three areas:

Social Institutions and Change, Criminology/Deviance, or Social Psychology.

Admission Requirements

1) Applicants with an honours degree in Sociology or a related field may be admitted into a one-year Master's program providing they have an adequate background in social theory and methodology. Students will be expected to comply with the general University requirements for the Master's degree. (*See* 1.6.2).

2) Applicants with a general degree in Sociology or a related discipline may be admitted into a two-year Master's program. Besides meeting all the requirements of the one-year Master's program in their second year, students will be expected to comply with the general University requirements. (*See* 1.6.2).

Program Requirements

Course selections and course changes must be made in consultation with a faculty counsellor designated by the area committee in which the student is planning to specialize, and receive the approval of the Graduate Affairs Committee.

1) Students in a one-year program will proceed toward the degree by completing six courses with at least a B average, among which a minimum of two courses must be in the declared area of specialization; also required are 48-500, 48-505, and 48-590, plus a thesis on a research subject approved by the Department and an oral defence of the thesis;

2) Students in the two-year program are required to take the following courses in their first year: two of 48-401, 48-402, 48-416, 48-417, two courses in the 48-403 to 48-406 sequence and six other courses at the 300- or 400-level, two of which may be outside the Department. At least an overall B average must be maintained.

Note: Students not having a sufficient background in statistics and/or social theory may be required to take 48-307 and 48-308 and/or 48-345 and 48-346.

28.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year.

All courses are taught as seminars.

THEORY AND METHODS

48-500. Sociological Theory
A critical study of conceptual issues in both macro and micro levels of sociological theory, including such fundamental questions as the nature of theories, human nature, and the nature of society. Normally, this course will be team-taught. (2 hours a week).

48-505. Methodology
A systematic exploration of the general epistemological and procedural problems as they apply to classical and contemporary methods of sociological research. The course will cover such problems as validation, measurement, computerization, and statistical inference. Normally, this course will be team-taught. (2 hours a week).

SOCIAL INSTITUTIONS AND CHANGE

48-523. Canadian Social System
An analysis of the institutional patterns of Canadian society, and the interconnecting structures relating to regionalism, cultural pluralism, stratification and power. The social relationships which have developed in the system to minimize social conflict, and enhance social cohesion, consensus and the growth of national identity will be analyzed. (2 hours a week).

48-524. Industrial Society
The structure and development of industrial (capitalist) society from its origin to its modern form. (2 hours a week).

48-526. Organization and Work Research
Critical analysis of current theories and research on formal organizations, focussing on such issues as bureaucracy and control, the alienation of labour, and the external determinants of organizational rationality. (2 hours a week).

48-528. Social Stratification
Advanced consideration of the theory, processes, and problems of social stratification and social mobility. (2 hours a week).

48-531. Social Change
Seminar on the theory and research of large scale social transformation through the examination of such topics as the development and impact of social movements, states and social revolutions, and the mobilization of people on the bases of racial, gender, and class divisions. (2 hours a week).

48-532. Intergroup Relations
An analysis of various aspects of the relationships between groups in hetergeneous societies. Particular emphasis will be placed on the role and status of racial, ethnic, and political minorities in pluralistic societies. (2 hours a week).

48-540. Sociology of Occupations and Professions
Study of the structure and dynamics of occupations and professions, and their members' recruitment, training and careers, with emphasis on current theoretical issues and research. (2 hours a week).

48-543. Comparative Social Institution
Drawing on the literature in social anthropology and sociology, this seminar will involve an examination of the central theoretical problems raised in the comparative analysis of societies and institutions. (2 hours a week).

48-550. Canadian Family and Sex Roles
An analysis of the various modes of family and sex-role organization and their relationship to the community and other social institutions. The historical shifts in labour force participation by women and the resultant consequences for the behaviour of women and men will be examined especially with respect to their impact upon familial organization, occupational roles and sexual mores. (2 hours a week).

CRIMINOLOGY/DEVIANCE

48-560. Crime and Criminology
This is a seminar course involving advanced critical analysis of theory and research on crime, criminals and criminality. Particular attention will be paid to typologies of crime and criminals. (2 hours a week).

48-561. Sociology of Law
An investigation of the salient theoretical and research problems in jurisprudence, legal structures, and legal behaviour. Focus will vary according to students' and instructors' interests. (2 hours a week).

48-562. Sociology of Punishment and Corrections
This course will include an intensive examination of the theories of punishments and evaluative research on correctional programs both within and outside of institutions. (2 hours a week).

48-563. Current Issues in the Study of Deviance and Criminology
This course will focus on new issues in the sociologies of crime and deviance. (2 hours a week).

SOCIAL PSYCHOLOGY

48-570. Current Issues in Social Psychology
An advanced research course designed to give students the opportunity to explore issues at the leading edge in the field of social psychology. Students will be expected to do either independent or team research on selected topics and present their findings in class for peer review. (2 hours a week).

48-571. Methods for the Study of Small Groups and Social Interaction Processes
Systematic observation methods, participant observer techniques, self-analytic groups, group structures and process category recording system. (2 hours a week).

48-572. Theoretical Social Psychology
A critical examination of current theories in social psychology, with an emphasis on conceptual and methodological issues. Theoretical emphasis will vary from year to year. While classical theories will be scrutinized, the concentration will be on existing critiques, reorientations and developments in contemporary social psychology. (2 hours a week).

48-573. Applied Social Psychology
A critical review and examination of the existing literature in applied social psychology. Students will engage in community-oriented research projects having applied significance of societal relevance. (2 hours a week).

48-575. Community Structures and Processes
Theory and research on the consequences of modern urban development. An emphasis on survey methods of studying human ecology, social epidemiology, power and class, religion, education, and deviance. (2 hours a week). (This course is offered in the Department of Psychology as 46-675).

48-590. Directed Readings: Development of the Thesis Proposal
Students will register for this course with a faculty advisor in their declared area of specialization with the purpose of developing a thesis proposal.

48-796. Major Paper

48-797. Thesis

29 VISUAL ARTS

29.1.1 OFFICERS OF INSTRUCTION

Associate Professors

Pufahl, John K. Jr.; B.F.A. (Illinois Wesleyan), M.A., M.F.A. (Northern Illinois), F.R.S.A. - 1967.

Doctor, Antonio P.; B.F.A. (Santo Tomas), Dipl. F.A. (Silpakorn), M.F.A. (Notre Dame) - 1967.

Farrell, Michael J.; B.A., M.A. (Florida State) - 1968.

Ferraro, Robert C.; B.A. (City College, New York), M.F.A. (Southern Illinois) - 1968.

Boles, Daniel; B.A. (Stanford), M.F.A. (Tulane), Certificate (Sculpture, Bavarian State Academy of Art) - 1969.

DeAngelis, Joseph R.; B.F.A. (Rhode Island School of Design), M.F.A. (Syracuse) - 1969.

Law, William C.; B.F.A. (Atlanta School of Art), M.F.A. (Tulane) - 1970. (Director of the School).

Gold Smith, Susan B.; B.A., M.A. (Wayne State) - 1970.

Dingler, Daniel W.; B.F.A. (Layton School of Art), M.F.A. (Cranbrook Academy of Art) - 1971.

Assistant Professor

Flett, Arthur; B.A., M.A. (Wayne State), Ph.D. (Indiana) - 1973.

Sessional Instructors

Duck, Adele; B.F.A. (Windsor), M.F.A. (Florida State) - 1976.

Brown, Brian; B.F.A. (Windsor), M.F.A. (Southern Illinois) - 1977.

Strickland, Rod; B.F.A. (Windsor), M.F.A. (Tennessee) - 1984.

Jones, Barrie; B.F.A. (British Columbia), M.F.A. (York) - 1985.

29.2 Programs of Study

29.2.1 THE MASTER OF FINE ARTS DEGREE

The program provides two years of advanced training for creative development in the student's chosen field of specialization. This would include the refinement of technical and manipulative skills, but with special concern for the interrelationship between technique and creative statement. Fields of specialization within the M.F.A. program are Painting/Drawing, Sculpture, Printmaking, and Multi-Media.

Admission Requirements

In addition to the requirements set forth in 1.3 and 1.6.1 for admission to the Faculty of Graduate Studies and Research, applicants for admission to the Master of Fine Arts program must satisfy the following particular requirements:

(a) have an honours B.A. with a major in Visual Arts or Bachelor of Fine Arts degree from an approved college or university; an applicant with a general B.A. with a major in Visual Arts may be admitted with the stipulation that deficiencies will be made up;
(b) present twenty slides of recent work for evaluation by the departmental graduate acceptance committee;
(c) have attained at least a B standing in undergraduate art courses;
(d) have six courses of Art History;
(e) present transcripts of all university- and/or college-level work to the Faculty of Graduate Studies and Research;
(f) present three letters of recommendation.

2) An applicant who has graduated from a recognized professional institution may be required to apply for entry into a special program prerequisite to admission into the M.F.A. program.

3) Students who are deficient in any of these requirements may be asked to register in appropriate undergraduate courses in order to satisfy the requirements.

4) Applications for admission to the Master of Fine Arts program should be complete by April 1 for Fall admission, and by November 15 for Winter admission; applications reaching the Office of Graduate Studies and Research after these dates may not be considered.

Program Requirements

1) Twelve courses plus the Thesis (27-797), are required:

(a) four courses in a studio major;
(b) two courses in a studio minor;
(c) two Art History courses;
(d) Graduate Seminar (27-596);
(e) one seminar in Art History;
(f) two optional courses which may be taken within or outside the School of Visual Arts; these may be undergraduate courses.

2) *Thesis:* The thesis will consist of a body of original creative works within the candidate's field of specialization. The thesis project will be planned with, and executed under, the direction of the candidate's chief faculty advisor.

3) *Examination and Thesis Requirements:*

(a) a solo exhibition of the completed creative thesis acceptable to the student's thesis committee;
(b) a written and photographic documentation of the thesis show acceptable to the student's thesis committee and to be retained by the School of Visual Arts;
(c) a formal oral defence of the thesis before the student's thesis committee.

4) *Residence Requirements:* The M.F.A. program will require a minimum of two academic years (four semesters). The final academic year must be taken in residence at the University of Windsor.

Transfer credits will be evaluated and may be accepted.

Work on an M.F.A degree should ordinarily be completed within three consecutive years after a student's enrollment.

29.3.1 COURSE DESCRIPTIONS - STUDIO

All graduate studio courses are Directed Individual Studies courses. Projects will be planned and carried out in conjunction with a faculty supervisor.

27-501. Sculpture
Directed individual studio projects for sculpture majors only.

27-502. Sculpture
Directed individual studio projects for sculpture majors only.

27-503. Sculpture
Directed individual studio projects for sculpture majors only.

27-504. Sculpture
Directed individual studio projects for sculpture majors only. Preparation of written and visual documentation of thesis exhibition.

27-505. Sculpture
Directed individual studio work in sculpture. (May be repeated for credit).

27-511. Painting/Drawing
Directed individual studio projects for painting/drawing majors only.

27-512. Painting/Drawing
Directed individual studio projects for painting/drawing majors only.

27-513. Painting/Drawing
Directed individual studio projects for painting/drawing majors only.

27-514. Painting/Drawing
Directed individual studio projects for painting majors only. Preparation of written and visual documentation of thesis exhibition.

27-515. Painting
Directed individual studio work in painting. (May be repeated for credit).

27-545. Drawing
Directed individual studio work in drawing. (May be repeated for credit).

27-551. Printmaking
Directed individual studio projects for printmaking majors only.

27-552. Printmaking
Directed individual studio projects for printmaking majors only.

27-553. Printmaking
Directed individual studio projects for printmaking majors only.

27-554. Printmaking
Directed individual studio projects for printmaking majors only. Preparation of written and visual documentation of thesis exhibition.

27-555. Printmaking
Directed individual studio work in printmaking. (May be repeated for credit).

27-561. Multi-Media
Directed individual studio projects for multimedia majors only.

27-562. Multi-Media
Directed individual studio projects for multimedia majors only.

27-563. Multi-Media
Directed individual studio projects for multimedia majors only.

27-564. Multi-Media
Directed individual studio projects for multimedia majors only. Preparation of written and visual documentation of thesis exhibition.

27-565. Multi-Media
Directed individual studio work in multimedia. (May be repeated for credit).

27-590. Photography
Directed individual studio work in photography.

27-596. Graduate Seminar

27-797. Thesis

29.3.2 COURSE DESCRIPTIONS - ART HISTORY

The specific topics of Individual Art History courses and the Art History Seminar will vary from year to year, depending upon the interests and needs of professors and students.

All courses are three hours a week unless otherwise indicated.

28-500. Ancient Near Eastern Art
A comprehensive study of the art of Egyptian and Mesopotamian civilizations with emphasis upon those periods which had distinct cultural influence upon the peripheral areas of the Eastern Mediterranean. (Prerequisite: permission of the School of Visual Arts).

28-501. Northern Renaissance Art
The Art of Northern Europe during the fifteenth and sixteenth centuries with particular emphasis upon the Franco-Flemish and German painting traditions and the beginnings of Graphic Art. (Prerequisite: permission of the School of Visual Arts).

28-507. Renaissance Art I
The Renaissance in Italy during the fifteenth century with special attention given to the architecture, sculpture, and painting of Florence. (Prerequisite: permission of the School of Visual Arts).

28-508. Renaissance Art II
The art of the Renaissance in Italy with a major consideration of the architecture, sculpture, and painting produced in Rome and Venice during the sixteenth century. (Prerequisite: permission of the School of Visual Arts).

28-512. Baroque Art
An analysis of the architecture, painting and sculpture of the seventeenth and early eighteenth centuries in Europe. (Prerequisite: permission of the School of Visual Arts).

28-514. European Art During the Eighteenth Century
The study of the art of the Rococo in Europe and the evolution of the Neo-Classic movement. (Prerequisite: permission of the School of Visual Arts).

28-531. Nineteenth-Century European Art
Architecture and sculpture during the nineteenth century in Europe, with emphasis upon painting as the visual exponent of the Neo-Classic, Romantic, Impressionist and Post-Impressionist movements. (Prerequisite: permission of the School of Visual Arts).

28-536. Early Medieval Art
An examination of the painting, sculpture and architecture of Europe including the Early Christian, Byzantine, Hiberno-Saxon, Carolingian, Ottonian and Romanesque periods. (Prerequisite: permission of the School of Visual Arts).

28-537. Later Medieval Art
An examination of the painting, sculpture and architecture of Europe during the Early through the High Gothic period including the International Gothic style. (Prerequisite: permission of the School of Visual Arts).

28-538. Islamic Art
An examination of important trends in the artistic development of the Muslim era, including the Umayyad, Tulunid, Fatamid, Seljuk, Mongol, Nasrid, Mamluk, Ottoman, Timurid, Safavid, and Mughal dynasties. (Prerequisite: permission of the School of Visual Arts).

28-539. Japanese Art
The architecture, sculpture, and painting of Japan and the relationship of Japanese culture to continental artistic developments. (Prerequisite: permission of the School of Visual Arts).

28-540. Art of India
A general survey of Indian architecture, sculpture and painting with particular emphasis on the development of the Buddha Image. (Prerequisite: permission of the School of Visual Arts).

28-541. Art of China
An examination of the architecture, sculpture and painting of China from the Shang through the Ching dynasties. (Prerequisite: permission of the School of Visual Arts).

28-542. The Development of American Art
A study of the art and architecture created in the United States from colonial times to the twentieth century. (Prerequisite: permission of the School of Visual Arts).

28-543. Canadian Art
A study of the development of painting, sculpture and architecture in Canada from the seventeenth century to the present with consideration of the legacy of early French and English settlers and persistent regional dis-

tinctions. Gallery visits and primary sources in Ontario will supplement class lectures and readings. (Prerequisite: permission of the School of Visual Arts).

28-544. Art of the Twentieth Century - Pre-1940

An examination of the sources, movements, and major figures contributing to twentieth century architecture, sculpture and painting in Europe and North America previous to 1940. (Prerequisite: permission of the School of Visual Arts).

28-545. Art of the Twentieth Century - Post-1940

An examination of the sources, movements and major figures contributing to twentieth century architecture, sculpture and painting in Europe and North America from 1940 on. (Prerequisite: permission of the School of Visual Arts).

28-600. Directed Individual Studies

This course involves examination of a particular problem in a specific area of interest in which a paper will be required. (May be repeated for credit with permission of the School).

28-656. Art History Seminar

A proseminar course based on group encounters with particular studies in the History of Art, which will be considered by means of readings, discussions, papers, and museum trips. (May be repeated for credit with permission of the School).

30 POSTGRADUATE AWARDS AND FINANCIAL AID

In accepting the administration of awards designated for specific groups, the University of Windsor is bound by provincial and federal human rights legislation not to deny eligibility to anyone on discriminatory grounds. The criteria of eligibility must be expressed therefore in accordance with these legislative principles. Ability to benefit is the primary criterion for the award of scholarships and may be measured by academic achievement, or demonstrated potential of other kinds relevant to the particular award. Membership of a group that has been disadvantaged because of race, national or ethnic origin, colour, religion, sex, age, or disability also may be a criterion of eligibility. However, adequate demonstration of such disadvantage must be provided by the donor for the University's consideration before it will accept a donation for such purposes.

Ontario Student Assistance Program (for Full- and Part-Time Students)

Students who are Canadian citizens or permanent residents, and who are residents of Ontario, may apply for an award under the Ontario Student Assistance Program.

To receive an award a student must establish a need for assistance and be enrolled in a program which leads to a degree, diploma, or certificate.

A common application form enables the student to apply for an Ontario Study Grant, a Canada Student Loan, and an Ontario Student Loan. Eligibility criteria and calculated financial need determine which of the plans, if any, provide the student with assistance. Applications and information brochures are available in the Student Awards Office, which is located at 496 Sunset Avenue.

Students wishing further information and applications on awards listed below should consult the Office of Graduate Studies and Research. As far as possible, information presented here is up-to-date at the time of calendar printing.

Students are invited to consult, in addition to these listings, publications and files on graduate awards maintained in the Office of Graduate Studies and Research.

A separate section on graduate awards administered by departments follows the general list.

University of Windsor Scholarships for Postgraduate Study

A number of scholarships (valued at $5,000 plus tuition) and bursaries (tuition only) will be offered annually for full-time postgraduate study in any field at the University of Windsor. The Scholarships are competitive and open to university graduates with high standing. These awards may be held concurrently with a Graduate Assistantship and/or Research Assistantship.

C. P. Crowley Scholarships

These prestige awards, established in honour of the founder and first Dean of the Faculty of Graduate Studies at this University, provide tuition fees plus a $5,000 stipend for each twelve months of graduate study.

University of Windsor Tuition Scholarships

These awards provide tuition fees.

Both of the above scholarships are offered annually for full-time postgraduate study in any field at the University of Windsor. The scholarships are competitive, and are open to university graduates with high standing. The tuition portion of these awards covers full tuition, but not incidental fees. Either of these awards may be held concurrently with a Graduate Assistantship and/or Research Assistantship. Applications are available from the Office of Graduate Studies and Research, University of Windsor. Closing dates: February 1 and April 1.

Assistantships

The University of Windsor offers Graduate Assistantships to the majority of full-time graduate students. The maximum Graduate Assistantship requires ten hours of work a week for a total stipend of $5,400 (Master's)

or $6,380 (Doctoral) during the Fall and Winter terms (1987-88 rates). Partial assistantships with prorated stipends are offered in some departments. For further details and application forms consult the department concerned.

A number of departments also offer Research Assistantships with funds received from external granting agencies.

Natural Sciences and Engineering Research Council Postgraduate Scholarships

These awards are open to students in the fields of agriculture, biology, forestry, chemistry, physics, geology, physical geography, oceanography, mathematics, engineering and psychology. These scholarships will be valued at $12,500 ($13,500 for engineering and computer science) for twelve months as of May 1, 1988, and are open to students in their first and subsequent years of graduate study.

At the time of application, an applicant must be either a Canadian citizen or a permanent resident.

Further information may be obtained from the Awards Officer, Natural Sciences and Engineering Research Council of Canada, Ottawa, Ontario, or from the Office of Graduate Studies and Research.

NSERC Undergraduate Student Research Awards

Undergraduate students enrolled in second or higher years of an Honours program eligible for NSERC support are encouraged to apply directly to their major department for further information on these awards. In 1987 a total of nineteen awards was made with minimum stipend of $750 a month. For the summer of 1988 the University of Windsor expects to make at least nineteen awards at a stipend of $750 per month for four months.

Application deadlines, set by departments, are usually early in December.

Social Sciences and Humanities Research Council of Canada

Doctoral Fellowships: $12,000 (1987-88 rates) for twelve months.

The fellowships are intended to develop research skills and to assist in the training of highly qualified personnel. As the number of fellowships offered under this program is limited, candidates must demonstrate a high standard of academic achievement in undergraduate and graduate studies in the social sciences and humanities. Applicants must be Canadian citizens or permanent residents of Canada, and by the time of taking up the award will have completed at least one year of doctoral study or a Master's degree. Application material available in the Office of Graduate Studies and Research. Deadline set by the department is usually early November.

Ontario Graduate Scholarships

The Government of the Province of Ontario provides annually a number of postgraduate awards, tenable at Ontario universities only. The purpose of these awards is to encourage excellence in graduate studies. The minimum academic qualification is the Ontario Honours Bachelor's degree or its equivalent. The value of the award for 1987-88 is $3,035 per term. The awards may be held for three consecutive terms and must be held for at least two consecutive terms. Further information and application forms are available from the Office of Graduate Studies and Research.

Ontario-Quebec Exchange Fellowship Program

The Ontario-Quebec Permanent Commission, in accordance with the interprovincial Agreement for Co-operation and Exchange in Educational and Cultural Matters, sponsors an exchange program that allows students from one province to pursue, on a full-time basis, graduate studies at the Master's or doctoral level in the other province.

Thus outstanding students from Ontario and Quebec, known as Ontario-Quebec Fellows, are offered the opportunity to live in the cultural milieu of their second language and to work in their particular field of study in their second language.

The two provincial governments will each award ten fellowships. In 1987-88 students

pursuing studies at the Master's level receive $8,000; doctoral students receive $10,000.

Fellowship holders must be registered as full-time students in a graduate program for the tenure of the award. Students from provinces other than Ontario must have resided in Ontario for twelve consecutive months. All candidates must be Canadian citizens or permanent residents for at least one year.

Queen Elizabeth II Ontario Scholarships

In honour of the visit of Her Majesty Queen Elizabeth II to Ontario in July, 1959, the Government of the Province established a fund to provide annually a number of post-graduate awards. This scholarship has a value of at least $12,500 plus a general expense allowance of $500, and will be available in the fields of the humanities, social sciences and mathematics. These awards are open to Canadian citizens and permanent residents. The scholarships are intended for full-time students of exceptional calibre who are nearing the completion of a Ph.D. program in an Ontario university and who are expected to be in the final full year of their research and writing during tenure of the award. Preference will be given to candidates who are residents of Ontario. Further information and applications may be obtained from the Office of Graduate Studies and Research. Deadline for submission of applications is December 1.

Canada Mortgage and Housing Corporation Scholarships

Up to seventy-five awards are offered to Canadians or permanent residents for graduate studies in the fields of architecture, business and public administration, economics, engineering, environmental studies, law, urban planning and the social and behavioural sciences, in Master's or doctoral degree programs. These scholarships were valued at $11,325 in 1987-88.

Individuals wishing to apply may obtain the necessary forms from the Office of Graduate Studies and Research or from the Head of the Department at the university where they propose to study.

Application forms may also be obtained from CMHC regional offices, or from the Administrator, Scholarships, CMHC National Office, Ottawa, K1A 0P7. Applications must be submitted to the Office of Graduate Studies and Research no later than April 15.

Commonwealth Scholarship and Fellowship Plan

Under a plan drawn up at a conference in Oxford in 1959, each participating country of the Commonwealth offers a number of scholarships to students from other Commonwealth countries. These scholarships are mainly for graduate study and are tenable in the country making the offer. Awards are normally for two years and cover travelling, tuition fees, other university fees and a living allowance.

Details may be obtained from the relevant government office in the applicant's own country or the Director General, External Aid Office, Ottawa, Ontario.

Canadian students wishing to study in another Commonwealth country may write to Association of Universities and Colleges of Canada, Commonwealth Scholarship Program, 151 Slater St., Ottawa, Ontario K1P 5N1.

Noranda/Bradfield Graduate Fellowship

Value: $14,000 for one year. Up to seven fellowships are available to full-time students in graduate programs leading toward a Master's or doctoral degree working in the natural and applied sciences, mathematics, economics, business and commerce. This graduate fellowship is given to promote and encourage research collaboration between Canadian universities and companies in or associated with the Noranda Group. Applicants must be Canadian citizens or landed immigrants in Canada. Application material is available in the Office of Graduate Studies and Research. Applications must be submitted by March 1.

Petro-Canada Inc. Graduate Research Award Program

Value: $10,000 for one year. Five graduate awards are made annually in the fields of science, engineering, social science and business administration. The program was established to recognize academic excellence and to support and encourage graduate

research in specialized fields of study relating to the petroleum industry. Candidates must be Canadian citizens or landed immigrants. For application material write to: Scholarship Administration Services, Association of Universities and Colleges of Canada, 151 Slater Street, Ottawa, Ontario K1P 5N1. Application must reach Ottawa by February 1.

National Institute of Mental Retardation

Research Grants: Awarded to Canadians or landed immigrants in doctoral programs in mental retardation or related fields. Value up to $8,000. May be renewed if research projects show results and can be published in related journals. Application deadline April 30.

Bursaries: Awarded to Canadians or landed immigrants accepted into post-graduate programs in mental retardation or related fields. Candidates must be recommended by the Provincial Association for the Mentally Retarded in their province. Value up to $1,500. Application deadline March 30.

Further information and application forms may be obtained from: The Secretary, Awards Committee, National Institute on Mental Retardation, Kinsmen NIMR Building, 4700 Keele Street, Downsview, Ontario M3J 1P3.

IODE War Memorial Scholarships for Graduate Study

Seven to nine scholarships will be awarded to enable students to carry on studies in history, economics, the humanities, constitutional government, or any subject vital to the interests of the Commonwealth. The value of the scholarships is $8,500 for study in Canada and $12,000 for study in the Commonwealth. These scholarships are tenable in any university in Canada, Great Britain, or within the Commonwealth. Applicants must be Canadian citizens who hold a first degree from a Canadian university, hold a Master's degree, or are in the final year of studies leading to a Master's degree. Deadline for application is December 1.

The Mackenzie King Travelling Scholarships

Four or five scholarships of up to $7,000 (subject to change) will be available to graduates of any Canadian university who propose to engage, either in the United States or the United Kingdom, in postgraduate studies in the field of international or industrial relations (including the international or industrial aspects of law, history, politics, economics).

Application material available in the Office of Graduate Studies and Research. Deadline date February 1.

The Mackenzie King Open Scholarship

A one-year scholarship of up to $7,000 (subject to change) will be available to graduates of any Canadian university, for full-time postgraduate studies in Canada or elsewhere and in any field.

Application material available in the Office of Graduate Studies and Research. Deadline date February 1.

Canadian Federation of University Women Awards

The Canadian Federation of University Women offers the following awards to women holding a degree from a Canadian university and who are Canadian citizens or have held landed immigrant status for one year:

Margaret McWilliams Travelling Fellowship.
Value $8,000.
Professional Fellowship.
Value $4,000.
Margaret Dale Philp Award.
Value $1,000.
Alice E. Wilson Grants.
Value $1000.
CFUW Memorial Grant.
Value $1,000.
La Bourse Georgette Lemoyne.
Value $1,000.

Applications are available in the Office of Graduate Studies and Research. Completed applications and documentation must be received by December 1 by the Canadian Federation of University Women, 55 Parkdale Avenue, Ottawa, Ontario, K1Y 1E5.

Alpha Delta Kappa Sorority, Iota Chapter Scholarship

The Iota Chapter of the Alpha Delta Kappa Sorority for women teachers offers a scholarship to a female teacher who wishes to pur-

sue postgraduate studies. Applications may be obtained from Mrs. Margaret Squire, Corresponding Secretary, Alpha Delta Kappa Sorority, Iota Chapter, c/o General Amherst High School, Amherstburg, Ontario.

Delta Kappa Gamma World Fellowship

The Delta Kappa Gamma Society International is an organization of professional women in the field of education. A fellowship for graduate study is offered to a female graduate student, in the amount of $3,000 U.S., with a possibility of renewal for a second year. To be eligible, an applicant must be a female student from a country other than Canada or the United States, studying under a "student authorization", and accepted for admission to graduate studies. The student must be in a program which will lead to a teaching position in an educational institution (school, college, university, library, nursing institution). In addition, the applicant must plan to return to her home country on completion of studies. Applications may be obtained from the International Students' Centre, and submitted by November 15.

German Canadian Business and Professional Men's Association Scholarship

Value: $2,000. Awarded to a full-time student registered at the University in any year beyond the first of an undergraduate program, or in a graduate program. Candidates must prepare a paper on the German contribution to any aspect of North American society (culture, music, engineering, architecture, psychology, etc.), and submit it by February 1 to the President, German Canadian Business & Professional Men's Association, c/o Mr. Horst Schmidt, 9555 Avery Lane, Windsor, Ontario N8R 2C1.

The winner will present his or her paper publicly at a meeting of the Association.

Air Pollution Control Association Bursary

The Ontario Section of the Air Pollution Control Association offers a bursary of $1,000 and a one year membership in the Association to a student interested in the study of air pollution. The applicant must be a Canadian citizen or landed immigrant, and must be a full-time student in a graduate program in Ontario, in the study of air environment. Further information and application forms may be obtained from: Bursary and Awards Committee, Ontario Section, APCA, P.O. Box 259, Postal Stn. U, Toronto M8Z 5P1. The deadline is October 31.

University of Windsor Faculty and Departmental Awards

Students wishing further information on the awards listed below should consult the Faculty or Department concerned.

BIOLOGICAL SCIENCES

The Biology Club Award

Value determined by interest earned on Trust Fund. Awarded annually to a student entering the M.Sc. program in Biology, on the basis of participation in departmental activities at the undergraduate level at the University of Windsor, financial need, and academic merit. This award may not be held concurrently with other major awards such as NSERC and OGS. Application forms are available in the Department of Biological Sciences office; deadline for submission is August 15. Applications to be submitted to the Department of Biological Sciences, University of Windsor.

BUSINESS ADMINISTRATION

Daniel Bryan Memorial Bursary

Value: $500. Awarded annually on the basis of academic standing to a full-time graduate student upon completion of the first year of the M.B.A. program. Established in 1985 by Mrs. Daniel Bryan and sons.

J. R. Calcott Memorial Fund

Value: $500. Awarded annually to a student who has completed Year I of the Master of Business Administration program, entering Year II. Recipients must have a cumulative average of at least B and must have demonstrated a strong interest in the area of entrepreneurship either by high grades in related courses or by serious research. Applicants must submit a letter of application and resume to the Dean of the Faculty by September 30.

Commerce Class of '55 Alumni Award

Annual awards of $100 for outstanding undergraduate and graduate students in business administration, awarded on the basis of combined academic excellence and extracurricular achievement. Further information is available from the Faculty. Deadline for submission of applications is September 30.

Financial Post Investment Prize

Value $80. Awarded annually during the second semester to the student in the candidate year with the highest standing in Investment Analysis. The award is funded by interest on prize money awarded the University of Windsor's Investment Team in the Canada-wide Financial Post's "Million Dollar Portfolio" contest.

Hiram Walker and Sons Ltd. Scholarship

Awarded to a graduate student entering the first year of the Master of Business Administration program.

Xerox Canada Inc. Scholarship

Value: $2,000. Awarded annually to a student entering the candidate year of the Master of Business Administration program, on the basis of the previous year's work. The student must be a Canadian citizen or permanent resident.

CHEMISTRY AND BIOCHEMISTRY

The William A. Redmond Memorial Bursary

Value: $1,000. Awarded annually on the basis of scholastic ability and financial need to a graduate student in the Department of Chemistry. Established (1972) in memory of William A. Redmond, who obtained his doctorate in chemistry at the University of Windsor in 1964.

EDUCATION

Gregory Blake Nephew Memorial Scholarship

Value: $1,000. Awarded annually on the basis of scholarship and financial need to a full-time graduate student in the Faculty of Education. Established in 1981 by Dr. and Mrs. J. H. Nephew.

ENGLISH

Commonwealth Graduate Prize

Value: $100. Awarded annually on the basis of scholarship and financial need to an outstanding graduate student in the Department of English. The award was established by a grant-in-aid to the Department from the Commonwealth Scholarship and Fellowship Plan, on behalf of a Commonwealth Scholarship recipient.

GEOGRAPHY

Paul Ernest Vandall Memorial Award

Value: $1000 and a gold medal. Awarded annually to a student entering the University of Windsor M.A. program in Geography, on the basis of academic record, submission and presentation of an original paper (max. 1500 words) dealing with conservation and/or resource management issues in the Great Lakes area, and commitment to pursue studies in conservation and/or resource management in Canada. The recipient will be chosen by the Paul Ernest Vandall Memorial Award Committee. The award will not be assigned if no candidate meets the standards set by the Committee. Apply to the Chairperson of the Geography Department before September 1. (Established in 1984 by the family, friends, and former students of Professor Vandall, and the faculty and staff members of the University of Windsor, to honour the founder of the Geography Department.)

GEOLOGY

The Ontario Petroleum Institute Award

Value: up to $1,000. This award is made annually on the basis of undergraduate academic results to a student in a geology or geological engineering Master's program. The award is for financial assistance toward the preparation of a geological thesis in stratigraphical or structural surface or subsurface studies with preference to studies in Ontario sedimentary basins. Application is made to the Institute through the Department of Geology by February 15.

HUMAN KINETICS

Human Kinetics Alumni Awards

Value: $100. Human Kinetics Alumni Awards are bestowed annually on the basis of scholarship. Students studying in the areas of Movement Sciences, Historical/Sociological Study of Sport, or Sport and Lifestyle Management are eligible for these awards.

POLITICAL SCIENCE

Walter L. White Memorial Scholarship

Value: up to $1000. Awarded annually on the basis of scholarship and financial need to a graduate student entering the candidate year in political science. Established in 1975 by friends and admirers of Walter L. White, first Head of the Department of Political Science and first Dean of Social Science.

PSYCHOLOGY

Phyllis Shapiro Hurwitz Memorial Bursary in Psychology

Value: $250. Awarded annually on the basis of academic standing and financial need to a graduate student in psychology. Re-established in 1986 by Mr. Richard Hurwitz.

RELIGIOUS STUDIES

Assumption University Award in Religious Studies

Value: $1,000. Awarded annually by Assumption University on the basis of academic merit and financial need to a graduate student in the Department of Religious Studies. Established in 1980 by the Basilian Fathers as a memorial to Father John H. O'Loane, C.S.B. Apply to the Chairperson, Department of Religious Studies, University of Windsor.

31 CALENDAR OF THE ACADEMIC YEAR

1988

January 1	New Year's Day (statutory holiday).
January 4	University offices reopen. First day of classes, Faculty of Education and Faculty of Law. Winter semester field work begins in Social Work.
January 4 to 8	In-person registration for full-time students; Registrar's Office will assign specific reporting times. In-person registration for part-time students who have not preregistered by mail.
January 11	Winter semester classes begin except Faculty of Education and Faculty of Law. Late payment penalty begins.
January 22	Last day of registration and change of course for Winter semester courses, day and evening.
January 29	In-person registration for January secondary school graduates entering February Session.
February 1	First day of classes in February Session. Final day for application for admission to First-Year Law in September, 1988.
February 5	Last day for course changes in February Session.
February 12	Last day to withdraw without a grade being assigned for regular Winter semester classes.
February 15	Last day to file application for Spring graduation.
February 22 to 26	Study week for the Faculty of Law.
February 26	Last day to withdraw without a grade being assigned for February Session courses.
February 29 to March 4	Study week for all faculties except Education and Law.
March 1	Final date for application to Level 3 and the Make-up program in Social Work.
April 1	Good Friday (statutory holiday) (no classes).
April 3	Easter Sunday.
April 15	Last day of classes, day and evening, for both the regular Winter semester and February Session except in Education. Field work ends in the School of Social Work.
April 16	Spring final examinations begin for all faculties except Education and Law.
April 18	Last day for mail registration for Intersession and 12-week session. Examinations begin, Faculty of Law.
April 25 to 29	Tutorial week and final evaluation in the Faculty of Education.

May 9	Intersession and 12-week session begin; late payment penalties begin.
May 11	Last day for late registration and change of course for Intersession and 12-week session.
May 23	Victoria Day (statutory holiday) (no classes).
June 15	Last day for mail registration for Summer Session.
June 17	Intersession classes end.
June 18	Intersession examinations begin.
June 30	Last day to file application for Fall graduation.
July 1	Canada Day (statutory holiday).
July 4	Summer Session begins. Late payment penalties begin for Summer Session. B.S.W. Make-up classes begin.
July 6	Last day for Summer Session late registration and change of course.
August 1	Civic Holiday (statutory holiday) (no classes).
August 12	Last day of classes for Summer Session and B.S.W. Make-up.
August 13	Summer Session examinations begin.
September 5	Labour Day (statutory holiday). Classes begin in the Faculty of Human Kinetics for students selecting 97-477 as an option.
September 6	In-person registration in the Faculty of Law and the Faculty of Education.
September 6 to 9	In-person registration for full-time students; Registrar's Office will assign specific reporting times. In-person registration for part-time students who have not preregistered by mail.
September 7	Classes begin in Law and Education.
September 12	Classes begin, day and evening, in all Faculties except Law and Education. Late payment penalty begins.
September 19	Field work begins in the School of Social Work.
September 21	Last day for late registration, Faculty of Law.
September 23	Last day for late registration and change of course for Fall semester day and evening except Law.
October 10	Thanksgiving Day (statutory holiday) (no classes).
October 14	Last day to withdraw without a grade being assigned.
October 23	Fall Convocation
December 8	Last day of classes, Faculty of Law.
December 9	Last day of classes, day and evening, in all faculties except Law.
December 10	Fall semester examinations begin for all faculties except Law.
December 12	Examinations begin in Law.
December 16	Last day for mail registration for Winter semester for part-time students.

December 22	Fall semester field work ends in Social Work.
December 23 to January 2	University offices closed for Christmas recess.
December 25	Christmas Day (statutory holiday).

1989

January 1	New Year's Day (statutory holiday).
January 3	University offices reopen.
January 9	Winter semester field work begins in Social Work. First day of classes, Faculty of Education and Faculty of Law.
January 9 to 13	In-person registration for full-time students; Registrar's Office will assign specific reporting times. In-person registration for part-time students who have not preregistered by mail.
January 16	Winter semester classes begin except Faculty of Education and Faculty of Law. Late payment penalty begins.
January 27	Last day of registration and change of course for regular Winter semester courses, day and evening.
February 1	Final day for application for admission to First-Year Law in September, 1989.
February 3	In-person registration for January secondary school graduates entering February Session.
February 6	First day of classes in February Session.
February 10	Last day of registration and change of course for February Session.
February 15	Last day to file application for Spring graduation.
February 17	Last day to withdraw without a grade being assigned for regular Winter semester courses.
February 27 to March 3	Study week for all faculties except Education.
March 1	Final day for application to Level 3 and the Make-up program in Social Work.
March 3	Last day to withdraw without a grade being assigned for February Session courses.
March 24	Good Friday (statutory holiday) (no classes).
March 26	Easter Sunday.
April 20	Last day of classes, Faculty of Law.
April 21	Last day of classes, day and evening, for both the regular Winter semester and February Session in all faculties except Education. Field work ends in the School of Social Work.
April 22	Spring final examinations begin for all faculties except Education.
April 28	Last day of mail registration for Intersession and 12-week session.
May 1 to 5	Tutorial week and final evaluation, Faculty of Education.
May 15	Intersession and 12-week session begin; late payment penalties begin.

May 17	Last day for late registration and change of course for Intersession and 12-week session.
May 22	Victoria Day (statutory holiday) (no classes).
June 23	Intersession classes end. Last day for mail registration for Summer Session.
June 24	Intersession examinations begin.
June 29	Last day to file application for Fall graduation.
June 30	University offices closed.
July 1	Canada Day (statutory holiday).
July 3	Summer Session begins. Late payment penalties begin for Summer Session. B.S.W. Make-up classes begin.
July 5	Last day for Summer Session late registration and change of course.
August 7	Civic Holiday (statutory holiday) (no classes).
August 11	Last day of classes for Summer Session and B.S.W. Make-up.
August 12	Summer Session examinations begin.
August 25	Last day for mail registration for Fall semester for part-time students.
September 4	Labour Day (statutory holiday). Classes begin in the Faculty of Human Kinetics for students selecting 97-477 as an option.
September 5	In-person registration in the Faculty of Law and the Faculty of Education.
September 5 to 8	In-person registration for full-time students; Registrar's Office will assign specific reporting times. In-person registration for part-time students who have not preregistered by mail.
September 6	Classes begin in Law and Education.
September 11	Classes begin, day and evening, in all faculties except Law and Education. Late payment penalty begins. Field work begins in the School of Social Work.
September 20	Last day for late registration, Faculty of Law.
September 22	Last day for late registration and change of course for Fall semester, day and evening.
October 9	Thanksgiving Day (statutory holiday) (no classes).
October 13	Last day to withdraw without a grade being assigned.
December 7	Last day of classes, Faculty of Law.
December 8	Last day of classes except Faculty of Law.
December 9	Fall semester examinations begin.
December 22	Fall semester field work ends in Social Work.
December 23 to January 2	University offices closed for Christmas recess.
December 25	Christmas Day (statutory holiday)

1990

January 1	New Year's Day (statutory holiday).
January 3	University offices reopen.
January 8	First day of classes, Faculty of Education and Faculty of Law. Winter semester field work begins in Social Work.
January 8 to 12	In-person registration for full-time students; Registrar's Office will assign specific reporting times. In-person registration for part-time students who have not preregistered by mail.
January 15	Regular Winter semester classes begin in all faculties except Education and Law. Late payment penalty begins.
January 26	Last day of registration and change of course for regular Winter semester courses, day and evening.
February 1	Final day for application for admission to First-Year Law in September, 1990.
February 2	In-person registration for January secondary school graduates who are entering February Session.
February 5	First day of classes in February Session.
February 9	Last day for course changes in February Session.
February 16	Last day to withdraw without a grade being assigned for regular Winter semester classes. Last day to file application for Spring graduation.
February 26 - to March 2	Study week for all faculties except Education.
March 1	Final date for application to Level 3 and Make-up programs in Social Work.
March 2	Last day to withdraw without a grade being assigned for February Session courses.
April 13	Good Friday (statutory holiday) (no classes).
April 15	Easter Sunday.
April 19	Last day of classes, Faculty of Law.
April 20	Last day of classes, day and evening, for both the regular Winter semester and February Session, for all faculties except Education.
April 21	Spring final examinations begin for all Faculties except Education and Law. Field work ends in the School of Social Work.
April 23	Examinations begin, Faculty of Law.
April 27	Last day for mail registration for Intersession and 12-week session.
April 30 to May 4	Tutorial week and final evaluation in Faculty of Education.
May 14	Intersession and 12-week session begin; late payment penalties begin.

May 16	Last day for late registration and change of course for Intersession and 12-week session.
May 21	Victoria Day (statutory holiday). (No classes).
June 15	Last day for mail registration for Summer Session.
June 22	Intersession classes end.
June 23	Intersession examinations begin.
June 30	Last day to file application for Fall graduation.
July 1	Canada Day (statutory holiday).
July 2	University offices closed.
July 3	Summer Session begins. Late payment penalties begin for Summer Session. B.S.W. Make-up classes begin.
July 5	Last day for Summer Session late registration and change of course.
August 6	Civic Holiday (statutory holiday). (No classes).
August 14	Last day of classes for Summer Session and B.S.W. Make-up.
August 15	Summer Session examinations begin.
September 3	Labour Day (statutory holiday). Classes begin in the Faculty of Human Kinetics for students selecting 97-477 as an option.

32 GENERAL INFORMATION

The University Library System

The University library system consists of the Leddy Library, housing the main collection, the Education Library, housed in the Faculty of Education building, the Paul Martin Law Library, an autonomous, associated library, and the Paul E. Vandall Map Library, housed in the Department of Geography. The principal objectives of the libraries are to develop collections in support of instructional and research programs, and to provide reference and information services to assist the university community in making maximum use of materials available. A policy of open access to the collections affords the reader opportunity to browse at leisure, or to exploit in depth the literature of a field of special interest.

Seating is available for 1,635 readers in a variety of general seating facilities, including open and closed carrels.

The collection contains 1,186,242 volumes of print material, 900,000 microform items and 300,000 government documents. About 8,000 current periodicals and serials are received, including important newspapers, both foreign and domestic. The library system has extensive collections of Canadian federal and provincial government documents and publications of major international organizations.

A complete range of photocopying, microform and audio-visual equipment is available.

The Library is implementing a state-of-the-art automated system which will provide online access to its collections.

Computer Centre

The University Computer Centre has two IBM 4381 computers with 32 megabytes of memory. It has six tape drives: two 800/1600 BPI, one 1600 BPI, and three 1600/6250 BPI. There are ten IBM 3380 drives for online storage of 25,200 million bytes.

There is one card reader and three fast printers. The WYLBUR and CMS systems have approximately three hundred and fifty terminals attached. There are about one hundred additional terminals attached to the Administration Information Systems.

A number of programming languages and numerous program packages are available for the academic users. Some of these are FORTRAN, STRUCTURED WATFIV, COBOL, WATBOL, PL/I, PL/C, SNOBOL, RPG, ASSEMBLER, GPSS, SPSS, SAS, BMD, IMSL, SSP, MATLAN, CSMP, SYMAP, SYMVU, SURF, ICES, CLUSTAN, STATLAB, BALANOVA, MANOVA, GAUSHAUS, MARKEX, KWIC, OSIRIS.

The PDP 11/44 in the Faculty of Business Administration and the VAX 780 (with 100 terminals) are directly connected to an IBM 4381 computer in the Computer Centre so that jobs can be submitted to the main computer. IBM microcomputers also are available for students' use in the Computer Centre.

Bookstore

For the convenience of students, the University maintains a Bookstore in the basement of the West Library Building (entrance off Library Mall) where textbooks and supplies used in the various classes may be purchased.

During the Fall and Winter Sessions, the Bookstore will be open:

Monday, Tuesday, Wednesday, Friday: 8:30 a.m. to 4:30 p.m.

Thursday: 8:30 a.m to 7:00 p.m.

During the first two weeks of classes in September, the Bookstore will be open:

Monday through Thursday:
8:30 a.m to 8:00 p.m.

Friday: 8:30 a.m to 4:30 p.m.

During the summer, the Bookstore will be open:

Monday through Friday:
8:30 a.m to 4:30 p.m.

For Intersession and Summer Session hours, contact the Bookstore.

32.1 Student Services

Residence Accommodation

The University residences house about one fifth of the student population. Residents come from many regions of Canada, the United States and overseas, giving the campus a cosmopolitan atmosphere. A sincere concern for scholarship prevails at the University of Windsor and residence living assists residents in making a smooth transition to university life.

Students interested in applying for residence accommodation may request information when applying for entrance to the University or apply directly to the Office of Residence Services. Residence tours can be arranged through the Office of Secondary School Liaison and off-campus housing information is available at the front desk of the University Centre.

The University of Windsor has seven residences, four on campus and three off campus.

The Quad is comprised of four halls, Cody, Laurier, Macdonald and Cartier. They are located on the south corner of the campus near the main food service outlet, Vanier Hall. Each residence houses undergraduate students in double rooms. Students may indicate a preference for co-ed residence in Cody or Cartier Halls, or male residence in Macdonald Hall and female residence in Laurier.

Electa Hall is located near the Faculty of Law and the Leddy Library. This co-ed residence houses graduate students. Electa is comprised of the "Annex", a dorm-style facility offering double rooms with a wash-basin, and the "Main," which offers split doubles and singles. Room assignments are done on points based on age, years in residence and course of study. Total points will determine the room type and size of single room assigned.

Huron Hall is located ten minutes from the heart of campus near the St. Denis Fieldhouse. This co-ed residence offers single rooms with private baths to students entering their fourth and fifth year in residence at the University of Windsor.

Tecumseh Hall is situated next to Huron Hall, Tecumseh is an apartment-style residence. It offers the convenience of on-campus living with the benefits of an apartment. Each unit is furnished and contains a living room, kitchen, storage closet, bathroom and two, three or four bedrooms; linen and utensils are not supplied. When applying to Tecumseh students are required to apply in groups of four.

The Food Plan is compulsory in all residences with the exception of Tecumseh Hall.

For further information regarding the Residence or Food Plan please call Residence Services at (519) 253-4232, Ext. 3279 or 3280.

Conference Services

Conference Services is here to help in planning activities such as workshops, luncheons, dances, receptions, banquets, etc. All arrangements for room reservations, liquor and food services and physical set-ups are made through this office. Another service provided by this office is summer accommodation to non-registered students, alumni and other visitors. Dormitory rooms and apartments are available.

For further information call 253-4232 Ext. 3276 or visit Room 19, Vanier Hall.

Food Services

The University of Windsor takes great pride in the food services program. The management team offers a wide range of facilities, menus and services on a meal plan for resident students, and also offers an off-campus meal plan. The main cafeteria is in Vanier Hall which houses two large dining rooms and the Round Table snack bar. The Mini Mart convenience store is also located in Vanier Hall. The Grand Marketplace, located in the University Centre, offers a number of specialty food presentations in a bright colourful dining area central to the university campus.

The University Centre

The University Centre is a focal point of campus activity. On the main floor of the building, the Information Desk provides general campus information, processes student I.D. cards for all full and part-time students and maintains an off-campus housing directory. The Grand Marketplace offers a complete variety of food items throughout the day.

In addition to a variety of meeting rooms that can be reserved by faculty, staff and students, the University Centre also houses offices of the Students' Administrative Council (SAC), the Organization of Part-time University Students (OPUS), Student Media Services, *The Lance* (student newspaper), CJAM (student radio), Centre Art Gallery, Digits (word processing centre), the "Lites 'N Levers" Games Room and the "Subway" Pub. While hours of operation for various areas and services within the building vary, the University Centre itself is open 24 hours a day, seven days a week, throughout the fall and winter semesters.

Graduate Student Society

The Graduate Student Society serves as the consolidating body for the views of the post-graduate students. An interdisciplinary exchange encourages the gathering of graduate students from the various faculties for educational and social activities, making them aware of the full range of academic, cultural, and social opportunities available through the University. The Society sponsors lectures by specialists in various fields of graduate interest with the intention of promoting interdisciplinary awareness and understanding. The Graduate Student Society also offers assistance to students in their relations with units of the University.

32.2 Student Affairs

Counselling

To help in the achievement of fuller personal development of intelligent career choices, and of intellectual freedom and satisfaction within the challenging educational framework, the University provides students with counselling services commensurate with their particular needs: educational, vocational, moral, and social.

Academic and Personal Counselling

The Office of Student Affairs and the Academic Advisory Centre provide counsell-

ing regarding the University community and academic programs. The AAC specifically provides counselling services for students who have not declared a major, and students experiencing academic difficulties. Through the Headstart program the AAC also coordinates counselling sessions for all newly admitted first-year students.

Financial Counselling

Information regarding financial assistance, with particular reference to awards, bursaries, scholarships, emergency loans, the Ontario Student Assistance Program, and the Canada Student Loan Plan, may be obtained from the Student Awards Office or the Graduate Studies Office.

Religious Counselling

Although the University is non-sectarian in its support of campus religious life, it is aware of the importance of ethical and moral influences in the development of the individual. Assumption University, Iona College, and Canterbury College are affiliated or federated parts of the University of Windsor and are committed to providing services for all the students of the University. Students, therefore, have access to the spiritual counsel of chaplains representing various denominations.

International Students

The University's concern for the large overseas student population has prompted the establishment of an International Students' Society, in cooperation with the Students' Administrative Council. The inter-cultural exchange has proven invaluable to all engaged in the development of the program. The International Centre, which is located in Cody Hall, provides an educational and social milieu for overseas students. Counselling services, provided by the International Students' Advisor, are available. Please call 253-4232, Ext. 3901.

Disabled Students

The University of Windsor attempts to accommodate the particular needs of physically disabled students. Individual counseling prior to registration is strongly reccommended and students are invited to contact the Office of Student Affairs at Ext. 3288 for an appointment.

Medical Facilities

Medical Office: The University maintains an office, staffed by full-time and part-time physicians and nurses, who will counsel, examine and advise students who have acute or chronic medical problems. In addition, they have a major interest in education and lifestyle choices, to help prevent later illness and to preserve optimum health throughout life. The medical office is located on the main floor of Cody Hall. Office. Hours are 0900 hrs. to 1700 hrs. daily, Monday to Friday.

Health Insurance Plan: The University does not assume responsibility for expenses incurred as a result of illness or injury. All students are strongly urged to establish and maintain health cost insurance protection with the Ontario Health Insurance Plan (OHIP). Coverage under parent's contract expires at age 21. Ontario students may be eligible for premium assistance depending on income. Those students without coverage will be charged for medical services. Hospitalization costs for those without coverage can be devastating. Application forms may be obtained from the University Medical Office (973-7002).

Student Placement and Career Counselling Centre

The Centre provides a resource library featuring employer and occupational information to assist students in career planning. It prepares graduating students with the necessary skills to enter an increasingly competitive work market. An active recruiting program is administered for graduating students, bringing company personnel on campus for interviews. For those students who have not yet formulated their career paths, workshops in self-assessment and personal counselling help them explore and identify career options.

Information on part-time jobs and summer employment is available year-round. The Centre is located in Dillon Hall, Room 163.

Psychological Services Centre

Located at 326 and 336 Sunset Ave., the Centre provides confidential aid to both students and faculty members in dealing with

crisis situations and periods of emotional duress, while at the same time promoting individual growth experiences. The friendly staff includes three clinical psychologists, three interns, and several graduate students from the Department of Psychology.

Methods of counselling can vary from individual sessions to group, family (or couple) therapy. The Centre also conducts workshops in such areas as personal growth or skill training, which includes issues of self-enhancement, assertiveness, and dealing with death and dying.

Appointments can be made in person or by calling 253-4232, ext. 7012. In event of an emergency, no appointments are necessary. No payment is required for this service.

33 FEE REGULATIONS AND SCHEDULE

The University reserves the right to make changes without prior notice in the various fee schedules, as well as changes in rules and regulations and the revision or cancellation of particular courses and programs. The acceptance of fees does not necessarily imply approval of registration.

The following regulations apply to all students.

33.1.1 PAYMENT OF FEES

Fees are due and payable on the day of registration. As a convenience, students may pay their tuition fees at any time prior to registration for each semester.

Certified cheques or other remittances must be made payable to the University of Windsor and must be received by the Cashier's Office prior to the prescribed due dates. The student's name, identification number, address and telephone number should be recorded in the upper portion of the front of the remittance to ensure that the records are properly credited.

Students who are unable to complete payment of fees by the prescribed due date must arrange fee deferment on the day of registration. Deferments are permitted under the following circumstances:

(a) if a student has evidence of having been awarded a Canada Student Loan or an Ontario Student Loan, the Loan must be assigned to the University to pay the fees (Fees may not be arranged on the basis of an anticipated award.);

(b) if a student has evidence of having been awarded a scholarship, bursary or similar award, which may be used to pay the fees. (Any known difference between the amount of the award and the fees must be paid on or before the day of registration.)

Note: Registration is incomplete until the registration form has been signed and payment of fees or fee arrangement has been made.

33.1.2 LATE PAYMENT CHARGES

Full-time students who have not paid fees prior to the prescribed date will be assessed a late payment charge of $30.00.

Part-time students will be assessed a late payment charge of $10.00 per course.

Students who have an outstanding amount owing will be assessed a service charge of Prime Rate plus 1% per month beginning October 31 in the Fall semester and February 28 in the Winter semester, and approximately 30 days after the start of Intersession and Summer Session.

A student who has failed to comply with the above regulations may have his or her registration cancelled as of the date on which the unpaid fees were due.

33.1.3 NON-PAYMENT OF FEES AND CHARGES

Information concerning academic results of any student who has an overdue debt owing to the University shall be withheld until the debt is settled.

Students who are graduating and who have an outstanding debt will be permitted to attend Convocation, but they will not receive their diplomas until their debts are settled.

Any student who has an overdue debt owing to the University may not be permitted to re-register until the debt is settled.

Any student whose registration has been cancelled for default of payment is required to apply for reinstatement of registration at the Office of the Registrar. If the application is approved a $50.00 reinstatement fee is added to any other assessable charges.

Overdue accounts must be paid by cash, certified cheque, or money order.

Any student who has an unresolved grievance concerning fees or other charges, may present an explanatory letter to the Supervisor, Cashier's Office, for transmission to the responsible university officer for consideration.

33.1.4 INCOME TAX CERTIFICATE

A special certificate in a form acceptable to Income Tax authorities is required in order that the student may claim tuition fees as a deduction for Income Tax purposes. This certificate will be mailed out in mid-March to all students whose accounts are paid in full by February 15.

Note: Student activity fees and other incidental fees are not allowable for tax purposes and consequently are not included in the certificate.

33.1.5 EDUCATION DEDUCTION CERTIFICATE (T2202)

This certificate is required in order that the student may claim a Student Education Deduction/Credit under paragraph 110 (1) (g) or (h) of the Income Tax Act. It is produced by the Registrar's Office and will be mailed out on February 28.

33.1.6 SCHOLARSHIPS

Scholarships and other awards made available by the University and paid to students through the Finance Office are usually credited to the student's account on the basis of one half payable in each semester. A cheque for the any balance owing to the student will be available to the student at the Cashier's Office.

October 31 - First Installment

February 28 - Second Installment

33.1.7 EXTRA COURSE FEE

Overload courses are deemed to be courses taken in addition to the prescribed yearly load in the semester for a given program. A student carrying an academic overload must have the permission of the Dean and will be assessed the part-time per course tuition fee.

Please refer to individual Faculty sections for definition of prescribed yearly load.

33.1.8 WITHDRAWAL AND REFUND POLICY

Graduate students who, for any reason, wish to withdraw from the University must notify, in writing, the Office of Graduate Studies and Research, as otherwise resumption of graduate study at this Univeristy may be difficult or impossible.

Full-time undergraduate students who intend to withdraw completely from the University are required to undergo an interview, and complete the appropriate forms at the Office of Student Affairs.

Part-time students who find it necessary to withdraw from a course or from the University are required to notify the Registrar in person or by registered mail and to give their reasons for withdrawal.

Notice by telephone is not acceptable. Failure to attend classes does not constitute a withdrawal. Full refund will be given to part-time students enrolled in a course that has been cancelled by the University. Students withdrawing from regular courses during the periods indicated below will be assessed fees as indicated.

WITHDRAWAL DURING FALL OR WINTER SEMESTER	FULL-TIME CHARGE	PART-TIME CHARGE (Per Course)
First Week	50.00	Nil
Second Week	100.00	Nil
Third Week	150.00	30.00
Fourth Week	200.00	30.00
Fifth Week	250.00	30.00
Thereafter	No Refund	No Refund

Withdrawal charges for special courses or during other academic sessions will be based upon academic withdrawal dates.

Refunds resulting from complete withdrawals will be available no earlier than six weeks after the date of withdrawal. Refunds resulting from net course drops will be available only on request.

33.1.9 ST. DENIS HALL FUND

As a result of student referenda, the St. Denis Hall Fund Contributions have been set at $10 a year for full-time undergraduate and graduate students and at $5 a year for part-time students. These contributions are collected along with academic and other fees, $5 being payable each Fall and Winter semester by full-time students and $2.50 by part-time students. The maximum amounts which may be collected in each twelve-month period commencing September 1 each year are $10 and $5 for full-time and part-time students respectively.

Any student who wishes to refrain from contributing to the St. Denis Hall Fund may receive a refund by submitting a signed Request for Refund Form to the Development Office of the University on or before the academic withdrawal dates mentioned above. Request for refund forms may be obtained from the Development Office.

33.1.10 FREE TUITION FOR STUDENTS 60 AND OVER

The University of Windsor offers an incentive of free tuition for students sixty years of age and over. It is felt that people in this group might wish to avail themselves of the University facilities, not only for degree purposes, but perhaps for personal enrichment and the fuller utilization of their leisure time. If you feel that your needs can be served according to this program, we encourage and invite you to contact the Division of Continuing Education. This applies to Canadian citizens only.

33.1.11 SCHEDULE OF FEES

The Board of Governors reserves the right to make changes without notice in the published scale of fees and charges if, in its opinion, circumstances so require. Any such changes will be reflected in the Fee Information sheets issued through the Registrar's Of-

fice before registration. It is the responsibility of the student to obtain this information.

The schedule of fees changes each year. Contact the Cashier's Office for information on the current Schedule of Fees, which outlines tuition, activity, and other program-specific fees.

The following miscellaneous fees and charges are payable as incurred:

Change of course	$5.00
Overload course	Part-time Tuition Fee
Special and supplemental exam (per course)	
Regular time, on campus	$10.00
Outside regular time, on campus	$20.00
Off campus	$40.00
Evaluation of documents	$15.00
Transcript of record	$3.00
Each additional copy	$1.50
Duplicate Income Tax Certificate	
Current year	$3.00
Previous years	$5.00
Duplicate T2202	
Current year	$3.00
Previous years	$5.00
Late payment	
Full-time students	$30.00
Part-time students	$10.00 per course
Late registration (full-time students)	$30.00
Returned cheque charge	$10.00 per cheque
Registration reinstatement	$50.00
Service charge on overdue accounts	Prime rate plus 1%

For information regarding residences, meal plans, residence deposits and refund policies, please contact the Office of the Director of Residence, Room 47, Vanier Hall, University of Windsor, Windsor, Ontario N9B 3P4.

34 GENERAL INDEX

1988

S	M	T	W	T	F	S
JANUARY						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

S	M	T	W	T	F	S
JULY						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

S	M	T	W	T	F	S
FEBRUARY						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

S	M	T	W	T	F	S
AUGUST						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

S	M	T	W	T	F	S
MARCH						
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

S	M	T	W	T	F	S
SEPTEMBER						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

S	M	T	W	T	F	S
APRIL						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

S	M	T	W	T	F	S
OCTOBER						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

S	M	T	W	T	F	S
MAY						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

S	M	T	W	T	F	S
NOVEMBER						
			1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

S	M	T	W	T	F	S
JUNE						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

S	M	T	W	T	F	S
DECEMBER						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

1989

S	M	T	W	T	F	S
JANUARY						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

S	M	T	W	T	F	S
JULY						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

S	M	T	W	T	F	S
FEBRUARY						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

S	M	T	W	T	F	S
AUGUST						
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

S	M	T	W	T	F	S
MARCH						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

S	M	T	W	T	F	S
SEPTEMBER						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

S	M	T	W	T	F	S
APRIL						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

S	M	T	W	T	F	S
OCTOBER						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

S	M	T	W	T	F	S
MAY						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

S	M	T	W	T	F	S
NOVEMBER						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

S	M	T	W	T	F	S
JUNE						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

S	M	T	W	T	F	S
DECEMBER						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1990

S	M	T	W	T	F	S
JANUARY						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			
FEBRUARY						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28			
MARCH						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
APRIL						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					
MAY						
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		
JUNE						
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

S	M	T	W	T	F	S
JULY						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				
AUGUST						
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	
SEPTEMBER						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						
OCTOBER						
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			
NOVEMBER						
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	
DECEMBER						
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

NOTES

NOTES

NOTES