1998

University of Windsor Graduate Calendar 1998-2000

University of Windsor

UNIVERSITY OF
WINDSOR

1998-2000 graduate calendar

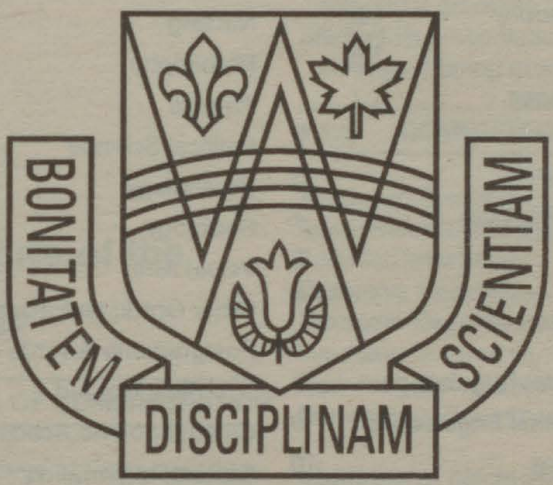
STATEMENT OF RESPONSIBILITY OF THE UNIVERSITY

1. The content of this Calendar is provided for the general guidance of the student and is not intended to make any contractual commitments therefor. The Calendar is accurate at the time of printing, but programs, courses, staffing, etc. are 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, 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 herein. 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 students in planning their academic programs. Advisors are not authorized to change established policy of the University of Windsor. Students are solely responsible for assuring that their academic programs comply 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/or 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 commitments 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 program offerings from term to term for educational reasons which it deems sufficient to warrant such actions.

Further, the University of Windsor reserves the right to terminate programs from term to term for financial or other reasons which it determines warrant such action. The content, schedule, requirements and means of presentation of courses 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.

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



GRADUATE CALENDAR
1998–2000

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

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519-253-4232, *or* **519-253-3000**

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1 COLLEGE OF GRADUATE STUDIES AND RESEARCH

LOCATION:
Graduate Studies and Research
Research Services
Room 306
Chrysler Hall Tower

TELEPHONE:
(519) 253-3000

1.1 Structure of the College

1.1.1 OFFICERS OF ADMINISTRATION

Executive Dean, College of Graduate Studies and Research, (Ext. 2107), Cameron, W. Sheila; R.S.C.N. (Scotland), Reg.N., B.A. (McMaster), M.A. Nurs. Educ. (Detroit), Ed.D. (Wayne State), F.A.A.M.R.

Interim Associate Executive Dean, Barron, Ronald M.; B.A., M.Sc. (Windsor), M.S. (Stanford), Ph.D. (Carleton)

FLUID DYNAMICS RESEARCH INSTITUTE

Director: Dr. Gary W. Rankin

GREAT LAKES INSTITUTE FOR ENVIRONMENTAL RESEARCH

Interim Director: Dr. Arthur G. Szabo

HUMANITIES RESEARCH GROUP
Director: Dr. Jacqueline Murray

1.1.2 COLLEGE COUNCIL

Ex-officio Members (with vote) :
Executive Dean, *Chair, ex officio*
Associate Executive Dean
Associate Vice-President, Research
University Librarian
President, Graduate Student Society

Elected Representatives from each unit offering a graduate program
Student Representatives from each College offering graduate programs

1.1.3 COMMITTEES

Academic Standing Committee
Admissions Committee
Awards Committee
Executive Committee
Graduate Development Committee
Graduate Support Committee
New Programs Committee
Nominating Committee

Membership elected annually from Graduate Council and graduate faculty

1.1.4 RESEARCH BOARD

Chair: elected
Executive Secretary: Associate Vice-President, Research, *ex officio*
Six faculty members nominated by the Research Board and appointed by the President
Two appointees of the Board of Governors
Executive Dean of Graduate Studies and Research, *ex officio*

The following committees report to the President of the University:

Animal Care Committee
Biohazards Committee
Ethics Committee

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

1.2 Programs Offered

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

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

Master of Science in Biological Sciences, Chemistry and Biochemistry, Computer Science, Geology, Mathematics, Nursing, Physics, Statistics;

Master of Applied Science in Civil Engineering, Electrical Engineering, Engineering Materials, Environmental Engineering, Geological Engineering, Industrial Engineering, Mechanical Engineering.

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

Master of Education;

Master of Fine Arts in Visual Arts;

Master of Human Kinetics in Kinesiology;

Doctor of Philosophy in Biological Sciences, Chemistry and Biochemistry, Civil Engineering, Electrical Engineering, Engineering Materials, Environmental Engineering, Manufacturing Systems Engineering, Mathematics, Mechanical Engineering, Physics, Psychology, Statistics;

Postdoctoral Diploma in Clinical Chemistry;

Postdoctoral Certificate in Adult Clinical Psychology.

1.3 Application Procedures

An application for admission may be obtained from the Office of Liaison and Applicant Services (Graduate Division), University of Windsor, Windsor, Ontario, Canada N9B 3P4 (liaison@uwindsor.ca).

Applicants are advised to check departmental listings for deadlines. If an earlier deadline is not specified, applications, official transcripts, confidential reports, and a $55 (Canadian) fee should be submitted no later than July 1 for September admission, November 1 for January admission, and March 1 for May admission. However, applicants are advised that offers of admission will be made prior to and following these dates to qualified applicants. All positions may be filled before the deadline dates. Early applications are advised.

International applicants are required to obtain a student visa. This is the sole responsibility of the applicant. Applicants are advised that Canadian government processing of visa applications may take several weeks or even months.

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

Admission to the College of Graduate Studies and Research is by letter of offer from the Executive Dean of Graduate Studies and Research.

A decision to admit or not to admit is made by the Executive Dean on the basis of a recommendation received from an academic unit, together with the documents required for admission.

A decision may be reconsidered upon the request of either the applicant or the academic unit if further information is offered.

Applicants who have not been admitted to the College of Graduate Studies and Research may upgrade their qualifications and reapply. A subsequent decision would be made on the basis of a further recommendation from the academic unit and the updated file.

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 College of Graduate Studies and Research" properly filled out.

2) Two official transcripts of all undergraduate and graduate work from all colleges or universities attended.

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

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. 08540. Information on the GRE may be obtained from the Office of Liaison and Applicant Services.

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 Liaison and Applicant Services.

6) For applicants whose native language is not English, a satisfactory score on an English proficiency test administered by one of the following institutions:

(a) *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.

(b) *The English Language Institute of the University of Michigan, Michigan English Language Assessment Battery (MELAB).* 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.

(c) *Carleton Assessment of English (CAEL).* Contact The Centre for Applied Language Studies, Room 215 Paterson Hall, Carleton University, Ottawa, Ontario, Canada, K1S 5B6.

An applicant who is unable to take one of these tests must present satisfactory alternative evidence of English proficiency. Consideration of alternative evidence may be requested on an exceptional basis by writing to the Executive Dean of Graduate Studies and Research and presenting supporting documentation of English proficiency.

1.3.3 ADMISSION LEVELS

M1 (Qualifying Year): Applicants who do not hold an honours degree may be admitted at this level, with a recommendation for advancement to the MII (Candidate Year) level contingent upon satisfactory completion of a prescribed set of qualifying courses;

MII (Candidate Year): Applicants who hold an honours degree in the discipline to which they are seeking admission may be admitted to this level;

MII (2-year); Applicants who hold an honours degree in a discipline other than the one to which they are seeking admission may be admitted at this level, with the condition that they satisfactorily complete a prescribed set of qualifying courses;

Ph.D: Applicants who hold a Master's degree or an honours Bachelor's degree may be admitted at this level.

1.3.4 POSTGRADUATE AWARDS

For information regarding graduate scholarships and other awards, see 29.

1.4 College 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 program advisors for registration on the dates recorded in the Calendar of the Academic Year (see 29). Part-time students may register by mail on the forms provided by mail from the Office of the Registrar.

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 made available to the Office of Graduate Studies and Research to the effect that the absence has the approval of the program coordinator and of the Executive Dean of Graduate Studies and Research;

(b) is regularly employed by the University, for not more than an average of ten hours a week. 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, including time spent on preparation, reading, setting 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 program coordinator. If a student has not been accepted on a part-time basis at first registration, he or she must petition the College of Graduate Studies and Research for permission to transfer to part-time status for cause. 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.

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) 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 terms missed up to a maximum of three terms.

3) In accordance with the circumstances listed below, a full-time student may apply to the Executive Dean of Graduate Studies and Research for, and may be granted, a leave of absence.

Maternity Leave: Graduate students may request a maternity leave for no more than three consecutive terms without prejudice to their academic standing.

Paternity Leave: In recognition of a father's role, a graduate student may request paternity leave for no more than one term without prejudice to academic standing.

Parental Leave: Parental leave is intended to recognize the need for a pause in studies in order to provide full-time care in the first stages of parenting a child. Either or both parents may request one term of leave. The request for leave must be completed within twelve months of the date of birth or custody.

Financial Leave: In the case of financial necessity, primarily as evidenced by the support awarded through the University, a student shall be granted a leave of no more than one term out of three upon application.

Medical Leave: Graduate students may apply for a leave of absence on medical grounds for up to three terms without prejudice to their academic standing. Students are required to provide documentation to support a medical leave of absence.

Personal Leave: Graduate students may apply for a leave of absence on grounds of serious personal circumstances for up to three terms without prejudice to their academic standing. Examples, though not wholly inclusive, are death in the immediate family, psychological difficulties, and educational opportunities (e.g., B.Ed., LL.B.).

A term is defined as a four-month period coinciding with the academic calendar (January to April; May to August; and September to December).

While on leave, a student may not continue the formal thesis process. This includes regular access to and guidance by faculty members, and the continuation of laboratory experiments and computer research applications.

Apart from the combination of maternity or paternity and parental leave, sequentially combining two leave of absence classifications is allowable only in special and extenuating circumstances.

Applications may be filed at any time and shall be processed within three weeks of receipt by the College of Graduate Studies and Research. A student on leave of absence will be assessed a fee of fifty dollars ($50.00) per term. Appeals against any decisions shall be heard promptly by the Graduate Appeals Committee.

4) 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 faculty members while working on a major paper, thesis, or dissertation. Part-time students who have not registered in two consecutive terms will be required to apply for readmission, and their applications will be considered on their merits in the light of the then prevailing conditions and circumstances.

5) Students are reminded that they will not receive credit for courses for which they are not properly registered 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 Executive Dean of Graduate Studies and Research. Subjects dropped without permission from the Executive Dean will be regarded as failures.

Non-Degree Registration: A student who is not interested in admission as a degree student may be allowed to register for individual courses on a non-degree basis. The normal maximum of courses taken on this basis is two. 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. 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 (available from the Clerk of the Senate).

Plagiarism is defined as:

9999The 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 College. 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 College 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 Executive 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 Executive 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 Executive 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 for Graduate Courses:

A^+, A, A-, B^+, B, B-, C^+, 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 one-term (i.e., twelve- or thirteen-week) graduate courses in Fall, Winter, or Summer term without a grade being assigned is eight weeks from the start of the term; for six-week courses in Intersession and Summer Session, three weeks are allowed. 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 maximum of the original due date unless an earlier deadline has been established. If such courses are not completed within twelve months,

they will be permanently 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 term will have their progress reviewed by their program chair, and a recommendation will be forwarded in each case to the Office of Graduate Studies and Research. Incomplete grades are not granted for major papers, theses or dissertations.

The College of Graduate Studies and Research requires that students maintain at least an 8.0 cumulative G.P.A. 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 program concerned, the College of Graduate Studies and Research may grant credit for not more than two term courses in which a grade of C^+, 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 program concerned and the Executive Dean of Graduate Studies and Research. No student may repeat, or replace with another course, more than two term courses in which credit was not obtained.

Letter grades or Satisfactory/Unsatisfactory may be assigned for theses and major papers, depending on program policy.

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 program 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 program coordinator 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 Executive Dean of Graduate Studies and Research, on recommendation of the program coordinator 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 Executive Dean of Graduate Studies and Research, in accordance with the Graduate Appeals Policy as stated in Senate Bylaw 51.B. and C. Appeals must be received no later than one month after the grade or decision has been released by the Registrar.

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 College of Graduate Studies and Research and the thesis or dissertation, if one is presented, must be received by the Office of Graduate Studies and Research for transmission to the Leddy Library at least two weeks before Convocation.

Registration in any program does not constitute an application for a degree or diploma. An "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 recognized colleges or universities may apply for admission. In general, admission to graduate study is granted only to those students who have good academic 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 or Master's year, but acceptance will be conditional until a satisfactorily completed 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 Executive Dean of Graduate Studies and Research, upon recommendation of the program concerned, when a student has satisfied the requirements for candidacy of the College of Graduate Studies and Research and of the program, as these may be specified in program 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 no more than one-half of the required courses for a program taken at another university may be given at the discretion of the College of Graduate Studies and Research, upon recommendation of the program coordinator.

A full-time residence year indicates that a student is in full-time work under the direction of a faculty member 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.

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 Executive 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.

Course of Study: Course requirements are specified in the program listings. Planning

and direction of the student's course of study are the responsibility of the program coordinator 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 program coordinator or an advisor.

Since in several programs only a few courses listed will be offered each year, students are advised to ascertain from the program coordinator or an academic advisor which courses will be offered in any given year.

Training in methodology may be required, at the discretion of the program. 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 program coordinator, 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.

Committees: Research undertaken as part of a doctoral program is normally directed and supervised by a doctoral committee. The program coordinator will recommend the appointment of members of the doctoral committee, whose appointments must be approved by the Executive Committee of the College Council of Graduate Studies and Research.

Within the first term of registration at doctoral level, each student will be assigned a committee consisting of a research advisor from the program, two other faculty members in the program, and one from another program at the University of Windsor. Additional members may be added with the approval of the program coordinator and the Executive Committee of the College Council of Graduate Studies and Research. This committee will, from time to time, review the student's progress.

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

For the defense of the dissertation (final oral examination), the committee will be supplemented by an independent, 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 external examiner will be recommended by the doctoral committee, subject to the approval of the program coordinator and the Executive 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 evaluation.

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 pro-

gram, a Copyright License, 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 programs should be consulted for details of their dissertation procedures. The general format is prescribed in the *Procedures to Follow in Preparing a Thesis or Dissertation*, which may be obtained from the Assistant to the Executive Dean 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 program coordinator. 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 doctoral committee for instructions as to the internal form of the dissertation.

Copies of a Ph.D. dissertation are to be provided to all members of the doctoral committee and two copies to the Office of Graduate Studies and Research, including one copy to be transmitted to the external examiner, at least four weeks before the expected date of defense. No changes may be made to the composition of the doctoral committee between these deadline dates and the defense except under the most extraordinary circumstances and with approval of the Executive Committee of Graduate Studies and Research. The oral presentation should be completed at least three weeks prior to the Convocation for which the candidate has applied to receive the degree. A public notice of defense must be received in the Office of Graduate Studies and Research and posted in the academic unit at least one week in advance of the oral presentation.

A doctoral committee shall notify the Office of Graduate Studies and Research whether, in its view, notice of defense is to be posted, but the decision to proceed shall be contingent upon the report of the external examiner to the Executive Dean of Graduate Studies and Research.

The candidate will present the dissertation at a public defense. The Chair of a Ph.D. defense will be the Executive Dean of Graduate Studies and Research or designate, such as the Executive Dean of a College or senior member of graduate faculty from outside the program, to be named by the Executive Dean of Graduate Studies and Research at the time the defense is publicly announced. The chair is non-voting. Questions will be permitted from the general audience at the discretion of the chair. The general audience may remain until the defense is completed and the committee begins its deliberations on the outcome. These deliberations are held *in camera*.

The minimum basis for acceptance of a Ph.D. dissertation shall be positive unanimity less one vote providing the dissenting vote is not by an external examiner who is present at the defense, and the chair of the defense determines that the examination by the external examiner has been fair to the candidate. Unless an examining committee is unanimously negative, a candidate may resubmit the dissertation once, after a minimum period of three months and before a maximum period of twelve months. The second decision shall be final.

Three copies of the corrected dissertation must be deposited with the Assistant to the Executive Dean for transmission to the Leddy Library at least two weeks prior to Convocation.

The candidate must also submit at this time three copies of an abstract of no more that 350 words and three copies of a *vita*, which will be bound with the dissertation. The abstract will be published in *Dissertation Abstracts International*. The title page of the dissertation, or a separate page immediately following the title page, must bear the Universal Copyright Convention symbol ©, 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 microfilming should be made with the Assistant to the Executive Dean. At such time as the program coordinator gives approval, the Office of Graduate Studies and Research will trans-

mit the original copy of the dissertation to the National Library, accompanied by Form NL/BN91, supplied by the Office and validated by the candidate, which authorizes the National Library to produce single microform 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 physical 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 Leddy Library, and a third copy in the academic unit.

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

Dissertation Requirements Synopsis:

1) Dissertation format must be as prescribed by *Procedures to Follow in Preparing a Thesis or Dissertation.*

2) Copies of the dissertation must be provided to all committee members and two copies to the Office of Graduate Studies and Research at least four weeks before the oral presentation prior to the Convocation at which the candidate has applied to receive the degree.

3) Copies of an abstract (no more than 350 words) and a *vita* are to be filed, one to be bound with each copy of the dissertation.

4) Public notice of defense must be received in the Office of Graduate Studies and Research and posted in the academic unit at least one week in advance.

5) Following successful defense, the candidate will deposit three copies of dissertation, abstract, and *vita* in the Office of Graduate Studies and Research for binding and distribution (two for the Leddy Library, one for the academic unit).

6) The candidate will validate Form NL/BN91, supplied by the Office of Graduate Studies and Research, authorizing the National Library to produce single microform copies. The title page of the dissertation, or separate page following, must bear the Universal Copyright Convention symbol ©, full name of author, and year doctoral degree was granted.

7) Fees for above are to be paid at time of deposit of the Dissertation in the Office of Graduate Studies and Research.

Examinations: In addition to the usual examinations on course work, there are three types of special examinations which may be required (see individual program 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 defense of the dissertation. A program 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 recognized colleges or universities may be admitted to programs leading to the Master's degree. A student with an honours Bachelor's degree or its equivalent, with standing at least in the B range overall and in both the final two years of study and 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 standing at least in the B range overall and in the final year of study and the major subject, may be admitted to a two-year Master's program (I Master's Qualifying followed by II Master's Candidate). A student holding an honours degree in another discipline may also be admitted to a two-year Master's program (II Master's Candidate) provided he or she has sufficient related credits and meets all other requirements for admission.

Applicants are urged to apply as early as possible to enable the program and the College of Graduate Studies and Research to evaluate qualifications.

Possession of the minimum requirements does not ensure acceptance.

Candidacy: A student in a one- or two-year II Master's Candidate program is also a candidate for the Master's degree. Students in the two-year I Master's Qualifying followed by II Master's Candidate program are not admitted to candidacy until they have satisfactorily completed the I Master's Qualifying program. A positive recommendation from a program and approval of that recommendation are 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 Executive Dean of Graduate Studies and Research. If a student does not expect to fulfil the residence requirement in the normal way, reasons for departing from the norm should be submitted in writing to the Executive Dean and approval secured for the plan before beginning the graduate program. See also the section on "Duration of Study" below.

The residency 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 no more than one-half of the required courses for program taken at another university may be given at the discretion of the College of Graduate Studies and Research, upon the recommendation of the program coordinator.

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 program regulations for information concerning the time limit given on a part-time basis.

If an extension of these time limits becomes necessary, the student should address a petition to the Executive 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.

Course of Study: Course requirements are specified in the program listings. Planning and direction of the student's course of study are the responsibility of the program coordinator 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 program coordinator or an advisor. Students are directed to obtain the approval of the program coordinator or designated advisor for changes in the program of study.

Training in methodology may be required, at the discretion of the program. 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 or Satisfactory/Unsatisfactory may be assigned for theses and major papers, depending on individual program policy.

After consultation between student and professor and authorization by the latter's program coordinator, 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.

Committees: Research undertaken as part of a Master's program is normally directed and supervised by a Master's committee. The program coordinator will recommend the appointment of members of the doctoral committee, whose appointments must be approved by the Executive Committee of the College Council of Graduate Studies and Research.

The Master's committee will include as a minimum the chief advisor from the program, and two other University of Windsor faculty members, one of whom shall belong to a program other than the one in which the student is obtaining the degree. Additional members may be added with the approval of the program coordinator and the Executive Committee of the College of Graduate Studies and Research. The member(s) from outside the program 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 (see below).

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 or project on which there will be a final evaluation. The regulations of individual programs should be consulted for details of their thesis or major paper requirements. Letter grades or Satisfactory/Unsat-

isfactory may be assigned for theses and major papers, depending on program policy.

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 academic unit. Major papers are available to library users for examination in the Reserve Reading Area of the Leddy Library.

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 academic unit, a Copyright License, 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 regulations of individual programs should be consulted for details of their procedures. The general format is prescribed in *Procedures to Follow in Preparing a Thesis or Dissertation*, which may be obtained from the Assistant to the Executive Dean. Within the thesis, the student should use forms approved for scholarly publication in the field of specialization and approved by the program coordinator. 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 Master's committee for instructions as to the internal form of the thesis.

Copies of the Master's thesis must be provided to all members of the Master's committee and one copy to the Office of Graduate Studies and Research, for the use of the chair of the defense, at least two weeks before the expected date of defense. Students are advised to ascertain from the academic unit any prior deadline established by the unit. No changes may be made to the Master's committee between these deadline dates and the defense except under the most extraordinary circumstances and with the approval of the Executive Committee of Graduate Studies and Research. The oral presentation should be completed at least three weeks prior to the Convocation at which the candidate expects to receive the degree.

No later than eight days before a proposed defense a Master's committee shall notify the Office of Graduate Studies and Research that a notice of defense is to be posted. The chair of a Master's defense will be a member of graduate faculty who has not served on the candidate's Master's Committee, and who is appointed by the Executive Dean of Graduate Studies and Research upon the recommendation of the program coordinator at the time the defense is publicly announced. The chair is non-voting. The general audience may remain until the defense is completed and the committee begins its deliberations on the outcome. These deliberations are held *in camera*.

The minimum basis for acceptance of a Master's thesis is positive unanimity by the examining committee less one vote. Unless an examining committee is unanimously negative, a candidate may resubmit the thesis once, after a minimum period of three months and before a maximum period of twelve months. The second decision shall be final.

Three copies of the corrected thesis must be deposited in the Office of Graduate Studies and Research for transmission to the Leddy Library at least two weeks prior to Convocation.

The candidate must also submit at this time three copies of an abstract of no more than 150 words and three copies of a *vita*, which will be bound with the thesis. The abstract will be published in *Masters Abstracts International*. The title page of the thesis, or a separate page immediately following the title page, must bear the Universal Copyright Convention symbol ©, the full name of the

author, and the year the Master's degree was granted. Arrangements for binding the thesis and payment of fees connected with binding and microfilming should be made with the Assistant to the Executive Dean. At such time as the program coordinator gives approval, the Office of Graduate Studies and Research will transmit the original copy of the thesis to the National Library, accompanied by Form NL/BN91, supplied by the Office and validated by the candidate, which authorizes the National Library to produce single microform 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 physical 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 Leddy Library, and a third (or two copies) in the academic unit.

Thesis/Major Paper Requirements Synopsis

1) Thesis format must be as prescribed by *Procedures to Follow in Preparing a Thesis or Dissertation.*

2) Copies of the thesis for Master's degree must be provided to all committee members, and one copy to the Office of Graduate Studies and Research at least three weeks before the oral presentation prior to the Convocation at which the candidate has applied to receive the degree.

3) Copies of the abstract (no more than 150 words) and of the *vita* are to be filed, one to be bound with each copy of the Thesis.

4) Public notice of the defense must be received in the Office of Graduate Studies and Research at least eight days in advance.

5) Following successful defense, the candidate will deposit all copies of the thesis, abstract, and *vita* in the Office of Graduate Studies and Research for binding and distribution (two for the Leddy Library, and one or two for the propgram).

6) The candidate will validate Form NL/BN91, supplied by the Office of Graduate Studies and Research, authorizing the National Library to produce single microform copies. The title page of the thesis, or a separate page following, must bear the Universal Copyright Convention symbol ©, full name of author, and year the Master's degree was granted.

7) Copyright application and microproduction by the National Library do not apply for the major paper program. One copy may be required for library deposit, the type of binding to be specified by the program. Major papers are available to library users for examination in the Reserve Reading Area of the Leddy Library.

8) Fees for the above are to be paid at the time of deposit of the thesis or major paper in the Office of Graduate Studies and Research.

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 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 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 defense of the thesis or major paper. A program 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 program on the subject of the research.

1.7 Research Institutes

1.7.1 THE GREAT LAKES INSTITUTE FOR ENVIRONMENTAL RESEARCH

The Great Lakes Institute for Environmental Research (formerly the Great Lakes Institute, University of Windsor) is entering its second decade as a unique university research institute. Accompanying its change in name is a change in role. Where once the focus was on the science of the Great Lakes, the Institute is now concerned with all facets of the aquatic environment: ecology, toxicology, geology, climatology, engineering, human health, socioeconomics, and law.

The Great Lakes Institute for Environmental Research is dedicated to the restoration and protection of the Great Lakes ecosystem. It is committed to excellence in the research it conducts, the education it promotes, and the training it provides. With excellence as their goal, the faculty and students associated with the Institute serve the immediate needs of the environmental community and anticipate the needs of future generations in the Great Lakes basin.

Institute Members

K. Adeli, Chemistry and Biochemistry
C. J. Ball, Education
J. K. Bewtra, Civil and Environmental Engineering
N. Biswas, Civil and Environmental Engineering
S. Cameron, Executive Dean, Graduate Studies and Research
Z. Chen, GLIER and Earth Sciences
J. V. H. Ciborowski, Biological Sciences
L. D. Corkum, Biological Sciences
R. Coronado, Citizens' Environment Alliance
D. A. Cotter, Biological Sciences
W. J. I. Crawford, Education
D. Dolan, International Joint Commission
J. Drummond, Ministry of the Environment and Energy
M. J. P. Dufresne, Biological Sciences
K. Duncan, Geography
B. Fryer, Executive Dean of Engineering and Science
K. Y. Fung, Mathematics and Statistics
D. E. Gustavsen, Sociology and Anthropology
G. D. Haffner, Biological Sciences
A. Hall, Sociology and Anthropology
J. Hartig, International Joint Commission
M. Hedley, Sociology and Anthropology
P.Hudec, Earth Sciences
F. C. Innes, Geography
M. Irish, Law
W. E. Jones, Vice-President - Academic, Chemistry and Biochemistry
P. D. LaValle, Geography
R. Lazar, GLIER Laboratory Manager
H. MacIsaac, Biological Sciences
W. Marshall, Tek Trans
J. R. Meyer, Education
M. L. Petras, Biological Sciences
B. Rourke, Psychology
P. Sale, Biological Sciences
F. Simpson, Earth Sciences
I. Stebelsky, Geography
A.G. Szabo, Chemistry and Biochemistry (Interim Director)
K. E. Taylor, Chemistry and Biochemistry
A. S. Trenhaile, Geography
A. Vakil, Geography
M. Valiante, Law
I. M. Weis, Biological Sciences
L. Westra, Philosophy
J. Wilson, Law
J. Winter, Communnication Studies
J. Ye, GLIER and Civil and Environmental Engineering
N. G. Zamani, Mathematics and Statistics

1.7.2 FLUID DYNAMICS RESEARCH INSTITUTE

The Fluid Dynamics Research Institute was founded to foster inter-departmental and inter-College research and postgraduate teaching related to the dynamics of fluids in the most general sense of the term. Members conduct basic and applied research, and are committed to providing a broad training for graduate students in all aspects of fluid mechanics and heat transfer. Members are drawn from Mechanical Engineering, Civil and Environmental Engineering,

and Applied Mathematics. Research ranges from theoretical studies on stability and exact solutions to enhancement of flow measurement techniques to implementation of commercial computer codes and development of new codes for industrial problems. Application areas include environmental engineering, the automotive, defence and petroleum industries, biomechanics and aeronautics.

Graduate students affiliated with Institute members in their research projects will register in the member's department and complete the degree requirements of that department.

Institute Members

R. M. Barron, Mathematics & Statistics and Mechanical Engineering
O. P. Chandna, Mathematics & Statistics
K.L. Duggal, Mathematics & Statistics
P. N. Kaloni, Mathematics & Statistics
J. A. McCorquodale, Civil and Environmental Engineering
G. W. Rankin, Mechanical Engineering (Director)
A. C. Smith, Mathematics & Statistics
K. Sridhar, Mechanical Engineering
N. G. Zamani, Mathematics & Statistics and Mechanical Engineering
C. Zhang, Mechanical Engineering

2 BIOLOGICAL SCIENCES

2.1.1 GRADUATE FACULTY

Professors

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

Thomas, Donovan D.; B.S. (Natal), M.S., Ph.D. (Florida)—1968.

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

Fackrell, Hugh B.; B.Sc., M.Sc. (Western Ontario), Ph.D. (Manitoba)—1974.

Cotter, David A.; B.S. (Penn State), M.S., Ph.D. (Wisconsin)—1975.

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

Haffner, G. Douglas; B.Sc. (Queen's), Ph.D. (London, England)—1986.

Lovett Doust, Jonathan N.; B.Sc. (Queen's), Ph.D. (Wales)—1988.

Lovett Doust, Lesley; B.Sc. (Edinburgh), Ph.D. (Wales)—1991.

Sale, Peter; B.Sc., M.A. (Toronto), Ph.D. (Hawaii)—1994.

Associate Professors

Taylor, Paul; B.Sc. (George Williams, Chicago), Ph.D. (Toledo)—1975.

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

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

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

Zielinski, Barbara; B.Sc., M.Sc. (Waterloo), Ph.D. (Manitoba)—1990.

MacIsaac, Hugh J.; B.Sc. (Windsor), M.Sc. (Toronto), Ph.D. (Dartmouth)—1992.

Assistant Professors

Crawford, Michael J; B.Sc., M.Sc., Ph.D. (Toronto)—1997.

Hubberstey, Andrew V.; B.Sc. (Waterloo), M.Sc., Ph.D. (Guelph)—1997.

Adjunct Professor

Brandt, Stephen B.; B.A., M.S., Ph.D. (Wisconsin)—1997.

Adjunct Associate Professors

Metcalfe, Christopher D.; B.Sc. (Manitoba), M.Sc. (New Brunswick), Ph.D. (McMaster)—1991.

Reynoldson, Trefor B.; B.Sc. (Leeds), M.Sc. (Calgary), Ph.D. (Lancaster)—1991.

Day, Kristin E.; B.Sc., M.Sc. (Waterloo), Ph.D. (Guelph)—1994.

Adjunct Assistant Professor

Zhang, John J.; B.Sc. (Yunnan), Ph.D. (Western)—1997.

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 Biological Sciences 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) attend all departmental seminars in Biological Sciences (formal presentations of visiting speakers; graduate student seminars, thesis defense presentations and dissertation defense presentations) each year of full-time registration;
(c) present a total of three departmental seminars exclusive of the dissertation defense;
(d) successfully complete a minimum of three Selected Readings courses;
(e) successfully complete a minimum of two additional graduate courses. One of the courses may be in a cognate area. Statistics 65-453 (Statistics for Life/Social Sciences) may be allowed for graduate credit;
(f) complete a dissertation embodying the results of an original investigation;
(g) defend the dissertation at a public lecture or seminar.

Students recommended and approved for transfer into the Ph.D. program after having completed one year of an M.Sc. degree in Biological Sciences at the University of Windsor will normally receive credit for graduate course work completed during the M.Sc. program.

(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) attend all departmental seminars in Biological Sciences (formal presentations of visiting speakers, graduate student seminars, thesis defense presentations and dissertation defense presentation) each year of full-time registration;
(c) present a total of three departmental seminars exclusive of the dissertation defense;
(d) successfully complete a minimum of three Selected Readings courses;
(e) successfully complete a minimum of one additional graduate course.

This course may be in a cognate area. Statistics 65-453 (Statistics for Life/Social Sciences) may be allowed for graduate credit;

(f) complete a dissertation embodying the results of an original investigation;

(g) defend the dissertation at a public lecture or seminar.

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

Doctoral Committee: Within the first term of the student's registration, 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 Biological Sciences, and three must be within Biological Sciences. The research advisor will act as chairperson of this committee. The student should meet with individual committee members on an informal basis at least twice a year.

The doctoral committee must meet for the following:

(a) to review and approve course work and the research proposal no later than six months into the program;

(b) to prepare and administer the qualifying examination within the first twelve months of the student's registration in the program;

(c) to discuss the student's progress within two months after the qualifying examination. (The extramural committee member need not participate.);

(d) to review and approve the research progress no less than six months before the candidacy examination is administered;

(e) to set the candidacy examination which must be given at least six months before the student's final oral examination. (The extramural committee member need not participate.);

(f) to discuss the student's research and dissertation at least two months before the anticipated time of the final oral examination;

(g) the final oral examination.

Research Progress: Each year from the date of initial registration, the student must submit a Research Progress Report to and meet with his or her doctoral committee. In addition, the student must review his or her research in a meeting with the doctoral committee at least six months before the anticipated date of the final oral examination.

Dissertation: At least six months prior to the candidacy 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.

Examinations:

(a) *Qualifying Examination:* The primary purpose of the Qualifying Examination is to ensure that the student has the appropriate background to successfully undertake the planned program of dissertation research. This examination must be completed within twelve months of the student's registration in the program. Prior to the examination, the student will have provided the doctoral committee with a written proposal outlining the background, approach and general expectations of the intended research project. The

Qualifying Examination will normally be an oral examination administered by the doctoral committee. The results of the examination and any recommendations will be communicated in writing to the student and the Graduate Committee. Following the Qualifying Examination the doctoral committee may assign the student appropriate remedial or supplementary course work. Successful completion of the examination and any remedial studies or course work recommended by the doctoral committee is corequisite to the student's continuation in the doctoral program.

(b) *Candidacy Examination:* The primary purpose of the Candidacy Examination is to ensure that the student has made the appropriate research progress to proceed with the dissertation defense. The Candidacy Examination should normally be completed not less than six months prior to the expected date of the dissertation defense. Prior to the examination, the student will provide the doctoral committee with a detailed written report outlining the scope of the student's research project, the work that was conducted and results of the research. This report may broadly follow the form that the student envisions for the final dissertation. The Candidacy Examination will normally be an oral examination administered by the student's doctoral committee. The student may be asked to summarize the major points of the report in a brief oral presentation. The student's oral summary and written report will typically serve as the focus for most of the questions posed as part of the examination. The results of the Candidacy Examination and any recommendations made by the doctoral committee will be communicated in writing to the student and the departmental Graduate Committee. Successful completion of the examination and any further work recommended by the doctoral committee is corequisite to the student's completion of the doctoral program.

(c) Finally, the student will be requested to defend the dissertation orally at a public lecture or seminar (final oral examination).

2.2.2 THE MASTER OF SCIENCE DEGREE

Admission Requirements

1) Applicants with an honours degree in Biological Sciences 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 Biological Sciences 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 regulations outlined in 1.6;

(b) attend all departmental seminars in Biological Sciences (formal presentations of visiting speakers, graduate student seminars, thesis defense presentations and dissertation defense presentations) each year of full-time registration;

(c) present a total of two departmental seminars exclusive of the thesis defense;

(d) successfully complete a minimum of two Selected Readings courses;

(e) successfully complete a minimum of one additional graduate course. The course may be in a cognate area. Statistics 65-453 (Statistics for Life/Social Sciences) may be allowed for graduate credit;

(f) complete an original research project and embody it in a thesis;
(g) 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 Biological Sciences course and at least a B- average in any non-Biological Sciences courses.

4) *Master's Committee:* Within one term of the student's registration in the program, the research committee will be formed and the names submitted to the Executive Dean of Graduate Studies and Research. The full committee will consist of at least three members—the research supervisor, one other faculty member from within Biological Sciences, and one University faculty member from outside of Biological Sciences.

The student should meet with individual committee members on an informal basis at least twice a year. The committee, in turn, must meet to:

(a) review and approve course work and the research proposal no later than six months into the program;
(b) discuss the student's research and thesis at least six months before the anticipated time of the final oral examination;
(c) participate in the final oral examination.

Research Progress: Each year from the date of initial registration, the student must submit a Research Progress Report to and meet with his or her Master's committee. In addition, the student must review his or her research in a meeting with the Master's committee at least six months before the anticipated date of the final oral examination.

Research Thesis: A thesis embodying the results of an original investigation in the student's major field is required of all candidates. The student must defend the thesis orally at a public lecture or seminar, which will be the final oral examination.

2.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered each year.

Biological Sciences provides three types of courses, each with a different primary purpose and format.

1) *Fundamentals Courses:* Fundamentals courses cover subject matter that is considered central to a comprehensive knowledge of principles and theories in the department's areas of research emphasis. The scope of these courses extends beyond that provided at the undergraduate level. These courses may entail formal lectures, laboratory instruction and/or directed readings and discussion, but the onus is on the course instructor to ensure that students are exposed to balanced and comprehensive coverage of the range of topics considered to represent the field. Because of their central importance to the Biological Sciences, these courses are offered on a regular, recurring basis.

2) *Special Topics Courses:* Special topics courses provide detailed expertise in theory and/or techniques in areas of researchers' expertise that are especially relevant to students' thesis research. Although no less rigorous than fundamentals courses, these courses may provide greater depth of information over a narrower subject range. The scope of these courses extends beyond that provided at the undergraduate level. These courses may involve a combination of lectures, laboratories, discussion, readings and/or student presentations under the guidance of the instructor. A Special Topics course will have an explicit subtitle indicating the theme of a particular offering. Some Special Topics courses will be offered each year. The themes will vary among years to reflect the expertise of the instructors available and the current needs of the graduate students.

3) *Selected Readings Courses:* The primary goal of the Selected Readings courses is to develop students' skill in objective, critical analysis of scholarly work among individuals with broadly similar research interests and backgrounds. An equally important aspect of these courses is to promote interaction among students and faculty and to help participants become aware of new research across a range of subdisciplines. The role of students in selecting and presenting relevant material is central to these courses.

55-516. Techniques in Molecular Biology

A course designed to introduce the student to a variety of biochemical, cellular, and molecular techniques. This course is composed of a series of topics from which students are required to participate in a minimum of four. The topics include: chromatography, electrophoresis, immunocytochemistry, electron microscopy, cell culture, cloning and nucleic acid analysis, computer-based protein and nucleic acid analysis, and radioisotope methods. Students should consult with their research advisors and supervisory committees in choosing the topics for study. (Prerequisite: consent of instructor.) (2 lecture hours, 4 laboratory hours a week for selected experiments during the year, both terms.) (One term course credit.) (Offered in alternative years.)

55-518. Experimental Design and Analysis in Biological Research

Discussion of philosophical and quantitative approaches used to investigate biological systems, with emphasis on design and implementation of efficient and unbiased experiments. Students will use expertise acquired in lectures and readings to constructively evaluate their own and others' research proposals through round table discussions and individual presentation. (Prerequisite/co-requisite: 55-320, or consent of instructor.) (2 discussion hours a week.)

55-520. Selected Readings in the Biological Sciences

Current publications on common themes of potential significance in students' area of study will be chosen for round table oral presentation and discussion. Multiple sections, each with enrolment of 8-12 students will be offered in the fall term of each year as required. This course is intended for graduate students in Biological Sciences only. (2 discussion hours a week.)

55-521. Selected Readings in the Biological Sciences

Current publications on common themes of potential significance in students' area of study will be chosen for round table oral presentation and discussion. Multiple sections, each with enrolment of 8-12 students will be offered in the winter term of each year as required. This course is intended for graduate students in Biological Sciences only. (2 discussion hours a week.)

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. (Required: consent of instructor.) (2 discussion hours a week.) (Offered in alternate years.)

55-529. Molecular Biology of Growth and Development II

An analysis at the molecular level of the growth and development of plants and animals. (Required: consent of instructor.) (2 discussion hours a week.) (Offered in alternate years.)

55-570. Fundamental Topics in Population and Evolutionary Biology

Major topics may include the evolution of mating systems, population structure and demography, population genetics and life history variation, theory of optimal resource use. (Prerequisite/corequisite: 55-324, or consent of instructor.) (3 lecture/discussion hours a week.) (Offered in alternate years.)

55-581. Fundamental Topics in Community Ecology

Major topics include niche and diversity theory, trophic complexity and community stability, assembly of guilds, ecosystem structure and function, biogeography. (Prerequisite/corequisite: 55-325, or consent of

instructor.) (3 lecture/discussion hours a week.) (Offered in alternative years.)

55-601. Special Topics in Molecular and Developmental Biology

This is a regularly offered course covering subjects that reflect current graduate program needs and departmental expertise in specific areas. The course addresses one or more theme subjects in any particular term. Students receive a course credit for each term in which they register for this course provided that a particular theme is not repeated. Where a theme parallels an undergraduate course listing, students may be required to attend some portion of the undergraduate course as a prerequisite or corequisite. Subjects that may be offered as special topics include but are not limited to the following: biology of cell transformation; electron microscopy; genetic engineering and its applications; advanced topics in immunochemistry; advanced topics in microbial physiology and ecology; advanced topics in physiology; plant hormones and development; virology. (Prerequisite: consent of instructor.) (2-3 discussion hours and/or up to 5 laboratory hours a week.)

55-602. Special Topics in Population and Environmental Biology

This is a regularly offered course covering subjects that reflect current graduate program needs and departmental expertise in specific areas. The course addresses one or more theme subjects in any particular term. Students receive a course credit for each term in which they register for this course provided that a particular theme is not repeated. Where a theme parallels an undergraduate course listing, students may be required to attend some portion of the undergraduate course as a prerequisite or corequisite. Subjects that may be offered as special topics include but are not limited to the following: animal behaviour; advanced topics in aquatic ecology; biogeography, conservation biology, ecotoxicology, quantitative ecology. (Prerequisite: consent of instructor.) (2-3 discussion hours and/or up to 5 laboratory hours a week.)

55-603. Special Topics in Biological Sciences I

Special Topics in the Biological Sciences courses may be used to introduce a new graduate offering, typically on a "trial" basis. Approved courses taken at Wayne State University or elsewhere, or courses offered by visiting professors may also fall into the category of Special Topics in the Biological Sciences. A limited number of these courses may be included in the program of graduate student.

55-604. Special Topics in Biological Sciences II

Special Topics in the Biological Sciences courses may be used to introduce a new graduate offering, typically on a "trial" basis. Approved courses taken at Wayne State University or elsewhere, or courses offered by visiting professors may also fall into the category of Special Topics in the Biological Sciences. A limited number of these courses may be included in the program of a graduate student.

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 term (including Summer) of residency at the University; however, this course may not 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 term of the first year of residency and subsequently for each term 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 BUSINESS ADMINISTRATION

3.1.1 GRADUATE FACULTY

Professors

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

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

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

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

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

Thacker, James W.; B.A. (Winnipeg), M.A., 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.

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

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

Brill, Percy; B.Sc. (Carleton), M.A. (Columbia), Ph.D. (Toronto)—l984.

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

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

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

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.B.A. (Windsor), M.A., Ph.D. (Toronto)—1986.

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

Associate Professors

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

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), Ph.D. (Oklahoma), C.A. (Quebec & Ontario), R.I.A.—1982.

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

Gunay, Erdal; B.S. (Middle East Technical), M.B.A., Ph.D. (Syracuse)—1984.

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

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

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

Reavley, Martha; B.Comm., M.B.A. (Windsor), Ph.D. (Wayne State)—1986.

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

Seck, Diery; Diplome d'Ecole Superior de Commerce de Toulouse (DESCAF), M.Sc. Sherbrooke, Ph.D. (Laval)—1987.

Lan, George; B.S. (Beloit College), M.A. (Smith College), M.B.A. (Tulane University), Ph.D. (Queens)—1988.

Armstrong-Stassen, Marjorie; B.S., M.L.H.R. Ph.D. (Ohio State)—1989.

Ursel, Nancy D.; B.Comm. (McGill), M.B.A. Ph.D. (Concordia)—1989.

Assistant Professors

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

Prince, Michael; B.A.Sc., M.B.A. (Windsor), Ph.D. (Bradford)—1986.

Green, Donna; B.A., (Ohio State), M.B.A. (Saskatchewan), Ph.D. (Western Ontario)—1990.

Kao, Diana; LL.B., (National Cheng-Chi), Dip. in Acc., (Wilfrid Laurier), M.B.A. (McMaster), Ph.D. (Western)—1990.

Slaymaker, Adrianne; B.A. (Indiana State), M.B.A. (Indiana), D.B.A. (Kentucky)—1995.

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. It provides students with three important components to prepare them for management positions; academic knowledge, job skills and work experience.

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.

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 and Research and in Liaison and Applicant Services.

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 in the Fast Track M.B.A. program provided they have obtained satisfactory standing in their undergraduate degree.

3) Students will be recommended for admission to the candidate year if they have maintained a B average or better in the first year of the program.

4) Students in the candidate year who maintain a B average or better will qualify for the M.B.A. degree.

Prerequisites:

(a) at least two terms of university-level Economics;
(b) at least one term of university-level Mathematics.

Students lacking prerequisites may be admitted and permitted to complete the appropriate undergraduate courses in their first term. The Mathematics prerequisite may be waived depending on an applicant's quantitative score on the GMAT test.

Part-time Students

All newly-admitted part time students are reqiured to have an interview with the Dean of the Faculty of Business Administration or his/her designate. Students wishing to be considered for advanced standing in 76-500, 76-509, 76-516, 76-521 or 76-585 must obtain permission from the Dean of the Faculty of Business Administration or his/her designate. Normally, advanced standing in these courses will be based on previous full time work experience. Advanced standing for courses in the core areas of Business Administration will be considered based on previous courses taken and grades received.

Course Requirements

Students will be allowed to pursue a general M.B.A. or choose a specific area of concentration. Areas of concentration include Finance, Marketing, Management and Labour Studies, Business Strategy and Entrepreneurship, and Management Science. To obtain an area of concentration, four 600-level courses in the area are required.

Two additional, cross-disciplinary areas of concentration are also available: International Business and Production/Operations.

INTERNATIONAL BUSINESS

required:

75-680. Managing the International Enterprise

and three of:

70-651. Reporting, Analyzing, and Using Accounting Information
71-643. International Management
72-674. International Financial Management
74-635. International Marketing Strategy
75-681. Global Strategy

PRODUCTION/OPERATIONS

required:

73-604. Production Management

and three of:

70-650. Managerial Accounting Analysis
73-605. Statistical Quality Design and Control
74-633. Marketing Channels
75-682. Manufacturing Strategy

THE MAJOR PAPER

Students may choose a major paper option. All students choosing this option must have a detailed major paper proposal approved by at least two faculty members in Business. These two faculty members will have primary responsibility for supervising the student's work. The approved proposal application form must be submitted to the Assistant to the Dean in order to register for the major paper (75-796). An oral defence will be required.

The major paper will be graded, will receive six credits and will substitute for two 600-level course electives.

THE THESIS

Students may choose a thesis option. All students choosing this option must have a detailed thesis proposal approved by at least two faculty members in Business and by one faculty member external to Business but from within the University. An oral defence will be required (see 1.6.2, *Committees*).

The thesis will be graded, will receive twelve credits and will substitute for four 600-level course electives.

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 (Fast Track M.B.A.).

Business Resource Centre

The *Business Resource Centre* is made up of faculty and students who provide consulting to the business community. Students generally share in any profits at the end of the year, but do the work primarily for experience.

Volunteer Internship Program

This program is designed to provide students with the opportunity to receive career-related work experience (unpaid) by working in non-profit or not-for-profit organizations.

3.2.2 CO-OPERATIVE (WORK-STUDY) M.B.A.

Students with a four-year honours degree in business administration or commerce are not eligible for the Co-op program.

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 term, 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 student's Faculty advisors and the Faculty Co-op Coordinator, in consultation with the student. One report is required for each completed work term. 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 a representative from the Office of Co-op Education and Career Services.

CO-OPERATIVE M.B.A. WORK/STUDY SEQUENCE

Qualifying Year

Fall Term

76-500. Introduction to Business
76-501. Interpersonal Dynamics
76-502. Core Concepts of Accounting Information I
76-503. Introduction to Financial Management
76-504. Quantitative Techniques in Management
76-505. Marketing Management
76-506. Managing Employees
76-509. Strategic Decision Making

Winter Term

75-701. M.B.A. Co-op Work Term I

Summer Term

76-510. Core Concepts of Accounting Information II
76-511. Research Methodology
76-512. Financial Management
76-513. Human Resources Management
76-514. Management Information Systems

Candidate Year

Fall Term

75-702. M.B.A. Co-op Work Term II

Winter Term

workshops, plus five, 600-level Business courses

Summer Term

75-698. Strategic Management
workshops, plus four, 600-level Business courses

3.2.3 REGULAR M.B.A. PROGRAM

This program is intended for those students not choosing the M.B.A. Co-op program. The academic portion is identical to the Co-op program and students will be required to take the majority of their courses during the study terms for Co-op students. Students will be required to take 76-521 or 76-585 at some point in the program.

REGULAR M.B.A. PROGRAM STUDY SEQUENCE

Qualifying Year

Fall Term

76-500. Introduction to Business
76-501. Interpersonal Dynamics
76-502. Core Concepts of Accounting Information I
76-503. Introduction to Financial Management
76-504. Quantitative Techniques in Management
76-505. Marketing Management
76-506. Managing Employees
76-509. Strategic Decision Making

Winter Term

76-521. Intensive Introduction to Small Business Consulting or
76-585. Volunteer Internship Program
plus workshops and other courses, as available

Summer Term

76-510. Core Concepts of Accounting Information II
76-511. Research Methodology
76-512. Financial Management
76-513. Human Resources Management
76-514. Management Information Systems

Candidate Year

Fall Term

76-521. Intensive Introduction to Small Business Consulting (optional) or
76-585. Volunteer Internship Program (optional)
plus workshops and other courses, as available

Winter Term

five, 600-level Business courses

Summer Term

75-698. Strategic Management
and four, 600-level Business courses

3.2.4 FAST TRACK M.B.A. PROGRAM

This program is designed for students who have graduated from a four-year honours business program. Fast Track M.B.A. students are exempt from the first (qualifying) year of the regular program, entering directly into the second (candidate) year. It includes not only traditional academic course work but also work in consultancy (*via* the Business Resource Centre or the Volunteer Internship Program) and in project management with selected organizations. The program is purposely designed to provide practical knowledge based experience usually not available at an undergraduate level.

FAST TRACK M.B.A. PROGRAM STUDY SEQUENCE

Fall Term

76-516. Management Skills Development
76-517. Business Research
76-521. Intensive Introduction to Small Business Consulting or
76-585. Volunteer Internship Program
plus workshops and other courses, as available

Winter Term

75-697. Field Study in Business
plus workshops and four, 600-level Business courses

Summer Term

75-697. Field Study in Business (continued)
plus workshops and four, 600-level Business courses

3.2.5 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 Associate 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 applica-

tions must be submitted to the Faculty of Law and the College of Graduate Studies and Research for admission to the regular degree programs in Law and Business Administration. 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 accordingly, 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 to re-apply 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) the applicant's 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 Law or Graduate Studies and Research; these persons will have demonstrated high academic achievement and appropriate vocational and personal commitment.

Application Deadlines

Faculty of Law—November 3 (LL.B.)

College of Graduate Studies and Research—June 1 (M.B.A.)

For application materials please contact the following separately:

Ontario Law School Application Service
Ontario Universities' Application Centre
P.O. Box 1328
650 Woodlawn Road West
Guelph, Ontario
N1H 7P4

College of Graduate Studies and Research
M.B.A. 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 or thesis 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 addition to the requirements outlined above, the candidate must choose three additional candidate-level M.B.A. courses or a further three law courses totalling at least nine credit hours or any equivalent combination. 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 Years: Standing in the top third of the class; no Faculty of Law course grade lower than C.

Third and Fourth Years: 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 —M.B.A.
II	Qualifying Year —M.B.A.	Law I
III*	Candidate Year —M.B.A. Law II & III	Candidate Year —M.B.A. Law II & III
IV*	Candidate Year —M.B.A. Law II & III	Candidate Year — M.B.A. Law II & III

* During Stages III and IV, students will be registered in the College of Graduate Studies and Research. Students must be registered in the College of Graduate Study and Research in order to qualify for graduate awards.

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 the Faculty of Law and the College of Graduate Studies and Research 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 term or year.

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

3.3.1 FIRST-YEAR M.B.A. COURSES

76-500. Introduction to Business
This module explores the Canadian business environment and examines the role of business in Canadian Society. Topics will include the structure of the Canadian economy, the international competitiveness of Canadian industry and the impact of globalizing forces on the North American business — all in the light of competing management and business ideologies of various stakeholders.

76-501. Interpersonal Dynamics
The focus of this module will be to provide students with the behavioural skills to be effective in organizations. Active Listening, conflict resolution, running effective meetings, etc., will be taught with a great deal of emphasis on practice of these skills. The framework for this module will be the team environment, which many successful companies are moving toward. Students in this first semester will have team projects including an international simulation which all instructors will be using in their module. This module will help students prepare for the teamwork which will be required by all the concurrent modules.

76-502. Core Concepts of Accounting I
This course provides an introduction to the role and importance of accounting informatoin in the decision-making process and how to use and interpret various types of accounting information found in financial statements and annual reports. Core concepts of financial accounting such as the detrmination of income and the recognition, measurement and reporting of assets, liabilities, and owners' equity will be examined. The impact of ethical, regulatory and environmental aspects on the interpretation and application of accounting information will be considered.

76-503. Introduction to Financial Management
This module is concerned with the concepts and principles of financial management of the business enterprise within the global financial environment. After an introduction to domestic and international financial markets and instruments, the module covers the concepts of value, risk, and efficient markets, followed by an introduction to capital budgeting, financial analysis and planning, and short-term financial management.

76-504. Quantitative Techniques in Management
The objective of this module is to provide students with a basic but solid background in the quantitative techniques used by successful business organizations. This module will focus on the important aspects of probability and statistics as they relate to the effective presentation of data and to decision making under uncertainty; and, on the use of mathematical modelling as it relates to problem solving within an organization.

76-505. Marketing Management
This module is concerned with introducing appropriate marketing management concepts and techniques that can be applied to private sector business as well as to not-for-profit organizations' marketing and communication activities. Emphasis will be on the marketing mix elements of product strategy, price strategy, place strategy, and promotion strategy.

76-506. Managing Employees
This module will familiarize students with the knowledge, roles, responsibilities and skills required of today's managers. Three approaches will be examined: systems, process, and behavioural. The contingency view of management as the process of organizing resources to set and accomplish organizational goals will be emphasized.

76-509. Strategic Decision Making
This intensive two week experience will help to refine and integrate the management skills that students acquired in the six introductory modules. Working in cross-disciplinary groups, students will apply an integrated management approach to the assessment of complex business situations, plan to manage necessary changes and practice communicating their decisions in a professional and convincing manner. Guest speakers and on-site visits will complement the in-class assignments.

76-510. Core Concepts of Accounting II
This course will further examine the use and interpretation of accounting information within the context of business and business decision-making. It will explore some of the ways in which accounting information may be utilized for business planning and to solve common business management problems. Core concepts of financial and managerial accounting such as financial statement analysis, tax considerations, cost-volume-profit analysis, budgeting, cost allocatoin, job order and process costing will be covered. As with 76-502, the impact of ethical, regulatory, and environmental aspects on the interpretation and application of accounting information wil be considered. (Prerequisite: 76-502.)

76-511. Research Methodology
This course is intended to provide students with a broad understanding of methodological issues in research with a specific focus in marketing. Students will develop an understanding of research issues and processes from a marketing perspective through classroom lectures as well as a hands-on practical marketing research project. Both quantitative and qualitative methods of research will be discussed. (Prerequisites: 76-504 and 76-505.)

76-512. Financial Management
This module focuses on the firm's long-term financial decisions. The sources and the mechanics of obtaining long-term financing are covered, together with the discussion of strategic decisions involving capital structure and dividends. The module includes a broader study of financial markets and instruments, including options, with applications in financial management. (Prerequisite: 76-503.)

76-513. Human Resources Management
This course is concerned with the role of human resources activities in facilitating the achievement of organizational effectiveness. Students will gain an understanding of the principles of human resources management and develop some skills they can apply in solving actual people problems at work. Particular attention is given to the roles of labour relations and trade unionism as they pertain to human resources activities. Students will be provided with exposure to both a management and labour perspective to H.R. issues.

76-514. Management Information Systems
Students in this course will learn how to envision, design and evaluate computer-based solutions to typical business problems. Emphasis will be on the contemporary and emerging hardware/software tools, the managing of information, and information technology.

The prerequisite for all candidate-level courses is candidate-level standing (or equivalent) in the M.B.A. program.

76-516. Management Skills Development
This course is designed to provide students with management skills that are required for providing feedback, dealing with problem employees, coaching and problem solving. The focus of the course will be practical in that there will be ample opportunity for students to practice the skills in different settings, and receive feedback on their performance. (Open to Fast Track and part-time M.B.A. students only)

76-517. Business Research
This course will provide students with a broad range of methods for conducting field research. Students will develop an understanding of research designs which are useful for determining the impact on interventions. Both quantitative and qualitative methods of research will be discussed. There will be an emphasis on qualitative research methods to assist students in prepar-

ing for the Field study in Business course. (Open to Fast Track and part-time M.B.A. students only.)

76-521. Intensive Introduction to Small Business Consulting
This is an accelerated and intensive course in the practice of consulting for M.B.A.s who are not receiving work experience through the Co-op program. Students receive accelerated training in the practice of consulting and work in the Business Resource Centre where they have an opportunity to apply what they are learning in their program of study. (A 4.0 credit course.) (Offered on a Pass/Non-Pass basis.)

76-585. Volunteer Internship Program
Students will be required to perform career-related volunteer work in a supervised not-for-profit or non-profit organization. The experience is designed to provide students with an opportunity to integrate theory and practice. Classroom workshops and regular assignments will facilitate the learning process and ensure that transferable skills are developed. (A 4.0 credit course.) (Offered on a Pass/Non-Pass basis.)

3.3.2 ACCOUNTING

70-650. Managerial Accounting and Analysis
This course will examine approaches to generating, analyzing and using accounting information in performing managerial functions such as planning, controlling, performance evaluation and decision making.

70-651. Reporting, Analyzing, and Using Accounting Information
This course will examine alternative approaches to generating, reporting, Analyzing and using accounting information. It will emphasize the understanding and the application phases of accounting information by users. Topics include: Accounting entity -- concepts of control and significant influence; accounting policy choice; internal control; elements in the consolidated financial statements, such as owners' equity, minority (non-controlling) interest and goodwill; profitability, liquidity and solvency analyses; working capital management; and business valuation.

Note: Fast Track students with undergraduate accounting concentration are not allowed to take 70-650; and Fast Track students who have taken a combination of related accounting and finance undergraduate-courses are not be permitted to take 70-651.

3.3.3 MANAGEMENT AND LABOUR STUDIES

71-611. Women in Business
This is a multi-disciplinary course which adopts a woman-centred point of view to examine how being female shapes the lives of women in the workplace and in the broader society. The course examines all aspects of women's work, paid and unpaid, from the perspective of women employed in managerial and professional occupations. (Students who take this course may receive credit towards their certificate or degree in Women's Studies).

71-612. Labour Law
An analysis of legislation dealing with labour organization; wages, employment standards, fair employment practice, and financial security of the worker. (Cross-listed with 71-448.)

71-640. Organizational Design
The course examines alternative concepts and forms of organizational design at both administrative and operational levels. The emphasis will be on critical analysis of the design implications of high rates of environmental and technological change. Management structures, processes, and technologies which enhance productivity and innovaton will be evaluated taking examples from Canada and other countries. Special attention will be paid to case studies and the development of problem-solving skills for the analyis and efficient design of organizations capable of achieving their goals under a variety of conditions. (Prerequisite: 71-540 or equivalent.)

71-641. Organizational Change
This course is designed to examine the process of organizational change and develop-

ment from a systems perspective. It will focus on the difficulties associated with attempting to change and improve organizational functioning. Specific organizational change and intervention techniques and methodologies will be addressed.

71-643. International Management
The course focuses on the problems and issues that confront managers in the area of international business. Background material, readings, cases, and exercises will involve the students in challenges facing 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 businesses.

71-644. Training and Development of Human Resources
This course addresses the development of human resources through training experiences. Topics related to training, adult learning, and effective teaching methods will be explored. The focus of the course is on the major theoretical aspects of training: 1) needs assessment, 2) program development, and 3) evaluation. This course has an experiential focus; student teams will be responsible for developing and presenting training programs.

71-645. Managing Rewards in Organizations
This course provides an understanding of organizational rewards. It offers specific guidelines on managing the power of rewards to facilitate the effectiveness of the enterprise. The focus is on the reward system as a strategic resource by which management supports overall organization objectives and philosophy. The course includes such topics as the administration and planning of salaries, wages, incentive pay, benefits and non-financial. Students will complete the course having a thorough grasp of the major concepts and principles of compensation management and able to design and evaluate an organizational reward program.

71-646. The Dynamics of Business Negotiations
This course has three major objectives. Firstly, it introduces students to the analytical concepts necessary for effective business negotiations. Secondly, it provides a variety of applications that illustrate the importance of negotiations to the practice of management. Finally, the course provides students with the opportunity to practice business negotiations skills through a variety of experiential exercises. Because of the importance of the experiential exercises attendance at each class session is mandatory.

71-647. Diversity in the Workplace
The human rights legislation will provide the framework for discussions on valuing diversity in terms of gender, age, race, religion, ability, and other categories. The course will help students to acquire knowledge and skills they need as managers to deal with opportunities and challenges created by the diversity in the labour force. Lectures, research, and case discussions will be used.

71-648. Issues in Management and Labour Studies
A reading and research seminar dealing with major concepts and important current problems in the areas covered by Management and Labour Studies. The precise topic to be covered in a particular term will vary according to current interest and faculty availability, and will be announced in the previous term.

3.3.4 FINANCE

72-670. Investment Analysis and Management
Economic background to security 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 government, industrial, financial and public utility securities; portfolio management.

72-671. Portfolio Management
Objectives of individual and institutional portfolios. Security selection, diversification, marketability, risk and return in portfolio construction. Timing and formula plans, bond

portfolio problems, performance measurement, trading problems, tax planning, supervision, quantitative techniques for portfolio management, regulations.

72-672. Cases in Financial Management
An advanced case course in financial management. Financial concepts and principles of managing a business enterprise are illustrated. Planning for the acquisition and use of funds so as to maximize the value of the firm is examined through the use of case analysis.

72-673. Topics in Finance
An in-depth study of topical issues in finance. A reading and research seminar dealing with major concepts and problems in the area of financial management. Precise topics to be covered during a term will vary according to current trends in the literature.

72-674. International Financial Management
A study of the problems facing the international financial manager. Topics include: international markets, spot and forward currency fluctuations, positioning corporate funds, investment decisions, hedging and exposure management.

3.3.5 MANAGEMENT SCIENCE

73-600. Statistical Techniques in Management
Intermediate and advanced statistical inferences. Topics in this course include Chi-Square Tests, Analysis of Variance, Multiple Linear Regression, Discriminant Analysis, Factor Analysis, and other selected topics.

73-602. Selected Topics in Operations Management
An in-depth study of selected topics in production and operations analysis. Topics may include inventory control, operations scheduling, quality and assurance, facilities layout and location, reliability and maintainability, recent advances in manufacturing technologies, etc.

73-603. Management Science
This course provides a study of selected topics in management science. Topics may include linear and integer programming, network models, dynamic programming, non-linear programming, Markov chains, Markov decision processes, stochastic models, etc.

73-604. Production Management
A study of managerial techniques for production and operations analysis. Topics may include capacity expansion, forecasting, aggregate planning, inventory control, material requirements planning, project scheduling, just-in-time inventory systems, etc.

73-605. Statistical Quality Design and Control
The course discusses some of the important statistical concepts and methods for quality design and improvement. Topics include statistical process control, development and interpretation of different kinds of control charts for variable and attribute data, design of experiments for product/process improvement. A software package may be required to simulate the operations of an actual process, and to illustrate the methodology.

3.3.6 MARKETING

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.

74-632. Seminar in Marketing Research
An advanced course assuming familiarity with the conceptual research process, characteristics of basic data collection modes and 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.

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 relationships, and approaches to total distribution system management.

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.

74-636. Advanced Advertising Management
An advanced study of the management 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 effectiveness. Consideration is also given to public policy issues including the legal, social, and ethical aspects of advertising.

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, experiential, or other format.

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.

3.3.7 BUSINESS STRATEGY AND ENTREPRENEURSHIP

75-621. Small Business Consulting
Students learn the field of consulting by working on small business consulting projects under faculty supervision in the Business Resource Centre. Working in teams, students experience the entire range of the small business consulting activities from searching for clients and proposal writing to performing the research and presenting final reports.

75-622. Advanced Small Business Consulting
The second course in a two semester sequence on consulting, this course hones the students consulting skills through practice. Students assume more responsibility increasingly complex projects and selected students assume team leadership and management roles in the business resource centre. (Prerequisite: permission of the instructor.)

75-680. Managing the International Enterprise
This survey course gives students a basic understanding of the international business environment, and the decisions that managers make in international firms. The course begins by considering the historical development of international business and the current global focus of international firms. It then examines the global economic environment, including theories of trades and foreign direct investment, and balance of payments and international institutions- and the firm environment models for evaluating various aspects of the environment in order to select the best international strategy, and the best mode of entry for a particular location. Finally, the course briefly examines the functional decisions made in international firms—financial ,marketing, operational, and human resources decisions, and issues associated with international structure and control.

75-681. Global Strategy
Operating a firm in an international rather than a national environment presents the manager with many challenges and oppor-

tunities. Global strategy encompasses evaluation of the global environment to establish a fit with the firm's capability. The course focuses on issues connected with the development of strategies and their implementation management across international boundaries.

75-682. Manufacturing Strategy
This course examines the use of manufacturing and operations as weapons in the firm's competitive arsenal. It addresses strategic questions related to the choice of proper process technology, the determination of plant size and location, the extent of vertical integration and the continuous pursuit of quality and productivity.

75-685. Strategic Analysis and Planning
The purpose of this course is to present and discuss management of strategic change. Unlike the strategic management course that deals with the formulation and implementation of strategy, the emphasis here is on administering the planning process, illustrating techniques such as scenarios, and managing change. This includes investigating the formal and informal strategic decision-making process, administering systems that improve the process, and providing an atmosphere that promotes strategic thinking and the acceptance of change in an organization. The course will consist of a combination of case studies, seminars, and independent research. A prerequisite is that students should be familiar with the elements of strategic management.

75-690. Entrepreneurship: New Venture Formation and Management
Aiming at opening up the entrepreneurial option for students, this course examines entrepreneurship as an economic and a business phenomenon with special emphasis on the process of new venture creation. Through a mix of seminars, case studies, and field research, students explore the topics of finding new venture ideas, developing business ideas and business concepts, conducting feasibility studies, developing business plans, preparing deal structures and financing strategies, launching new ventures, and initial entrepreneurial management beyond the start-up phase. Students are expected to undertake a new venture creation project culminating with a detailed business plan.

75-692. Seminar in Strategic Management
This is an investigation and discussion of contemporary issues in strategic management and entrepreneurship. The topics to be covered will vary from term to term according to current developments in the Business world.

75-697. Field Study in Business
This is a six credit field study course in business research that lasts two semesters. Organized into multi-disciplinary teams, students research a significant problem in a cooperating organization. Students also study the organization and its business environment in order to understand the focal problem in its context. Students will be required to write up the findings of the study, and present (formally defend) the study to faculty. (A 6.0 credit course, offered over two terms.)

75-698. Strategic Management
This is the capstone course of the M.B.A. program. It integrates the knowledge gained in prior courses and focuses it on the functions of top management of an organization. Discussion of concepts and current practice are combined with case studies of strategic leadership and strategy formulation and implementation in a domestic and international environment. (Prerequisites: candidate-year standing and all other required courses.)

75-701. M.B.A. Co-op Work Term I

75-702. M.B.A. Co-op Work Term II

75-796. Major Paper

75-797. Thesis

4 CHEMISTRY AND BIOCHEMISTRY

4.1.1 GRADUATE FACULTY

Professors Emeriti

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

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

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

Professors

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.

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.

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

Loeb, Stephen J.; B.Sc., Ph.D. (Western Ontario), F.C.I.C.—1990.

Jones, William E.; B.Sc., M.Sc. (Mount Allison), Ph.D. (McGill)—1991.

Szabo, Arthur G.; B.Sc. (Queen's), M.A., Ph.D. (Toronto), F.C.I.C.—1994.

Associate Professors

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

Adeli, Khosrow; B.Sc. (Tehran), M.Sc., Ph.D. (Ottawa), Dipl. Clin. Chem. (Toronto)—1988.

Green, James R.; B.Sc. (Windsor), Ph.D. (Waterloo)—1989.

Christopoulos, Theodore K.; B.Sc., Ph.D. (Athens), Dipl. Clin. Chem. (Toronto)—1992.

Antonelli, David M.; B.Sc., Ph.D. (Alberta)—1997

Assistant Professors

Dutton, Philip J.; B.Sc., Ph.D. (Victoria)—1991.

Adjunct Professors

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

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

Spitz, Werner U.; M.D. (Hadassah); Pathologist, Macombe Munroe Counties Medical Examiner—1978.

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

Yee, George E.; M.D. (Manitoba), F.R.C.Path.; Medical Director, Medical Laboratories of Windsor—1986.

Cheung, Raphael M.C.; M.D. (Toronto), F.R.C.P.(C); Medical Director, Lipid Clinic, Windsor Western Hospital—1988.

Drury, Craig F.; B.Sc., M.Sc. (McGill), Ph.D. (Guelph); Agriculture Canada—1991.

Kovacs, Gregory J.: B.Sc., M.Sc., Ph.D (Toronto)—1991.

Nazri, Gholam-Abbas; B.S., M.S. (Tehran), Ph.D. (Case Western Reserve); Scientist, General Motors Research, Warren—1991.

Adjunct Assistant Professors

Artiss, Joseph D.; B.Sc., M.Sc., Ph.D. (Windsor); Associate Professor of Pathology, Wayne State University, Detroit—1993.

Shore, Joseph; B.S. (Cornell), M.S. (Massachusetts), Ph.D. (Rutgers); Department of Pathology, Henry Ford Hospital, Detroit — 1996.

Keys, Stephen; B.Sc. (Toronto), Ph.D. (British Columbia), Fellowship in Clinical Chemistry (Windsor), FCACB —1997.

4.2 Programs of Study

Facilities are provided for students wishing to proceed to the degrees of Master of Science and Doctor of Philosophy. Students may enrol in graduate studies in Chemistry and Biochemistry. One field of study in Chemistry is Clinical Chemistry, which is approved by the Canadian Academy of Clinical Biochemistry and is accredited by the Commission on Accreditation in Clinical Chemistry (U.S.A.).

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 courses, including 59-710 (or four courses if the candidate enters the program with an M.Sc. degree) chosen from the available graduate offerings in the student's field or from related and cognate courses, with the approval of the Program Committee. Credit for up to a maximum of two courses may be given for equivalent courses taken as an undergraduate, provided that a grade of at least A- was achieved in the courses.

Ph.D. Candidates who are studying in the field of Clinical Chemistry are required to take the following core courses: 59-564, 59-680, 59-681, 59-682, 59-683, 59-684, and 59-686. Candidates who have taken any of these courses for an M.Sc. degree will be given credit for those courses successfully completed. They will also participate in a Hospital Rotation Program which is designated as the course, 59-689.

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

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

3) *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.

4) *Doctoral Committee:* The Ph.D. committee is chosen in the manner described in 1.5.2. This committee will meet with the student annually to review his or her progress. As part of this review the student will present a short seminar on his or her research progress.

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

(a) *Qualifying Examination for Admission to the Ph.D. Program:* Students who wish to transfer to a Ph.D. program from an M.Sc. program will be required to satisfactorily complete an oral comprehensive examination in the first twenty-four months of graduate study prior to transfer. For students who enrol directly in a Ph.D. program, the qualifying examination must be completed within the first twelve months of the doctoral program. The examination will take the form of a ten to twenty minute presentation of the student's research work to date, followed by a question and answer session in which the student's depth of knowledge of the field of research and the underlying chemical and/or biochemical principles will be examined. The stu-

dent may be assessed by a committee of three members comprised of the research advisor and two other faculty members from Chemistry and Biochemistry. As a guide to the student, the committee may provide some directed readings prior to the examination. The student will be expected to understand the subject matter and background of these topics. A grade of Pass or Fail will be given. In the event of a failing grade, the student may be allowed a second examination within one month, or a specific assignment for subsequent evaluation at the discretion of the examining committee. It may be possible that the student will not be allowed to repeat the examination.

(b) *Final Examination:* Each candidate will take a final oral examination in defense of the dissertation on the recommendation of the doctoral committee. An external examiner, chosen for acknowledged scholarship in the appropriate field of chemistry, biochemistry or clinical 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 Executive 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 Executive Dean of Graduate Studies and Research or delegate.

4.2.2 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 courses chosen from the available graduate offerings in the student's field or from related and cognate courses, with the approval of the Program Committee. Credit for 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.

M.Sc. candidates in Clinical Chemistry will be required to take the following core courses: 59-680, 59-681, 59-682, and 59-683. These candidates will also take a Practical Laboratory Methodology course (59-589).

The M.Sc. program in Clinical Chemistry is accredited by the Commission on Accreditation in Clinical Chemistry (U.S.A.). This program has been approved by the National Registry in Clinical Chemistry (U.S.A.) as fulfilling all of the academic requirements and a portion of the practical experience for certification by examination at the Clinical Chemist level.

2) *Seminars:* In addition to the above course work, students must attend the regular departmental Seminar (59-795) throughout their M.Sc. studies and present at least one seminar on their research as a fulfilment of this requirement.

3) *Thesis:* A student must undertake original research and embody the results in a thesis (59-797). The student will then be examined by a 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.

4.2.3 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 other related fields, provided that their training in chemistry and biochemistry is demonstrably adequate.

Program Requirements

1) *Residence Requirements:* The postdoctoral diploma program is of three years duration on a full-time basis, i.e., thirty-six 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 Biochemistry (59-680 and 59-681), Biochemical Diagnosis of Disease (59-682 and 59-683), Pathophysiology (59-684), Advanced Bioanalytical Topics (59-686) and DNA Science and Diagnostics (59-564).

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

(c) Clinical Chemistry Laboratory Methodology (59-589) and Clinical Chemistry Research and Development (59-689) for a total of 2000 hours. These courses will be in the form of practical laboratory experience at one or more of the following hospitals in Windsor: Hotel Dieu/Grace Hospital, Windsor Regional Hospital; or at Henry Ford Hospital or Detroit Medical Centre in 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. These courses will be assigned to the trainees as required in order to give them a thorough background in the appropriate areas of Chemistry, Biochemistry, and Biology. Advanced standing will normally be granted for courses previously taken.

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 Director of the Clinical Chemistry Program will establish the trainee's diploma committee in consultation with the Executive Dean of Graduate Studies and Research. This committee will consist of four members, three of whom will be chosen from Chemistry and Biochemistry, 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 (seventeen 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 Chemistry and Biochemistry 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.

4) Two months will be spent in molecular diagnosis of disease and DNA diagnostics.

Third Year (12 months)

In the last year, the trainees will train in other areas of laboratory medicine including immunology, hematology, and microbiology. The trainees will spend at least eight weeks in each of the above areas at one of the designated hospitals. The remaining time will be devoted to research at either the university or one of the hospital sites. During this period the trainees will also be exposed to informatics and management aspects of the clinical laboratory.

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 Academy of Clinical Biochemistry 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. Topics courses may be taken several times provided the course content is different. Where prerequisites are not stated, consent of the instructor is required.

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

59-531. Special Topics In Organic Chemistry
Topics may include polymer chemistry, natural product chemistry, physical organic chemistry, or design and execution of organic syntheses. (Prerequisite: 59-331 or consent of instructor.) (2 lecture hours a week.)

59-535. Advanced Organic Chemistry
Physical organic chemistry. Includes molecular orbital theory, stereochemistry, thermodynamics, and reaction mechanisms. (Prerequisite: consent of instructor.) (2 lecture hours a week.)

59-541. Statistical Thermodynamics
Development of statistical thermodynamics and its application to theories of gases, condensed states, and chemical equilibria. (2 lecture hours a week.)

59-542. Fourier Transform Nuclear Magnetic Resonance Spectroscopy
Theory and applications of FT NMR in chemical problems, special techniques such as T1, T2 measurements, cross polarization, "magic angle" spinning, 2D spectroscopy, DEPT pulse sequences, and others will be covered. (2 lecture hours a week.)

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

59-546. Advanced Topics in Spectroscopy
Electronic and vibrational spectroscopy of gases, liquids, and solids. Theory and practice of infrared and Raman spectroscopy. Theory and applications of electron spin resonance spectroscopy. (2 lecture hours a week.)

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

59-552. Topics in Inorganic Chemistry and Organometallic Chemistry
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.)

59-553. X-ray Crystallography
Theoretical and experimental aspects of single crystal X-ray diffraction methods for the determination of molecular structures. (2 lecture hours a week.)

59-564. DNA Science and Diagnostics
An advanced lecture and laboratory course dealing with DNA science and the application of DNA technology in the understanding and diagnosis of human disease. The lectures cover the biochemistry and expression of DNA and RNA at the molecular level, the theory and practice of recombinant DNA technology and the application of DNA probes in the diagnosis of human disease. The laboratory component involves construction and cloning of a recombinant DNA molecule. (Prerequisites: 59-360, 59-361, and 59-365, or consent of instructor; antirequisite: 59-468.) (2 lecture hours, 1 laboratory hour a week.)

59-565. Membrane Biochemistry
The structure and function of artificial and natural membranes. Special consideration will be given to the identification and function of membrane proteins. (Prerequisites: 59-360 and 59-361 or 59-362 and 59-363, or equivalent.) (2 lecture hours a week.)

59-570. Advanced Quantum Chemistry
Perturbation and variation theories. Theories of many electron atoms and general theories of chemical bonds in diatomic and polyatomic molecules. (Prerequisite: 59-341 or equivalent.) (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. (Prerequisites: 59-360 and 59-361 or 59-362 and 59-363, 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 500 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 term. 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; (b) to spend one term working in an agreed industrial setting; the quality of work will be assessed by the supervisory committee. This work may be related to but not part of the research undertaken in 59-797 or 59-798. (Prerequisite: approval of the Program Committee.)

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

59-620. Analytical Spectroscopy of Surfaces
Surface spectroscopic techniques and their application to the analysis of chemisorbed and physisorbed species and monomolecular layers. (Prerequisite: 59-321 or equivalent.) (2 lecture hours a week.)

59-630. Synthetic Methods in Organic Chemistry
A study of some important organic reactions with emphasis on their practical application in synthesis. (Prerequisites: 59-330 and 59-331, or consent of instructor.) (2 lecture hours a week.)

59-631. Advanced Topics in Organic Syntheses
The design, execution, and methodology of total syntheses of complex molecules will be discussed. Emphasis will be placed on both retrosynthetic pathways and execution. (Prerequisites: 59-330 and 59-331, or consent of instructor.) (2 lecture hours a week.)

59-633. Current Topics in Organic Chemistry
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. (Prerequisites: 59-331 or consent of instructor.) (2 lecture hours a week.)

59-634. Advanced Topics in Organic Chemistry
Special topics in organic chemistry will be described. Some of these may include natural product chemistry, organometallic chemistry or heterocyclic chemistry. (Prerequisite: consent of instructor.) (2 lecture hours a week.)

59-636. Advanced Topics in Physical Organic Chemistry
A survey of structure, mechanism, and theory in organic chemistry. (Prerequisite: consent of instructor.) (2 lecture hours a week.)

59-651. Organometallic Chemistry
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. (2 or 3 lecture hours a week.)

59-653. Advanced Topics in Organometallic Chemistry
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, ESR and NMR spectroscopy, and photoelectron spectroscopy. (2 lecture hours a week.)

59-660. Protein Chemistry I
Protein chemistry; chemical modification, protein folding, post-translational modification, lipoproteins, and glycoproteins. (Prerequisite: 59-365 or equivalent.) (2 lecture hours a week.)

59-661. Protein Chemistry II
Biophysical chemistry; advanced kinetic techniques, pre-steady state, perturbation based methods, review of instrumentation, and examples of how these techniques are currently used to solve biochemical problems. (Prerequisite: 59-660.) (2 lecture hours a week.)

59-663. Special Topics in Biochemistry
(Prerequisites: 59-360 and 59-361, or 59-362 and 59-363, or equivalent.) (2 lecture hours a week.)

59-671. Special Topics in Theoretical Chemistry
Topics to be selected by registrants but will generally be molecular orbital calculations for organic and inorganic chemists. (2 lecture hours a week.)

59-680. Clinical Biochemistry I
An advanced lecture course dealing with the application of current techniques in clinical chemistry in the diagnosis of human disease. The various aspects of a clinical chemistry laboratory and its role in laboratory medicine will be discussed as well as the new advances in the development of clinical laboratory instrumentation.

59-681. Clinical Biochemistry II
The continuation of Clinical Biochemistry I. An advanced lecture course dealing with the application of current techniques in clinical chemistry in the diagnosis of human disease. The various aspects of a clinical chemistry laboratory and its role in laboratory medicine will be discussed as well as the new advances in the development of clinical laboratory instrumentation.

59-682. Biochemical Diagnosis of Human Disease I
An advanced lecture course dealing with the biochemistry of human disease, including various aspects of physiological chemistry.The molecular and biochemical basis of human disease will be discussed together with current approaches to the laboratory diagnosis of human disease. The major human organ systems will be discussed in terms of physiology, biochemistry, pathophysiology, and laboratory investigation.

59-683. Biochemical Diagnosis of Human Disease II
The continuation of Biochemical Diagnosis of Human Disease I. An advanced lecture course dealing with the biochemistry of human disease, including various aspects of physiological chemistry.The molecular and biochemical basis of human disease will be discussed together with current approaches to the laboratory diagnosis of human disease. The major human organ systems will be discussed in terms of physiology, biochemistry, pathophysiology, and laboratory investigation.

59-684. Pathophysiology
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. 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. (Prerequisites: Biology 55-140 and 55-141, 59-360 or 59-362, or equivalent, and consent of instructor.) (2 lecture hours a week and demonstrations.)

59-686. Advanced Bioanalytical Topics
(Prerequisite: 59-360 or 59-362, 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 500 hours.)

59-710. The Research Proposal
This course focuses on the development and presentation of a research proposal, as well as the cultivation of a wide base of knowledge of the chemical and biochemical literature. Techniques of research proposal composition, with particular reference to subject area, budgetary considerations, and written and oral presentation techniques will be discussed. The student will be required to develop and defend his or her own research proposal in chemistry and/or biochemistry. The subject of this proposal must not be from the research work undertaken for the Ph.D. thesis. A written proposal will be submitted to the student's advisory committee and will be followed by an oral presentation and defense of the proposal. The advisory committee will evaluate the originality, the significance, the clarity of the written and oral presentation, and the student's knowledge of the area in the defense. (Prerequisite: registration in the Ph.D. program. The oral presentation and proposal defense will take place during the term of registration.)

59-795. Seminar

59-796. Major Clinical Chemistry Critique

59-797. Master's Thesis

59-798. Doctoral Dissertation

5 COMPUTER SCIENCE

5.1.1 GRADUATE FACULTY

Professors

Kent, Robert D., B.Sc. (British Columbia), M.Sc., Ph.D. (Windsor)—1982.

Bandyopadhyay, Subir; B.Sc., B. Tech., M. Tech. (Calcutta), M. Math. (Waterloo), Ph.D. (Calcutta)—1984.

Frost, Richard A.; B.Sc. (Hons.) (London), M.Sc. (Aberdeen), Ph.D. (Strathclyde)—1987.

Associate Professors

Tsin, Yung H.; B.Sc. (Nanyang), M.Sc. (Calgary), Ph.D. (Alberta)—1985.

Morrissey, Joan; B.Sc., Ph.D. (Dublin)—1989.

Li, Liwu; M.Sc. (Beijing), Ph.D. (Alberta)—1991.

Park, Young G.; B.Sc. (Seoul), M.Sc. (K.A.I.S.T.), M.Sc., Ph.D. (N.Y.U.)—1992.

Assistant Professors

Jaekel, Arunita; B.Eng. (Calcutta), M.Sc., Ph.D. (Windsor)—1995.

Ezeife, Christie; B.Sc. (Nigeria), M.Sc. (British Columbia), Ph.D. (Manitoba)—1996.

Chen, Xiao J.; B.C.S. (Beijing), Ph.D. (Pisa)—1997.

Tjandra, Indra O.; Dipl.-Informatiker (Munich), Dr.rer.nat (Karlsruhe)—1997.

5.2 Programs of Study

5.2.1 THE MASTER OF SCIENCE DEGREE

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 degree or equivalent with ade-

quate specialization in Computer Science and with at least B standing in the major subject may be admitted to a minimum one-year Master's program (II Master's Candidate). A student with a general Bachelor's degree with a major in Computer Science or an honours Bachelor's degree in a related subject and with at least B standing in the major subject may be admitted to a minimum two-year Master's program (I Master's Qualifying followed by II Master's Candidate) or to a minimum two-year II Master's Candidate program depending upon prior qualifications.

Students with deficiencies in some areas of Computer Science may be required to make up those deficiencies by registering in undergraduate courses prior to or as part of their graduate program or by following a program of supervised reading.

Program Requirements

1) The requirements for the degree of Master of Science may be satisfied by pursuing a program of studies consisting of six approved courses and a thesis. (A thesis is a major research project which must involve substantial innovative work generally culminating in original results.)

2) Courses 60-510 and 60-520 will be required of all candidates. Master's II students must register in 60-510 in the first term of their studies.

3) With prior approval, candidates may be permitted to include at most one advanced undergraduate computer science course in their program.

4) With prior approval, candidates may be permitted to include graduate courses offered by other departments in their program.

5) No student will be allowed to include in his or her program a course which substantially overlaps a course previously taken.

6) All candidates' programs are subject to approval by the Computer Science program graduate committee.

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

The Master's committee is chosen in the manner described in 1.6.2 of this Graduate Calendar. The final examination will take the form of an open seminar in the presence of the Master's committee. The examination will be open to the public.

Each student must obtain approval of his or her program, in writing, from the graduate coordinator within three weeks of registration. Subsequent changes require written approval from the graduate coordinator.

5.3.1 COURSE DESCRIPTIONS

Not all of the courses listed below will necessarily be offered in any one year. A component of certain courses will be offered in conjunction with an advanced undergraduate course; in such cases the undergraduate course work will comprise one half of the graduate course.

All courses are restricted to students enrolled in the Master's II Computer Science program who have all undergraduate qualifying courses and who have approval from the instructor and Computer Science program graduate committee.

Note: Certain courses listed below require more than one term to complete. Unless such courses are officially graded as "In Progress" (IP), regulations for incomplete grades will apply (see 1.4.3).

To remove any suggestion that the word "engineering" in the context of courses in Computer Science may be taken to cover the meaning of "engineering" as used in the context of courses in Professional Engineering, it is hereby acknowledged that Software Engineering is a collection of principles, models, methods, and techniques for the development, maintenance, evolution and reuse of software that meets functional, performance and quality requirements in an economic and competitive manner.

60-510. Background Reading
The purpose of this course is to prepare students for conducting the specific research on which their major paper or thesis will be based. Students are required to complete a thorough literature search on the general

area in which they intend to conduct research and to undertake extensive supervised reading. Students must submit a comprehensive survey of relevant research, together with an annotated bibliography of important papers, theses, books, and conference proceedings. The survey should include a "citation lattice" indicating clearly the major papers in the area. The bibliography should include names and current addresses of scientists working in the student's chosen area and also a list giving details of relevant forthcoming conferences and workshops relevant to the student's chosen research area. Students may not register in 60-510 until they have completed all undergraduate qualifying courses required. This is the first graduate course in which students must enrol.

60-511. Advanced Software Engineering
Development and maintenance of software systems that satisfy their specifications. Topics include integrating informal and formal software design methodologies, software reuse, and software reliability.

60-512. Software Engineering for Distributed Systems
This course introduces to the students both formal and informal techniques used in software specification, verificaton and testing. The concentration is put on the advanced methods and techniques in dealing with large-scale distributed concurrent systems. The aim of the course is to provide graduate students the opportunity of obtaining strong background and skills in developing complex software systems for their future work in industry.

60-513. Topics in Software Engineering
Some advanced selected topics in software engineering will be discussed in this course. Topics include software quality engineering, formal methods in software verification, and reverse engineering of software.

60-520. Seminars and Computing Tools
Candidates are required to attend Computer Science seminars throughout their M.Sc. studies and, during each academic year, to present one seminar on a topic approved by the program chair. Students are also required to investigate, through reading and experimentation, eight "computing tools" including, for example, parser generators, database management packages, simulators, typesetters, synthesizer generators, VLSI design packages, and state-of-the-art programming languages and environments. Each candidate will be required to submit a report comprising summary descriptions and evidence of successful non-trivial use of the eight tools investigated, together with critical reviews of four particular tools. The selection of tools to be investigated will be made by the student with the approval of the program coordinator within the first two weeks of the term. (This course has the same weight as the other courses, but is extended over a full academic year.)

60-535. Distributed Query Processing
This course will cover topics such as algorithms and techniques for query optimization in distributed databases; methods for evaluating algorithms and experimental procedures. Each student will be required to survey a topic in the area and present a report. Students will also be required to implement algorithms and comparatively evaluate techniques.

60-537. Database Management Systems
Current developments in selected aspects of database management. Topics covered may include data models, database languages, database logics, database machines, and transaction management.

60-538. Information Retrieval Systems
Fundamental principles and advanced topics in the design of information retrieval systems. Theoretical as well as practical aspects will be discussed.

60-539. Emerging Non-traditional Database Systems
Course focuses on the study of one or more advanced, new and non-traditional database system(s) like Data Warehousing and Mining, Video Database Systems, Mobile Database Systems, and Distributed object-oriented Datbase Systems. Topics discussed include system architecture, components, features, implementation, applicatoins and research issues. Both theoretical and practical contributions to further

improve the system under study remain part of the course objective.

60-540. Foundations of Programming Languages
Current developments in the theory and practice of programming language design and implementation. Various languages will be considered and may include imperative, applicative, logic, constraint, object-oriented, and equational languages.

60-550. Visualization and Rendering Techniques
Current developments in computer animation and rendering techniques. Introduction to visualization methods, algorithms, design and current system models. Integrated roles of modelling, simulation and visualization.

60-552. Computer Graphics
Current developments in computer graphics. Topics covered will include hardware, software, interfaces, graphics standards, data structures, rendering algorithms, and visualization.

60-554. Advanced Algorithms
Methodology for developing efficient algorithms. Advanced data structures. Intractable computational problems and approximation algorithms.

60-555. Parallel Computation
Introduction to to fundamental issues in parallel computation. Models of parallel computation such as vector machine, shared memory model, systolic array. Data parallel abstraction. Parallel algorithms for numeric and non-numeric problems.

60-560. Computer Architecture
Current developments in computer architecture. Topics will include parallel processing architectures and application/language specific architectures.

60-567. Advanced Computer Networks
Topics will include present day high-speed broadband networks, optical networks, wireless communications, etc.

60-572. Topics in Artificial Intelligence
A programming-oriented introduction to selected topics in artificial intelligence. Topics to be covered will include: AI programming techniques, pattern matching systems, knowledge representation schemes, AI software engineering tools, and developments in software/hardware integration.

60-588. Advanced Programming Languages
Current developments in the design, application, and implementation of pure lazy functional programming languages.

60-589. Knowledge Systems
Current developments in the theoretical and practical aspects of knowledge systems. In particular, the course will be concerned with the integration of database and AI theories and technologies.

60-590. Directed Special Studies
With approval of the program coordinator, a student may undertake to write an original paper on a specialized topic which would enhance his or her program of study. The course will involve directed supervised reading and informal discussion with the graduate supervisor. The work undertaken in fulfilling the requirements for this course will not be counted directly for credit in the evaluation of either 60-796 (Major Paper) or 60-797 (M.Sc. Thesis).

60-592. Selected Topics
Selected advanced topics in computer science.

60-797. M.Sc. Thesis
Students may not register in 60-797 until they have completed 60-510.

6 ECONOMICS

6.1.1 GRADUATE FACULTY

Professors

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

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

Fan, Yanqin; B.Sc. (Jilin), M.A., Ph.D. (Western Ontario)—1989.

Gencay, Ramazan; B.Sc. (Middle East Tech. U., Ankara), M.A. (Guelph), Ph.D. (Houston)—1991.

Associate Professors

Charette, Michael F.; B.A., M.A. (Windsor), Ph.D. (Western Ontario)—1976.

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

Anglin, Paul; B.Sc. (Toronto), M.A., Ph.D. (Western Ontario)—1988.

Wen, Quan; B.Sc. (Jilin), M.A., Ph.D. (Western Ontario)—1991.

Suh, Sang-Chui; B.A. (Korea), M.A. (Taiwan), Ph.D. (Rochester)—1994.

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 minimum one-year Master's program. Applicants are expected to have completed one course in each of calculus, linear algebra and statistics. Applicants who have not completed the above mathematics requirements are encouraged to do so prior to beginning their graduate course work.

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 advisor.

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;
(b) at least one course in microeconomics, one in macroeconomics and one in econometrics. Students intending to enter a Ph.D. program are advised to take 41-501, 41-502, 41-503, 41-504, 41-541, and 41-542.

6.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in every term. Courses are normally three hours a week.

41-501. Microeconomics
An intensive review of the theory of the firm and consumer theory.

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

41-503. Microeconomic Theory II
Additional topics in microeconomic theory.

41-504. Macroeconomic Theory II
Additional topics in macroeconomic theory.

41-510. Theory of International Trade
An introduction to the problem of international trade goods and services, and the related issues of exchange rate determination and balance of payments control.

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 adjustment; distribution of income; selected policy issues.

41-519. Social Choice and Cost-Benefit Analysis
This course covers the problems of social choice and institutions of collective decision making. Applications may include topics such as evaluating public sector projects and the response to externalities.

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

41-541. Econometric Theory I
The general linear model, selected single equation problems, and an introduction to simultaneous equations methods.

41-542. Econometric Theory II
Additional topics in econometric theory (Prerequisite: 41-541.)

41-543. Applied Econometrics
The specification, estimation and testing of economic models. Emphasis will be on the classical linear regression model, the implications or violations of its basic assumptions and diagnostic testing. (This course is not intended for students who take 41-541.)

41-550. Monetary Theory
A survey of recent developments in the theory of money and monetary control of an economy, in addition to selected topics.

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.

41-565. Economic Development
A review of selected theoretical and policy issues based upon recent literature on the economic growth and development of less-developed economies.

41-575. Economics of Transition
This course studies the problems associated with significant changes in the economic organization of an entire economy. Possible topics include the role and effectiveness of common incentive systems and the effects of an entrenched bureaucracy.

41-580. Models of Strategic Behaviour
A review of game theory showing how strategic reasoning can be used as a tool in decision theory. Topics include solution concepts for Normal form and Extensive form games, plus applications.

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.

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

41-796. Major Paper
Students are expected to attend the major paper seminar in at least two terms.

Undergraduate senior courses, which may be assigned at the discretion of the program coordinator 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 also the program's homepage for additional information (http://www.uwindsor.ca/faculty/socsci/eco/grad.html.)

7 EDUCATION

7.1.1 GRADUATE FACULTY

Professors

Awender, Michael A.; B.A., M.A. (Windsor), M.Ed. (Toronto), Ph.D. (Claremont)—1975.

Laing, Donald A.; B.A., M.A., Ph.D. (Toronto)—1976. (Co-ordinator of Graduate Studies).

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

Kuendiger, Erika; Staatsexamen (Aachen), Dr. Phil. (Saarbruecken)—1984.

Morton, Larry; B.A. (Waterloo), B.Th. (O.B.C.), B.Ed. (O.T.E.C.), M.A., Ph.D. (Toronto)—1988.

Associate Professors

Innerd, Wilfred L.; B.A., Dip. Ed., M.Ed. (Durham), Ph.D. (Pittsburgh)—1976.

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

Diffey, Norman R.; B.A., Dip. Ed. (Oxon.), M.A. (McMaster), Ph.D. (McGill)—1987.

Shantz, Doreen; B.A. (Wilfrid Laurier), M.Ed., Ed.D. (Toronto)—1987.

Heald-Taylor, B. Gail; B.A. (McMaster), M.Ed. (Brock), Ed.D. (Toronto)—1988.

Flewelling, Janet; B.A. (Guelph), B.Ed. (Queen's), M.Ed., Ed.D. (Toronto)—1990.

Assistant Professors

Kellenberger, David; B.A.Sc., B.Ed., M.Ed. (Windsor), Ph.D. (Toronto)—1990.

Hurley, Noel P.; B.A., B.Ed., M.Phil. (Memorial), Ph.D. (Ottawa)—1991.

Starr, Elizabeth; B.A. (Guelph), B.Ed. (Queen's), M.Ed. (Acadia), Ph.D. (Alberta)—1992.

7.2 Programs of Study

7.2.1 THE MASTER OF EDUCATION DEGREE

The objectives of the Master of Education program are to provide candidates with opportunities to develop:

1. a commitment to intellectual enquiry and scholarship as a basis for continuing professional growth;

2. a knowledge of current theory and research relevant to the curriculum and administration of elementary and secondary schools; and

3. an understanding of, and respect for, the principles of educational research.

Admission Requirements

1) In addition to the requirements set forth in 1.3 and 1.6.1 for admission to the College of Graduate Studies and Research, and to programs leading to a Master's degree, applicants to the Master of Education program must:

(a) present an undergraduate degree from an approved university with standing in the B range overall and at least B standing in the final two years of study;
(b) present a Bachelor of Education degree with standing in the B range or the equivalent professional preparation;
(c) have at least one year of successful professional experience in education;
(d) submit a "Statement of Personal Objectives" outlining the applicant's professional background and reasons for seeking a graduate degree in education.

2) In exceptional cases, the Faculty may admit applicants holding an honours Bachelor's degree or the equivalent with standing in the B range overall and at least a B standing in the final two years of study who can demonstrate experience, interests and mo-

tivation that make them appropriate applicants to the program.

3) *Advanced Standing:* Applicants may be granted credit for up to two graduate term courses completed before application to the Master of Education program and taken in another program at the University of Windsor or at another accredited institution. Requests for advanced standing will be considered only at the time of application and only for graduate courses completed with at least B standing. The Faculty will not grant credit for any course taken more than seven years before all the requirements for the degree have been fulfilled.

4) Admission to the Master of Education program is to the II Master's Candidate level.

Program Requirements

1) Candidates for the Master of Education degree will pursue studies in one of two areas of concentration:

(a) Curriculum Studies;
(b) Educational Administration.

2) Candidates will follow either a major paper or a thesis program. Those who wish to include a thesis in their program must request approval from the Graduate Committee of the Faculty. Normally, the Committee will not consider such requests from part-time candidates until four courses have been completed.

Additional information concerning the procedures for theses and major papers may be obtained from the Coordinator of Graduate Studies.

3) In addition to the general requirements for a Master's degree set forth in 1.6.2 and 1.6.3, all candidates are required to complete successfully the equivalent of a minimum of ten term courses and the comprehensive examination in Education. Specific requirements include:

(a) two compulsory courses, 80-527 (Research in Education) and 80-510 (Statistics in Education);
(b) a research project resulting in either a major paper (80-796), with the value of two term courses, or a thesis (80-797), with the value of four term courses;
(c) candidates in Curriculum Studies proceeding to the degree by major paper, are required to complete 80-524 (Fundamentals of Curriculum Theory and Development) and five additional courses at least three of which must be chosen from the Curriculum Studies options;
(d) candidates in Educational Administration proceeding to the degree by major paper are required to complete 80-529 (Theories of Educational Administration) and five additional courses, at least three of which must be selected from the Educational Administration options;
(e) candidates proceeding to the degree by thesis must complete either 80-524 or 80-529 as appropriate and three additional courses, at least two of which must be selected from the option courses listed for their area of concentration.
(f) in the case of candidates following thesis programs, the comprehensive examination is the responsibility of their thesis committees.

4) Candidates with previous courses in research methods or statistics may request the Graduate Committee of the Faculty for permission to substitute other courses for either one or both of 80-527 and 80-510.

5) *Transfer Credit:* While the student is registered in the M.Ed. program, credit for up to two graduate term courses normally may be applied towards the degree from another Faculty at the University of Windsor or transferred from another accredited institution. Candidates must receive the approval of the Dean of the Faculty of Education or designate before taking such courses. Credit will be granted only for courses completed with at least a B standing.

6) Full-time candidates must complete all requirements for the degree within three years of their first registration.

7) Part-time students may not carry more than two courses in any term and must complete all requirements for the degree within five years of their first registration.

STUDIES IN THE AREA OF CONCENTRATION

Common Courses

81-503. The Psychology of Learning and Teaching

80-524. Fundamentals of Curriculum Theory and Development
82-529. Theories of Educational Administration
80-530. Qualitative Methods in Educational Research
82-550. Issues in Education
81-551. Microcomputers for Educators
80-554. Fundamentals of Instructional Design
80-555. Strategies for the Implementation of Change in Education
81-558. Psychology of Learning Problems
82-565. Sociological Aspects of Education
82-566. Interpersonal Relationships in Education

Curriculum Studies Options

80-534. Individual Reading
81-537. Language Arts in the Elementary School
81-539. Second Language Teaching: Theories and Applications
81-541. The Social Sciences Curriculum
81-547. Learning in Science
81-552. Curriculum Developments in Mathematics Education
81-553. The Teaching and Learning of Mathematics
81-556. Approaches to Literacy Development
81-557. The English Language Arts
81-572. Theory and Practice in Early Childhood Education

A course may be selected from those listed under Educational Administration.

Educational Administration Options

80-531. Supervision of the Instructional Process
82-532. Organization and Administration of the School
80-534. Individual Reading
82-535. Organizational Behaviour in Educational Institutions
82-560. Politics of Education
82-561. Legal Aspects of Education
82-562. Educational Finance

7.3.1 COURSE DESCRIPTIONS

All courses will not necessarily be offered each year.

80-510. Statistics in Education
This course will deal with the following: descriptive and inferential statistical procedures; commonly used one- and two-sample tests; an introduction to analysis variance and corresponding research designs. (Prerequisite: 80-527 or permission of the instructor.) (3 lecture hours a week.)

80-524. Fundamentals of Curriculum Theory and Development
A survey of the major theories of curriculum that have influenced education Canada. An outline of the techniques employed in curriculum development, including sources of influence and control, specification of outcomes, selection and coordination of activities, strategies, resources and evaluation. (3 hours a week.)

80-527. Research in Education
An overview of educational research methods: e.g., the interpretation of research literature, the identification and use of data bases, the design of research proposals and the application of specific methods to research projects. (3 lecture hours a week.)

80-530. Qualitative Methods in Educational Research
This course will examine the concepts and methods involved in carrying out educational research through naturalistic observation, participant observation, case studies, and other qualitative approaches. (3 lecture hours a week)

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 technical skills, (2) the development of competence in interpersonal and group skills, and (3) a general examination of supervisory approaches. (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 available courses to pursue those interests through independent, supervised study. (Permission of an advisor and of a subcommittee of the Graduate Studies Committee is required.)

80-554. Fundamentals of Instructional Design
This course will consider current principles, research, theory and practice in the design, development, implementation and evaluation of instruction within various learning and teaching settings. (3 hours a week.)

80-555. Strategies for the Implementation of Change 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.)

80-796. Major Paper
Conducted under the guidance of at least two members of the Faculty, a major paper may analyze and evaluate a substantial body of scholarly literature or describe or interpret a research project undertaken by the student. The major paper is subject to an oral examination (see Thesis or Major Paper, 1.6.3, and Program Requirements, 7.2.1).

80-797. Thesis
(See Thesis or Major Paper, 1.6.3, and Program Requirements, 7.2.1.)

81-503. The Psychology of Learning and Teaching
This course will provide students with an in depth view of psychological theory and research towards the understanding of learning and teaching. While both behavioural and cognitive perspectives will be discussed, the emphasis will be upon cognitive theory and application. Topics will include behaviourism, behaviour modification, information processing, metacognition, cognitive behaviour modification, cognitive strategy training, motivation and individual differences.(3 lecture hours a week.)

81-537. Language Arts in the Elementary School
This course will examine issues in language arts instruction in the light of current language theories. The focus is on current research and its practical application, with special emphasis on methods of instruction, teacher strategies, student activities and evaluation practices. (3 lecture hours a week.)

81-539. Second Language Teaching: Theories and Applications
This course reviews current thinking on the nature of language, communication and second-language learning and examines implications for teaching methods and curriculum design. (3 lecture hours a week.)

81-541. The Social Sciences Curriculum
An examination of trends and development of social science curricula. Curriculum theory will be applied to one or more of the social sciences within the context of provincial guidelines and the academic and professional qualifications of the students. (3 lecture hours a week.)

81-547. Learning in Science
This course will consider current research and theory in the promotion of science as a process and product. Included will be a critical survey of recent issues in science education. The focus will be on their implications for curriculum and practice at the classroom level. An examination of some of the major difficulties in the design, development, implementation, and evaluation of science curricula. (3 lecture hours a week.)

81-551. Microcomputers for Educators
A comprehensive survey of the uses of microcomputers in the classroom, including a discussion of current issues in the use of microcomputers by educators. (3 lecture hours a week.)

81-552. Curriculum Developments in Mathematics Education
This course will examine recent developments in curriculum, instruction, and evaluation in elementary and secondary mathematics education. Trends will be discussed in light of recent research findings, technological advances, and social goals. International comparisons will be made.

81-553. The Teaching and Learning of Mathematics
This course will examine research into students' learning and the teaching of mathematics. First, the motivational aspects of teaching and learning will be considered, including those related to the topic "Women in Mathematics." Second, specific mathematical topics will be dealt with, selected according to the interests of students. (3 lecture hours a week.)

81-556. Approaches to Literacy Development
This course will consider current research and theory in the development of reading and writing abilities, and will examine some aspects of assessing literacy development. (3 lecture hours a week.)

81-557. The English Language Arts
This course will examine current theories and issues in the English Language Arts with particular focus on their implications for curriculum and practice in the intermediate and senior divisions. Current issues at the local or provincial level, determined by the group, may be examined in detail. (3 lecture hours a week.)

81-558. Psychology of Learning Problems
This course will review current theories of learning disabilities and learning problems. Various approaches to diagnosis and remediation will be presented. Students will be expected to discuss case study examples 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.)

82-529. Theories of Educational Administration
This course will examine current knowledge in educational administration. Theory, research, and the practice of leadership within the educational system will be the main foci. Emphasis will be placed on administrative problems, such as staff development, team building, and motivation. (3 lecture hours a week.)

82-532. Organization and Administration of the School
This course will consider and analyze the many variables impacting upon school administrators as they organize their schools. The effects of administrative theory, past and present, will be considered. A case study approach will be taken to the problems of day-to-day operation. (3 lecture hours a week.)

82-535. Organizational Behaviour in Educational Institutions
A study of theory and research in the socio-behavioral sciences which concerns the behaviour of individuals and groups in educational settings. Attention will be given

to the implications of such theory and research for administration in educational institutions. (3 lecture hours a week.)

82-550. Issues in Education
This course will examine current issues affecting contemporary Canadian education. Specific course content and instructors will be published in advance. (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 be concerned with educational finance in Canada, with particular emphasis on Ontario. It will examine such topics as equity, accountability, efficiency, and adequacy of educational revenues and expenditures. Provincial grant systems will be analyzed within the contexts of political governance and the economics of education. (3 lecture hours a week.)

82-565. Sociological Aspects of Education
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 examine and develop their own skills in this area. Emphasis will also be placed upon a practical orientation toward utilizing these skills in the educational environment. (3 lecture hours a week.)

8 ENGINEERING

8.1 Programs of Study

Ph.D. and M.A.Sc. degrees are offered in Civil Engineering, Electrical Engineering, Engineering Materials, Environmental Engineering, Industrial and Manufacturing Systems Engineering, and Mechanical Engineering. The M.A.Sc. degree is offered in Geological Engineering.

Requirements common to these Programs and supplementary to the general requirements of the College of Graduate Studies and Research are listed below.

The Faculty of Engineering offers a Bachelor's - Master's Integrated Engineering Degree program which allows students with outstanding academic ability to achieve both a B.A.Sc. and M.A.Sc. degree in a time period as short as five years. This program treats the educational process through the B.A.Sc. to the M.A.Sc. degree as a single coherent integrated whole, while ensuring that the requirements for both degrees are fully satisfied. This structured program represents a complementary alternative to the existing separate undergraduate and graduate degree programs.

8.1.1 THE DEGREE OF DOCTOR OF PHILOSOPHY

Areas of Specialization

The areas of specialization are listed by Program.

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 Program Graduate Committee, Graduate Record Examinations (GRE) may be required.

All applicants whose native language is not English are required to satisfy the English proficiency requirement 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 Chair of the Program Graduate Committee.

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 term 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 these 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 responsible 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 a program area 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 Program Graduate Committee and the Executive Committee of the College 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 Executive Dean of Graduate Studies and Research 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 on course work, all students must meet the following requirements:

1) *Review of Progress on Research:* Within the first year, the student will present in the form of a seminar an outline of his or her proposed thesis research. This will be presented to the doctoral committee who must approve, with or without modifications, or reject the proposal. Thereafter, at least once a year the student will report his or her progress in the form of a seminar.

2) *Comprehensive Examination:* Students who have previously obtained a Master's degree must attempt this examination within twelve months of registering for the Ph.D. program. Other students must take it within twenty-four months of registration for the Ph.D. program. This set of examinations requires the students to demonstrate an adequate background in the general discipline of engineering, and an advanced knowledge in their fields of specialization. The comprehensive examination will be conducted by a program comprehensive committee in one or two sections at the discretion of the Program Graduate Committee:

(a) a scheduled, supervised written portion, of at least three hours' duration, designed to test the student's general knowledge on core subjects in the field of study, with questions set and answers evaluated by the program comprehensive committee;

(b) an oral examination to be evaluated by the program comprehensive committee. The objective of this part of the examination is to test the student's ability to integrate general knowledge from different areas of the field of study in order to solve problems the student has not previously encountered.

The student's overall success in the comprehensive examination will be determined by the program comprehensive committee. If the student is unsuccessful, the committee may require:

(a) that the student repeat all or part of the comprehensive examination at a specified time,
(b) that 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, that the student 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 defense 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, and a satisfactory preliminary report from the external examiner, a date for the oral examination can be set. Except under very unusual circumstances, the external examiner must be present at the oral examination. 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 may be appointed and another oral examination will be 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 Program.

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 Program Graduate Committee 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 Program, Graduate Record Examinations (GRE) may be required.

All applicants whose native language is not English are required to satisfy the English proficiency requirement 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 term hours, depending on the term hour equivalence assigned to the mandatory thesis or major paper. A thesis may be equivalent to as many as eighteen term hours, and a major paper to as many as six term hours of the total minimum requirement of thirty term 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 pa-

per. 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 defense 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 the Executive Dean of Graduate Studies and Research, giving reasons for the request and plans for completion of the work. The Chair of the Program Graduate Committee will then make a recommendation to the Executive Dean of Graduate Studies and Research.

Committees: Research undertaken 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 responsible 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 a Program 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 Program Graduate Committee and the Executive Committee of the College 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 Chair of the Program Graduate Committee or designate of the Executive Dean of Graduate Studies and Research as chairperson (non-voting).

Examinations: At the discretion of the Program Graduate 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 final candidate year of Master's work.

In addition to the usual examination on course work, all students must meet the following requirements:

1) *Review of Progress on Research or Major Paper:* Within the first year a full-time student will present in the form of a seminar an outline of his or her proposed thesis research or outline the content of his or her major paper. This will be presented to the Master's committee, who must approve, with or without modifications, or reject the proposal. Thereafter, at least once a year, the student will report his or her progress in the form of a seminar.

2) *Final Examinations:* The passing of the final oral examination on the thesis (or the major paper) requires both an adequate thesis (or major paper) and a satisfactory de-

fense. The examination will be conducted by the examining committee and the thesis defence will be chaired by the Chair of the Program Graduate Committee or appointed designate. If the examining committee cannot arrive at a unanimous decision to award a passing grade, a majority decision will be accepted provided there is no more than one dissenting vote. If there is more than one dissenting vote, the student may be required to carry out additional work if the thesis is judged to be adequate in all other respects, or the student may be required to withdraw.

Grading: The grading system is outlined in 1.4.3.

The Faculty of Engineering 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 Chair of the Program Graduate Committee and advisor concerned, credit may be granted by the College of Graduate Studies and Research for not more than two term 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 Chair of the Program Graduate Committee concerned and the Executive Dean of Graduate Studies and Research. No student may repeat, or replace with another course, more than two term 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 Chair of the Program Graduate Committee 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 academic university). A student who does research at an outside institution must fulfil 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 CIVIL AND ENVIRONMENTAL ENGINEERING

9.1.1 GRADUATE FACULTY

Professors Emeriti

Monforton, Gerard R.; B.A.Sc. (Assumption), M.A.Sc. (Windsor), Ph.D. (Case Inst.), F.C.S.C.E., P.Eng.-1962

Kennedy, John B.; B.Sc. (Hons.) (Cardiff), Ph.D. (Toronto), D.Sc. (Wales), F.A.S.C.E., F.C.S.C.E., P.Eng.—1963.

MacInnis, Cameron; B.Sc. (Dalhousie), B.E. (Hons.) (Nova Scotia Technical College), Ph.D. (Durham), F.C.S.C.E., F.E.I.C., F.A.C.I., P.Eng.—1963.

McCorquodale, John Alexander; B.E.Sc. (Western Ontario), M.Sc. (Glasgow), Ph.D. (Windsor), F.C.S.C.E., P.Eng.-1966

Professors

Abdel-Sayed, George; B.Sc., M.Sc. (Cairo), Dr.Ing. (T. U. Karlsruhe), F.C.S.C.E., P.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. (Massachusetts Inst. Tech.), Ph.D. (Toronto), F.E.I.C., F.C.S.C.E., P.Eng.—1969.

Madugula, Murty K.S.; B.E. (Hons.), M. Tech., Ph.D. (I.I.T., Kharagpur), P.Eng.—1979.

Asfour, Abdul-Fattah Aly; B.Sc. (Hons.), M.A.Sc. (Alexandria), Ph.D. (Waterloo), P.Eng.—1981.

Biswas, Nihar; B.E. (Calcutta), M.A.Sc., Ph.D. (Ottawa), P.Eng.—1981.

Budkowska, Bozena Barbara; B.A.Sc., M.A.Sc., Ph.D. (Gdansk)—1989.

Assistant Professors

da Silva, Ana Maria; B.Sc.Engg. (Porto), M.Sc.,Ph.D. (Queen's)—1997.

Henshaw, Paul; B.Sc., B.Eng. Sc. (Western Ontario), M.A.Sc., Ph.D. (Windsor), P.Eng.—1997.

Adjunct Professors

Gnyp, Alex William; B.A.Sc., M.A.Sc., Ph.D. (Toronto), P. Eng.—1958.

Sklash, Michael G.; B.A.Sc. (Windsor), M.Sc., Ph.D. (Waterloo), P. Eng.—1977.

Becker, Norbert K.; B.A.Sc. Ph.D. (Windsor), P. Eng.—1981.

Jasim, Saad Y.; Ph.D. (Wales), P. Eng.—1994.

Cross-Appointment

Hudec, Peter; B.Sc. (Western Ontario), M.S., Ph.D. (Rensselaer Polytech. Inst.), A.I.P.G.—1970.

9.2.1 AREAS OF SPECIALIZATION

Civil and Environmental Engineering offers programs 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 Environmental Engineering, Structural Engineering, and Water Resource Engineering. In Environmental Engineering research focuses on air and water quality, sanitation and environmental impact. In Water Resources, research is in hydraulics, hydrology, water quality and wastewater treatment. In Structures, research encompasses advanced composite materials, steel, concrete, and timber structures, concrete technology, soil mechanics, foundations and soil-metal structures.

9.3.1 COURSE DESCRIPTIONS—CIVIL ENGINEERING

Courses offered by Civil Engineering at the graduate level are listed below. Students may take courses other than Civil Engineering with permission of the Chair of the Program Graduate Committee and the advisor.

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 is 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., light-weight and heavy-weight concretes. (3 lecture hours a week.)

87-513. Structural Dynamics
Formulation of equations of motion; single degree-of-freedom systems: free vibration response and response to harmonic, periodic, impulse, and general dynamic loading; analysis of non-linear structural response;

multi degree-of-freedom systems: equations of motion, structural property matrices, undamped free vibration, Raleigh's method, forced vibration response, practical vibration analysis; continuous systems: partial differential equations of motion, analysis of undamped free vibration, analysis of dynamic response, wave propagation analysis. (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

Properties of scalar and vector fields; gradiant, divergence and curl. Flow visualization. Flow kinematics: continuity equation, potential flow, stream function. Flow dynamics: transport theorems, integral and differential equations of motion. Boundary-layer theory. Turbulent flow and turbulence models. (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.)

87-540. 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 In Civil Engineering

Selected advanced topics in the field of civil engineering. (3 lecture hours a week.)

Current topics include:

Soil-Steel Structures;
Advanced Concrete Technology;
Analysis of Engineering Problems in Soils;
Numerical Methods in Solid and Structural Mechanics;
Earthquake-resistant Design of Buildings

87-796. Major Paper

87-797. Thesis

87-798. Dissertation

9.3.2 COURSE DESCRIPTIONS—ENVIRONMENTAL ENGINEERING

Course offered by Environmental Engineering at the graduate level are listed below. Students amy take courses other than Environmental Engineering with permisson of the Chair of the Program Graduate Committee and the advisor.

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

93-530. 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.)

93-531. 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: 93-530 or equivalent.) (3 lecture hours a week.)

93-532. 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.)

93-533. 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.)

93-534. Environmental Separation Processes

Application of the principles of surface chemistry to separation processes involving phase equilibria, ion exchange, membrane separation, adsorption, absorption, flocculation, spherical agglomeration, sedimentation, filtration, and centrifugation. (3 lecture hours a week.)

93-535. Water Quality Management

Water quality criteria; methods of wastewater disposal and their effects on ecology; stoichiometry, reaction kinetics and material balance; movement of contaminants in water bodies; modelling of water quality in natural systems. (3 lecture hours a week.)

93-536 Environmental Engineering Themodynamics

An advanced study of the application of classical thermodynamic principles to environmental engineering practice; flow systems; composition relationships between equilibrium phases; systems involving surface effects, electric or magnetic fields. (3 lecture hours a week.)

93-537. Kinetics

Basic concepts of chemical reaction kinetics; characterization of chemical and biochemical systems; reactor flow models and consideration of non-ideality. (3 lecture hours a week.)

93-590. Special Topics In Environmental Engineering

Selected advanced topics in the field of environmental engineering. (3 hours a week.)

Current topics include:

Air Pollution Control;
Biological Wastewater Treatment;
Land Treatment of Wastewater;
Principles of Water Quality;
Coastal Engineering;
Separation Processes;
Transport Phenomena;
Industrial Hygiene Engineering;
Groundwater Contamination;
Industrial Wastewater Treatment.

93-796. Major Paper

93-797. Thesis

93-798. Dissertation

10 ELECTRICAL ENGINEERING

10.1.1 GRADUATE FACULTY

University Professors

Jullien, Graham A.; B.Tech. (Loughborough), M.Sc. (Birmingham), Ph.D. (Aston), P.Eng.—1969.

Hackam, Reuben; B.Sc. (Technion, Israel), Ph.D., D. Eng. (Liverpool), F.I.E.E.E., P. Eng.—1978.

Professors

Miller, William C.; B.S.E. (Michigan), M.A.Sc., Ph.D. (Waterloo), P.Eng.—1968.

Soltis, James; B.Sc. (Windsor), M.Sc., Ph.D. (Michigan)—1974.

Sid-Ahmed, Maher A.; B.Sc. (Alexandria); M.A.Sc., Ph.D. (Windsor)—1978.

Raju, G.R. Govinda; B.E. (Mysore), Ph.D. (Liverpool), F.I.E., P. Eng.—1980.

Ahmadi, Majid; B.Sc. (Tehran), D.I.C., Ph.D. (Imperial College) C.Eng., F.I.E.E.—1981.

Kwan, Hon K.; B.Sc. (London), M.Phil. (CUHK), D.I.C., Ph.D. (London), F.I.E.E., C.Eng., P.Eng.—1988.

Associate Professor

Alexander, Philip H.; B.A.Sc. (Assumption), M.A.Sc. (Windsor), P.Eng.—1964.

Adjunct Professors

Chikhani, Aziz Y.; B. Sc., M. Sc. (Cairo), Ph.D. (Waterloo), P. Eng.—1985. (Royal Military College of Canada)

Shridhar, Malayappan; B.Sc. (Bombay), D.M.I.T., M.S. (Brooklyn), Ph.D. (Aston), P.Eng.—1986. (Head, Electrical Engineering Department, University of Michigan, Dearborn)

10.2.1 AREAS OF SPECIALIZATION

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) Signals and Systems and (b) High Voltage and Power Systems.

Within the area of Signals and Systems 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 High Voltage and Power area deals with such topics as power systems, high voltage technology, electrical arcs, insulation and electric and magnetic field calculations.

10.3.1 COURSE DESCRIPTIONS

The graduate course offerings in Electrical Engineering are designed to complement the two major areas that define the research orientation of the program. 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 programs.

Graduate students will be associated with one of the two major areas of research. Their program of studies will be formulated in consultation with the graduate advisors and approved by the Chair of the Program Graduate Committee coordinator.

Only a selected number of the courses listed below will be available each year. The current list will be provided by the Coordinator of Graduate Studies in Electrical Engineering. The following courses all are two hours a week for one term.

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. Measurement 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.

88-521. Digital Signal Processing
Discrete processes, Z-transform, recursive and non-recursive digital filters, quantization effects, hardware implementation.

88-522. Applied Time Signals Analysis and Processing
Continuous and discrete signals; sampling theory and practice; filtering, interpolation, coding, statistical concepts, transform methods; power density estimation, correlation functions, convolution.

88-523. System Theory
Continuous and discrete time systems, state formulation techniques, controlability and observability concepts, and system simulation.

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
Fundamentals of 2-D signals and transforms; Laplace, Z, Fourier, etc. Design, stability, stabilization and implementation of 2-D LSI 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 graphics. 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 recognition of speech and speakers through speech analysis; applications.

88-528. Image Processing
Digital image representation, elements of image processing system, image enhancement, 2-D sampling theorem, image transforms, image restoration and colour image processing.

88-529. Discrete Transforms and Number Theoretical Methods
Introduction to orthogonal transforms, DFT, DCT, DHT; implementation methods; fast algorithms, FFT, WFT; polynomial transforms; finite rings and fields; number theoretic techniques; residue number systems; conversion and computation; finite polynomial rings; VLSI implementation consideration.

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
Overview of VLSI designs, CAD tools, application, technology; review of properties of silicon, solid state physics and devices; SPICE models; analog simulation; IC technology; target CMOS process; static CMOS logic; principles of standard cell CMOS design; dynamic characteristics of static CMOS logic; dynamic logic; system level considerations; hardware description languages; silicone compilers.

88-533. Neural Networks
Introduction to neural networks, the human brain and nervous system; pattern associators; auto-associators and Hopfield network; Hamming network; feed-forward network; other supervised learning neural network models; unsupervised learning neural network models; VLSI implementation; real-world applications.

88-534. Systolic Array Architectures
Introduction to systolic array architectures; mapping methodology; systolic array realization of convolution and discrete Fourier transform; systolic array realization of digital filters; bit-level systolic array realizations; fault-tolerance; VLSI implementation.

88-590. Special Topics
Selected advanced topics in a field of research in the Electrical Engineering. (May be repeated more than once for credit if the topics are different.)

88-797. Thesis

88-798. Dissertation

11 ENGINEERING MATERIALS

11.1.1 GRADUATE FACULTY

Professor Emeritus

Youdelis, William V.; B.Sc. (Alberta), M.Eng. Ph.D. (McGill), P.Eng.—1965.

Professors

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., FIMMA, F.I.E. Aust., C.P.Eng. (Australia), P. Eng., Research Professor—1976.

Alpas, Ahmet T.; B.Sc., M.Sc. (Middle East Tech. Turkey), Ph.D. (Open University, U.K.) P.Eng.—1989, (Research Professor)

Associate Professor

Sokolowski, Jerzy; M.M.E., Ph.D. (Tech. U. Silesia, Poland), Ford/NSERC Industrial Research Chair—1993.

Adjunct Professors

Chao, Benjamin S.; B.S., M.S., Ph.D. (Syracuse)—1993.

Yamauchi, Hisao; B.Eng. (Tokyo), M.S., Ph.D. (Northwestern), P.Eng.—1993.

11.2.1 AREAS OF SPECIALIZATION

Ph.D and M.A.Sc. graduate programs in Engineering Materials are administered by Mechanical and Materials Engineering upon the advice of its Graduate Studies Committee for Engineering Materials. Research is concentrated on the physical, mechanical, tribological and chemical aspects of materials. A Chair in Light Metals Casting Technology is jointly funded by Ford Motor Company and the Natural Sciences and Engineering Research Council of Canada. Particular research topics include:

Alloy Design, Development, and Processing: Aluminum alloy (wrought, cast, particulate reinforced), nuclear reactor materials, computer calculation of phase diagrams; structure refinement solidification and precipitation processing; metal hydrides for energy applications.

Industrial Materials Development and Processing: Ceramic and cementitious materials; tear resistant elastomers; thermoforming polymers; nanocrystalline materials; tribological properties of composite materials; surface coatings.

Mechanical and Tribological Properties of Materials: Creep and fatigue behaviour; deformation mechanisms; friction and wear mechanisms; computer simulation of deformation; corrosion.

Light Metals Casting Technology: Advanced foundry processes for lightweight castings; aluminum and magnesium alloys; new generation foundry materials; solidification modelling.

11.3.1 COURSE DESCRIPTIONS

Course requirements for the Ph.D. and M.A.Sc. programs in Engineering Materials will be selected from the courses listed below and related courses in other programs. A student's course program will be formulated in consultation with the Graduate Studies Committee for Engineering Materials and requires approval of the research advisor and Chair of the Program Graduate Committee.

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, eutec-

toid 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.)

Current topics include:

Creep of Metals and Alloys;
Microscopy of Materials II
Electron Theory of Metals
Wear of Materials
Composite Materials
Fatigue of Metals and Alloys
Advanced Thermodynamics of Alloys
Transport Processes in Metallurgical Systems
Metal Casting Technology
Polymers
Ceramics
Introduction to the Finite Element Analysis

89-797. Thesis

89-798. Dissertation

12 GEOLOGICAL ENGINEERING

12.1.1 GRADUATE FACULTY

Professors

Smith, Terence E.; B.Sc., Ph.D. (Wales)—1969.

Hudec, Peter P.; B.Sc. (Western Ontario), M.S., Ph.D. (Rensselaer Polytech. Inst.)—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.

Fryer, Brian J.; B.Sc. (McMaster), Ph.D. (Massachusetts Inst.Tech.)—1993.

Associate Professors

Rodrigues, Cyril G. I.; B.Sc. (British Columbia), M.Sc., Ph.D. (Carleton)—1979.

Samson, Iain M.; B.Sc., Ph.D. (Strathclyde)—1986.

Al-Aasm, Ihsan S.; B.Sc., M.Sc. (Baghdad), Ph.D. (Ottawa)—1989.

12.2.1 AREAS OF SPECIALIZATION

An M.A.Sc. degree in Geological Engineering is offered. The main areas of research specialization are:

1) Engineering Geology: durability of construction materials, properties of industrial rocks and minerals.

2) Environmental Geology: contaminant transport, environmental geochemistry, stable isotope studies in groundwater, underground storage.

3) Economic Geology: characteristics, origin, and valuation of, and exploraton for ore deposits.

12.3.1 COURSE DESCRIPTIONS

Courses offered in Geological Engineering at the graduate level are listed below. The candidate for the M.A.Sc. degree will be required to take 90-580, 90-582, plus a minimum of three 500-level courses, at least two of which should be Earth Sciences and/or Geological Engineering courses. Not more than one course may be in Special Topics (90-590), and not more than two courses may be from the same instructor. Additional 500-level Science or Engineering courses may be taken on the recommendation of the student's Master's Committee. Students may be required by the student's Masters Committee to take up to three additional courses as prerequisites or required background courses.

The total of all courses taken shall not exceed eight. The student's Master's Committee will recommend to the Chair of the Program Graduate Committee all courses to be taken for graduate credit after discussion with the student.

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; potential uses of mineral processing byproducts. (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.)

90-556. Applied Geophysics in Mineral and Petroleum Exploration
An introduction to the use of geophysics to find deep-seated ore and petroleum depos-

its emphasizing gravitational, magnetic, induced potential, and other relevant methods. (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.)

90-560. Petrology of Mineral Deposits
Examination of the geology, geochemistry, and types of important mineral deposits. Methods used in the study of mineral deposits. (Prerequisite: 61-542 or consent of instructor.) (3 seminar hours a week.)

90-561. Advanced Geochemical Exploration
Recent advances in geochemical exploration techniques. Topics such as: volatile and airborne surveys, surveys in contaminated terrains, isotope methods. Interpretation and handling of survey data. (Prerequisite: 61-424.) (3 lecture hours a week.)

90-580. Graduate Seminar
Discussion of current topics in the earth sciences. (Students must register in this course in each term of full-time registration in the M.A.Sc. Program.) (1 hour a week.)

90-582. Thesis Proposal
Preparation of a written report containing: a thorough review of the literature relevant to the proposed research topic; an outline of the proposed research including a discussion of the expected contributions to the subject area and how these relate to previous work; and a description of the relevant methods. The student shall be examined by his or her Master's committee on the content of the proposal and related background knowledge, and shall present the proposal in a public lecture.

90-590. Special Topics
Selected advanced topics in a field of research in Geological Engineering.

90-797. Thesis

13 INDUSTRIAL AND MANUFACTURING SYSTEMS ENGINEERING

13.1.1 GRADUATE FACULTY

Professors

Lashkari, Reza S.; B.Sc. (Tehran), M.S.I.E., Ph.D. (Kansas State), P. Eng.—1977.

Dutta, Sourin P.; B.E., M.Tech. (Burdwan), Ph.D. (I.I. Sc.), P. Eng.—1984.

El Maraghy, Hoda A.; B.Eng. (Cairo), M. Eng., Ph.D. (McMaster), P.Eng. —1994.

El Maraghy, Waguih; B.Eng. (Cairo), M. Eng., Ph.D. (McMaster), P.Eng.—1994.

Associate Professors

Du, Ruxu; B.S. (Wahung Iron and Steel Inst.), M.S. (South China Inst. Tech.), Ph.D. (Michigan), P.Eng.—1991.

Wang, Hunglin (Michael); B.S. (National Tsing-Hua U.), M.S. (State U. of New York, Buffalo), Ph.D. (Iowa), P.Eng.—1991.

Taboun, Salem; B.Sc. (Tripoli), M.Sc. (Miami), Ph.D. (Windsor)—1992.

Assistant Professor

Salustri, Filippo A.; B.A.Sc.,M.A.Sc., Ph.D. (Toronto), P.Eng.—1996.

13.2.1 AREAS OF SPECIALIZATION

Graduate programs offered are M.A.Sc. in Industrial Engineering and Ph.D. in Manufacturing Systems Engineering, encompassing basic as well as applied research.

13.3.1 COURSE DESCRIPTIONS

Courses offered by Industrial and Manufacturing Systems Engineering at the graduate level are listed below. Students may take courses from outside Industrial and Manufacturing Systems Engineering with permis-

sion of the Chair of the Program Graduate Committee and the advisor.

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. (Prerequisite: 91-312 or equivalent.) (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. (Prerequisite: 91-227 or equivalent.) (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. (Prerequisite: 91-413 or equivalent.) (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, and implicit enumeration methods. Dynamic programming. Recent developments. (Prerequisite: 91-312 or equivalent.) (3 lecture hours a week.)

91-505. Advanced Operations Research II
Probabilistic O.R. models. Markovian decision process. Queueing theory. Single channel and multichannel queueing systems. Queues with general arrival and service patterns. Bulk queues and priority queues. Applications of queuing models. Probabilistic dynamic programming. (Prerequisite: 91-412 or equivalent.) (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. (Prerequisites: 91-315 and 91-415, or equivalent.) (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. (Prerequisite: 91-415 or equivalent.) (3 lecture hours a week.)

91-508. Reliability Engineering
Basic reliability distributions. Constant failure rate models-exponential reliabilty function, Poisson process. Time dependent failure models-the Weibull, normal, lognormal distributions. State-dependent systems-Markov analysis. System reliability-system structure function. Reliability growth testing-noon-parametric methods, censored testing and accelerated lifetesting. Design for reliability-specification, reliability allocatin, failure analysis, system safety. Maintainability and availabilty. (Prerequisite: 91-327 or equivalent.) (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. (Prerequisite: 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. (Prerequisite: 85-313 or equivalent.) (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—limit theorems, renewal reward processes, regenerative processes, computing the renewal function. Brownian motion and stationary processes. (Prerequisite: Statistics 91-412 or equivalent.) (3 lecture hours a week.)

91-512. Flexible Manufacturing Systems
FMS components, characteristics, operation and control. Planning design and implementation of FMS. Product design, process planning, scheduling, machine control, sensing and system control for FMS. (Prerequisite: 91-413, 91-502, 91-509 or equivalent/permission of instructor.) (3 lecture hours a week.)

91-513. Advanced Manufacturing Technology
Developments in nontraditional methods in EDM and ECM. Trends in automation. Recent developments in manufacturing processes; micromanufacturing—integrated circuits and laser machining. Advances in computer technology, CAD and CAM. Kinematics of manipulation robots, artificial intelligence, monitoring and vision systems. (Prerequisite: 91-321 or equivalent.) (3 lecture hours a week.)

91-590. Special Topics
Selected advanced topics in the field of Industrial Engineering. (3 lecture hours a week.)

Current topics include:

Sustainable Manufacturing
Industrial Control & Robotics
Engineering Design, Methodology and Applications
Artificial Intelligence Applications in Manufacturing
Time Series with Applications in Manufacturing
Space Robotics & Design
KAD: Knowledge Aided Design
Development of Knowledge-Based Systems for Manufacturing
Computer-Aided Design (CAD)
Computer-Aided Manufacturing
Management of Technology

Scheduling/Process Planning
Manufacturing Systems Simulation
Assembly
Vision

91-796. Major Paper

91-797. Thesis

91-798. Dissertation

14 MECHANICAL ENGINEERING

14.1.1 GRADUATE FACULTY

Professors Emeriti

Sridhar, Krishnaswamy; B.Sc. (Madras U.), D.M.I.T. (Madras Inst. of Technology), M.A.Sc., Ph.D. (Toronto), P.Eng.-1963

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.

Professors

North, Walter P.T.; B.Sc. (Queen's), M.Sc. (Saskatchewan), Ph.D. (Illinois), P.Eng.—1965.

Rankin, Gary W.; B.A.Sc., M.A.Sc., Ph.D. (Windsor), P. Eng.—1980.

Frise, Peter R.; B.Sc., M.Sc. (Queen's), Ph.D. (Carleton)—1997

Associate Professors

Gaspar, Robert George Stephen; B.A.Sc., M.A.Sc., Ph.D. (Windsor)—1983.

Zhang, Chao; B.Sc., M.Sc. (Xi'an Jiaotong), Ph.D. (New Brunswick)—1990.

Adjunct Professor

Khalighi, Bahram; B.S. (Arya-Mehr U. of Tech.), M.S., Ph.D. (Iowa)—1994.

Cross Appointments

Barron, Ronald Michael; B.A., M.Sc. (Windsor), M.S. (Stanford), Ph.D. (Carleton)—1975.

Zamani, Nader G.; B.Sc. (Case Western), M.Sc., Ph.D. (Brown)—1986.

14.2.1 AREAS OF SPECIALIZATION

Ph.D. and M.A.Sc. graduate programs in Mechanical Engineering are administered by Mechanical and Materials Engineering upon the advice of its Graduate Studies Committee for Mechanical Engineering. Ph.D. and M.A.Sc. programs are offered in the areas of Manufacturing Automation and

Thermo-Fluids. Within the Manufacturing Automation area, a graduate student may concentrate upon Automotive Manufacturing Engineering by the selection of appropriate courses and the choice of the research topic.

14.3.1 COURSE DESCRIPTIONS

Course requirements for the Ph.D. and M.A.Sc. programs in Mechanical Engineering will be selected from the courses listed below and related courses in other programs. A student's course program will be formulated in consultation with the advisor and requires approval of the Graduate Studies Committee for Mechanical Engineering and the Chair of the Program Graduate Committee.

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 term 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.)

92-512. Automated Inspection
Measurement techniques in manufacturing and production industries, statistical quality control, optical metrology, machine vision and inspection. (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.)

92-517. Automated Machining
Fundamentals of metal cutting processes, machine tool condition monitoring, and cutting process monitoring. (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

15 ENGLISH

15.1.1 GRADUATE FACULTY

University Professor

MacLeod, Alistair; B.A., B.Ed. (St. Francis Xavier), M.A. (New Brunswick), Ph.D. (Notre Dame), LL.D. (St. Francis Xavier)—1969.

Professors

Ditsky, John M.; Ph.B., M.A. (Detroit), Ph.D. (New York)—1967.

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

Atkinson, Colin B.; B.Eng. (McGill), B.A. (Sir George Williams), M.A. (Columbia), Ph.D. (New York)—1971.

Quinsey, Katherine M.; B.A. (Trent), Ph.D. (London)—1989.

Straus, Barrie Ruth; B.A. (Oregon), M.A., Ph.D. (Iowa)—1990.

Campbell, Wanda R.; B.A. (New Brunswick), M.A. (Windsor), Ph.D. (Western Ontario)—1991.

Brandt, Diana; B.A. (Manitoba), M.A. (Toronto), Ph.D. (Manitoba)—1997.

Assistant Professors

Bebout, Linda J.; B.A. (Central), M.Sc. (San Francisco State), Ph.D. (Cornell)—1977.

Bucknell, Bradley W.H.; B.A., M.A. (Alberta), Ph.D. (Toronto)—1993.

15.2 Programs of Study

15.2.1 THE MASTER OF ARTS DEGREE

Programs of Study

The Department of English offers programs leading to the M.A. in English and Creative

Writing and the M.A. in English Literature and Language. Within the English Literature and Language program, there are three different streams: the Thesis Stream, the Course Work Stream, and the Cultural Studies Stream.

The English and Creative Writing program allows students to combine graduate-level study of literature with advanced work on creative writing in a two-term workshop and by developing a significant independent writing project. Within the English Literature and Language program, the Course Work Stream offers exposure to a wide variety of topics in literature and linguistics. The Thesis Stream allows students to investigate a single topic in depth through independent, extended research with faculty supervision. The Cultural Studies Stream is intended for the student who wishes to work across traditional academic and creative disciplines to explore a cultural studies topic in depth.

The specific requirements for each option are:

M.A. IN ENGLISH AND CREATIVE WRITING

26-590. Creative Writing Seminar (over both the Fall and Winter terms)
26-794. Creative Writing Project (a novel, a play, a collection of poems or short stories) and four graduate seminar courses.

M.A. IN ENGLISH LITERATURE AND LANGUAGE

Thesis Stream
26-797. Thesis/Project (of at least 20,000 words) and five graduate seminar courses.

Cultural Studies Stream
26-585. Literary Genres: Criticism/Cultural Studies
26-797. Thesis/Project (of at least 20,000 words) and four graduate seminar courses.

Course Work Stream
Eight graduate seminar courses.

For all programs, students who have not taken 26-309 (Scholarship and Bibliography) or its equivalent must include 26-500, a four-week course in Methodology (offered on a Pass/Non-Pass basis), in addition to their regular course load.

Admission Requirements

In addition to the requirements set forth in 1.3 and 1.6.1 for admission to the College 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 have the following undergraduate preparation:

1) Some courses, normally four, in the pre- and early-modern periods, that is, from Old English through the Eighteenth Century;

2) Some courses, normally four, in the modern period, that is, the Nineteenth and Twentieth Centuries, including Canadian and American;

3) Some courses, normally two, from the areas of Critical History, Theory and Approaches, Scholarship and Bibliography, and Language and Linguistics;

4) Additional courses from any of the above areas to make up the total number of courses required for an Honours English B.A.

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 College of Graduate Studies and Research in the minimum two-year M.A. program will be expected to elect courses in their first year to complete the requirements specified above.

In addition to the documents specified in 1.3.2, applicants must submit a "Proposal of Studies" (about 500 words) with their applications indicating the program and stream to which they are applying and discussing such

issues as their areas of academic or creative interest, their undergraduate training, and their academic or career goals. Students with an Honours B.A. in English may apply to either of the degree programs and to any of the streams. Students with interdisciplinary interests, with honours degrees combining English with another discipline, or with abilities or backgrounds that do not correspond to the particular requirements for admission listed above, but who have an overall average of A-, may apply to the Cultural Studies Stream of the English Literature and Language program, which allows for flexible program design.

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, 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 program coordinator is notified well in advance.

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 program coordinator (or a delegate) must approve a student's program of study before registration.

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 given only 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 Executive Dean of Graduate Studies and Research and the program coordinator. The student may not repeat more than one course (see 1.4.3).

15.3.1 COURSE DESCRIPTIONS

All graduate courses are seminars. Enrolment 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 program coordinator and the professor offering the seminar. The specific topics of individual courses may vary, 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. 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 more than once providing the course content is different and with the permission of both the program coordinator 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 term.

In the Winter term each year, English 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 other details about requirements of the course, wherever possible. Students are welcome to write to or call the office for a copy of this booklet.

Not all of the following areas will necessarily be represented by course offerings in any one year. Seminar titles and full course information is available in the English *Graduate Handbook.*

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. Post-Colonial Literature

26-570. Literary Genres: Poetry

26-575. Literary Genres: Drama

26-580. Literary Genres: Fiction

26-585. Literary Genres: Criticism/Cultural Studies

26-590. Creative Writing Seminar

26-794. Creative Writing Project

26-797. Thesis/Project

16 GEOGRAPHY

16.1.1 GRADUATE FACULTY

Professors

Stebelsky, Ihor; B.A., M.A. (Toronto), Ph.D. (Washington)—1968.

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.

Lakhan, V. Chris; B.A. (Guyana), M.A. (Windsor), Ph.D. (Toronto), F.R.G.S. (U.K.), C.E.I., C.E.S. —1984.

Phipps, Alan G.; B.A. (Manchester), M.A. (Queen's), Ph.D. (Iowa), M.C.I.P.—1988.

Associate Professors

La Valle, Placido D.; B.A. (Columbia), M.A. (Southern Illinois), Ph.D. (State U. of Iowa)—1969.

Duncan, Kirsty E.; B.A. (Toronto), Ph.D. (Edinburgh)—1993.

Vakil, Anna C.; B.A. (Carleton), M.U.P. (McGill). Ph.D. (Michigan)—1993.

16.2 Programs of Study

16.2.1 THE MASTER OF ARTS DEGREE

Offerings in Geography emphasize two areas: physical geography and environmental resource management, and urban-economic geography. Also offered are some courses in planning and students may take a maximum of two planning courses at Wayne State University if they are not available at Windsor.

The general admission, residence, and period of study requirements may be found in the regulations of the College of Graduate Studies and Research (see 1.3 and 1.6.). The *Handbook of Procedures for Graduate Students in Geography* provides additional

information on requirements for specific areas of focus.

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—Master of Arts in Geography

After being counselled in Geography, 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 program coordinator, 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 program coordinator, 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 Geography Graduate Coordinator .

All candidates will take 02-250 and 42-231 as non-credit courses, if they have not taken them or equivalent course(s) at the undergraduate level.

All candidates will take 42-500 and 42-504 as required courses.

16.3.1 COURSE DESCRIPTIONS—GEOGRAPHY

42-500. Modern Scientific Thought in Geography
Designed to inform the student of rational inquiry through modern social science literature and thought. (Prerequisites: 02-250 and 42-231, or equivalent.)

42-504. Advanced Spatial Analysis
The translation of statistical methods used by geographers and planners into operational computer programs; spreadsheet, statistical-package and C++ programs are applied to the student's data set.

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.

42-517. Urban Geography and Planning
Readings and seminars on different interpretations of urban dynamics. Selected topics are assigned for analysis. (Cross-listed with 50-517.)

42-519. Theoretical and Applied Geomorphology
Supervised readings and seminars relating to the development of modern geomorphological theory and its application.

42-520. Geomorphology in Environmental Management
This course concentrates on the various aspects of geomorphology that relate to human use of the natural environment. Discussions and selected readings will demonstrate that geomorphology can contribute toward the analysis of several environmental problems.

42-521. Advanced Environmental Resource Management
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.

42-525. Advanced Geographic Information Systems and Remote Sensing
Selected research projects in applying geographic information systems (GIS) and computer analysis of remotely sensed data to resource management, urban planning, and other geographic and environmental problems. A GIS system and a computer image analysis system (EASI/PACE) are used. (Prerequisites: 42-402 and 42-405.)

42-528. Location Theory and Analysis
Readings and seminars on the forces and sectoral needs influencing the locational decisions of firms and the resulting patterns of activities, with emphasis on the service, information, and control sectors.

42-529. Advanced Economic Geography
Theoretical developments in economic geography; application to transport systems planning and to developing countries.

42-537. Advanced Problems in Geography
Topics to be selected in consultation with the instructor.

42-796. Major Paper

42-797. Thesis

16.3.2 COURSE DESCRIPTIONS—PLANNING

50-502. Planning Law
An introduction to the legal principles and rules governing the planning process in Ontario; the course will examine the *Planning Act* and other related statutes and their interpretation by the courts and will focus on substantive and procedural aspects of the law governing the operation of planning boards, committees of adjustment, land division committees, and municipal councils in the exercise of their planning powers and the function of the respective ministers and the Ontario Municipal Board in the planning process. (Cross-listed with 99-213.)

50-503. Housing Policy
A study of social policy issues related to housing. Emphasis is on housing market management, program design, land use regulations and urban growth assessment.

50-511. Urban Planning Process
(Available at Wayne State University.)

50-518. Issues in Planning
Issues raised in the literature of planning will be discussed in lectures and seminars. Metropolitan expansion and various planning responses to it, living environments, community arrangements, economic development, transportation and similar topics may be included.

50-526. Urban and Regional Planning in Developing Areas
This course is concerned with issues associated with planning in the developing areas of Canada and the Third World. Taking a case study approach, the course addresses key theoretical, methodological, and implementation problems related to planning in inner city, native, and other disadvantaged communities in Canada, as well as in urban squatter settlements and poor rural communities in the Third World.

50-537. Advanced Problems in Planning
Current topics in strategic planning: meeting the needs of an aging society; provision of leisure activities; addressing problems at the urban fringe.

50-665. Land Use Controls
(Available at Wayne State University.)

50-701. Planning and Decision Theory
(Available at Wayne State University.)

50-715. Financial Aspects of Urban Planning
(Available at Wayne State University.)

50-770. Projects in Urban Planning
(Available at Wayne State University.)

17 GEOLOGY

17.1.1 GRADUATE FACULTY

Professors

Smith, Terence E.; B.Sc., Ph.D. (Wales)—1969.

Hudec, Peter P.; B.Sc. (Western Ontario), M.S., Ph.D. (Rensselaer Polytech. Inst.)—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.

Fryer, Brian J.; B.Sc. (McMaster), Ph.D. (Massachusetts Inst. Tech.)—1993.

Associate Professors

Rodrigues, Cyril G. I.; B.Sc. (British Columbia), M.Sc., Ph.D. (Carleton)—1979.

Samson, Iain M.; B.Sc., Ph.D. (Strathclyde)—1986.

Al-Aasm, Ihsan S.; B.Sc., M.Sc. (Baghdad), Ph.D. (Ottawa)—1989.

17.2 Programs of Study

17.2.1 THE MASTER OF SCIENCE DEGREE

Program Requirements

1) *Course Requirements:* The candidate for a Master's degree will be required to take 61-580, 61-582, plus a minimum of three 500-level courses, of which at least two should be Geology and/or Geological Engineering courses. Not more than one course may be in Special Topics (61-590), and not more than two courses may be from the same instructor. Additional 500-level Science or Engineering courses may be taken in on the recommendation of the student's Master's Committee. Up to three additional courses may be required to be taken as prerequisites or required background courses. The total of all courses taken shall not exceed eight. The student's Master's Committee shall recom-

mend to the program coordinator all courses to be taken for graduate credit after discussion with the candidate. 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 for a maximum of two courses, 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 defense of the thesis at a public lecture.

17.3.1 COURSE DESCRIPTIONS—GEOLOGY

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

61-542. Geochemistry of Hydrothermal Systems
Origin and chemistry of fluids in the earth's crust. Physical chemistry of hydrothermal fluids. Fluid-mineral equilibria and wallrock alteration. Isotope systematics of hydrothermal systems. Fluid inclusions. Transport and deposition of ore components. (3 lecture hours a week.)

61-544. Sedimentology of Detrital Deposits
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. Advanced Igneous Petrology
The petrology and petrogenesis of igneous rocks emphasizing current concepts and recent developments. (2 lecture, 3 laboratory hours a week.)

61-548. Low-temperature Geochemistry and Diagenesis
Geochemistry of sedimentary rocks and natural waters; chemistry and mineralogy of weathering; geochemical cycles; geochemical facies analysis; fractionation of elements and isotopes during sedimentation; chemical diagenesis; organic matter and mineral diagenesis; geochemical evolution of sedimentary rocks during geologic history. (3 lecture hours a week.) (Prerequisite: 61-324 or equivalent, or permission of the instructor.)

61-549. Carbonate Sedimentology
Carbonate mineralogy, carbonate sedimentation and environments, diagenetic processes and products, carbonate evolution through time. (Prerequisite: 61-324 or consent of instructor.) (3 lecture hours a week.)

61-551. Isotope Geochemistry
Theory, systematics, and application of radioactive and stable isotopes in the earth sciences. Current advances in the field. Selected case studies. (3 lecture hours a week.)

61-564. Advanced Methods in Geochemical Research
Sampling of geological materials. Sampling statistics. Modern analytical methods in geochemistry - theory and selected applications. Data analysis. (3 lecture and/or project hours a week.)

61-565. Geochemistry and Earth Systems
Mass and energy transfer and their relationship to geochemical cycles. Lithosphere-atmosphere-hydrosphere-biosphere interactoins. Topics include rock-water interaction, hydrothermal systems, weathering, volcanism, and ocean chemistry. (3 seminar hours a week.)

61-572. Micropaleontology I
The morphology, classification, paleoecology, and geologic history of selected microfossil groups; field and laboratory techniques of collection and preparation. (2 lecture, 3 laboratory hours a week.)

61-573. Micropaleontology II
The application of microfossils to biostratigraphy and paleoenvironmental interpretation. Lectures and seminars on fundamentals and selected case histories. (Prerequisite: 61-572.) (3 lecture hours a week, including seminars.)

61-580. Graduate Seminar
Discussion of current topics in the earth sciences. (Students must register in this course in each term of full-time registration in the M.Sc. Program.) (1 hour a week.)

61-582. Thesis Proposal
Preparation of a written report containing: a thorough review of the literature relevant to the proposed research topic; an outline of the proposed research including a discussion of the expected contributions to the subject area and how these relate to previous work; and a description of the relevant methods. The student shall be examined by his or her Master's committee on the content of the proposal and related background knowledge, and shall present the proposal in a public lecture.

61-590. Special Topics
(May be taken for credit more than once provided that the topics are different.)

61-797. M.Sc. Thesis

17.3.2 COURSE DESCRIPTIONS— 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; potential uses of mineral processing byproducts. (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.)

90-556. Applied Geophysics in Mineral and Petroleum Exploration
An introduction to the use of geophysics to find deep-seated ore and petroleum deposits emphasizing gravitational, magnetic, induced potential, and other relevant methods. (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.)

90-560. Petrology of Mineral Deposits
Examination of the geology, geochemistry, and types of important mineral deposits. Methods used in the study of mineral deposits. (Prerequisite: 61-542 or consent of instructor.) (3 seminar hours a week.)

90-561. Advanced Geochemical Exploration
Recent advances in geochemical exploration techniques. Topics such as: volatile and airborne surveys, surveys in contaminated terrains, geochemical prospecting in glaciated terrains, isotope methods. Interpretation and handling of survey data. (3 lecture hours a week.)

90-580. Graduate Seminar
Discussion of current topics in the earth sciences. (Students must register in this course in each term of full-time registration in the M.A.Sc. Program.) (1 hour a week.)

90-582. Thesis Proposal
Preparation of a written report containing: a thorough review of the literature relevant to the proposed research topic; an outline of the proposed research including a discussion of the expected contributions to the subject area and how these relate to previous work; and a description of the relevant methods. The student shall be examined by his or her Master's committee on the content of the proposal and related background knowledge, and shall present the proposal in a public lecture.

90-590. Special Topics
Selected advanced topics in a field of research in Geology.

90-797. Thesis

18 HISTORY

18.1.1 GRADUATE FACULTY

Professors

Klinck, David M.; B.A.; M.A. (Western Ontario), Ph.D. (Wisconsin)—1968.

McCrone, Kathleen E.; B.A. (Saskatchewan), M.A., Ph.D. (New York)—1968.

Associate Professors

Murray, Jacqueline; B.A. (British Columbia), M.A., Ph.D. (Toronto)—1988.

Tucker, Bruce; B.A., M.A. (Toronto), Ph.D. (Brown)—1988.

Simmons, Christina; A.B. (Radcliffe), M.A., Ph.D. (Brown)—1990.

Assistant Professor

Howsam, Leslie; B.A. (Waterloo), M.A., Ph.D. (York)—1993.

Burr, Christina A.; B.A., M.A. (Western Ontario), Ph.D. (Memorial)—1997.

Adjunct Professor

Mason, Philip P.; B.A. (Boston), M.A. (Brown), Ph.D. (Michigan)—1990.

Cross Appointments

Bird, Harry W.; B.A. Dipl.Ed., M.A. (Cambridge), M.A. (McMaster), Ph.D. (Toronto)—1969.

Metcalfe, Alan; D.L.C. (Loughborough), B.P.E. (British Columbia), M.S., M.A., Ph.D. (Wisconsin)—1969.

Glassford, Larry; Dip.Ed., B.A. (Western Ontario), M.A. (Carleton), Ph.D. (York)—1991.

18.2 Programs of Study

18.2.1 THE MASTER OF ARTS DEGREE

Major Paper Program

Candidates for the Master of Arts degree will normally prepare a major paper on a topic selected in conjunction with one of the seminar courses. Students will also take at least six graduate courses, two of which may be in a cognate field (with permission of the program coordinator), and including at least one of either 43-503 or 43-504.

Major Paper students not specializing in Archival Studies may receive credit for no more than two archival courses.

Students must select a major paper topic not later than the end of the second term of enrolment in the program.

Thesis Program

Candidates for the Master of Arts degree who wish to prepare a thesis must submit a thesis proposal to a graduate subcommittee for approval. Students will also take at least four graduate courses one of which may be in a cognate field (with permission of the program coordinator), and including at least one of either 43-503 or 43-504.

Thesis students not specializing in Archival Studies may receive credit for no more than one archival course.

Archival Studies

Candidates for the Master of Arts degree who wish to specialize in Archival Studies must so indicate, preferably upon application to the graduate program. All such applications will be reviewed by the departmental Admissions Committee. Students allowed to specialize in Archival Studies must consult with both the departmental Graduate Counsellor and the Director of Archival Studies.

Accepted candidates will complete the following program of studies:

(a) *Required Archival Courses:* 43-571, 43-572, 43-578, 43-581, and 43-582;
(b) *Required History Course: either* 43-503 or 43-504;
(c) *Other Archival Courses:* two of 43-573, 43-574, 43-579, or 43-580;
(d) *Other History Courses:* one of 43-503, 43-504 (whichever was not taken to satisfy the requirement of (b) above), or any of 43-507, 43-521, 43-522, 43-542, 43-543, 43-547, 43-561, 43-563, 43-585, 43-587, or 43-598.

(e) plus a major paper (43-796) in Archival Studies.

Requirements for All Programs

1) All graduate students must consult with the departmental Graduate Counsellor.

2) Students in any Master of Arts program in History are advised that they may be required to have proficiency in a language other than English in order to do their research for major paper or thesis.

3) There shall be a public, oral examination on the major paper or thesis.

Areas of Study

Graduate seminars will be selected from the following areas:

Canada
United States
Great Britain
Europe
Local History
Womens' History
Archival Studies

18.3.1 COURSE DESCRIPTIONS

All of the following courses will not necessarily be offered in any one year.

43-503. Modes of Historical Interpretation
This course will introduce students to current methodological and theoretical issues in the study of history. Students will review the diverse modes of contemporary historical analysis. Particular attention will be paid to the relationship between history and the social sciences, the role of narrative in historical writing, and the application of models in historical explanation.

43-504. Historiography: Selected Topics
The subject of this course will vary from year to year, but its focus will be on the development of historiographical interpretation in particular fields.

43-507. Aspects of British History
The focus of this course may vary from year to year. The primary perspective will be that of social history, and subjects may include social problems, social protest, social reforms, and the women's movement in the nineteenth and twentieth centuries.

43-521. Medieval Social History
This course will provide a thematic approach to the Middle Ages from the perspective of social historians. Themes will vary from year to year and may include marriage and the family, social institutions, women, the history of sexuality, or popular religion.

43-522. Politics and Culture in the Era of the French Revolution
This course focuses on political life during the Revolutionary era, perceived as comprising a variety of symbolic practices including language and imagery.

43-524. Selected Topics in the History of Imperial Russia
This course explores the evolution of Russian society from the perspective of social, cultural, and intellectual history. Although the themes, issues, and groups examined are present throughout the imperial period, the focus of this course will be primarily on developments in the nineteenth and early twentieth centuries.

43-542. Canadian-American Relations
This course will examine the historic Canadian-American relationship with particular reference to issues of the twentieth century.

43-543. Canada in the Nineteenth and Twentieth Centuries
The approach in this course is both thematic and historiographical. Themes from social, political, economic, and intellectual history receive attention, with some emphasis on the relations among them.

43-547. Local History: The Detroit-Windsor Region to the Present
A combination of Canadian urban and local history using Windsor and the Border Cities as a case study. Economic growth and metropolitan development, the urban landscape, population growth, and ethnic relationships; the urban community—social, cultural, and political life.

43-561. Aspects of the History of the United States

This course will provide a thematic approach to the history of the United States in the nineteenth and twentieth centuries. Themes will vary from year to year and will touch on various social and political developments.

43-563. Studies in the History of Women and Gender

This course examines major themes in the history of women and gender in North America, predominantly the United States. Themes include labour and economic development; women and political life; the Afro-American experience; the Native-American experience.

43-571. Introduction to Archival Administration

An introduction to the development of archives in the western world, especially upon United States public and private institutions; terminology and differences between library and archival techniques; the arrangement, description and servicing of archival materials.

43-572. Archival Administration

A continuation of 43-571 designed to deal with more advanced and complicated aspects of archival administration, such as literary legal rights, libel and appraisal of records for historical and income tax purposes.

43-573. Conservation and Administration of Photography Collections

Basic course in the fundamentals of photographic conservation procedures for the organization and control of photographic collections used for research and historical documentation in archives.

43-574. Introduction to Archival and Library Conservation

A basic course in the fundamentals of archival and library conservation essential for effective management of programs of preventative and restorative conservation for books, documents, maps, broadsides and works of art on paper.

43-578. Records Management

Management of information, including records creation, records inventory and appraisal, retention/disposition, scheduling, filing systems, maintenance of inactive records, micrographics, vital records protection, and electronic impact on records management.

43-579. Special Topics in Archival Science

43-580. Computer Applications for Archives and Records Management

Basic course on computer applications for the control, access, and processing of archival materials and records in archives, libraries, historical agencies, businesses, and museums.

43-581. Archival Description and Indexing

Description and indexing of archives using rules for description and formation of access points. Specialization in development of archival finding aids at institutional and collection levels.

43-582. Practicum

Archival students will be required to undertake a practicum of at least one month's duration in a recognized archival institution. This will be under the supervision of a senior archivist. The student will gain experience in basic archival operations. (Prerequisite: successful completion of first-year graduate courses.)

43-585. Oral History

A methodology for research techniques of gathering data from individuals for use in research classroom teaching, in historical, cultural or other contexts.

43-587. Administration of Historical Agencies

The operation of public and private historical agencies, archives, and museums. Determination of agency priorities, problems of staffing and finance, government regulations, community relations, and professional ethics.

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 program coordinator 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 3.9.3).

19 KINESIOLOGY

19.1.1 GRADUATE FACULTY

Professors Emeriti

Moriarty, Richard James; B.A., M.A. (Assumption), M.Ed. (Wayne State), Ph.D. (Ohio State)—1956.

Metcalfe, Alan; D.L.C. (Loughborough), B.P.E. (British Columbia), M.S., M.A., Ph.D. (Wisconsin)—1969.

Professors

Olafson, Gordon A.; B.P.E., M.P.E. (British Columbia), Ph.D. (Illinois)—1969.

Salter, Michael A.; D.P.E. (Sydney), B.P.E., M.A. Ph.D. (Alberta)—1972.

Boucher, Robert L.; B.Sc. (Mankato State), M.Sc. (Illinois State), Ph.D. (Ohio State)—1974.

Marino, G. Wayne; B.A., B.P.E. (McMaster), M.P.E. (Windsor), Ph.D. (Illinois)—1977.

Weese, W. James; B.H.K., M.H.K. (Windsor), Ph.D. (Ohio State)—1986.

Associate Professors

Kimmerle, Marliese; B.A., B.P.H.E. (Queen's), M.A., Ph.D. (Michigan)-1969

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.

McLean, Joanne; B.P.E., M.P.E. (New Brunswick), Ph.D. (Ohio State)-1985.

Corlett, John T.; B.Sc. (Brock), M.Sc., Ph.D. (Simon Fraser)—1986.

Weir, Patricia; B.H.K., M.H.K. (Windsor), Ph.D. (Waterloo)—1991.

Potvin, James; B.H.K. (Windsor), M.Sc., Ph.D. (Waterloo)—1997.

Adjunct Professor

Hoshizaki, Blaine; B.P.E. (Calgary), M.A. (South Alabama), Ph.D. (Illinois)-1996.

Mainwaring, Lynda M.; B.A., B.H.K., M.H.K. (Windsor), Ph.D. (York), C. Psych.—1997.

19.2 Programs of Study

19.2.1 THE MASTER OF HUMAN KINETICS DEGREE

General Nature of the Program

There are two streams to the program, Sport Management and Applied Human Performance: both streams include a thesis option which normally will lead to doctoral work. The Sport Management Stream also offers course work and a Sport Management internship, which is designed to serve as an enrichment experience.

Admission Requirements

1) In addition to the general admission requirements of the College 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 student must have a faculty research advisor before being admitted into one of the following areas of specialization:
i) Applied Human Performance
ii) Sport Management

(b) A person who holds a three-year degree in another discipline is required to complete the requirements for the Master's degree as outlined in the *Graduate Calendar*. Up to ten kinesiology undergraduate courses beyond the minimum requirement may be deemed necessary by the departmental admissions committee.

Normally, the makeup courses are to be selected from the areas of specialization: Applied Human Performance and Sport Management.

Undergraduate courses, assigned at the discretion of the admissions committee and the student's advisor to form the make-up requirements, may be found in the *Undergraduate Calendar* (see 3.10.2).

Program Requirements

1) In addition to the general requirements for the Master's degree, the candidate must:

(a) complete a minimum five graduate-level courses and a thesis, or substitute a minimum of three graduate-level courses and an internship;

(b) pass an oral examination based on a thesis;

2) Only one Special Problems (95-510) course may be taken regardless of area of specialization.

3) Master's Committee and Advisors: Prior to a candidate's initial registration, the Chair of Kinesiology will assign a program advisor for each candidate.

The faculty research 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 shall be a faculty member from outside Human Kinetics. An additional member from the graduate faculty of another university may be invited to serve on 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 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 defense, the candidate will deposit all copies of the thesis in the Office of the College of Graduate Studies and Research for binding and distribution (two copies for the Leddy Library, a copy to the School of Human Kinetics).

(b) *Sport Management Internship Option:* The sport management internship consists of a minimum of 360 hours of applied work experi-

ence in a sport management setting. The internship option is open exclusively to sport management students who have completed four graduate courses. Students develop an internship experience in conjunction with a graduate faculty member from the sport management program prior to registering for the internship. Students are required to complete the "Internship Objectives Form" prior to completing 50 hours of their experience. Their work experience is supervised and evaluated (mid-term and final evaluation) by the cooperating field professional. Students are also required to prepare and defend a research report. Final evaluation is on a Pass/Non-Pass basis and the student is required to pass both the experience and the research report components of the internship. Following the successful completion, the candidate deposits two copies of the internship and research report in the School of Human Kinetics.

The following summaries of requirements apply to thesis and sport management internship options.

APPLIED HUMAN PERFORMANCE

The program focuses on the application of movement science in sport, the workplace, and activities of daily living. Students pursue course work and thesis research that examines the basic and applied principles of human biomechanics, motor performance and exercise physiology. To fulfil the degree requirements, each candidate must complete the following:

1) Required level courses: 95-523, 95-524, 95-525, 95-526, 95-527.

2) A Thesis (95-797).

SPORT MANAGEMENT

The program focuses upon the understanding of the components of organizational behaviour in the context of amateur and professional sport environments. Students will pursue course work and either thesis research or an internship that focuses on topics such as leadership, organizational effectiveness, sport marketing, organizational change, and legal, philosophical and social issues of management. To fulfil the degree requirements, each candidate must complete all of the following:

Thesis Option:

1) Four courses from 95-500, 95-501, 95-502, 95-503, 95-504, 95-505.

2) One graduate course chosen from Kinesiology, or a cognate program.

3) A Thesis (95-797).

Internship Option:

1) Required courses: 95-500, 95-501, 95-502, 95-503, 95-504, 95-505.

2) Two graduate cognate courses.

3) Internship (95-795).

19.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given term. All courses are three hours a week unless otherwise noted.

95-500. Sport Leadership
A survey course using the current research and literature relating to leadership in administrative environments. Several leadership theories will be reviewed and analyzed. Various models of leadership will be discussed relative to the sport administration environments.

95-501. Legal and Human Rights Issues in Sport Management
An analysis of the research and professional practice related to the role of legislation and litigation as they relate to sport and physical activity programs and services and participation. Specific emphasis will be placed on the issue of human rights, covering topics including legislation and case study analyses from the sport management domain.

95-502. Organizational Behaviour in Sport Organizations
An analysis of the interdependent nature of the social/psychological components of organizational behaviour. Special reference

will be made to individual and group behaviour in terms of the organizational effectiveness of sport organizations.

95-503. Sport Marketing
An analysis of the research and literature related to the marketing of sport and physical activity programs and services. Specific emphasis will be placed on the review and application of sport marketing research, an overview and application of the related marketing terms and the development of a marketing plan for a sport organization.

95-504. Philosophical Issues in Sport Management
This course examines the philosophical foundations upon which sport management decisions are made. Particular emphasis will be placed upon the role of moral valuation and moral reasoning in the conduct of ethical sport management practice. Traditions in moral theory will form the basis for investigations of issues such as social research involving human subjects; honesty in sport marketing, sport information, finance, and human resources; and international responsibility in global sport culture.

95-505. Social Issues in Sport Management
Sport managers operate within a social world. This course examines current social issues and their implications for sport managers. Issues include the impact of various institutions on sport management (e.g., sport, government, economics, media, education), as well as the relationship between sport management and various power relations in society (e.g. race, gender, class, age, and physical ability).

95-510. Special Problems
Independent study conducted under the advisement of a graduate faculty member. This course cannot be used as a review of literature for thesis. (Prerequisite: consent of program committee.)

95-523. Applied Biomechanics of Human Performance
This seminar/lecture course will focus on the application of biomechanics concepts and measurement techniques in the study of human performance. Specific topics will reflect the interests of students and may include areas such as sports, locomotion, activities of daily living, and equipment testing and design.

95-524. Biomechanics in the Work Place
This seminar/lecture course will focus on applications of human performance biomechanics in the work place. Special emphasis will be placed on theoretical and practical methods of assessing work place efficiency and effectiveness while considering the comfort and safety of the worker.

95-525. Motor Skill Acquisition
This seminar/lecture course will examine the learning processes involved in skill acquisition. Different theoretical approaches will be used to examine the learning of motor tasks by novices and experts and contrast that with the acquisition of motor skills in children. In lab/field settings students will carry out task analysis and acquire movement observation/analysis skills.

95-526. Motor Control of Human Performance
This seminar/lecture course will examine the perceptual, cognitive, and neurophysiological aspects of human motor control. Different theoretical and methodological approaches will be examined and applied to the understanding of functional movements in the home, workplace, and sporting environment. Changes in the control of movement in special populations will also be examined.

95-527. Physiological Responses to Human Movement Demands
This seminar/lecture course will examine the acute response and chronic adaptive nature of selected physiological systems directly related to human movement. Specific topics will reflect the interests of students and may include areas such as temperature regulation and fatigue as well as current topics of interest in human movement.

95-562. Research Methods
A review and appraisal of qualitative and quantitative research methods with special reference to design, data collection, analysis and generalization. (Prerequisite: 95-270 or consent of instructor.)

95-590. External Graduate Course
(Must be a course approved by the College of Graduate Studies and Research).

95-595. Selected Topics
Topics developed by individual faculty members, based on new developments in a particular area of study. (Subject to Kinesiology Council approval) (Prerequisite: Consent of Program Committee)

95-795. Sport Management Internship
(See Graduate Sport Management Internship Handbook)

95-797. Thesis

Undergraduate courses, which may be assigned at the discretion of the admissions committee and Chair to form part or all of the requirements for admission to candidacy, may be found in the *Undergraduate Calendar* (see 3.10.2).

20 MATHEMATICS AND STATISTICS

20.1.1 GRADUATE FACULTY

Professor Emeritus

Tracy, Derrick Shannon; B.Sc., M.Sc. (Lucknow), M.S., Sc.D. (Michigan)—1965.

Professors

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.

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.

Britten, Daniel J.; B.A. (Merrimack College), M.S., Ph.D. (Iowa)—1971.

Wong, Chi Song; B.S. (National Taiwan), 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.

Fung, Karen Yuen; B.A., M.S., Ph.D. (U.C.L.A.)—1976.

Paul, Sudhir R.; B.Sc., M.Sc. (Dacca), Ph.D. (Wales)—1982.

Caron, Richard J.; B.M., M.M., Ph.D. (Waterloo)—1983.

Zamani, Nader G.; B.Sc. (Case Western), M.Sc., Ph.D. (Brown)—1986.

Associate Professors

Traynor, Tim Eden; B.A., M.A. (Saskatchewan), Ph.D. (British Columbia)—1971.

Hlynka, Myron; B.Sc. (Manitoba), M.A., Ph.D. (Pennsylvania State)—1986.

Assistant Professor

Hu, Zhiguo; B.Sc., M.Sc. (Northeast China), Ph.D. (Alberta)—1993

Cross Appointments

Brill, Percy; B.Sc. (Carleton), M.A. (Columbia), Ph.D. (Toronto)—1984

Fan, Yanqin; B.Sc. (Jilin), M.A., Ph.D. (Western Ontario)—1989.

Gencay, Ramazan; B.Sc. (Middle East Tech. U., Ankara), M.A. (Guelph), Ph.D. (Houston)—1991.

20.2 Programs of Study

20.2.1 THE DOCTOR OF PHILOSOPHY DEGREE

Admission Requirements

For admission requirements and period of study, the general regulations of the College of Graduate Studies and Research should be consulted (see 1.5). Qualifying examinations will not normally be required.

Candidacy

Students will be recommended for candidacy (see 1.5.1) only after successful completion of the Comprehensive Examinations and course work.

Program Requirements for the Ph.D. (Mathematics)

1) *Course Work:* Students admitted with an M.Sc. or equivalent must successfully complete at least four graduate courses numbered with the prefix 62-; further graduate courses may be assigned by the Graduate Studies Committee in consultation with the advisor. Transfer credits will not be allowed. In addition, graduate courses completed at this institution must include two of the following: Real Analysis (62-510), Functional Analysis (62-512), or Partial Differential Equations (62-561).

Students admitted with an Honours B.Sc., or equivalent, which is done only in exceptional cases, must successfully complete at least twelve graduate courses, eight of which must be numbered with the prefix 62-; further graduate courses may be assigned by the Graduate Studies Committee in consultation with the advisor. Transfer credits will not be allowed.

2) *Doctoral Committee:* Within the student's first term of study at the doctoral level, 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 College of Graduate Studies and Research. The doctoral committee shall include the student's advisor 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. 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-five 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:* Students admitted with an M.Sc. or equivalent must successfully complete at least four graduate courses numbered with the prefix 65-; further graduate courses may be assigned by the Graduate Studies Committee in consultation with the advisor. Transfer credits will not be allowed. (Up to two courses prefixed 65- may be replaced by 62-510 and/or 62-511.)

Students admitted with an Honours B.Sc., or equivalent, which is done only in exceptional cases, must successfully complete at least twelve graduate courses, eight of which must be numbered with the prefix 65-; fur-

ther graduate courses may be assigned by the Graduate Studies Committee in consultation with the advisor. Transfer credits will not be allowed.

It is strongly recommended that all Ph.D. students in Statistics take a measure theoretic probability course.

2) *Doctoral Committee:* within the student's first term of study at the doctoral level, 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 College of Graduate Studies and Research. The doctoral committee shall include the student's advisor 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:* 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 advisor and student).

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-five months of registration in the doctoral program. If this deadline is not met, the student must withdraw from the program.

20.2.2 THE MASTER OF SCIENCE DEGREE

Program Requirements for the M.Sc. (Mathematics)

The candidate must complete six graduate courses, and a thesis, where the originality of a Master's thesis may lie in the organization, exhibition, and scholarly evaluation, rather than in the result.

In addition, graduate courses completed at this institution must include two of the following: Real Analysis (62-510), Functional Analysis (62-512), or Partial Differential Equations (62-561).

Program Requirements for the M.Sc. (Statistics)

The candidate must complete six graduate courses, of which at least four must be numbered with the prefix 65-, and a thesis, where the originality of a Master's thesis may lie in the organization, exhibition, and scholarly evaluation, rather than in the result.

Master's Committee

A Master's committee must be appointed within the student's first term of study at the II Master's (Candidate) level. The Master's committee must be approved by the Executive Committee of the College of Graduate Studies and Research. The Master's committee shall include the student's supervisor as chairperson, one other member of the Department, and one faculty member from outside the Department.

20.3.1 COURSE DESCRIPTIONS

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

MATHEMATICS

62-500. Mathematical Logic

62-501. Axiomatic Set Theory

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

62-520. Abstract Algebra I

62-521. Abstract Algebra II

62-523. Lie Algebras

62-524. Representation Theory

62-525. Matrix Algebra and Analysis

62-530. General Topology

62-533. Differential Geometry

62-536. Riemannian Geometry

62-561. Partial Differential Equations

62-568. Numerical Analysis I

62-569. Numerical Analysis II

62-570. Continuum Mechanics

62-572. Fluid Dynamics I

62-573. Perturbation Methods in Fluid Mechanics

62-575. Compressible Flow I

62-577. Numerical Techniques in Fluid Dynamics I

62-579. Visco-elasticity and Plasticity

62-582. Fluid Dynamics II

62-585. Compressible Flow II

62-587. Numerical Techniques in Fluid Dynamics II

62-590. General Relativity

62-592. Relativistic Fluid Dynamics

62-593. Introduction to Finite Element Method

62-595. Mathematical Programming

62-598. Special Topics

62-796. Major Paper

62-797. Thesis (M.Sc.)

62-798. Dissertation (Ph.D.)

STATISTICS

65-540. Theory of Probability

65-541. Stochastic Processes

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

65-548. Non-parametric Statistics

65-549. Discrete Multivariate Analysis

65-550. Linear Models

65-552. Experimental Design

65-554. Theory of Sampling and Surveys

65-555. Regression Analysis

65-556. Decision Theory

65-559. Topics in Statistics
Topics offered may include queueing theory, generalized multivariate analysis, bioassy, generalized linear models, optimal design, and Bayesian analysis.

65-796. Major Paper

65-797. Thesis (M.Sc.)

65-798. Dissertation (Ph.D.)

21 NURSING

21.1.1 GRADUATE FACULTY

University Professor

Cameron, W. Sheila; R.S.C.N. (Scotland), B.A. (McMaster), M.A. Nurs. Educ. (Detroit), Ed.D. (Wayne State), F.A.A.M.R., Reg.N.—1976.

Professors

Thomas, Barbara Campbell; Dip.P.H.N., B.N.Sc. (Queen's), M.Ed. (Windsor), Ed.D. (Wayne State), Reg.N.—1969.

Rosenbaum, Janet N.; B.Sc.N., M.Sc.N., Ph.D., (Wayne State), Reg.N.—1975.

Carty, Laurie; B.Sc.N., B.A., M.Ed. (Windsor), Ph.D. (Wayne State), Reg.N.—1980.

Horsburgh, M. Elizabeth; B.Sc.N., B.A., M.Ed. (Windsor), M.Sc.N. Ph.D. (Wayne State), Reg.N.—1984.

Associate Professors

Fawdry, Mary Kaye; B.Sc.N. (Windsor), B.A., M.Ed., Ed.D. (Wayne State), Reg.N.—1973.

McMahon, Sharon; B.Sc.N., B.A., M.Ed. (Windsor), Ed.D. (Wayne State), Reg.N.—1973.

Drake, Mary Louise; Dip. P.H.N., B.Sc.N., B.A. (Windsor), Dip. in Midwifery (Great Britain), M.A. Nurs. Educ. (Detroit), Ed. D. (Wayne State), Reg.N.—1975.

Matuk, Lucia, B.Sc. (Toronto), B.Sc.N., B. A.,(Windsor), M.Sc.N. (Western), Reg.N.—1987.

Rajacich, Dale; B.Sc.N. (Windsor), M.Sc.N. (Western Ontario), Reg.N.—1987.

Snowdon, Anne; B.Sc.N. (Western Ontario), M.Sc. (McGill), Reg.N.—1988.

Stamler, Lynnette Leeseberg; B.S.N. (St. Olaf College), M.Ed. (Manitoba), Ph.D. (Cincinnati) Reg.N.—1994.

Assistant Professors

Kane, Deborah; B.Sc.N. (Windsor), M.Sc.N. (Western Ontario), Reg.N.—1989.

Hernandez, Cheri; B.Sc.N., B.A., M.Ed. (Windsor), Ph.D. (Toronto), Ph.D. (Case Western Reserve)—1997.

21.2.1 THE MASTER OF SCIENCE DEGREE IN NURSING MISSION STATEMENT

The mission of the University of Windsor Master of Science degree program in Nursing is to prepare graduates for advanced nursing practice. Graduates will address societal health needs relating to health promotion and illness prevention, or human responses and adaptations to alterations in health. Through the integration of theory, research, and practice students will advance their scientific base for practice. In addition the program supports development of leadership and advocacy skills for contributions to health care, education and research. Through faculty guidance and self-directed learning activities, students from diverse backgrounds will develop advanced professional knowledge through critical thinking, decision making, and scholarly inquiry in a multicultural society. This program is especially designed to meet the needs of employed baccalaureate prepared nurses.

Admission Requirements

1) All general regulations of the College of Graduate Studies and Research admission requirements are applicable.

2) Applicants must have a Bachelor of Science in Nursing or equivalent which includes physical assessment, and courses in research and statistics. Consideration may be given to nurse applicants holding degrees in other cognate disciplines.

3) Applicants must have maintained an overall B average in their undergraduate nursing program.

4) Applicants must be eligible for a current certificate of competence as registered nurses in Ontario.

5) Three School of Nursing confidential reports must be completed by academic/professional referees, with at least one from an academic who has taught the applicant and one from a recent employment supervisor.

6) An "Applicant Profile" must be completed which includes a section addressing goals in seeking graduate education (narrative statement).

7) Applicants whose native language is not English must submit certification of English proficiency (official TOEFL score or equivalent MELAB).

8) Applications for admission must be completed by February 15.

9) An interview may be required.

Program Requirements

1) Candidates for the Master of Science degree in Nursing will pursue studies in one of two areas of concentration:

(a) Human responses and adaptations to alterations in health of individuals, families and groups to acute and chronic illness.
(b) Health promotion and illness prevention in selected populations.

2) The requirements may be satisfied by pursuing a program of studies consisting of six compulsory courses and a thesis, or six compulsory courses, two elective courses and a major project/paper. Those who wish to include a thesis in their program must request approval from the Graduate Committee of the School of Nursing.

Additional information concerning the procedure for theses and major papers may be obtained from the coordinator of graduate studies (see 1.6.3).

3) *Compulsory courses*:

63-581. Theoretical Foundations of Nursing
63-582. Advanced Statistics
63-583. Research Methods in Nursing
63-599. Clinical Judgment in Nursing

and either 63-584 and 63-586, or 63-588 and 63-590, depending on the selected area of focus.

4) Clinical Judgement in Nursing Practice will involve one term of full-time study in a setting selected in consultation with the student. Students will select individuals, families, groups, populations and/or communities in various health care facilities, and/or community settings, to develop their knowledge and skill for advanced nursing practice.

5) Major project/paper students will select two graduate electives in nursing or related disciplines. Courses will be selected according to the student's research interests.

6) All candidates' programs are subject to approval by the graduate coordinator.

7) The minimum grade required in all graduate courses is B-. Any student who does not successfully complete a course may repeat it once at the discretion of the Director of the School and the Executive Dean of Graduate Studies and Research. The student may not repeat more than one course.

8) The maximum time limit is six years.

9) Students of the School of Nursing are required to demonstrate behaviours consistent with the Professional "Standards for Registered Nurses and Registered Practical Nurses" in Ontario and the "Guidelines for Professional Behaviour" of the College of Nurses of Ontario.

Failure of any Nursing student to conform to the principles of these documents may result in dismissal from any of the School of Nursing's programs.

The Master's thesis committee is chosen in the manner described in 1.6.2 of this *Graduate Calendar*. The final examination will be conducted by the Master's committee.

Students choosing a major project/paper must have a detailed proposal approved by at least two nursing faculty members, one of whom will serve as the primary advisor. The approved proposal application form must be submitted to the Director of the School in order to register for the major project/paper. The major project/paper committee will conduct the final oral examination.

Each student must obtain approval of his or her program in writing, from the graduate coordinator, within three weeks of registration. Subsequent changes require written approval from the graduate coordinator.

21.3.1 COURSE DESCRIPTIONS

Not all of the courses listed below will necessarily be offered in any one year.

63-560. Pathophysiology for the Advanced Practice Nurse
Concepts of pathophysiology as a basis for advanced nursing practice will be studied from a systems approach. Common themes that interface with pathophysiological concepts will be integrated into each system. A case study approach will provide a comprehensive overview of the etiology, pathogenesis, and clinical manifestations of diseases in adults and children in primary health care settings.

63-562. Advanced Health Assessment
This course will focus on helping students conduct a full range of health assessments towards the goal of providing comprehensive and holistic care to individuals, families, and communities. Emphasis will be placed on disease prevention within a primary care setting. (A 6.0 credit hour course, 2 semesters)

63-570. Curriculum Process in Nursing
Curricular models and instructional approaches will be analyzed from both a philosophical and theoretical perspective. Curricular models will be analyzed according to their philosophical base, theory and research, and their resultant impact on teaching and learning in nursing.

63-572. Leadership in Nursing
Study of political, economic, legal, and ethical issues impacting on nursing leadership in educational and clinical settings.

63-574. Organizational and Management Theories Relevant to Health Care Organizations
Theories and concepts relating to health care organizations will be studied. The impact of internal and external forces on health care delivery systems will be studied.

63-576. Management of Human Resources in Nursing
A study of concepts, theories, and practices that will assist nurse leaders to develop effective approaches to human resource management in nursing education and service settings.

63-578. Seminar in Current Nursing Issues
An historical and futuristic examination of the critical issues facing the nursing profession and discipline. Considering the practice orientation of nursing, students will explore issues related to education, practice, discipline, and professionalism.

63-580. Selected Readings in Nursing
Intended for students with a special interest in and knowledge of a specialty area in nursing. To explore theory and research related to human responses and adaptations to alterations in health, or health promotion and illness prevention with selected client populations. (To be taken only with permission of the School.)

63-581. Theoretical Foundations of Nursing
The focus of this course is theory exploration in nursing. Beginning with the theoretical evolution of the discipline of nursing, students progress to issues related to development of theory in a practice discipline. Analysis, evaluation, and comparison are made of selected nursing conceptual models/theories and their major concepts. The contributions of the conceptual models to practice and research are investigated.

63-582. Advanced Statistics
An advanced course with a focus on multivariate analysis. Topics include ANOVA, MANOVA, regression analyses, critique of statistical analyses of research articles, and computer data analysis.

63-583. Research Methods in Nursing
Students will examine diverse approaches to scientific inquiry in nursing. Within selected research paradigms, students will explore design, process, and evaluation techniques. Models for research analysis will be explored. Opportunities will be provided for students to develop a research proposal to gain solutions to nursing problems.

63-584. Human Responses and Adaptation to Alterations in Health I

With emphasis on nursing assessment, patterns of coping in life situations involving alterations in health will be explored. Theories, concepts, and research related to normative and situational stressors for the individual and family in interaction with the environment will be studied in relation to healthy coping.

63-586. Human Responses and Adaptation to Alterations in Health II

Emphasis on planning, intervening, and evaluating nursing care strategies for promotion of adaptation/coping for individuals, families, groups, and communities. Needs related to age and special populations will be examined in cultural context. Students will analyze social structure features, for example, politics, economics, values which influence resources for healthy coping and adaptation.

63-588. Health Promotion and Illness Prevention Through the Life Cycle I

Students will examine theories and research related to processes which result in both positive and negative changes in health and well-being for individuals within the context of families and communities. Interactional patterns of nurses and clients in promoting clients' right to health will be explored. The role of the nurse as client advocate will be emphasized.

63-590. Health Promotion and Illness Prevention Through the Life Cycle II

Health promotion and illness prevention for complex populations will be analyzed, with an emphasis on strategies for nursing intervention to facilitate positive health outcomes. Health issues related to gender, life-cycle, and culture will be included, with examination of related theory and research.

63-599. Clinical Judgment in Nursing Practice

Students will select an area of clinical interest and apply theories and research in a practice setting. Using their expanded theoretical base, students will conduct comprehensive assessments of clients (individuals, families, groups, populations and/or communities) and will implement appropriate intervention strategies and evaluation protocols. Students will validate their conceptual model of nursing care.

63-796. Non-Thesis Option

An expansion and extension of course work in which students working with a faculty advisor will choose a major project/paper. Students must provide evidence of synthesis of previous course work relative to a selected health issue or area such as clinical practice, teaching or administration.

63-797. Thesis Option

Before writing the thesis, the student must meet with the Master's committee to obtain approval of the thesis investigation. Permission will only be granted when the student has shown sufficient preparation and competence to carry out the thesis proposal. Upon completion, each candidate will be required to make a satisfactory oral presentation and defense of the thesis.

22 PHILOSOPHY

22.1.1 GRADUATE FACULTY

University Professor

Johnson, Ralph Henry; B.A. (Xavier), M.A., Ph.D. (Notre Dame)—1966.

Professors

Blair, John Anthony; B.A. (McGill), M.A. (Michigan)—1967.

Wright, John P.; B.A., M.A. (Toronto), Ph.D. (York)—1983.

Westra, Laura; B.A. (York), M.A., Ph.D. (Toronto)—1990.

Associate Professors

Pinto, Robert C,; B.A., M.A., Ph.D. (Toronto)—1963

Cook, Deborah; B.A., M.A. (Ottawa), Doct. 3e cycle (Sorbonne) 1989.

Fisher, Linda J.; B.A. (Wilfrid Laurier), M.A. (Ottawa), Ph.D. (Pennsylvania State)—1992.

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 for general requirements for admission into an M.A. program at the University of Windsor. The Philosophy program normally requires the equivalent of twenty one-term courses in philosophy for admission to the one-year Master's program and the equivalent of ten one-term courses in philosophy for admission to the two-year Master's program.

Program Requirements

For general requirements for the Master's degree, see 1.6.2. 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 term 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 34-491 (Honour's Seminar) (see 3.12.3 of the *Undergraduate Calendar*).

4) *Program Approval :* Each student must have his or her projected program authorized by the Graduate coordinator.

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. Ethical Theory

34-521. Political Philosophy

34-522. Philosophy of Law

34-525. Topics in Practical and Applied Ethics

34-540. Philosophy of Religion

34-541. Philosophy of Science

34-542. Philosophy of History

34-543. Philosophy of Language

34-544. Aesthetics

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 one or more 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 GRADUATE FACULTY

Professors Emeriti

Krause, Lucjan; B.Sc. (London), M.A., Ph.D. (Toronto), D.Sc. (London; Nicholas Copernicus), F.Inst.P.—1958.

van Wijngaarden, Arie; B.Sc., Ph.D. (McMaster)—1961.

Czajkowski, Mieczyslaw; M.Sc., D.Sc. (Nicholas Copernicus)—1967.

Schlesinger, Mordechay; M.Sc., Ph.D. (Jerusalem), F.Inst.P.—1968.

University Professors

Drake, Gordon W. F.; B.Sc. (McGill), M.Sc. (Western Ontario), Ph.D. (York), F.Inst.P., F.R.S.C.—1969. (Killam Research Fellow, 1990–1992).

McConkey, John William; B.Sc., Ph.D. (Queen's University of Belfast), F.Inst.P.—1970. (Killam Research Fellow, 1986–1988)

Professors

Baylis, William Eric; B.S. (Duke), M.S. (Illinois), D.Sc. (Technical U. of Munich)—1969.

Atkinson, John Brian; M.A., D. Phil. (Oxon.)—1972.

Helbing, Reinhard K. B.; Dipl. Phys., Dr. Rer. Nat. (Bonn)—1972.

Glass, Edward N.; B.S. (Carnegie-Mellon), M.S., Ph.D. (Syracuse)—1974.

Maev, Roman G.; B.Sc. (Moscow Physical Engineering Institute), M.Sc. (Moscow Physical Technical University), Ph.D. (Lebedev)—1995.

Adjunct Professor

Snyder, Dexter Dean; B.A. (Wabash), Ph.D. (Massachusetts Inst. Technology)—1995.

Cross Appointments

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

Jones, William E.; B.Sc., M.Sc. (Mount Allison), Ph.D. (McGill)—1991.

23.2 Programs of Study

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 or 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 (GRE) 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.

23.2.1 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 Physics at the University of Windsor 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 program coordinator and approval by the College of Graduate Studies and Research.

2) *Course Work:* Candidates with Master's degrees in Physics (or equivalent) will complete a minimum of four graduate courses, including 64-610, 64-612 (or 64-613), and at least one of 64-630, 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 eight 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 Physics.

This committee will, from time to time, review the student's progress (see 1.5.2).

For the defense of dissertation (final oral examination) the advisory committee will be supplemented by one professor from outside Physics 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 *Procedures to Follow in Preparing a Thesis or Dissertation* (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 at this university. 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 program coordinator.

Each candidate will, on recommendation of the advisory committee, submit to a final oral examination in defense 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, 64-521, 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 program coordinator, 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 present a minimum of one seminar on a topic approved by the Seminar Coordinator.

64-520. Classical Electrodynamics
Radiation by moving charges, synchrotron radiation, bremsstrahlung, scattering of radiation, 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.)

64-550. Advanced Quantum Theory I
General principles, representations and transformation theory. Approximation methods. Many-body problems and identical particles.

64-551. Advanced Quantum Theory II
Number representations and second quantization. Dirac equation. An introduction into quantum electrodynamics and the electroweak theory. (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.)

64-563. Introduction to Elementary Particles
Long-lived particles; basic interactions and antiparticles; conservation laws and C, P, T; pions and nucleons; magnetic moments; strange particles; leptons; resonances; SU(3) multplets of hadrons; Regge poles, SU(6), and quarks.

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
A selection of topics from the following: characteristic properties of stars, stellar atmos-

pheres, models of stellar interiors, nuclear reactions in stars.

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 and Environmental Physics

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, ionospere, 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.

64-610. 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 present a minimum of two seminars on topics 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 term. 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 Condensed Matter Physics

Crystal field theory in the weak and strong coupling schemes. Molecular orbitals; vibronic interactions. Electronic structure and spectra of molecular complexes. (Prerequisite: 64-551.)

64-797. M.Sc. Thesis

64-798. Ph.D. Dissertation

24 POLITICAL SCIENCE

24.1.1 GRADUATE FACULTY

University Professor

Soderlund, Walter C.; B.A. (Connecticut), M.A., Ph.D. (Michigan)—1968.

Professors

Briggs, E. Donald; B.A. (New Brunswick), Ph.D. (London)—1963.

Brown-John, C. Lloyd; B.A. (British Columbia), M.A., Ph.D. (Toronto)—1968.

Associate Professors

Brooks, Stephen; B.A., M.A. (Windsor), Ph.D. (Carleton)—1985.

Lee, Martha; B.A., M.A. (Calgary), Ph.D. (Syracuse)-1992.

Pawley, Howard; B.A. (Winnipeg), LL.B. (Manitoba), Q.C., P.C.—1991.

MacIvor, Heather; B.A. (Dalhousie), M.A., Ph.D. (Queen's)—1992.

Assistant Professors

Dashwood, Hevina S.; B.A. (Toronto), M.A. (McGill), Ph.D. (Toronto)—1997.

VanNijnatten, Debora L.; B.A. (Brock), M.A., Ph.D. (Queen's)—1997.

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 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 deficiencies, will be required to take additional courses, or to enter a two-year program (see 1.3.3).

Program Requirements

With the advice of the Political Science Graduate Committee, 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 Graduate Committee and the College of Graduate Studies and Research.

(a) A minimum of four graduate courses plus a thesis on some research subject approved by the Graduate Committee. The thesis will be written under the direction of a committee composed of two Political Science faculty members plus a member outside Political Science, but from within the University. An oral defense of the thesis will be required (see 1.6.2).

(b) Six graduate courses and a major paper on some research subject approved by the Graduate Committee. The major paper will be written under the direction of a committee normally composed of two Political Science faculty members. An oral defense of the major paper will be required.

All students in the I Master's (Qualifying) 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. This course is strongly recommended for 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.

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.

45-561. 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 de-

pendence, North-South conflict, and regional integration.

45-588. Selected Topics in Political Science

Topics of current interest selected by the Political Science faculty which may vary from year to year. (May be repeated for credit if offered as a different topic with the permission of the program coordinator.)

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 program coordinator.)

45-796. Major Paper

45-797. Thesis

25 PSYCHOLOGY

25.1.1 GRADUATE FACULTY

Professors Emeriti

Holland, Cornelius J.; B.A. (St. Joseph's, Philadelphia), M.A. (Detroit), Ph.D. (Catholic University of America)—1967.

Auld, Frank; B.A. (Drew), M.A., Ph.D. (Yale)—1970.

McCabe, Ann E.; B.Sc. (St. Norbert College), M.S. (Iowa State), Ph.D. (Wisconsin)—1973.

University Professor

Rourke, Byron P.; B.A. (Windsor), M.A., Ph.D. (Fordham)—1965.

Professors

Cohen, Jerome S.; B.A. (Michigan State), M.A., Ph.D. (Wayne State)—1968.

Reynolds, David V.; A.B. (Massachusetts), Ph.D. (Stanford)—1969.

Minton, Henry L.; B.A. (New York), M.A. (Southern Illinois), Ph.D. (Pennsylvania State)—1970.

Page, Stewart; B.A., M.A. (Western Ontario), Ph.D. (Toronto)—1981.

Associate Professors

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, R. Robert; B.A. (Valparaiso), M.A., Ph.D. (Iowa)—1969.

Porter, James E.; B.A. (Toronto), M.A. (Roosevelt), Ph.D. (Windsor)—1980. (Psychological Services Centre)

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.

Thomas, Cheryl, D.; B.A., M.A., Ph.D. (Simon Fraser)—1987.

Towson, Shelagh, M.J.; B.A. (York), M.A. (Wisconsin), Ph.D. (Waterloo)—1987.

Kral, Michael J.; B.A. (Guelph), M.A., Ph.D. (California School of Professional Psychology)—1991.

Hakim-Larson, Julie A.; B.S. (Michigan State), M.S. (Eastern Michigan), Ph.D. (Wayne State)—1991.

Lafreniere, Kathryn D; B.A. (Windsor), M.A., Ph.D. (York)—1991.

Senn, Charlene Y.; B.Sc., M.Sc. (Calgary), Ph.D. (York)—1992.

Assistant Professor

Shore, Douglas L.; B.A., M.A., Ph.D. (Wayne State)—1985.

Adjunct Professors

Fellbaum, Anthony; B.A. (Laurentian), M.A., Ph.D. (Windsor). Associate Professor—1977.

Girash, Martin; B.Sc., M.A., Ph.D. (Windsor). Associate Professor—1977.

McDermott, William; B.A. (Holy Cross), M.A. (Temple), Ph.D. (Windsor). Associate Professor—1977.

Ross, William; B.A., M.A., Ph.D. (Windsor). Associate Professor—1977.

Fisk, John; B.A. (Western Ontario), M.A., Ph.D. (Windsor). Associate Professor—1979.

Adams, Kenneth; B.S., M.A., Ph.D. (Wayne State). Professor—1981.

Dobson, Lois; A.B. (New York), B.A., M.A., Ph.D. (Windsor). Associate Professor—1984.

Petrimoulx, Catherine; B.A., M.A., Ph.D. (Windsor). Associate Professor—1984.

Bacheyie, Godfrey; M.B., Ch.B. (Ghana). Associate Professor—1985.

Strang, John; B.A. (York), M.A., Ph.D. (Windsor). Associate Professor—1985.

Broga, Mary; B.A. (Waterloo), M.A. Ph.D. (Western Ontario). Associate Professor—1987.

Lycaki, Helene; M.A. (Athens), M.A., Ph.D. (Wayne State). Associate Professor—1987.

Bieliauskas, Linas; B.S. (Xavier), M.A., Ph.D. (Ohio). Associate Professor—1991.

Del Dotto, Jerel; B.A. (Augsburg College), M.A., Ph.D. (Windsor). Associate Professor—1991.

DeLuca, John; B.A. (Detroit), M.A. (Michigan), Ph.D. (Windsor). Assistant Professor—1991.

Finlayson, Alan; B.A., M.A. (Waterloo Lutheran), Ph.D. (Windsor). Associate Professor—1991.

Ricciardi, Philip; B.A. (Concordia), M.A., Ph.D. (Windsor). Associate Professor—1991.

Rudzinski, Donald; B.A. (Illinois), M.A. (Roosevelt), Ph.D. (Windsor). Associate Professor—1991.

Wolfe, Vicky; B.A. (Auburn), M.A. (Southern Illinois), Ph.D. (West Virginia). Assistant Professor—1993.

Burke, Brian; B.A., M.D. (Toronto). Assistant Professor—1994.

Symons, Sonya; B.Sc. (Dalhousie), M.A., Ph.D. (Western Ontario). Associate Professor—1994.

Abrash, Donald; B.A., M.A., Ph.D. (Windsor). Assistant Professor—1994.

Fuerst, Darren; B.A. (York), M.A., Ph.D. (Windsor). Assistant Professor—1994.

North, Anita; B.Sc., M.Sc. (Calgary), M.D. (McMaster). Assistant Professor—1994.

van der Vlugt, Harry; Ph.D. (Florida), M.D. (Leiden). Professor—1995.

Casey, Joseph; B.A. (Windsor), M.A. (Carleton), Ph.D. (Windsor). Assistant Professor—1996.

Harnadek, MIchael; B.Sc. (Victoria), M.A., Ph.D. (Windsor). Assistant Professor.

25.2 Programs of Study

All graduate students in Psychology are required to comply with the ethical principles, values, and standards contained in the "Canadian Code of Ethics for Psychologists", (1991) developed by the Canadian Psychological Association, the "Ethical Principles of Psychologists and Code of Conduct" (1992) developed by the American Psychological

Association, and with current standards for research with human subjects adopted by the University of Windsor.

Failure of a student to adhere to the principles, values, and standards defined above will constitute sufficient cause to warrant dismissal from the graduate program in Psychology.

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 do not complete the Master's thesis in the first year will be permitted to take courses toward the doctoral degree for one additional year only until the thesis is completed. 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 ensure acceptance. The Graduate Record Examination (GRE) is required of all students seeking admission to the Department of Psychology. The GRE scores, Verbal, Quantitative, Analytical, and the Advanced Test in Psychology are used as supplementary information in conjunction with the primary criteria indicated above. Applications for admission must be completed by January 15.

Program Requirements

1) *Course Work:* Students must complete successfully a minimum of twelve graduate courses after the honours B.A. or its equivalent. Requirements vary, however, according to areas of specialization. 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, theories of social psychology, the historical and philosophical foundations of psychology, and ethical and professional issues in 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 Head of the Department and the Executive Dean of Graduate Studies and Research. The student may not repeat more than one course. If a student has failed two courses, a recommendation will normally be made to the Executive Dean of Graduate Studies and Research that the student be required to withdraw from the program. Together with the above requirements, students in the areas of clinical psychology and applied social psychology must complete an internship. The clinical internship is approximately 2000 hours and the applied social internship is approximately 1000 hours.

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 College 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 Executive 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 (see below, 5b).

4) *Dissertation:* The principal requirement for the Ph.D. degree in Psychology is the presentation of a dissertation which embodies the results 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 Head of the Department and the Executive 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 defense 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, although most students are admitted directly into the doctoral 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 will be assessed with respect to their academic qualification, letters of recommendation, and career-related achievements. Possession of the minimum academic requirements does not ensure acceptance. The Graduate Record Examination (GRE) is required of all students seeking admission to Psychology. The GRE scores, Verbal, Quantitative, Analytical, and the Advanced Test in Psychology, are used as supplementary information in conjunction with the primary criteria indicated above. Applications for admission must be completed by January 15.

Program Requirements

After receiving advising within Psychology, the candidate may proceed toward the degree by completing 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).

25.2.3 POSTDOCTORAL CERTIFICATION IN ADULT CLINICAL PSYCHOLOGY

Psychology offers a postdoctoral certification in Adult Clinical Psychology. (Note that postdoctoral certification programs in Child Clinical Psychology or in Clinical Neuropsychology are not offered.) The Postdoctoral Certification Program in Adult Clinical Psychology is designed for psychologists who: a) hold a Doctor of Philosophy degree in Psychology in areas other than clinical psy-

chology; b) have had a minimum of three years of postdoctoral experience; and c) wish to retrain as clinical practitioners.

Admission Procedures

A committee of three faculty members (including the Adult Clinical Coordinator and the Postdoctoral Certification Program Coordinator) will constitute the admissions committee. Inquiries and requests for application forms should be addressed as follows: Postdoctoral Certification Program Coordinator, Department of Psychology, University of Windsor, Windsor, Ontario N9B 3P4.

Program Requirements

The following courses are required and will be used by the advisory committee as the basis for designing the trainee's program:

46-580. Psychopathology
46-581. Ethical and Professional Issues in Psychology
46-582. Clinical Assessment I
46-583. Clinical Assessment II
46-584. Clinical Practice
46-585. Advanced Clinical Practice
46-680. Introduction to Psychotherapy

and four additional courses in psychotherapy (i.e., two-term course sequences).

In addition to required courses, the Postdoctoral Certification Program requires completion of a 2000-hour clinical internship and the Clinical Proficiency Examinations. Trainees should not expect to complete the program in less than two to three years.

The advisory committee will be composed of three faculty members, including the Adult Clinical Coordinator. The committee will evaluate the specific needs of the trainee and modify the program as necessary to meet individual training needs. The advisory committee is also responsible for guiding the trainee through the program, evaluating the trainee's progress, determining the timing for the Clinical Proficiency Examination, and, ultimately, verifying that the trainee has successfully completed the certification program.

25.3.1 COURSE DESCRIPTIONS

All courses listed will not necessarily be offered in any given year. Some courses are restricted to students in the Clinical Program.

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
Basic brain/behaviour relationships are explored in the context of neuro-anatomical and neurotransmitter systems. Traditional theories of brain function are reviewed and current brain modelling techniques are introduced. Individual student presentations or projects based on reviews of specialized brain systems are required. (2 hours a week.)

46-504. Human Ethology
An examination of the ethological/sociobiological theoretical perspective and related methodological approaches as these are applied to human behaviour. (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.)

46-512. Statistics for Graduate Study in Psychology I
Analysis of variance, including repeated measures and mixed designs. Multiple comparisons. Matrix algebra. Multiple correlation and regression. Partial and semipartial correlation. Factor analysis and multivariate analysis of variance. Logistic regression and log-linear models. Multidimensional scaling and cluster analysis. Computer analysis of multivariate data. (3 hours a week.)

46-513. Statistics for Graduate Study in Psychology II
Continuation of 46-512 (3 hours a week.)

46-514. Research Methods in Clinical Psychology
Review of research values and issues in clinical psychology; survey and evaluation of common research designs and strategies in psychopathology, personality, and psychotherapy. (Prerequisite: 46-510.) (3 hours a week.)

46-516. Applied Psychological Measurement
The basic principles of measurement and how they are applied in the construction and evaluation of surveys, tests, and scales will be covered. Also examined will be special problems characteristic of various approaches to measurement, such as the role of sampling in survey work. (Prerequisite: 46-512.) (2 hours a week.)

46-517. Qualitative Methods
An examination of theory, methods, and inference related to qualitative methodologies. Approaches to be covered include topics such as interviewing, case studies, ethnography, semiotics, narrative inquiry, discourse analysis, archival research, projective techniques, and hermeneutics. (2 hours a week.)

46-518. Introduction to Data Analysis
Students will be provided with a practical introduction to statistics for health and behavioural sciences research. Particular emphasis will be placed on the execution and interpretation of univariate and multivariate data analysis using SPSS for Windows. The general aim of the course is to prepare students to collect and analyze data for Master's level quantitative research. (2 hours a week.)

46-519. Research Project in Child Development I
An overview of resources and methods used in child development research and the development of a proposal for a research project. (2 hours a week.)

46-520. Research Project in Child Development II
An overview of statistical methods and computer programs utilized in child development research and the completion of the research project developed in 46-519. (2 hours a week)

46-523. Psychology of Animal Learning
Selected topics in 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 46-604 either concurrently or sequentially.)

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. (Prerequisites: 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.)

46-540. Developmental Psychopathology
Review and analysis of developmental theories and research describing normal and abnormal development as pathways to adult outcome. (2 hours a week.)

46-541. Cognitive Development
Review and comparison of major theoretical positions in cognitive development and a consideration of research generated from these theories. (2 hours a week.)

46-542. Emotion and Motivation in Human Development
An overview of contemporary theories of emotion and motivation with emphasis on various phases of the life span. (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. Language Development
A review of current theories and research in the area of children's language acquisition and use. (2 hours a week.)

46-546. Psychology of the Family
Review and analysis of theory and research examining the impact of family context on individual development. (2 hours a week.)

46-549. Psychogeriatrics
An examination of psychological problems of aging. The course will include such topics as: psychosocial assessment (clinical, functional, behavioural and environmental); mental health counselling (group and family therapy); support systems; and family dynamics. (2 hours a week.)

46-560. Experimental Social Psychology
A survey of theory and research in experimental social psychology, with an emphasis on experimental research methods. Topics will be chosen from substantive areas such as impression formation, interpersonal attraction, attitude formation and change, conformity, aggression, altruism, intergroup relations, and personality and social behaviour. (2 hours a week.)

46-563. Theories of Social Psychology
A critical analysis of theoretical approaches such as social cognition, social learning, group dynamics, symbolic interaction, social constructionism, and postmodernism. (2 hours a week.)

46-566. Program Evaluation
An examination of theory, research, and analytical methods appropriate to the planning, design, implementation, and utilization of program evaluation in educational, social and other organizational settings. Students will apply program evaluation techniques in applied settings. (2 hours a week.)

46-572. Psychology of Personality
A survey of theory and related research in personality. Topics will be chosen from particular theoretical approaches such as psychoanalysis, phenomenology, and behaviourism, and related substantive areas such as personality measurement, development, structure, and dynamics. (2 hours a week.)

46-575. Psychology of Women
A survey of psychological research and theoretical approaches to the study of women past and present. The course will focus on one topic within the field in considerable detail (e.g., violence against women, women and "mental health"), or will cover feminist research and theory in psychology more generally, using a number of topics as exemplars. (2 hours a week.)

46-580. Psychopathology
Survey of issues, diagnostic categories, etiological perspectives, and research in psychopathology. Emphasisis is on adult psychopathology, but the course includes an introduction to childhood disorders. (3 hours a week.)

46-581. Ethical and Professional Issues in Psychology
Ethics and standards of psychological practice and research are reviewed. Legislation, privileged communication, confidentiality, informed consent, private practice, patient rights and sexism are among the topics discussed. (3 hours a week.)

46-582. Clinical Assessment I
Assessment of mental status and intelligence; evaluation of the clinical utility and psychometric properties of standardized intelligence tests. Focus is on assessment of older adolescents and adults. Students practice administration, scoring, and interpretation of tests, and develop basic report writing skills. (Limited to Clinical Program students.) (3 seminar, 3 laboratory/practicum hours a week.)

46-583. Clinical Assessment II
Assessment of personality and psychopathology; evaluation of the clinical utility and psychometric properties of major personality instruments. Focus is on assessment of older adolescents and adults. Students build on skills developed in 46-582 and practice administration, scoring, and interpretation of tests, case formulation, and report writing.

(Prerequisite: 46-582.) (3 seminar, 3 laboratory/practicum hours a week.)

46-584. Clinical Practice
Further exploration of assessment issues such as: the interview process, rationale for assessment, test selection, report writing, recent developments in assessment, and professional issues. (Corequisite or prerequisite: 46-583.) (3 hours a week.)

46-585. Advanced Clinical Practice
Provides opportunities for students to develop and discuss comprehensive clinical presentations based on case samples. Emphasis is on understanding how psychopathology impacts on the assessment process and on treatment selection. (Prerequisite: 46-584.) (3 hours a week.)

46-586. Behavioural Pharmacology
A review and comparison of the major pharmacological agents utilized clinically to affect changes in human behaviour. (2 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. Seminar
(2 hours a week.)

46-640. Child-Clinical Neuropsychology (Theory and Research)
A 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. (Prerequisites: 46-336 and 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. (Limited to Clinical Program students.) (Prerequisites: 46-336 and 46-337, or equivalent.) (2 hours a week.)

46-642. Adult Clinical Neuropsychology (Theory and Research)
A survey of the literature dealing with brain-behaviour relationships in adults. Topics emphasized include the following: the effect of brain dysfunction on perception, learning, and thinking, memory disorders; personality disorders associated with cerebral dysfunction. (Prerequisites: 46-336 and 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. (Limited to Clinical Program students.) (Prerequisite: 46-642.) (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. (Prerequisites: 46-336 and 46-337, or equivalent.) (2 hours a week.)

46-645. Neuropsychological Aspects of Rehabilitation
A study of the literature and the methods currently employed in the treatment of brain-injured adults. Topics to be stressed include epidemiology and societal impact, pathophysiology, clinical presentation and both the theories and practices of rehabilitation. (2 hours a week.)

46-646. Developmental Pediatrics
An examination of neurological, genetic, and other medical/developmental issues in infancy and early childhood. (2 hours a week.)

46-648. Neuropsychology of Aging
A survey of the literature dealing with brain-behaviour relationships across the older

adult life span. Emphasis is given to the understanding and assessment of normal and dysfunctional aspects of cognitive and affective development in adulthood and aging. (2 hours a week.)

46-650. Advanced Child Psychopathology
A 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 with an emphasis on fundamental principles and empirical foundations of effective psychotherapy. Several treatment approaches are studied. (Prerequisite: 46-650.) (2 hours a week.)

46-652. Child-Clinical Assessment I
Investigation of the construction, selection, evaluation and use of ability tests. Practicum in assessment of children's intelligence and achievement. (Limited to Clinical Program students.) (Prerequisite: 46-582 or consent of instructor.) (2 lecture hours a week, plus laboratory and practicum.)

46-653. Child-Clinical Assessment II
Investigation of the construction, selection, evaluation, and use of tests designed for the assessment of children's personality and behaviour. Practicum in administration, interpretation, and communication of results of comprehensive test batteries. (Limited to Clinical Program students.) (Prerequisites: 46-583 and 46-652.) (2 lecture hours a week, plus laboratory and practicum.)

46-654. Adolescent Psychopathology
A survey of the literature dealing with adolescent psychopathology. Emphasis is given to current theory and research and their implications for clinical (2 hours a week.)

46-660. Community Psychology
Theory, research and practice in community psychology from clinical and social psychological perspectives. A variety of topics will be selected from a range of cultural studies and interpretative sources. (2 hours a week.)

46-661. Industrial Psychology
This course covers topics of individual and group differences as related to work, job analysis and evaluation, personnel selection (including employment testing and interviewing), performance appraisal, training and development, environment and safety. The course examines theories, research, and case studies of real-world problems. (2 hours a week.)

46-662. Health Psychology
An overview of health psychology, with emphasis on contributions made by psychology to the areas of health promotion, prevention and treatment of illness, modification of unhealthy behaviours, and improvement of health delivery. Application of the biopsychological model to health-related research and practice will be examined. (2 hours a week.)

46-665. Organizational Psychology
The social psychology of behaviour in organizations. Topics include models for conceptualizing organizations and identifying problems and methods for analyzing and solving problems in areas such as motivation, leadership, satisfaction and communication. (3 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.)

46-670. Applied Social Psychology
A survey of theory and research in applied social psychology, with an emphasis on applied research methods. Topics will be chosen from substantive areas such as organizational, health and community psychology, and areas of application such as social change issues, business, education, environment and law. (2 hours a week.)

46-671. Assessment for Developmental and Social Psychologists
Investigation of the development, selection, administration, scoring, and integration of a variety of ability, aptitude, intelligence, achievement, personality, interest, and other tests used in educational, human service, industrial, and other organizational settings. (Prerequisite: 46-511 or equivalent.) (4

hours a week, combined lecture and laboratory.)

46-673. Cultural Psychology
A survey of the emerging field of cultural psychology, covering the areas of the self, emotion, cognition, motivation, development, social relations, and other psychological constructs within the framework of meaning-making and the cultural embeddedness of identity. Similarities and distinctions between cultural psychology and cross-cultural psychology, psychological and cognitive anthropology, ethnopsychology, and folk psychology will be examined. The interdisciplinary nature of this field will be viewed from both basic and applied perspectives. (2 hours a week.)

46-674 Introduction to Psychotherapy
Comparative analysis of major contemporary models of psychotherapy with an emphasis on psychodynamic, behavioural, and experiential traditions. The practicum portion of the course focuses on the development of basic interviewing and therapeutic relationship skills. (Limited to Clinical Program students.) (3 seminar, 3 laboratory/practicum hours a week.)

THERAPY COURSES

Therapy courses consist of courses numbered 46-675 through 46-697 as listed below. Enrolment in the Clinical Program, 46-674, and consent of the instructor are prerequisites for all therapy courses.

Therapy courses are taught over two terms. Seminars involve readings, discussion, and presentations on the theory, relevant research, techniques, and processes that are specific to the therapeutic approach under consideration. Practica involve supervised experience appropriate to the therapeutic modality.

At least three different therapy course sequences will be offered in each academic year, but offerings will vary from year to year depending upon demand and the availability of qualified instructors.

All therapy courses consist of two seminar hours a week, plus two to four hours of practicum a week.

46-675. Child Psychotherapy I
A survey of approaches to psychotherapy with children, including supervised clinical work in psychotherapy with children and their families. (Prerequisite: 46-680.) (2 lecture, 2 practicum hours a week.)

46-676. Child Psychotherapy II
An application of several models of psychotherapy with children and their families, including supervised clinical work. (Prerequisite: 46-654.) (2 practicum hours a week.)

46-677. Adolescent Psychotherapy I
Examination of the theory, reearch, and practice of clinical interventions with adolescents with an emphasis on fundamental principles and empirical foundatons of effective psychotherapy. Supervised practicum included. (2 lecture, 2 practicum hours a week.)

46-678. Adolescent Psychotherapy II
Continuation of 46-477.

46-679. Short Term and Crisis Intervention I
Theory and practice of time-limited psychotherapy and crisis intervention. Lectures, reviews of major dynamic schools and role playing. (Prerequisite: at least one two-term therapy course sequence.)

46-680. Short Term and Crisis Intervention II
Supervised practicum in time-limited psychotherapy and crisis intervention. Clinical Students will carry two therapy clients at any given time under supervision (Prerequisite: 46-679.)

46-681. Behaviour Therapy I
An examination of the theory, research, and practice of learning based behaviour change strategies. The emphasis will be on respondent and operant-based procedures, and will include social learning.

46-682. Behaviour Therapy II
Students will have the opportunity to apply behavioural techniques and change processes to selected clients. Emphasis will be placed on behavioural assessment and the systematic remediation of clinical problems through the application of respondent and operant techniques. (Prerequisite: 46-681.)

46-683. Systems Approaches to Psychotherapy I

46-684. Systems Approaches to Psychotherapy II
Continuation of 46-683.

46-685. Psychodynamic Therapy I

46-686. Psychodynamic Therapy II
Continuation of 46-685.

46-687. Group Therapy I

46-688. Group Therapy II
Continuation of 46-687.

46-690. Family Therapy I

46-691. Family Therapy II
Continuation of 46-690.

46-692. Cognitive Behaviour Therapy I

46-693. Cognitive Behaviour Therapy II
Continuation of 46-692.

46-694. Experiential Psychotherapy I
An introduction to humanistic/experiential psychotherapy (an introduction of the person-centered, gestalt, experiential, and existential perspectives), with an emphasis on developing one's talents in the nonspecific relationship factors central to all modes of psychotherapy. The humanistic/experiential approach emphasizes the development and use of therapist, as well as client, self-awareness, and is presented through didactic and experiential seminars. (Prerequisite: consent of instructor.) (4 hours a week.)

46-695. Experiential Psychotherapy II
Further development of the humanistic experiential approach to psychotherapy, with emphasis on its methods and on its application to particular syndromes, situations, and populations. Focus is placed on therapist understanding and experience of issues relevant to childhood abuse, spirituality, substance abuse, vicarious traumatization, gender, and race. (Prerequisite: 46-694.) (4 hours a week.)

46-696. Contemporary Issues in the Practice of Psychotherapy I
Presentation, discussion, and practice of a humanistic/experiential model of psychotherapy which integrates client-centred, gestalt, and existential perspectives. Focus is placed on the humanistic/experiential understanding of human functioning, human change processes, and the role of psychotherapy and of the therapist in supporting change.

46-697. Contemporary Issues in the Practice of Psychotherapy II
The humanistic/experiential approach will be applied to particular syndromes, situations, and populations in a supervised practicum. Focus will be placed on therapist experience and understanding of issues relevant to childhood abuse, spirituality, substance abuse, vicarious traumatization, gender, and race. (Prerequisite: 46-696.)

46-698. Advanced Psychotherapy
Lectures, readings, and supervised clinical work in psychotherapy at an advanced and specialized level, with an emphasis on relating types of psychopathology and modes of psychotherapy. (Prerequisites: at least one two-term therapy course sequence and consent of the instructor.)

46-699. Supervised Therapy Practice
Under this course number, advanced clinical students are permitted to carry one or two therapy cases under the close supervision of a clinical faculty member or associate. (Students may register in 46-699 for more than one term.) (Prerequisite: 46-698.)

46-701. Clinical Assessment Practicum
Supervised experience in an approved clinical setting with a focus on the development of skills related to interviewing, use of clinical assessment instruments, case formulation, and report writing. (Prerequisites: 46-582, 46-583, and consent of the Director of Clinical Training.) (500 hours minimum of supervised practicum.)

46-702. Clinical Practicum I
Supervised experience in an approved clinical setting with a focus on the development of basic clinical skills in preparation for practice and/or research. (Prerequisite: consent of the Director of Clinical Training.) (100 hours minimum of supervised practicum.)

46-703. Clinical Practicum II
Supervised experience in an approved clinical setting with a focus on the development of basic clinical skills in preparation for practice and/or research. (Prerequisite: consent

of the Director of Clinical Training.) (100 hours minimum of supervised practicum.)

46-704. Predoctoral Clinical Internship I
A one-year, half-time internship in an approved clinical setting. (Prerequisites: completion of M.A. requirements and consent of the Director of Clinical Training.) (1000 hours of supervised internship.)

46-705. Predoctoral Clinical Internship II
A one-year, half-time internship in an approved clinical setting. (Prerequisites: 46-704, completion of all required courses except 46-742 and 46-798, and consent of the Director of Clinical Training.) (1000 hours of supervised internship.)

46-706. Predoctoral Clinical Internship III
A one-year, full-time internship in a CPA- and/or APA-accredited clinical setting. (Prerequisites: completion of all required courses and consent of the Director of Clinical Training.) (2000 hours of supervised internship.)

46-707. Clinical Supervision Traineeship
Advanced clinical students may apply for the Clinical Supervision Traineeship at the on-campus Psychological Service Centre (PSC). This training experience may be taken at other approved facilities. The traineeship involves seminars, supervised practice, and directed readings intended to prepare the trainee for future clinical supervision roles. (Prerequisites: 46-704, completion of all core clinical courses, at least two 600-level therapy courses, at least three of 46-702, 46-703, 46-708, 46-709, 46-710, and consent of the Director of Clinical Training and the agency Training Coordinator.)

46-708. Advanced Clinical Assessment Practicum
Supervised experience in an approved clinical setting with a focus on the continued preparation for practice and/or research related to interviewing, use of clinical assessment instruments, case formulation, and report writing. (Prerequisites: 46-701 and consent of the Director of Clinical Training.) (100 hours minimum of supervised practicum.)

46-709. Advanced Clinical Practicum I
Supervised experience in an approved clinical setting with a focus on the continued preparation for practice and/or research. (Prerequisites: 46-702, 46-703, and consent of the Director of Clinical Training.) (100 hours minimum of supervised practicum.)

46-710. Advanced Clinical Practicum II
Supervised experience in an approved clinical setting with a focus on the continued preparation for practice and/or research. (Prerequisites: 46-709 and consent of the Director of Clinical Training.) (100 hours minimum of supervised practicum.)

46-711. Supervised Field Work I
(250 hours of supervised practice.)

46-712. Supervised Field Work II
(250 hours of supervised practice.)

46-713. Half-time Clinical Practicum I
Half-time supervised experience in an approved setting with a focus on preparation for clinical research and/or practice. Experience may emphasize development of assessment or clinical intervention skills. (Prerequisite: consent of the Director of Clinical Training.) (500 hours of supervised practicum.)

46-714. Half-time Clinical Practicum II
Half-time supervised experience in an approved setting with a focus on preparation for clinical research and/or practice. Experience may emphasize development of assessment or clinical intervention skills. (Prerequisite: consent of the Director of Clinical Training.) (500 hours of supervised practicum.)

46-715. Psychological Services Centre Predoctoral Internship I
A one-term, half-time internship at the Psychological Services Centre. (Prerequisites: completion of M.A. requirements and consent of the Director of Clinical Training.) (350 hours of supervised internship.)

46-716. Psychological Services Centre Predoctoral Internship II
A one-term, half-time internship at the Psychological Services Centre. (Prerequisites: completion of M.A. requirements and consent of the Director of Clinical Training.) (350 hours of supervised internship.)

46-717. Psychological Services Centre Predoctoral Internship III

A one-term, half-time internship at the Psychological Services Centre. (Prerequisites: completion of M.A. requirements and consent of the Director of Clinical Training.) (350 hours of supervised internship.)

46-721. Applied Social Psychology Practicum

Problem solving in work settings, applying methods of community psychology, organizational psychology, and other fields of applied psychology. Students consult and work directly with a group or organization on a project selected for value to the organization and to the student. (2 class hours biweekly over 2 terms; 100 practicum hours.)

46-722. Consultation and Intervention Skills in Applied Social Psychology

This course provides students with skills for intervention with groups and organizations in community and business settings. Students will receive hands-on practice through participation in and delivery of workshops. Three workshops will focus on core skills such as communications, problem solving, and small group process. Two workshops will be designed to meet participant interests (e.g., conflict management, negotiation, leadership, stress management.) (30 hours over 2 terms.)

46-731. Applied Social Doctoral Internship I

(250 hours of supervised internship.)

46-732. Applied Social Doctoral Internship II

(250 hours of supervised internship.)

46-733. Applied Social Doctoral Internship III

(250 hours of supervised internship.)

46-734. Applied Social Doctoral Internship IV

(250 hours of supervised internship.)

46-741. Comprehensive Examination

Preparation through independent study for the written Comprehensive Examination. Students may register in 46-741 for a maximum of three consecutive terms. (Prerequisite: completion of M.A. requirements.)

46-742. Clinical Proficiency Examinations

Preparation through independent study for written and oral Clinical Proficiency Examinations. Students may register in 46-742 for a maximum of three consecutive terms. (Prerequisites: 46-704 and 46-705, and completion of at least 75% of 46-706.)

46-797. M.A. Thesis Research

46-798. Doctoral Dissertation Research

26 SOCIOLOGY

26.1.1 GRADUATE FACULTY

Professors Emeriti

Ferguson, John D.; B.A., M.A. (Toronto), Ph.D. (Columbia)—1968.

Whitehurst, Robert N.; B.A. (Butler), M.S., Ph.D. (Purdue)—1969.

Professors

Ramcharan, Subhas; B.A., M.Sc. (West Indies); Ph.D. (York)—1971.

Adam, Barry D.; B.A. (Simon Fraser), M.A., Ph.D. (Toronto)—1976.

Fleming, Thomas S.; B.A., M.A. (Toronto), Ph.D. (London School of Economics)—1988.

Maticka-Tyndale, Eleanor; B.A. (State U. of New York, Binghamton), M.A. (McGill), Ph.D. (Calgary)—1993.

Associate Professors

Shuraydi, Muhammad; B.A. (American U. of Beirut), Ph.D. (Alberta)—1973.

Ehrentraut, Adolf W.; B.A., M.A., Ph.D. (Toronto)—1976.

Hedley, Max J.; B.A. (York, England), M.A., Ph.D. (Alberta)—1976.

Drakich, Janice; B.A., M.A. (Windsor), Ph.D. (York)—1989.

Basok, Tanya; B.A., M.A., Ph.D. (York)—1989.

Phillips, Lynne; B.A. (British Columbia), M.A., Ph.D. (Toronto)—1989.

Gannagé, Charlene; B.A., M.A., Ph.D. (Toronto)—1992.

Sears, Alan; B.A., M.A. (Carleton), Ph.D. (Warwick)—1992.

Assistant Professors

Baron, Stephen W.; B.A., M.A. (Victoria), Ph.D. (Alberta)—1994.

Hall, Alan; B.A. (Bishop's), M.A. (Guelph), Ph.D. (Toronto)—1994.

Ilcan, Suzan M.; B.A. (Saint Mary's) M.A. (Dalhousie), Ph.D. (Carleton)—1994.

Lewis, Jacqueline; B.A., M.A., Ph.D. (Toronto)—1994.

de Lint, Willem B.; B.A., M.A., Ph.D. (Toronto)—1997.

Nakhaie, M. Reza; B.A. (University of Iran), M.A. (Guelph), Ph.D. (Waterloo)—1997.

26.2 Programs of Study

26.2.1 THE MASTER OF ARTS DEGREE

At the graduate level students in Sociology will be expected to specialize in one of six areas: International Development; Work; Race and Ethnic Relations; Family, Sex and Gender; Criminology; or Social Psychology.

Admission Requirements

1) Applicants with an honours degree in Sociology or a related field may be admitted into a minimum one-year Master's program provided 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 minimum one-year Master's program in their second or further years, 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 advisor 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 minimum one-year program will proceed toward the degree by completing six courses with at least a B average, among which at least two courses must be taken from one of the following course sequences: 48-515 to 48-555, 48-560 to 48-563, or 48-570 to 48-575. Also required are

48-500, 48-505, and 48-590, plus a thesis on an approved thesis subject and an oral defense of the thesis.

2) Students in the two-year program are required to take the following courses in their first year: 48-401 or 48-402, 48-416, 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 program. At least an overall B average must be maintained.

3) Students with an honours degree in Anthropology must take 48-307, 48-308, 48-346 and two courses from the 48-403 to 48-406 sequence or the equivalent. Students with an honours degree in Criminology must take 48-345 and two courses from the 48-403 to 48-406 sequence or the equivalent. Students with an honours degree in Family and Social Relations must take two courses from the 48-403 to 48-406 sequence or the equivalent.

Notes:

1) 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.

2) Seminar classes require active class participation. Instructors may therefore take into account class participation in grading students, in accordance with Senate regulations.

26.3.1 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.)

48-515. Current Issues in Macrosociology
An advanced seminar examining contemporary approaches to issues of power and social change. The central focus will be on recent Canadian contributions to the study of inequality on the basis of class, gender, race, ethnicity, and sexuality.

INTERNATIONAL DEVELOPMENT

48-520. Social Movements and 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.)

48-525. Development in the World System
Seminar on the central theoretical and empirical issues raised in understanding the ways in which national and global processes of socio-economic development are experienced locally. Questions of class, culture, household, gender, and community will be discussed in the context of both the third world and Canada.

WORK

48-530. Industrial Society
Critical analysis of current paradigms of industrial development in both western and non-western societies focusing on such issues as socio-cultural convergence and diversity, the international division of labour, the role of international organizations, the effectiveness of competing state policies, and the political responses of workers.

48-535. Organization and Work Research
Critical analysis of current theories and research on formal organizations, focusing on such issues as bureaucracy and control, the alienation of labour, and the external determinants of organizational rationality. (2 hours a week.)

RACE AND ETHNIC RELATIONS

48-540. Race and Ethnic Relations
A comparative analysis of race and ethnic relations in Canada focusing on such issues as ethnic stratification and mobility patterns, assimilation and cultural pluralism, policies and legislation governing multiculturalism, employment equity and collective rights.

48-545. Ethnicity and Nationalism
A comparative analysis of the contemporary and historical relations between ethnicity and the construction of collective identities and ideologies in the context of ethnic movements for self-determination, separatism, and the process of nation-state formation.

FAMILY, SEX, AND GENDER

48-550. The Canadian Family in Comparative Perspective
Various forms of family organization will be examined in terms of their historical development and current configuration. The relationship between families and the economy, the polity, and education will also be studied along with family life cycle, including such issues as conjugal and intergenerational conflict, emergent family forms, and the social position of the elderly.

48-555. Gender and Sexuality
Examination of current debates on the formation of gender and sexuality, including such topics as: the sexual division of labour, social policy and state regulation, and gay and lesbian studies.

CRIMINOLOGY

48-560. Crime and Criminology
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 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. Social Psychological Approaches to Social Institutions
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.)

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

27 VISUAL ARTS

27.1.1 GRADUATE FACULTY

Professors

Gold/Smith, Susan; B.A., M.A. (Wayne State)—1970.

Baxter, Iain; R.C.A., B.Sc., M.Ed. (Idaho), M.F.A. (Washington State) - 1988.

Associate Professors

DeAngelis, Joseph R.; B.F.A. (Rhode Island School of Design), M.F.A. (Syracuse)—1969.

Dingler, Daniel W.; B.F.A. (Layton School of Art), M.F.A. (Cranbrook Academy of Art)—1971.

Bélanger, Sylvie; Bacc. Spec. (Montreal), Ed. Cert. (Quebec), B.F.A. (Concordia), M.F.A. (York)—1989.

Sessional Lecturers

Duck, Adele; B.F.A. (Windsor), M.F.A. (Florida State)—1976.

Strikland, Rod; (Windsor), M.F.A. (Tennessee)—1984.

Jones, Barrie; B.F.A. (British Columbia), M.F.A. (York)—1985.

27.2 Programs of Study

27.2.1 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.

Students with a B.F.A. degree from the University of Windsor are encouraged to seek their Master's degree elsewhere.

Admission Requirements

In addition to the requirements set forth in 1.3 and 1.6.1 for admission to the College 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 in art history;
(e) present transcripts of all university- and/or college-level work;
(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 February 10 for Fall admission; applications received after that date may not be considered.

Program Requirements

1) Ten to twelve courses are required including Thesis (27-797):

(a) four courses in a studio area of concentration;
(b) two to four additional courses which may be taken within or outside Visual Arts;
(c) one seminar on contemporary issues (28-660);
(d) one Art History Seminar (28-656) or Directed Individual Studies course (28-600);
(e) Graduate Seminar (27-596);
(f) Early in the second term of their first year, students must participate in a first year M.F.A. group exhibition. This exhibition will be evaluated by faculty members to determine the advisability of a student continuing in the program.

2) *Thesis:* The thesis will consist of an exhibition of a body of original creative works within the candidate's field of concentration. The thesis will be planned with, and executed under the direction of the candidate's principal faculty advisor. This final exhibition should be regarded as the equivalent of the scholarly thesis of an academic discipline.

3) *Committees:*

(a) *Guidance Committee:* Each student will choose a guidance committee, approved by the Visual Arts Graduate Program Committee, at the beginning of the second term of his or her Master's program. This committee will meet with the student periodically throughout the time required to complete the M.F.A. program and to assess his/her work and progress through the program.
(b) *Thesis Defence Committee:* This committee will assess the student's thesis exhibition, conduct the oral examination, decide if the M.F.A. degree should be awarded and determine the thesis grade. The thesis committee will be constituted as follows: a member of the graduate faculty appointed by the Dean of Graduate Studies and Research serving as a non-voting chair, the student's principal advisor and two additional faculty members, one of whom will not have been a member of the student's guidance committee. In ad-

dition a professional artist or artist-educator not from the University of Windsor or the Windsor area will be chosen as an external member of the committee. The student will choose the last three members of this committee with the approval of the Visual Arts Graduate Program Committee and subject to the approval of the Executive Committee of the College of Graduate Studies and Research.

4) *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 to be retained by Visual Arts;
(c) a formal oral defense of the thesis before the student's thesis committee.

5) *Residence Requirements:* The M.F.A. program will require a minimum of two academic years (four terms).

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 enrolment.

27.3.1 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.

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/drawing majors only.

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.

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.

27-580. Studio Tutorial I
Introduction to course preparation and studio teaching practices.

27-581. Studio Tutorial II
Continuation of 27-580, with emphasis on studio teaching experience. (Prerequisite: 27-580 and approval of the M.F.A. Program Coordinator.)

27-596. Graduate Seminar
The Graduate Seminar will meet weekly each term and will provide a forum for peer critiques and critical discussion of students' work and the issues arising from that discussion. The Seminar will also be the venue for developing the written statement required for presentation to the student's thesis defence committee and as part of the oral examination. It must be taken in each term. A grade will be assigned only at the completion of the final term.

27-599. Studio Work
Directed individual studio work outside the student's major. (May be repeated for credit.)

27-797. Thesis

27.3.2 COURSE DESCRIPTIONS—ART HISTORY

The specific topics in the Directed Individual Studies in art history 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.

28-600. 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 M.F.A. Program Coordinator.)

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 M.F.A. Program Coordinator.)

28-660. Seminar on Contemporary Issues
Current issues in art criticism and theory will be considered through reading, discussions, museum trips, guest lectures and research papers culminating in a seminar presentation by individual students on specific issues.

28 GRADUATE FACULTY

The following are members of Graduate Faculty who hold appointments in units which do not offer graduate programs.

Amore, Roy C.; B.A. (Ohio), B.D. (Drew), Ph.D. (Columbia)—1970.

deVillers, Jean-Pierre; L. ès L. (Aix-en-Provence), Ph.D. (Colorado)—1968.

Fraser, Veronica; B.A. (London), M.A., Ph.D. (Toronto)—1988.

Gallant, Wilfred A.; B.A. (St. Francis X.), M.S.W. (Maritime School of Social Work), Ed. D. (Wayne State), C.S.W.—1973.

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

Gorey, Kevin M.; B.A., M.S.W., Ph.D. (S.U.N.Y. Buffalo)—1994.

Hildebrandt, Kai; M.A. (Hamburg), M.A., Ph.D. (Michigan)—1985.

Holosko, Michael J.; B.A.(Hons.) (York), M.S.W. (Toronto), Ph.D. (Pittsburgh)—1985.

King, J. Norman; B.A., M.A. (Toronto), S.T.B. (Laval), Ph.D. (U. of St. Michael's College, Toronto)—1964.

Kingstone, Basil D.; B.A., M.A., Ph.D. (Oxford), M.A. (Ottawa)—1963.

Lage, Dietmar; B.A. (Manitoba), M.A., Ph.D. (McGill)—1983.

Leslie, Donald R.; B.A. (Guelph), M.S.W. (British Columbia), Ph.D. (Georgia)—1994.

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

Linton, James M.; B.A. (York), M.A. (Pennsylvania)—1972.

Mehta, Mahesh; B.A., M.A., LL.B., Ph.D. (Bombay)—1969.

Moon, Richard J.; B.A. (Trent), LL.B. (Queen's), B.C.L. (Oxford), of Osgoode Hall, Barrister-at-Law—1987.

Muldoon, Maureen H.; B.A. (Queen's), M.A., Ph.D. (U. of St. Michael's College, Toronto)—1986.

Starets, Moshé; Dipl. Ed., B.A., M.A. (Tel Aviv), Doct. 3e cycle (Sorbonne)—1986.

van den Hoven, Adrian T; B.A. (Assumption), M.A. (French), M.A. (English) (Windsor), D.ès L. (Louvain)—1966.

Whitney, Barry L.; B.A. (Carleton), Ph.D. (McMaster)—1976.

Warren, Bernie;—1992.

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

29 POSTGRADUATE AWARDS AND FINANCIAL AID

While there is no guarantee of financial support for individual students, the University of Windsor is committed to supporting and encouraging graduate studies. We are proud of our record of funding for graduate study, and with the active effort of current and potential graduate students we aim to sustain and enhance that record. Your host program and the College of Graduate Studies and Research will be happy to assist you in the preparation of a strong and complete application for external funding.

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.

The five main sources of funding for graduate students at the University of Windsor are:

(a) National (Canadian) and provincial (Ontario) scholarship awards (i) tenable at Windsor, or (ii) tenable elsewhere;
(b) Internal scholarships and bursaries;
(c) Internal graduate teaching assistantships and research assistantships;
(d) OSAP (Ontario Student Assistance Program), which generally provides loans;
(e) Discipline-specific or designated awards (awarded by departments or external donors).

A sixth group of awards are "Career Awards". These often seek to identify a researcher during the period of graduate studies, and to provide the individual with

ongoing support over various formative stages of the career.

International students ("visa students") may also be eligible for scholarship and bursary support through programs based in or administered through their home country. We recommend that international students investigate potential sources of support prior to making an application to graduate school, noting that, in Ontario, tuition costs for international students are higher than those for Canadians and Canadian permanent residents (landed immigrants). International students are eligible to apply for all scholarships marked with an asterisk (*) in the section that follows; unmarked scholarships are open only to Canadian citizens and Canadian permanent residents. International students should note that if they hold certain specific forms of visa status, they may not be required to pay the higher "international student" tuition, but instead may be eligible to pay at the same rate as Canadians and Canadian permanent residents. Details of these exceptions to the international student rate are available on an information sheet from the Office of Graduate Studies and Research.

29.1.1 NATIONAL AND PROVINCIAL SCHOLARSHIP AWARDS

Generally speaking, a student should have an outstanding academic record to be in the running for these external awards. A grade average of A- in the most recent two years of study (undergraduate or graduate coursework) is usually necessary. Evidence of research capability, previous research awards (such as NSERC Undergraduate Student Research Awards), and experience of research will also strengthen an application. An application for an external scholarship will pass through several stages: first, the application must be submitted to the program by the appropriate deadline date, then applications may have to be ranked by a program committee. The applications will then be forwarded, along with the program's ranking, to the Executive Dean of Graduate Studies and Research. A committee representing the College of Graduate Studies and Research may then have to rank the applications overall. The Executive Dean will forward recommendations and ranking to the external agency. These applications should be prepared with care. They must be typed, and complete. It is the responsibility of the student to ensure that the application package, including letters of reference, arrives on time. Applicants should check to see whether an award is renewable, or if it must be applied for anew on subsequent occasions. Special requirements and conditions are mentioned in the paragraphs below, but any student who is making an application should request the full packet of background material from the Office of Graduate Studies and Research.

TENABLE AT WINDSOR, AWARDED EXTERNALLY

Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarships (NSERC)

These scholarships are valued at $15,700 for twelve months as of May 1, 1998 for students in their first and second years of graduate study (PGS-A) and $17,400 for those in their third and fourth years of graduate study (PGS-B). These awards are open to students in the fields of agriculture, biology, forestry, chemistry, physics, geology, physical geography, oceanography, mathematics, engineering and some areas of psychology. At the time of application, an applicant must be either a Canadian citizen or a permanent resident. The deadline set by the University is usually early October. Further information may be obtained from the Office of Graduate Studies and Research, or the Natural Sciences and Engineering Research Council of Canada, 350 Albert Street, Ottawa, Ontario K1A 1H5.

Social Sciences and Humanities Research Council of Canada Fellowships (SSHRC)

Doctoral Fellowships are valued at $16,620 (1998-99) for twelve months. The fellowships are intended to develop research skills and to assist in the training of highly qualified

personnel. 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 is available in the Office of Graduate Studies and Research or from the Social Sciences and Humanities Research Council of Canada, 255 Albert Street, Box 1610, Ottawa, Ontario K1P 6G4. Deadline set by the department is usually early November. (Note that SSHRC does not at present provide support for Master's degree research.)

*** Ontario Graduate Scholarships (OGS)**

The Government of the Province of Ontario provides annually a number of postgraduate awards, valued for 1998-99 at $3,953 per term, and tenable only at Ontario universities. The purpose of these awards is to encourage excellence in graduate studies in all disciplines. The minimum academic qualification is the Ontario Honours Bachelor's degree or its equivalent. Applicants should have an A- grade average or better in the most recent two years of study. The awards may be held for three consecutive terms and must be held for at least two consecutive terms. International students should note that while they are eligible to apply for OGS support, there is a very limited number of awards allocated to international students. Further information and application forms are available from the Office of Graduate Studies and Research. Deadline is normally in October.

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 postgraduate awards with a minimum value of $13,000 plus a general expense allowance of $500. These awards will be available in the fields of the humanities, social sciences and mathematics and 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.

Petro-Canada Inc. Graduate Research Award Program

The value of this award is $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: Administrative Services, Association of Universities and Colleges of Canada, 350 Albert Street, Ottawa, Ontario K1R 1B1. Application must reach Ottawa by January 2.

IODE War Memorial Scholarships for Doctoral Study

A maximum of nine scholarships, valued at $12,000 for study in Canada ($15,000 for study elsewhere in the Commonwealth) 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. 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.

*** 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 in the amount of $4,000 U.S. is offered to a female graduate student, 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 teach in her home country on completion of studies. Applications may be obtained from the International Students' Centre, and must be submitted by December 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. For international students wishing to study at Windsor, details may be obtained from the relevant government office in the applicant's own country or from the Director General, External Aid Office, Ottawa, Ontario. Canadian students should note that they may also apply for these awards, but the award would be held in another Commonwealth country (see section on awards tenable elsewhere, awarded externally, below).

*** Datatel Scholars Foundation Scholarships**

Datatel Inc. awards scholarships to undergraduate and graduate students who attend or plan to attend a university selected from one of Datatel's client sites, the University of Windsor being one of these sites. Value of the scholarship determined by the cost of tuition. Application forms are available from the Office of Student Awards and Financial Aid, University of Windsor. Deadline for 1998: January 30.

* International students may apply for awards marked with an asterisk (*).

TENABLE ELSEWHERE, AWARDED EXTERNALLY

Windsor students may also apply for many of the scholarships listed above through the University of Windsor, and hold the scholarships at other Ontario (and in some cases other Canadian) universities. Please see above for details of the following scholarships: NSERC, SSHRC, OGS, Queen Elizabeth II Ontario Scholarships, Petro-Canada, IODE, Delta Kappa Gamma World Fellowship and Commonwealth Scholarships.

The Canada-United States Fulbright Program

This program provides, for a nine-month period, a grant of $15,000 (U.S.). This Fulbright program sponsors outstanding graduate students who are Canadian citizens who will spend one academic year at a host institution in the U.S. The goal of the program is to promote and improve mutual understanding between Canada and the United States. In addition to the general Canada-U.S. Fullbright awards, the foundation also offers a number of corporate awards. Eligible topics: issues pertaining to Canada and the U.S., for example science policy issues, international trade, comparative studies of U.S. and Canadian policies and institutions, attitudes, etc. Deadline: September 30 in the Fulbright Program Office (Ottawa). This is a prestigious award, and only students in the A range should apply. Further informaton is available from the Office of Graduate Studies and Research. U.S. students should note that this is a reciprocal program, and they may be able to apply from the U.S.

CIDA Awards for Canadians

Awards of up to $15,000 (less income tax) per year are available. The objective of these long-term awards is to develop a body of Canadians competent and expert in the field of international development. Applicants must be Canadian citizens; proof of

citizenship must accompany the application form. Applicants must have indicated a definite commitment to and suitability for a career in international development work. Deadline: March 31.

Ontario-Quebec Exchange Fellowship Program

The two provincial governments will each award ten fellowships; in 1997-98 students pursuing studies at the Master's level received $10,000; doctoral students received $12,000. The Ontario-Quebec Commission for Co-operation, 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. Outstanding students from Ontario and Quebec 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. 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.

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. Canadian Students wishing to study in another Commonwealth country may write to the Association of Universities and Colleges of Canada, Commonwealth Scholarship Program, 600-350 Albert, Ottawa, Ontario K1R 1B1, or may obtain scholarship applications from the Office of Graduate Studies and Research.

IODE War Memorial Scholarships for Graduate Study

Seven to nine scholarships valued at $10,000 for study in Canada ($12,500 for study elsewhere in the Commonwealth) 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. 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.

Mackenzie King Travelling Scholarships

Six scholarships of up to $13,000 (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.

Mackenzie King Open Scholarship

One one-year scholarship of $9,000 (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 $10,000. The candidate must have completed at least one full calendar year in doctoral studies at the time of application.

Professional Fellowship

Value $5,000. The candidate must be enrolled in graduate work below the Ph.D. level. She may be studying abroad.

Beverley Jackson Fellowship

Value $3,500. The candidate must be over the age of 35 at the time of application and enrolled in graduate work at an Ontario university.

1989 Polytechnique Commemorative Award

Value $1,400. For graduate studies in any field, with special consideration given to study of issues related particularly to women. The onus is on the candidate to demonstrate the relevance of her work to women.

CFUW Memorial Grant

Value $1,000. For graduate study in science and technology.

La Bourse Georgette Lemoyne

Value $1,000. For graduate study at a Canadian university where one of the languages of instruction and administration is French.

Margaret Dale Philp Award

Value $1,000. For graduate studies in the humanities or social sciences with special consideration given to study in Canadian history. The candidate must reside in Canada.

Alice E. Wilson Award

Value $1,000. Three awarded. For graduate studies in any field, with special consideration given to candidates returning to study after at least three years.

Application forms are available in the Office of Graduate Studies and Research. Completed applications and documentation must be received by November 15. Applications should be sent to the Canadian Federation of University Women, 297 Dupuis Street, Suite 308, Ottawa, Ontario K1L 7H8.

Mensa Canada Scholarships

Value varies. These scholarships are awarded on the basis of a 500-word essay. In the 1997 competition the deadline was Feb. 1. For information please contact the Office of Graduate Studies and Research, or the Coordinator, Mensa Canada Scholarship Program, 329 March Road, Suite 232, Box 11, Kanata Ontario, K2K 2E1.

29.1.2 INTERNAL SCHOLARSHIPS AND BURSARIES

Institutional OGS Awards

The University of Windsor may ordinarily nominate a number of students for the institutional OGS awards,valued for 1998-99 at $3,953 per term, and tenable only at the University of Windsor. These awards are made by the Graduate Awards Committee to eligible Canadian or permanent resident applicants who will be beginning or continuing their graduate studies at Windsor. Priority is usually given to new, rather than continuing, students. Other eligibility criteria and conditions are the same as for regular OGS awards (see section above on awards tenable at Windsor, awarded externally). In 1998, the University of Windsor was allocated five of these special awards. All eligible students whose files are complete by February 1 will automatically be considered for this award. Each program will provide a ranking of all its eligible students for this and other internally awarded scholarships; the ranking and other documentary information will be used as the basis of decisions by the Graduate Awards Committee.

*** University of Windsor Scholarships and Bursaries**

The following scholarships, valued at tuition plus stipend, and bursaries (tuition only) will be offered annually for full-time postgraduate study in any field at the University of Windsor. All students who apply for admission to graduate studies at Windsor and

whose file of documentation is complete by February 1 will be considered by their program as potential candidates for the scholarship. Eligible continuing students will also be considered. The awards are competitive and open to university graduates with high standing. They may be held concurrently with a Graduate Assistantship and/or Research Assistantship.

*** C. P. Crowley Scholarships**

These prestigious awards, established in honour of the founder and first Dean of the College of Graduate Studies at this University, provide tuition for one calendar year beginning with Summer term in the year of the award, and an annual stipend of $5,000 for three terms of registration.

Strategic Scholarships

These are special scholarships for Canadian citizens and permanent residents in areas designated by the University as of strategic importance to its mission. They provide tuition for one calendar year beginning with Summer term in the year of the award, and an annual stipend of $4,000 for three terms of registration.

*** University of Windsor Tuition Scholarships**

These awards provide full tuition for one calendar year beginning with Summer term in the year of the award.

*** University of Windsor Visa Differential Fee (partial tuition) Bursaries**

Most international students are obliged by the Government of Ontario to pay a higher tuition rate than Canadians and landed immigrants. Award of a visa differential fee waiver reduces the fee required of an international student to the same level as that for Canadians and landed immigrants, for one calendar year beginning with Summer term in the year of the award. All eligible students will automatically be considered for this award, and will be ranked by their department in February of each year.

Ian David Berks Memorial Scholarship

This scholarship, value $1,000, is awarded annually through the College of Graduate Studies and Research. It is designated for a mature married student with family or other responsibilities, on the basis of academic merit. The recipient may be enrolled in any graduate program in the natural or applied sciences at the University of Windsor, and shall be a Canadian citizen or British subject with landed immigrant status in Canada. This award was established in 1990 by the family and friends of Ian David Berks. Eligible students should indicate their interest in being considered for this award to the program coordinator or chair of the graduate committee.

Lois K. Smedick Graduate Award

Awarded annually, to a Canadian citizen or permanent resident, on the basis of financial need and scholastic ability. Established in 1996, by friends and colleagues of Dr. Lois K. Smedick, former Dean of Graduate Studies and Research, in recognition of her contribution to the College of Graduate Studies and Research. Application deadline: November 30.

*** University of Windsor Summer Research Scholarships**

These awards are available to assist students in the completion of the thesis. They are terminal in that they are available only for the last summer of the research program. Students who have received this award are no longer eligible for further support from the University.

* International students may apply for awards marked with an asterisk (*).

29.1.3 INTERNAL GRADUATE ASSISTANTSHIPS

*** Graduate (Teaching) Assistantships**

The majority of financially eligible full-time graduate students who have been accepted to graduate studies at the University of Windsor are awarded graduate assistantships. The Graduate Assistant/Teaching Assistant manual, "GA/TA Employment Policy Manual", which is included in the Graduate Student Society (GSS) Handbook, should be consulted for details of the working ar-

rangement, conditions, etc. The maximum Graduate Assistantship requires an average of ten hours of work a week for a total stipend of $6,500 (Master's) or $7,500 (Doctoral) during the Fall and Winter terms (1997-98 rates). Partial assistantships with prorated stipends may be offered in some programs. For further details please consult the program concerned.

*** Research Assistantships**

A number of programs also offer Research Assistantships supported by funds received by faculty from external granting agencies. Consult your program for further information.

* International students may apply for awards marked with an asterisk (*).

29.1.4 EXTERNAL LOAN PROGRAM (ONTARIO STUDENT ASSISTANCE PROGRAM)

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 (graduate or undergraduate) 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, may provide the student with assistance. Applications and information brochures are available in the Office of Student Awards and Financial Aid, which is located at 122 Dillon Hall.

A separate section on graduate awards administered by departments follows below.

29.1.5 INTERNAL, DISCIPLINARY OR DESIGNATED AWARDS (AWARDED BY PROGRAMS)

Students wishing further information on the awards listed below, conditions and deadlines should consult the program concerned.

BIOLOGICAL SCIENCES

The Biology Club Award

Value determined by interest earned on Trust Fund. The Biology Club is organized by the undergraduate and graduate students of Biological Sciences. Award is made annually to a student entering the M.Sc. program in Biological Sciences, 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 major awards such as NSERC and OGS. Application forms are available in the Biological Sciences office; deadline for submission to Biological Sciences, University of Windsor, is August 15.

Dr. Joseph E.J. Habowsky Graduate Student Teaching Award

Each academic year, an award may be made to an eligible graduate student in Biological Sciences who demonstrates enthusiasm, commitment and excellence in undergraduate teaching. Nominations may be made by a faculty member or graduate student by March 31 to the program coordinator. This Committee will evaluate and recommend an award to the Program Chair by April 15. This award was established by colleagues, friends and students to honour Dr. Joseph E.J. Habowsky, Professor of Biological Sciences, on the occasion of his retirement.

Graduate Leadership Award for Excellence

One or two awards may be made in any academic year to recognize graduate students who demonstrate an enthusiasm for science, excellence in research and teaching, and who display leadership in fostering a

spirit of enquiry and community within Biological Sciences, the University or society at large. Nominations with supporting documents may be made by a faculty member or graduate student by March 31 to the program coordinator. Faculty members of this Committee will evaluate and recommend awards to the Pnrogram Chair by April 15. This award was established by Biological Sciences to acknowledge graduate student excellence.

BUSINESS ADMINISTRATION

Odette Family Graduate Scholarships in Business Administration

Value $4,000 (1 scholarship) and $3,000 (2 scholarships). Three scholarships awarded annually to students entering the M.B.A. program, on the basis of academic achievement and achievement on the Graduate Management Admission Test (GMAT).

Women's Graduate Scholarship in Business Administration

Value $2,500. Awarded annually to a female M.B.A. student entering the two-year program. Based on academic achievement and achievement on the Graduate Management Admission Test (GMAT).

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 M.B.A. 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 of Business Administration 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 extra-curricular achievement. Further information is available from the Faculty of Business Administration. Deadline for submission of applications is September 30.

Financial Post Investment Prize

Value $80. Awarded annually during the second term to the student in the candidate year with the highest standing in investment analysis. The award is funded by interest on prize money awarded to the University of Windsor's Investment Team in the Canada-wide Financial Post's "Million Dollar Portfolio" contest.

Allied Domecq Scholarship

Awarded to a graduate student entering the first year of the M.B.A. program. Further information is available from the Faculty of Business Administration.

Denise Gervais Memorial Award

Value $500. Awarded annually to a female graduate of the Honours B.Comm. program upon entrance to the M.B.A. program. Special consideration for this award will be given to students who demonstrate leadership qualities, interest in Human Resources, Marketing, and involvement in undergraduate extra-curricular activities (i.e. Marketing and/or other teams). Established in 1994 by the family and friends in memory of Denise Gervais, B.Comm. (1991), M.B.A. (1992). Deadline: September 30.

CANADIAN-AMERICAN STUDIES

Scholarship for Study in Canadian-American Relations

One or more awards totalling $500. annually to a full-time student registered in an undergraduate or graduate program of study focused on Canadian-American relations. Applicants must have a cumulative average of at least 10.5 and may be engaged in an exchange program or a joint degree program with a university in the United States. Application forms available in the Centre for Canadian-American Studies and the Student Awards office. Deadline: December 15.

CHEMISTRY AND BIOCHEMISTRY

William A. Redmond Memorial Bursary

Value $1,000. Awarded annually on the basis of academic achievement to a student beginning a graduate program in Chemistry or Biochemistry at the University of Windsor. Established (1972) in memory of William A. Redmond, who obtained his doctorate in chemistry at the University of Windsor in 1964.

Roger J. and Audrey M. Thibert Travel Award in Clinical Chemistry

Value $100. Awarded annually to a student enrolled in Clinical Chemistry at the Master's, Doctoral, or postdoctoral diploma level, on the basis of academic excellence and financial need. The award may not be held concurrently by students who have already received another major travel award. This award is to be given only to a second year student or beyond who is presenting a paper/poster at an Annual National Meeting of the Canadian Society of Clinical Chemists, American Association for Clinical Chemistry, or International Federation of Clinical Chemistry. Apply to Chemistry and Biochemistry.

COMMUNICATION STUDIES

Meng Xiaoping Memorial Bursary

Value $200. Awarded annually on the basis of scholarship and financial need to a graduate student in Communication Studies. Established in 1989 in honour of a Master's student from the People's Republic of China.

EARTH SCIENCES

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 Earth Sciences by February 15.

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. Deadline: April 15, to the Dean of the Faculty of Educaton.

ELECTRICAL ENGINEERING

Fredrick Atkins Graduate Awards

Value $2,000. Two annual awards, one for a doctoral student in the Department of Electrical Engineering on the basis of excellent performance in research and course work; and one award for a female Master's or doctoral student in Electrical Engineering on the basis of excellent performance in research and course work. If no female student is eligible, the award will be given to another student on the same basis. The two awards may not be held concurrently.

ENGLISH

Commonwealth Graduate Prize

Value $100. Awarded annually on the basis of scholarship and financial need to an outstanding graduate student in English. The award was established by a grant-in-aid to English from the Commonwealth Scholarship and Fellowship Plan, on behalf of a Commonwealth Scholarship recipient.

GEOGRAPHY

Paul Ernest Vandall Memorial Award

Value $1,000 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 Geography 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 program)

HUMAN KINETICS

Human Kinetics Alumni Awards

Value $100. Human Kinetics Alumni Awards are bestowed annually on the basis of scholarship. Specific areas of emphasis will be identified each year.

NURSING

Dr. Sheila J. Cameron Graduate Award

Value $250. One or more entrance awards annually to M.Sc. students in nursing, on the basis of academic merit and leadership in nursing. All students accepted into the Master's program in nursing will be considered for the award. Established in 1996 by the School of Nursing alumni to honour the contribution of Dr. Sheila J. Cameron (Director of the School of Nursing from 1986-1995) to the development of graduate education.

Alumni Graduate Award

Value $250. Awarded annually to an M.Sc. student in nursing entering the final year of the program, on the basis of scholarship and leadership. Established in 1996 by the School of Nursing alumni.

**POLITICAL SCIENCE*

Walter L. White Memorial Scholarship

Value up to $1,000. Awarded annually on the basis of scholarship and financial need to a graduate student 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

Louis L. Odette Bursaries in Child Clinical Neuropsychology

Two bursaries, one valued at $3,000 and one valued at $2,000, awarded to graduate students in Psychology specializing in Child Clinical Neuropsychology. Established in 1995 by Louis L. Odette.

VISUAL ARTS

Louis Odette Graduate Scholarship in Fine Arts (Sculpture)

Value $2,000, including book allowance. Awarded to a graduate student in the M.F.A. program, specializing in sculpture, on the basis of merit in academic and studio work.

Warner-Lambert Award in Printmaking

Value up to $1,000. May be awarded annually on the basis of the graduate admissions portfolio, transcript and letters of recommendation to a first-term M.F.A. student majoring in printmaking. The award will not necessarily be assigned every year.

29.1.6 CONTINUING CAREER AWARDS

This group of awards includes programs that often seek to identify a researcher during the period of graduate studies, and to provide the individual with ongoing support over various formative stages of the career.

Information on these programs is available from the Office of Graduate Studies and Research, University of Windsor. They include, for example:

Alzheimer Society Training Awards and Research Awards
Canadian Foundation for the Study of Infant Deaths (grants)
Canadian Northern Studies Trust
Canadian Space Agency
Eco-Research Doctoral Fellowships (Green Plan)
Gerontology Research Council of Ontario
Health and Welfare Canada: National Welfare Scholarships

Learning Disabilities Association of Canada: Doreen Kronick Scholarship
Medical Research Council/National Health Research and Development Program: HIV/AIDS Research Initiative
Ministry of Community and Social Services: Northern Bursary Competition
Ontario Mental Health Studentships
Planned Parenthood Federation of Canada Award
Soroptimist Foundation of Canada
J.H. Stewart Reid Memorial Fellowship
Wildlife Habitat Canada (M.Sc. and Ph.D. support)

Note to Donors: The University of Windsor greatly appreciates the financial contributions of individuals, groups, and corporations who wish to support the creative and research enterprise of graduate study. Anyone who is interested in setting up a named award or trust fund to support scholarship or commemorate individuals or events is encouraged to contact the Executive Dean of Graduate Studies and Research. Donors are often interested in directing their contribution to specific groups of students. It must be recognized that 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 therefore be expressed 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 may also be a criterion of eligibility. It would be helpful if the donor could provide supporting evidence that a particular group is disadvantaged, so that such "positive discrimination" can be justified to Federal and Provincial authorities.

30 CALENDAR OF THE ACADEMIC YEAR

(Dates of specific interest to graduate students appear in italics.)

1998

August 1	Last day to register for Fall Distance Education courses.
September 4	Fall term fees are due and payable.
September 7	Labour Day (statutory holiday).
September 8	Late payment penalties begin. In-person registration in the Faculty of Law.
September 9	All classes begin, day and evening. Field work begins in Social Work.
September 22	Last day for late registration and change of course for Fall term day and evening. Last day for full tuition refund.
September 25	*Last day for the oral defense of dissertations, theses and major papers for Fall Convocation.*
October 2	*Last day to deposit dissertations, theses and major papers for Fall Convocation.*
October 12	Thanksgiving Day (statutory holiday) (no classes).
October 13	Last day to receive partial refund for withdrawal from courses
October 17	Fall Convocation

November 3	Last day to withdraw voluntarily from courses. After this date students remain registered in courses and receive final grades as appropriate.
December 1	Last day to register for Winter Distance Education courses.
December 8	Last day classes, day and evening, except Law. Fall term field work ends in Social Work.
December 9	Last day of classes, Law.
December 10	Fall term examinations begin except Law and Education.
December 11	Examinations begin in Law.
December 23 to January 1	University offices closed for Christmas recess.

1999

January 4	University offices reopen. Winter term fees are due and payable. All classes begin, day and evening. Field work begins in Social Work.
January 5	Late payment penalties begin.
January 15	Last day of registration and change of course for Winter term courses, day and evening. Last day for full tuition refund.
February 5	Last day to receive partial refund for withdrawal from courses.
February 15	Last day to file application for Spring graduation.
March 1	Final day for application to Level 3 in Social Work.
February 22 to February 26	Study week for all faculties except Education. Field work continues in Social Work.
February 26	University offices closed.
March 5	Last day to withdraw voluntarily from courses. After this date students remain registered in courses and receive final grade as appropriate.
March 26	*Deadline for recommending an external examiner for an oral defense on the last day for Spring Convocation.*
April 2	Good Friday (statutory holiday)
April 9	Last day of classes, day and evening, for Winter term, except Law. Field work ends in Social Work.
April 12	Winter term final examinations begin, except Law.
April 15	Last day to register for Summer Distance Education courses.
April 15	Last day of classes, Law.
May 7	Intersession, 12-week session and Summer Co-op fees are due and payable.
May 10	Intersession, 12-week session and Summer Co-op terms begin. Late payment penalties begin.
May 14	Last day for late registration and change of course for Intersession. Last day for full tuition refund for Intersession courses. *Last day for oral defense of dissertations, theses and major papers for Spring Convocation.*
May 17	Victoria Day (statutory holiday) (no classes).

May 21	Last day to receive partial refund for withdrawal from Intersession courses. Last day for registration and change of course, 12-week session and Summer Co-op. *Last day to deposit dissertations, theses and major papers for Spring Convocation.*
June 4	Last day to withdraw voluntarily from Intersession courses. After this date students remain registered in courses and receive final grades as appropriate. Last day to receive partial refund for withdrawal from 12-week session and Summer Co-op term courses.
June 5, 6	Spring Convocation
June 18	Intersession classes end.
June 21	Intersession examinations begin. Summer midterm break for 12-week session and Summer Co-op.
June 30	Last day to file application for Fall graduation. Summer Session fees are due and payable.
July 1	Observance of Canada Day (statutory holiday)
July 2	Summer Session fees are due and payable
July 5	Summer Session begins. Late payment penalties begin.
July 9	Last day for Summer Session late registration and change of course. Last day for full tuition refund for Summer Session courses.
July 16	Last day to receive partial refund for withdrawal from Summer Session courses. Last day to withdraw voluntarily from 12-week and Summer Co-op term courses. After this date students remain registered in courses and receive final grades as appropriate.
July 30	Last day to withdraw voluntarily from Summer Session courses. After this date students remain registered in courses and receive final grades as appropriate.
August 1	Last day to register for Fall Distance Education courses. *Deadline for recommending an external examiner for an oral defense on the last day for Fall Convocation.*
August 2	Civic Holiday (statutory holiday) (no classes).
August 13	Last day of classes for Summer Session and Summer Co-op term.
August 16	Summer Session and Summer Co-op term examinations begin.

Specific dates of events beyond this point have yet to be determined.

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31 GENERAL INFORMATION

31.1.1 THE UNIVERSITY LIBRARY SYSTEM

The University library system consists of the Leddy Library, housing the main collection, the Paul Martin Law Library, an autonomous, associated library, and the Paul E. Vandall Map Library, housed in the Department of Geography. The Leddy Library also houses the Curriculum Resource Centre, a specialized collection of K-12 materials for Faculty of Education students. 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 1,200 readers in a variety of general seating facilities, including open and closed carrels.

The collection contains 2,188,000 volumes of print material, 776,000 microform (volume equivalent) items and 350,000 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.

The Library is fully automated and connected to the campus network. The on-line, public access catalogue (LUIS) is available through terminals in the library or off-site, *via* personal microcomputer and modem. There is an ever-increasing number of electronic resources available to students and faculty of the University. The library strives to support undergraduate research through its on-site collection and as a member of several consortia within Ontario to expand our off-campus resources.

31.1.2 ATHLETICS & RECREATIONAL SERVICES

The University of Windsor's program in Athletics and Recreational Services offers a full range of interuniversity athletics and campus recreation activities. Interuniversity varsity teams, nicknamed the Lancers, compete in the newly formed Ontario University Athletics conference (OUA). Nationally, Windsor is affiliated with the Canadian Interuniversity Athletic Union (CIAU). Varsity teams compete for berths at OUA conference and CIAU national championships, staged at different universities across the country.

The men's interuniversity program includes basketball, cross-country running, golf, football, ice hockey, soccer, indoor track & field, and volleyball. Women's interuniversity teams include basketball, cross-country running, ice hockey, soccer, indoor track & field, and volleyball. Regular conference schedules are supplemented by a non-conference schedule including games against opponents from different universities across Canada and the United States. If you are interested in trying out for a varsity team, you can contact the Athletics Office at (519) 253-4232, ext. 2437. Ask to speak with the coach of your particular sport, or plan to attend that team's opening meeting, usually held in late August or early September.

For those students who do not wish to compete in varsity athletics but are still interested in becoming involved, there are numerous opportunities available. For spectators, admission to all Lancer home events is free with a valid student ID card, and there are numerous part-time jobs as well. Students help organize behind-the-scenes aspects of home games, organize and publicize special events, even keep statistics and collect gate receipts. Positions as team managers and student athletic therapists are also available. The University of Windsor is home to the Green Shield Canada Sport Therapy Clinic, a state of the art sport injury facility.

Participation in Campus Recreation provides more options for those not interested in varsity athletics. Instructional classes in

campus recreation include weight training, fitness, learn-to-swim, martial arts, tai chi, and dance. If you enjoy recreational and competitive intramural sports, a challenging program with a variety of activities is available. Activities include volleyball, basketball, slo-pitch, badminton, floor or ice hockey, soccer, and innertube water polo. No prior experience or specific skill level is necessary. Different levels of competition allow novices and those with experience the opportunity to participate. Competitive club experiences are also available in women's and men's rugby.

As with varsity athletics, there are also a number of part-time jobs available in Campus Recreation, ranging from referees and intramural co-ordinators to fitness and aquatic instructors. To join an intramural program or team, or to apply for a position with Campus Recreation, call (519) 253-4232, ext. 2449, or sign up in September when you arrive on campus.

You can visit our website at http://www.uwindsor.ca/athletics.

31.1.3 COMPUTING SERVICES

Computing Services is in the University Computer Centre, located on the south end of the CAW Student Centre. Computing Services provides a full range of facilities and services for students, faculty and staff. The Helpdesk, Computing Consultants and Operation staff are located on the main floor of the building. The lower level houses the Computer Lab and the Computer Classroom.

The *Computer Lab* is open from 8:00 a.m. to 2:00 a.m., seven days a week, during the Fall and Winter terms. During the summer and Christmas holidays, the Lab operates on a shorter schedule. The Lab is always staffed by a Student Consultant to provide assistance.

The *Servers* typically used by students, namely the UNIX SGI server and Novell servers, operate from 8:00 a.m. to 6:00 a.m. They can be accessed from the Computer Lab and other locations on campus. The SGI can be accessed from home using the dial-up services.

The *Helpdesk* is staffed between 8:30 a.m. and 5:00 p.m. during working days. Consulting support is available during normal business hours. Documentation on various services is available from the HelpDesk.

A *Userid* is required to use the UNIX and other servers: students can activate their userid at a microcomputer located in the Computer Lab for this purpose; faculty and staff can obtain a userid by filling out a form indicating their employee number. The personal computers in the Computer Lab can be used by simply producing a student card.

Facilities

The following is the list of major facilities available to students:

UNIX Server (SGI): The UNIX server can be accessed using X-terminals, microcomputers (with appropriate software) from various locations across campus and through via Telnet. Fortran, Java, IMSL, C, SPSS, SAS, SAS/GRAPH and MAPLE are some of the over 80 applications available on the server. The SGI is also used by students for e-mail.

Computer Lab Facilities: The Computer Lab has 73 microcomputers on a Student Novell network, 40 X-terminals accessing the SGI, two Macintosh computers and 8 ethernet laptop docking stations. The microcomputers access Corel WordPerfect and other popular software such as SPSS for Windows, MAPLE, CorelDraw, QuatroPro and Paradox. The X-terminals access the software on the SGI. The Macintosh computers run System 7 with Word and Excel software. There are dot matrix and laser printers available to all workstations.

Dial-up Access: Students can use our computing resources from home and residences using the student dial-up system for a nominal charge.

Internet Access: Students have access to many Internet services such as e-mail, WWW access, Telnet, FTP and many others. These are available from the Computer

Lab, most microcomputers on campus, some residence buildings as well as off campus through the student dial-up service.

Services

Computing Services offers the following services to students:

Helpdesk: Offers problem solving for computer related problems through telephone, e-mail or walk-in contact. Solutions requiring longer or multiple contacts will be referred to the Computing Consultants.

Consulting: Consulting is available on computing related issues for graduate students and faculty members. Undergraduate students can use this service for specialized, non-assignment related problems. Student Consultants are always available in the Computer Lab.

Training: Computing Consultants offer non-credit seminars and workshops on a variety of topics during the term. The seminars are open to all students at no cost. The schedules are posted in the Computer Lab and are published in the electronic "Daily News", the "Lance" and "Insight".

Documentation: An extensive HELP facility and on-line PUBLIC files are available on the WWW to provide detailed information and help. Computing Services publishes a bi-monthly newsletter called "Insight", which contains technical information for the active computer user. It is placed in the Computer Lab, at the HelpDesk and in other campus computing facilities. Handouts on various topics and services of interest to students are available at the Helpdesk.

Databases: Computing Services, in conjunction with Leddy Library, maintains a large collection of databases that are available for student and faculty research. These databases, available on the WWW by registered students and faculty, include the Canada Census, General Social Surveys, CANSIM and many others.

SOCR: Computing Services also works closely with SOCR (Student Organized Computing Resources) which provides students with the opportunity to host their own WWW pages.

Further information is available at Computing Services' WWW site at: http://www.uwindsor.ca/computing/

31.1.4 COUNSELLING

For Academic Advising, Career Planning and Placement, Financial Counselling, Students with Special Needs, International Students, and Aboriginal Education Counselling, see "Student Affairs," 31.3.

For Medical Facilities, see "University Services," 31.2.

For Campus Ministry, see "University Services," 31.2.

Psychological Services Centre

Located in two houses at 326 and 336 Sunset Avenue, the Psychological Services Centre provides confidential assistance to students, staff and faculty in dealing with both crisis situations and personal problems of longer duration. The staff includes five clinical psychologists, four psychology doctoral-level interns, other graduate students from the Department of Psychology, one consulting psychologist, and one consulting psychiatrist.

Methods of counselling can vary from individual sessions to group, couple, or family therapy. The Centre conducts both psychotherapy groups and topic-focused groups, such as stress management, eating disorders, interpersonal relationships, and women's issues. We also offer workshops in specific areas such as stress around exams, topics relevant to residence life, and others as the need arises. Our staff also consults with faculty and staff an any department to assist them in helping students.

Applications for service can be made in person at 326 Sunset Avenue. For additional information, call either 973-7012 or 253-4232, Ext. 7012. Hours are 9:00 a.m. to 12:00 noon, and 1:00 p.m. to 5:00 p.m., Monday through Friday and the office is closed for the month of August. Services are free to students.

31.1.5 HUMAN RIGHTS OFFICE

The objective of the Human Rights Office is to create and promote an environment in which all members of the university community interact on the basis of mutual respect and which is harassment-free. The office deals with all forms of harassment, discrimination and issues of procedural, unfairness, employing various procedures, remedies and sanctions to settle disputes. The Human Rights Commissioner has been authorized by the university to investigate complaints and request person(s) to cooperate in investigations of complaints. Confidentiality is assured in all dealings with the Office.

The University of Windsor has a policy that prohibits harassment and discrimination on the basis of gender, race, sexual orientation, disability, ancestry, place of origin, citzenship, creed, age, marital staus, receipt of public assistance and family status. Behaviour constituting a violation of the University policy and/or the Ontario Human Rights Code is considered to be a serious offense.

Complaints, concerns or questions should be directed to the Human Rights Office, 310 Sunset Ave., or call 253-4232, ext. 3400.

31.1.6 LIAISON AND APPLICANT SERVICES

Representatives from this office present information about the University of Windsor to prospective students for undergraduate and graduate admissions and for admission to the Faculty of Law. Liaison officers offer details with respect to undergraduate admission requirements, student awards and financial aid, residence, academic program particulars, first year programs, student services and campus life. Presentations are made to student groups, secondary administrators and parents.

This area is also responsible for conducting tours of the campus for individuals and groups. Tours include a guided walk through the campus and buildings, academic advising in the appropriate area when required and visits to special areas as requested.

Special open house activities for prospective applicants are conducted through the year.

Those interested in the services of Liaison and Applicant Services should contact the office directly at 440 Sunset Avenue. For those from within the local calling area the telephone number is 973-7013. Others may use our toll free number 1-800-864-2860.

31.2 University Services

University Services provides facilities, services, programs, and activities designed to meet the diverse needs of the campus community. In addition to the administration of specific student services departments, the Office of University Services facilitates liaison with student organizations, the general student body, and other sectors of the University.

Residence Accommodation

The Residence Mission is to provide quality student housing in an environment that supports the academic and social needs of students. To assits students, residence staff offer a variety of programs and services designed to help students acquire the skills necessary to improve academic performance and adjust to theor new environment. Programs such as how to research essays using the Internet, study skills, and exam preparation help students to make the transition to university a successful one.

Students interested in living in residence may request information about the application process, the residences, and residence life when applying for entrance to the University. Questions about residence or the application procedures should be directed to the Office of Residence Services.

Residence tours can be arranged through the Office of Secondary Liaison, and off-campus housing information is available at the front desk of the CAW Student Centre.

The University of Windsor has seven residences, three on campus and four located on the perimeter of the campus.

The Quad is comprised of three halls, Laurier, Macdonald and Cartier. They are located on the south corner of the campus near the main food service outlet, Vanier Hall. Each co-ed residence houses undergraduate students in double rooms.

Electa Hall is located adjacent to the Faculty of Law and one block from the Faculty of Education. This traditional-style, co-ed residence houses upper-year and graduate students in single rooms only. Room assignments are done on a first come, first served basis.

Huron Hall is located ten minutes from the heart of campus near the St. Denis Fieldhouse. This co-ed residence offers double rooms with private baths to undergraduate students entering their second to fourth 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 encouraged to apply in groups of four.

Clark Residence is a 224-bed, townhouse-style residence located on Sunset Avenue at Walnut Street. The Tudor-style units house seven to ten students each in single and double bedrooms, full kitchens, bathrooms, living rooms, dining rooms, storage rooms, and balconies. A limited number of studio (single) and two-bedroom apartments are also available.

Meal Plans are compulsory in all residences.

For further information regarding the Residence or Food Plan please call Residence Services at (519) 253-3000, Ext. 3279 or 3280.

Catering and Conference Services

Catering Conference Services assists students, faculty, and staff in planning their workshops, luncheons, dances, receptions, and banquets. All arrangements for meeting rooms and banquet rooms, liquor, food services, and the physical set-ups are made through this office. Another service offered by Catering and Conference Services is summer accommodation to non-registered students, alumni, and other visitors. Residence rooms and apartments are available.

For further information call (519) 253-4232, Ext. 3276 or 3277, or visit Room 12, Vanier Hall.

Document Services Centre

The Document Services Centre provides same-day copying services to meet the printing needs of students, faculty, and staff on campus. Fast, low-priced photocopies, full-colour copies, a wide selection of résumé paper, overheads, and transparencies are available. Located in the lower level of Chrysler Hall Tower, the Document Services Centre is open Monday through Friday from 8:30 a.m. until 4:30 p.m.

For further information, contact the Document Services Centre at (519) 253-4232, Ext. 2013.

Word Processing and Desktop Publishing Services

Word Processing and Desktop Publishing Services provides typesetting of manuscripts, résumés, cover letters, papers, posters, and flyers, offers laser printing from diskette with black and white or colour. Scanning services are also available in black and white or colour. Overhead production is available.

For further information, visit Word Processing and Desktop Publishing Services at 309 Chrysler Hall Tower, or call (519) 253-4232, Ext. 2100.

Food and Hospitality Services

The dining program at the University of Windsor is designed with taste, nutrition, and convenience in mind. Five restaurants and two convenience stores are located on campus and serve both the resident student and the student living off campus. Campus meal plans are available to both residents and commuters.

Locations in Vanier Hall include the main dining room, Café Chez Vanier, the Quad Lounge, and the Mini Mart convenience

store. The Marketplace and the Kiosk are located in the CAW Student Centre. Dividends, in the Faculty of Business Administration Building features the offerings of Tim Horton's. The Gavel, located in the Faculty of Law Building, offers "grab and go" items for nutrition on the run.

For further information regarding campus meal plans, please call Food and Hospitality Services at (519) 253-4232, Ext. 3272.

The CAW Student Centre

The CAW Student Centre is a focal point of campus activity. On the main floor of the building, the Information Desk provides a variety of services, including general campus information, processing of student I.D. cards for all full- and part-time students, locker rentals, and an off-campus housing directory. The Marketplace offers a complete variety of food items throughout the day.

In addition to a variety of meeting rooms that can be reserved by both campus and community groups, the CAW Student Centre also houses offices of the Students' Administrative Council (SAC), the Graduate Student Society (GSS), Womyn's Centre, the Organization of Part-time University Students (OPUS), Student Media Services, *The Lance* (student newspaper), CJAM (student radio), the Games Room, and the "Asylum" Pub. The CAW Student Centre is also home to Medical and Health Services, the SAC Used Bookstore, a pharmacy, and a travel agency, in addition to a variety of lounge and study areas. While hours of operation for various areas and services within the building vary, the CAW Student Centre itself is open 24 hours a day, seven days a week, throughout the Fall and Winter terms.

Marketing, Sales and Promotions

The Marketing, Sales and Promotions Department provides a contact or liaison for students, staff, and faculty with all the services offered within the Division. Complete listings of services and hours of operation are available. Questions, comments, or concerns regarding any of the services may be brought to this office.

For further information, call (519) 254-4232, Ext. 3412 or 7065, visit Room 272, CAW Student Centre, or find it on the web at http://www.uwindsor.ca under University Services.

Medical and Health Services

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 Health education and life-style choices, to help prevent later illness and to preserve optimum health throughout life. The medical office is located on the second floor, CAW Student Centre. Office. Hours are 0900 hrs. to 1700 hrs. daily, Monday to Friday.

Ontario Health Insurance Plan: This plan (OHIP) covers all in-patient and out-patient hospital and medical services, and is available free of charge to all Ontario residents. Each person now has an individual card, not a "family" card as in the past. Visa students are given an individual card for which they must apply in person with their Student Authorization and which is valid for the length of their visa.

Application forms may be obtained at the University Student Health Office, CAW Student Centre.

Bookstore

For the convenience of students, the University maintains a Bookstore located at Wyandotte and Sunset (next to the Odette Faculty of Business Building), where textbooks, supplies and clothing may be purchased. Special orders are also taken.

The Bookstore is open year-round, from 8:30 a.m. to 4:30 p.m., Monday through Friday, and from 10:00 a.m. to 4:00 p.m. on Saturdays (except holiday weekends).

EXTENDED HOURS

For the first two weeks of classes in September, the Bookstore is open until 8:00 p.m., Monday through Thursday, with regular hours on Friday;

For the first two weeks of classes in January, the Bookstore is open until 7:00 p.m., Monday through Thursday, with regular hours on Friday;

For the balance of September, October, January and February, the Bookstore remains open on Mondays until 7:00 p.m.;

For Intersession, the Bookstore is open until 7:00 p.m. for the first week of classes; for Summer Session, regular hours are observed.

The *Campus Nook* is open from 10:00 a.m. to 2:00 p.m., Monday to Friday, in the C.A.W. Student Centre.

Campus Ministry

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.

31.3 Student Affairs

Academic Advisory Centre

Located on the first floor of Dillon Hall, the Academic Advisory Centre provides assistance to students through academic advising and student support programs. Academic advisors provide general information to all students, especially those who have not declared their academic major or who are considering changing it. Students who have already declared their major are directed to the appropriate department/ which administers their program. Assistance is provided to all students who are experiencing academic difficulty and placed on academic probation.

Career counselling is also available in the Centre. All University students may take advantage of several interest tests to explore their academic, educational and vocational goals. Participants of the *Major Choices—Getting Serious About Your Future* program series of workshops offered by the AAC, have the opportunity of examining various academic and career options compatible with their scholarly and vocational goals and talents.

The Academic Advisory Centre offers a series of workshops on academic skills to assist students to become more effective and efficient learners. Topics include Improving Reading Skills, Effective Note Taking, Time Management, Exam Strategies, and Studying and Memory.

Through the *Head Start* program the Academic Advisory Centre also co-ordinates academic advising for all newly-admitted, first-year students and provides for them a comprehensive orientation to University life, thus facilitating their transition to a new learning environment.

More than a hundred student volunteers are involved in the activities of the AAC as Peer Advisors, Project Assistants, group leaders during Head Start and "Partners" to new students. They form a very effective network of *Students Orienting Students (S.O.S.)* assisting the staff of the Centre in delivering services to the student community.

Academic Writing Centre

For the student who experiences a degree of uncertainty with meeting the academic writing requirements at the University of Windsor, assistance and instruction is available from the Academic Writing Centre. The instruction provided is non-credit, individualized, and sequentially covers all elements of the essay writing process. An enroled University of Windsor student may register at any time by telephoning 253-4232, Ext. 3405 or by stopping in the office located at 470 Sunset Avenue.

Upon student request, writing workshops, individual tutorials, and diagnostic assessments are readily available. Daily workshops, embracing grammar and mechanics, writing style, in addition to essay writing skills, are scheduled conveniently throughout each term. Appointments for tutorials are reserved for students in need of intensive instruction as indicated by the diagnostic assessment and/or the writing sample.

Co-op Education and Student Placement

The Office of Co-op Education & Student Placement's mission is to provide quality assistance and to facilitate the employment of students by offering programs, services, information, tools, resources, and guidance to students and new graduates engaged in career planning, co-op, and job search activities.

The Office co-ordinates and administers co-operative programs in Business (undergraduate and M.B.A.), Computer Science, Engineering, Earth Science, and Environmental Biology.

Career-related programs and services are offered through workshops and counselling in the areas of career exploration, resume writing, job search, and interview techniques. Special events featuring alumni and recruiters are offered throughout the year to provide career information and better prepare students for the job market.

A career information centre houses educational calendars, employment literature, directories, videotapes, reference books, and other resource materials.

Job descriptions for on- and off-campus, part-time, full-time, summer, overseas, and volunteer positions are posted on our job boards.

Program for Students with Special Needs

The Special Needs Office facilitates the integration of students with special needs by providing individualized services and accommodations necessary to eliminate as much as possible the effect of a disability. The office provides counselling, professor liaison, exam accommodation and contact with notetakers, interpreters, scribes, and mobility assistants. A computer and access technology facility has also been established which contains specialized equipment. Individual counselling prior to registration is strongly recommended, and students are invited to contact the Special Needs Co-ordinator (519-253-4232, Ext. 3298), whose office is located on the first floor of Dillon Hall, in the Office of Student Affairs.

Aboriginal Education Centre (Turtle Island)

Located at 496 Sunset Avenue, the Aboriginal Education Counsellor provides an academic, social and cultural support system to students. The counsellor will liaise with various departments, s, and faculties and encourage participation in all workshops and activities that will result in improved study habits and personal satisfaction with campus life. For more information about the A.E.C., call 253-4232, Ext. 3465.

International Students' Centre

Assistance, advice and information regarding orientation, general counselling, U.S. Visitor's Visa, Canadian Immigration matters (work visa, student authorizations, visitors' visas),, and referral services can be obtained at the International Students' Centre on the first floor of Cody Hall and through the International Students' Advisor. The Centre provides a lounge for organizations clubs' functions and meetings, and houses the office of the International Students' Society (I.S.S.). For assistance from the International Students' Advisor, please visit the office or call 519-253-4232, Ext. 3901, or e-mail lanspea@uwindsor.ca.

Office of Student Awards and Financial Aid

The Student Awards Office administers all of the bursary, loans, and special project components of the Ontario Student Assistance Program (including the Canada Student Loans Plan). The office administers all of the University's undergraduate scholarships, bursaries, and other awards. An emergency loan fund for OSAP-eligible University of Windsor students is also co-ordinated through this office.

Information on undergraduate scholarships, bursaries and other awards may be obtained from the office, located in Room 122, Dillon Hall.

Graduate students wishing information on non-OSAP awards should consult the Office of Graduate Studies.

32 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.

32.1.1 PAYMENT OF FEES

Fees are due and payable before the commencement of regular term classes. (See 29, "Calendar of the Academic Year" for specific dates.) As a convenience, students may pay their tuition fees at any time prior to this day. It is the responsibility of the student to ensure that deadlines are met.

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 above-mentioned due date. The student's name, identification number, address and telephone number should be recorded in the upper portion of the form of the remittance to ensure that the records are properly credited.

Students may pay their fees at any branch of any chartered bank in Canada, using a remittance form available at the Cashier's Office. If a student has a grant and/or loan (e.g., OSAP), the loan must be assigned to the University to pay the fees.

Students who are unable to complete payment of fees by the prescribed due date must arrange a fee deferment. 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.
(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 above-mentioned due date.)

Students who are sponsored and require invoices to be sent for collection of fees must bring the appropriate documentation to the Accounts Receivable Office, 1st Floor, Windsor Hall North.

32.1.2 LATE PAYMENT PENALTY AND INTEREST CHARGES

Full-time and part-time students who have not paid fees prior to the above-mentioned due date will be assessed a late payment charge according to the following schedule:

For balances less than $50.00	$ 0.00
For balances from $50.01 to $300.00	$20.00
For balances from $300.01 to $600.00	$30.00
For balances from $600.01 to $1,000.00	$40.00
For balances from $1,000.01 to $2,000.00	$50.00
For balances from $2,000.01 to $3,000.00	$60.00
For balances over $3,000.01	$70.00

A monthly interest charge will be levied on all outstanding accounts. The rate applicable will be in excess of the bank prime rate.

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.

32.1.3 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 all 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.

A student who has not made a satisfactory fee arrangement by the appropriate fee payment due date may be subject to cancellation of his/her registration. Appropriate charges will be assessed effective the date of cancellation.

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 Credit Manager, Cashier's Office.

32.1.4 TUITION AND EDUCATION CREDIT CERTIFICATE (T2202A)

A special certificate in a form acceptable to Revenue Canada authorities is required in order that the student may claim a tax credit for eligible tuition fees for income tax purposes. This certificate will be mailed out by February 28 to all students whose accounts were paid in full by December 31 of the previous year.

Note: Student incidental fees and other society fees are not allowable for tax purposes and consequently are not included as eligible for tuition education credits.

32.1.5 SCHOLARSHIPS

Scholarships and other awards paid to students through the Finance Office are usually credited to the student's account on the basis of one half payable in each term. A cheque for 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

32.1.6 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 University 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 entirely 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. Full- and part-time students withdrawing from regular courses during the periods indicated below will be assessed fees as indicated.

WITHDRAWAL DURING FALL OR WINTER TERM

	REFUND
Week(s) One and Two	Full Refund
Week(s) Three, Four and Five	Partial Refund
After Week Five	No Refund

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.

32.1.7 FREE TUITION FOR STUDENTS 60 YEARS OF AGE AND OVER

The University of Windsor offers an incentive of free tuition and incidental fees 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.

32.1.8 SCHEDULE OF FEES

The Board of Governors reserves the right to make changes without notice in the published schedule of fees and charges if, in its opinion, circumstances so require. Any such changes will be reflected in the Self-Assessment form issued through the Cashier's Office before registration. It is the responsibility of the student to obtain this information.

The schedule of fees changes annually. Contact the Cashier's Office for information on the current schedule of fees, which outlines tuition, incidental, and other fees.

The following miscellaneous fees and charges are payable as incurred:

Part-time studies application fee	$25.00
Letter of Permission	$25.00
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	$40.00
Transcript of record	$ 5.00
Duplicate T2202A	
Current year	$ 3.00
Previous year	$ 5.00
Late registration (full-time students)	$30.00
Returned cheque charge	$25.00 per cheque
Registration reinstatement	$50.00

For information regarding residences, meal plan, residence deposits, and refund policies, please contact the Office of the Associate Director of Residence and Conference Services, Room 49, Vanier Hall, University of Windsor, Windsor Ontario, N9B 3P4.

33 GENERAL INDEX

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