SECTION 17: GRADUATE STUDIES

Dean of Graduate Studies: Brian Campbell, BA, BPhil, PhD

UOIT is an innovative research intensive university with modern state-of-the-art facilities. Graduate students at UOIT benefit from innovative instructors, progressive research and academic tools unique to UOIT. We are focused on high quality programs in high demand areas of study. Our faculty members are dedicated professionals, who have acquired their considerable skill by working on some of the most advanced projects in Canada and around the world. Students who accept the challenge of graduate studies at UOIT are equipped with the tools needed to succeed in today's global marketplace.

The first part of this section outlines a comprehensive set of policies relating to graduate level study, teaching and administration. The second part outlines specific details of the graduate programs offered at UOIT. This information is organized as follows:

17.1 Administration of Graduate Studies

17.1.1 Dean of Graduate Studies

The role of the dean of Graduate Studies is central to all major academic and administrative graduate study activities.

17.1.1.1 Responsibilities

The responsibilities of the dean of Graduate Studies include:

- providing leadership, strategic planning and vision, particularly in the growth and development of graduate programs and activities;
- administering all regulations relating to graduate studies;
- chairing the Graduate Studies Committee of Academic Council;

- representing graduate studies at Academic Council; and
- representing the university's graduate studies to internal and external individuals and groups.

17.1.2 Graduate program directors

Each program has a graduate program director. This role is of critical importance to ensuring the success of the program and its students.

Graduate program directors should have a strong interest in students and their success, thoroughly understand UOIT's policies and procedures for graduate studies, and be available on a regular basis to assist students seeking advice on issues related to their studies.

The graduate program director is accountable to the dean of the faculty and, with respect to graduate activities, to the dean of Graduate Studies.

17.1.2.1 Appointment

The graduate program director is appointed by the dean of the home faculty, in consultation with the dean of Graduate Studies. The duration of the appointment may be two or three years at the discretion of the home faculty dean with opportunity for re-appointment.

17.1.2.2 Responsibilities

Each graduate program director has a formal role and responsibilities relating to the Graduate Studies Committee of Academic Council, including nominations, Supervisory Committees, student awards and similar matters.

The main duties of the graduate program director are to:

- Ensure that all graduate studies policies and procedures are administered fairly and correctly and are communicated to students in their program;
- Chair the Academic Committee for the program and make recommendations to the dean of Graduate Studies regarding the admission of applicants;
- Approve a program of studies for each student and provide advice regarding changes to a student's status or program;
- Appoint a faculty advisor or research supervisor for each student;
- Where applicable, work with the student and research supervisor to form a Supervisory Committee and appoint a committee chair;
- Recommend external examiners to the dean of Graduate Studies;
- Consider requests from students to defer an examination;
- Consider for approval changes to a student's grade;
- Liaise regularly with the dean of Graduate Studies and, as needed, with the registrar;
- Maintain student records and forward to the appropriate UOIT office(s), as required;
- Provide advice, as needed, to units and bodies such as the Graduate Studies Committee of Academic Council;
- Help ensure that graduate students have the necessary resources, facilities and support;
- Co-ordinate financial assistance (including assistantships and fellowships) for graduate students;
- Help monitor the progress of graduate students;
- Provide input and assistance as requested for the creation and review of graduate programs;
- Mediate as needed in conflicts or disputes between a graduate student and his or her research supervisor; and
- Co-ordinate graduate student recruitment activities for the program.

17.2 Graduate faculty appointments

Faculty members who are eligible to participate in the supervision of graduate students and teach graduate courses must have an academic appointment at UOIT. This may be a core or definite-term appointment, or that of an adjunct professor or professor emeritus/emerita. Individuals wishing to teach at the graduate level are nominated by the dean of the faculty through which the program is delivered. Once approved by the dean, the nomination is forwarded to the Graduate Studies Committee of Academic Council for final approval.

All faculty members who are currently involved in any aspect of graduate education, including acting

as a research supervisor and/or member of a Supervisory Committee and who are listed in the Ontario Council of Graduate Studies (OCGS) briefs, automatically become eligible to teach graduate courses and supervise graduate students. The category of their graduate faculty status is determined by the criteria set out below.

Membership is effective from the date of introduction of a graduate program until the program is scheduled for a periodic appraisal by OCGS. At this point, all faculty members are re-evaluated for graduate teaching and supervision privileges. In effect, the normal renewal of graduate teaching and supervision privileges is synchronous with OCGS periodic program appraisal.

The updated faculty list is printed annually in the paper and electronic versions of the graduate section of the Academic Calendar. It is the responsibility of the graduate program director to keep an up-to-date list of eligible faculty members who participate in a graduate program.

17.2.1 Categories of graduate teaching and supervision privileges

Graduate studies at UOIT offers two categories of eligibility: Graduate faculty and Special Graduate faculty.

Graduate faculty are UOIT faculty members who are authorized to participate in all aspects of a graduate program on a regular and sustained basis. These privileges are renewable every seven years at the time of the OCGS periodic appraisal of the graduate program in which the faculty member participates. Graduate faculty are authorized to perform a variety of activities including: serving as a research supervisor or co-supervisor or as a member of a student's Supervisory Committee, participating in an examining committee, teaching graduate-level courses, acting as a faculty advisor, and mentoring and advising graduate students in all aspects of their program. Graduate faculty have a research program that includes externally refereed publication.

Special Graduate faculty status is intended for non-core faculty members who have temporary appointments at UOIT (in certain cases where qualifications warrant) and who provide a limited graduate educational activity for a limited time (i.e. two to three years). Faculty members in this category may be appointed to serve on a Supervisory Committee and/or as external examiners. They may also be allowed to teach graduate courses for a limited time and participate on an examining committee. Approval for such appointments must be obtained from the dean of the host faculty with a memo to the dean of Graduate Studies and an up-to-date curriculum vitae.

In no case may a Special Graduate faculty member serve as the sole research supervisor of a graduate student. Individuals with special graduate teaching and supervision privileges may assist with the direction of a graduate student's research, following approval by the dean, through appointment as a co-supervisor. In this case, however, one of the co-supervisors must be a member of the graduate faculty for that graduate program.

17.3 Program format

Some master's programs require students to write a thesis, while other programs require a project, major paper or other work. The thesis, project or major paper is a central part of the student's program and helps fulfill one of UOIT's mandates: to promote the generation of knowledge through scholarly research of the highest quality.

In some UOIT programs, students may choose between one or more formats such as a thesis, project or a course work option. The program format and options are specified in the program description in the graduate section of the Academic Calendar and in other program information.

A graduate thesis is an original work that is overseen by a research supervisor and a Supervisory Committee. Theses are worth at least nine credits and involve an oral examination that includes an assessment by an external examiner. A project or major paper is an original work that is supervised by a research supervisor and includes a second reader. Projects and major papers are worth at least six credits and do not require an oral examination or an external examiner.

17.4 Student supervision

Each master's student will have a faculty advisor or research supervisor to provide guidance throughout the program. In programs that do not require a thesis, project or major paper, the student will be guided by a faculty advisor throughout the program.

A student registered in a program that requires a thesis, project or major paper may initially have a faculty advisor, but will be assigned a research supervisor when the student begins his or her

research. In some cases a student may have co-supervisors, with the terms established through an agreement for co-supervision and made clear at the outset to all involved.

17.4.1 Faculty advisor appointment

The graduate program director is responsible for assigning faculty advisors.

17.4.2 Faculty advisor responsibilities

The faculty advisor will be a member of the student's home faculty. The main responsibilities of the faculty advisor are to:

- Consult with the student, recommend a program of study and submit it to the graduate program director for approval;
- Help the student choose an appropriate area of research, if applicable;
- Ensure that the student understands all degree requirements and regulations, as well as applicable policies;
- Be knowledgeable about, and inform the student of, key deadlines and related information;
- Be reasonably available to the student to discuss the program of study, as well as any academic concerns;
- If requested, advise the student on academic or personal student services or resources; and
- Monitor the student's academic progress.

17.4.3 Research supervisor appointment

The relationship between the student and the research supervisor is most important to the student's successful completion of a graduate degree. The graduate program director will seek input from the student before assigning a research supervisor.

All research supervisory appointments must be approved in the first instance by the dean of the primary faculty in which the student is registered. Except in extraordinary circumstances, approved on an individual basis by the dean of Graduate Studies, research supervisors must be members of the UOIT core faculty. Associate members and adjunct professors may serve as co-supervisors with the approval of the dean of the faculty.

Before approving the appointment of a research supervisor, the dean should give careful consideration to the faculty member's research activities, supervisory experience and training, previous performance in graduate student supervision, the number of graduate students already being supervised, any imminence of leave (i.e. research, maternity or administrative) or retirement, and any other relevant factors.

Since continuity of supervision is important in all graduate work, a change of research supervisor may be made only for strong reasons and after extensive consultation with all involved. A request for a change may come from the student, the research supervisor, the graduate program director or the dean. It should normally be sent, in writing, to the graduate program director accompanied by the reasons for the proposed change. If the home faculty dean concurs with the request, the recommendation for change should be sent to the dean of Graduate Studies for final approval.

17.4.4 Research supervisor responsibilities

Specific responsibilities of the research supervisor include:

- Being sufficiently familiar with the field of research to provide guidance and/or be willing to gain that familiarity before agreeing to act as a research supervisor;
- Being accessible to the student for consultation and discussion of the student's academic progress and research;
- Helping the student select and plan a suitable, timely and manageable research topic;
- Co-operating with the student and graduate program director to establish a Supervisory Committee to convene meetings, normally at least once annually, to evaluate the student's progress;
- Responding in a timely, consistent and thorough manner to written work submitted by the student, with constructive and well-informed suggestions for improvement and continuation;
- Providing a research environment that is safe, healthy, tolerant and free from harassment, discrimination and conflict;
- Within the norms appropriate to the discipline, providing financial support and/or helping the

student obtain financial support from all reasonable sources;

- Endeavouring to achieve consensus and resolve differences in the best interests of all involved when there is conflicting advice, or when there are different expectations on the part of co-supervisors or members of a student's Supervisory Committee;
- Acknowledging appropriately the contributions of the student in presentations and published material, in many cases via joint authorship;
- Being sensitive to cultural factors which may influence the individual student's learning and research behaviour and experience; and
- Making arrangements for continuity of the student's supervision before beginning an extended leave of absence.

17.4.5 Student responsibilities

Student responsibilities include:

- making a commitment and showing substantial effort, initiative and dedication to gain the background knowledge and skills needed to pursue the research project successfully;
- working with their research supervisor to develop a plan and a timetable for completion of all stages of the research project, and working assiduously to adhere to a schedule and to meet appropriate deadlines;
- meeting regularly with their research supervisor and reporting fully and regularly on progress and results;
- keeping their graduate program director fully informed regarding any matter relevant to their status in the program and seeking advice from their research supervisor, as appropriate;
- meeting agreed-upon performance standards and deadlines of funding organizations to the extent possible when financing has been provided by UOIT or a funding agency, or through a contract or grant; and
- adhering to the standards of research ethics, health and safety, and respecting the requirements of academic integrity, honesty and professionalism (this includes, but is not limited to, acknowledging and crediting any source of ideas, assistance, materials and/or data provided by others).

17.4.6 Student-research supervisor conflicts

It is the responsibility of UOIT and its faculties to ensure that all graduate students receive appropriate and fair supervision. Due to the nature of the relationship between the student and research supervisor, conflicts may arise. In such instances, the first step must be to attempt to resolve the conflict informally between the student and research supervisor. It is the responsibility of the graduate program director to act as a mediator.

A student who believes the conflict has not been resolved should contact the dean of the student's home faculty. If the conflict persists, the student may pursue appropriate resolution through the dean of Graduate Studies.

17.5 Supervisory Committee

Each graduate student in a program that requires a thesis will have a Supervisory Committee. Early formation of a Supervisory Committee, along with regular meetings and formal meeting records, will help ensure higher completion rates.

17.5.1 Appointment

The Supervisory Committee will be appointed by the graduate program director, after consultation with the research supervisor and the student. The appointment will be made once the research supervisor is satisfied that the student has made adequate progress in the chosen research area.

17.5.2 Composition

Normally, each Supervisory Committee consists of the student's research supervisor and at least one other UOIT faculty member. The chair, who may be someone other than the student's research supervisor, will be appointed by the graduate program director of the student's home faculty.

17.5.3 Responsibilities

The Supervisory Committee's main responsibilities are to:

- Advise the student and help define the course of study.
- Assess and approve the student's research proposal.
- Provide support to the student and research supervisor by broadening and deepening the range of expertise and experience available.
- Be reasonably accessible to the student to discuss and suggest other sources of information.
- Offer comments when requested on written work submitted by the student.
- Review the student's progress toward successful completion of the thesis with scheduled meetings at least once per year.
- Provide constructive feedback and provocative discussion of the student's program of study, thereby exposing the student to a wider range of expertise and ideas than can be provided by the research supervisor alone.
- Report progress to the graduate program director and recommend continuation in the program based on satisfactory performance (in the case of reports of unsatisfactory progress, the student may be required to withdraw from the graduate program).
- Recommend to the graduate program director and the dean of Graduate Studies whether a thesis should move to oral examination (this recommendation must be made no less than three months prior to the date set for examination).

17.5.4 Chair's responsibilities

The main responsibilities of the chair of the Supervisory Committee are to:

- Convene and run Supervisory Committee meetings;
- Keep the graduate program director informed of the student's progress;
- Recommend potential external examiners to the dean of Graduate Studies; and
- Forward a copy of the student's thesis to members of the Examining Committee at least four weeks before the oral examination.

17.6 Thesis, project or major paper

Many master's programs require students to write a thesis or major paper, or produce a project. All written work must be in English and in correct, concise and scholarly language.

17.6.1 Permission to begin

Permission to begin the thesis is given by the student's Supervisory Committee when there is general agreement that sufficient research has been done. If the student's program requires a project or major paper, the student's research supervisor will authorize the student to begin the project or major paper.

Students should seek guidance from their research supervisor regarding the use of a style manual appropriate to the academic discipline in which they are working, as well as other available guides to assist in effective writing. Also, students are expected to be aware of and observe copyright requirements, and to follow other standards as outlined in the UOIT policies on Research Ethics **www.uoit.ca/EN/main2/about/13525/14057/14152/150940/thesis.html** and Research Involving Animals **www.uoit.ca/EN/main2/11246/13525/14057/14152/research_guidelines.html**.

17.6.2 Use of copyright material in student work

When preparing a thesis, major paper or other program work, students may include some copyright material, typically in the form of excerpts from books or articles, charts, diagrams or similar previously published materials. It is the student's responsibility to acknowledge properly any copyright materials used, strictly following the citation guidelines and rules of their faculty and/or program.

As well, students who use extensive selections of copyright work may need to seek advance written permission from the author, and must append the letter to their work. Students should contact the copyright holder well in advance of their deadline, as obtaining permission to use copyright materials may take considerable time. In addition, students may be required to pay a fee to obtain such permission. Questions regarding the use of copyright materials should be discussed with the faculty

advisor or research supervisor, as appropriate.

Students may be required to submit their work to Turnitin.com. Further information can be obtained online from UOIT's policy on the Use of Turnitin.com's Plagiarism Detection System **www.uoit.ca/EN/main/11259/11265/150328/196937/turnitin_policy.html**.

17.6.3 Oral examination

Master's candidates whose programs require a thesis will be required to defend their work orally in front of an Examining Committee. Students are expected to follow the advice of their research supervisor and their Supervisory Committee in establishing when their work is ready for examination. In exceptional circumstances students may request that the dean of Graduate Studies arrange for an examination of the thesis or other work without the support of the research supervisor and Supervisory Committee.

It is the student's responsibility to ensure that all materials are prepared and assembled appropriately. Students should consult their research supervisor for specific regulations on the preparation and presentation of materials.

17.6.3.1 Examining Committee

The Examining Committee evaluates the academic merit of each student who defends a thesis and decides whether the student has satisfactorily passed the oral examination.

The Examining Committee consists of all members of the Supervisory Committee plus one external examiner (section 6.3.2). The committee is chaired by the graduate program director or designate.

17.6.3.2 External examiner

An external examiner is typically a faculty member outside the student's program.

The external examiner cannot be an associate or adjunct member of the student's home faculty, nor have had any direct or indirect supervision of the student's thesis. This person will have considerable direct knowledge in the field of study of the subject matter.

Conflicts of interest must be avoided when recommending the names of external examiners to the dean of Graduate Studies. External examiners must not be teaching or supervising family members or relatives of the student, must not be closely linked in a personal or research capacity, nor shall they have shared financial interests with either the student or the research supervisor. Should the student's thesis contain chapters or sections of previously published works, the external examiner shall not have been involved in the review or editing of this material in any capacity.

When an external examiner from outside the university is recommended, a curriculum vitae and written rationale for the choice must be provided to the dean of Graduate Studies.

The external examiner is appointed by the dean of Graduate Studies, upon recommendation of the chair of the Supervisory Committee.

17.6.3.3 Approval for oral examination

Before an oral examination can be held, the Supervisory Committee must approve the thesis for examination (no more than one negative vote and/or abstention). Once the work has been deemed ready for examination and the Examining Committee has been formed, the chair of the Examining Committee, in consultation with committee members and the student, sets the examination date. The chair makes arrangements for sending the student's work to all committee members, including the external examiner, at least four weeks prior to the proposed oral examination. The chair also prepares the relevant documents needed at the time of the examination.

17.6.3.4 Examination procedure

If a member of the Examining Committee finds that he or she is unable to attend the oral examination, the graduate program director should secure a suitable replacement. Should a suitable replacement not be found, the member is asked to submit his or her questions or concerns, to be read by the Examining Committee chair at the defence. In extraordinary circumstances, the examination will be rescheduled if one or more members of the Examining Committee are unable to attend.

The oral examination consists of a short presentation (15-20 minutes) by the candidate summarizing the main findings of the work. The presentation is an open event that can be attended by all interested parties at the discretion of the chair, but visitors may not remain for the rest of the proceedings.

Once the presentation has concluded, the student answers questions from members of the Examining Committee, including the committee chair. Questions must be related to the work done by the student for the thesis and be based on knowledge directly related to the material.

When the question period is over, the student is asked to leave the room and members of the Examining Committee will determine the outcome of the oral examination. The chair of the Examining Committee is a non-voting member, unless the chair's vote is needed to break a tie.

17.6.3.5 Outcomes of completion of the oral examination

The Examining Committee will render one of the following four decisions:

1) Acceptable without change.
2) Acceptable with minor change.
3) Acceptable with major change.
4) Not acceptable.

1. Acceptable without change
A grade of pass is given if there is acceptance of the student's work with no required revisions by the committee as a whole.

2. Acceptable with minor change
A grade of pass is given if there is acceptance of the student's work with minor revisions to be completed within four weeks; revisions must not alter or drastically change the content of the thesis.

3. Acceptable with major change
A thesis which is not acceptable as a pass but not deemed a fail is referred for major revision. A thesis cannot be referred for a major revision and a second oral examination more than once; no further defence is permitted. In order to qualify for a decision of major revision, the work must meet one of the following requirements:

- The committee agrees that the work requires considerable change in order to be deemed a pass; or
- There is a majority vote in favour of major revision.

In the case of a major revision, the Examining Committee will reconvene within six months to continue the examination including the revisions. The revised thesis will be distributed within four to six weeks prior to the meeting to all members of the committee for review and assessment.

4. Not acceptable
A thesis is deemed failed if:

- There is a majority vote to fail it; or
- The thesis is deemed unacceptable after major revisions.

Detailed reasons for failure must be submitted by the chair of the Examining Committee to the dean of Graduate Studies, the graduate program director, and the candidate within two weeks.

17.6.4 Project or major paper evaluation

The research supervisor or co-supervisors, and at least one other reader appointed by the graduate program director from among the graduate faculty or special graduate faculty for that program, shall submit a grade for the project or major paper. All grades must be accompanied by a report that outlines the reasons for the grade.

Each of the submitted grades will be one of the following:

- Acceptable without change;
- Acceptable with minor change;
- Acceptable with major change; or
- Not acceptable.

In cases where all the submitted grades are acceptable without change, a grade of pass will be given.

In cases where at least one grade is "acceptable with minor change" and there are no "acceptable with major change" or "not acceptable" grades, the research supervisor will ensure that the student's work is revised to respond to the recommended minor changes. Normally, these revisions must be completed within four weeks. Revisions must not alter or drastically change the content of the project or major paper. Upon the satisfactory completion of the revisions, a grade of pass will be submitted for the student.

In cases where at least one grade is "acceptable with major change" and there are no "not acceptable" grades, the research supervisor will ensure that the student's work is revised to respond to the recommended changes. These revisions must be completed within six months. After these revisions are complete the student's project or major paper will be circulated a second time for evaluation by the research supervisor or co-supervisor and at least one other reader appointed by the graduate program director. Any grade of "acceptable with major change" or "not acceptable" from the second reading will result in a grade of fail. Any evaluations of "acceptable without change" or "acceptable with minor change" will be processed accordingly and the student will be given a grade of pass.

In cases where there are at least two "not acceptable" grades, the student will be given a grade of fail.

In cases where there is only one "not acceptable" grade, the graduate program director will meet within two weeks with the research supervisor and the student. The graduate program director has two options after this consultation:

1. The graduate program director sends the project or major paper to another reader within four weeks. The project or major paper may incorporate only minor revisions.

   If the new reader determines that the project or major paper is either "acceptable without change," "acceptable with minor change" or "acceptable with major change," the assessment of the student's work will continue with the appropriate level of response as outlined above for the evaluation that requires the greatest revision. If the new reader assigns a grade of "not acceptable," the student will have then received a second "not acceptable" and will be given a grade of fail.

   Or

2. The graduate program director follows the procedures associated with "acceptable with major revision."

17.6.5 Thesis, project or major paper notation

Upon acceptance of the student's thesis, project or major paper, the title of the work and date of approval will be recorded on the transcript.

17.7 Submission of student work

Once a student's thesis, project or major paper has been approved, the student must submit the work formally. The following procedures and conditions apply:

1. One bound copy and one electronic copy of the original thesis, project or major paper become UOIT property.
2. The student grants UOIT a royalty-free, non-exclusive license to make copies of the work for academic purposes at UOIT, and upon request from other universities or bona fide institutions.
3. The international copyright symbol (©) is displayed prominently on the title page of the thesis or displayed with similar prominence on other types of work.
4. The site licence, signed by the student at the start of the program, takes effect; the site licence permits the UOIT library to circulate as part of its collection and/or copy the work for academic purposes only (the university's copyright notice is placed on all copies made under the authority of the licence).
5. While the site licence excludes the sale of authorized copies for profit, UOIT may recover duplication costs through a fee.
6. Every copy made available under the licence clearly states that the copy is being made available in this form with full consent of the copyright owner and only for the purposes of private study or research.
7. UOIT may submit the work to the National Library of Canada, which is permitted to reproduce and lend copies for educational or research use only.

17.8 Intellectual property

Intellectual property (IP) comprises original work which often takes various forms such as research data, books, journal papers, theses, projects, photographs, computer programs, websites, equipment, devices, or audio recordings.

17.8.1 Students and ownership of intellectual property

Students, as well as faculty members and researchers, may create intellectual property. This may be done individually or in collaboration with one or more students, the student's research supervisor or faculty advisor, or other faculty members.

UOIT's Intellectual Property Policy generally states that creators own their work. As a result, student rights are treated as equivalent to those of all other academic personnel, including faculty members. When a student works collaboratively with other students, the student's research supervisor or other UOIT faculty members or researchers, credit for the work is generally shared among the research collaborators. To be considered for joint authorship, all collaborators must:

- Have made a significant contribution to the concept, design, collection, analysis or interpretation of the data; and
- Have helped write and revise the draft publication for intellectual content.

In addition, as the Student Contributors section of UOIT's Research Guidelines states:

"A student should be granted due prominence on the list of co-authors for any multiple-authored article or report that is based primarily on the student's own work, according to the commonly accepted practice in the field."

17.8.2 Students and ownership of externally funded research

While jointly created intellectual property (IP) is owned jointly, other ownership rules may apply when a student participates in a project that is funded by externally sponsored contracts or grants. In such cases, the sponsoring organization or any contractual agreement with UOIT may determine ownership and control of IP.

Students should discuss with their research supervisor or faculty advisor whether any such conditions apply to the student's work. Nevertheless, an external organization or agency may not delay completion of a student's thesis, project or major paper. Only in special circumstances may an outside organization or agency be permitted to temporarily delay public dissemination of such student work.

If the work has commercial value, the student, in conjunction with other co-creators of the work, may wish to apply for a patent or other IP protection. Upon request, UOIT will assess the commercial value of the work and may agree to pay for these costs and manage the IP commercialization process on behalf of the creators. In all cases, commercialization activities require authorization from the associate provost, Research to confirm that obligations to UOIT and any research sponsors have been met and will continue to be satisfied.

17.9 New graduate programs and review of existing programs

When developing new graduate programs or reviewing existing ones, UOIT will follow the policies and procedures of the Ontario Council on Graduate Studies (OCGS).

OCGS by-laws and procedures can be found at **http://ocgs.cou.on.ca/**.

17.10 Admission policies and regulations

17.10.1 Application procedure

Applications for admission to graduate studies programs are normally submitted online at **www.uoit.ca**. Where paper applications are required, they shall be submitted to:

Office of Graduate Studies
University of Ontario Institute of Technology (UOIT)
2000 Simcoe St. North
Oshawa, Ontario L1H 7K4
Canada

Website: www.gradstudies.uoit.ca

17.10.2 Application deadline dates

Prospective students should refer to the Graduate Studies website for application deadlines.

17.10.3 Admissions

To be eligible for admission to any graduate degree program at UOIT, applicants must normally meet the following requirements:

- Hold a four-year honours degree or equivalent from a recognized institution in the area of graduate study or a closely related subject.
- Have an overall academic standing of at least a B (GPA = 3.0 on a 4.0/4.3 scale), with a minimum B in the last two full-time years (four semesters) of undergraduate work or equivalent.
- Provide a minimum of two letters of reference from persons having direct knowledge of the applicant's academic competence. Some faculties may require three letters. Academic references are preferred; however, professional references will be accepted. Letters of reference should come from individuals under whom the applicant has worked closely or studied.
- Provide proof of English proficiency if the first language is not English (see current policy on English proficiency on the Graduate Studies website).
- Submit one official copy of each previous undergraduate and graduate transcript directly from the granting institution. It is the student's responsibility to provide a certified English translation of the transcript if the original is in another language.
- As part of the application form, provide a one-page statement of interest outlining their objectives in undertaking graduate study. Applicants may describe career aspirations/plans, specific research interests (if known), and experience relevant to their interests. If a potential thesis supervisor has been contacted, he/she must be identified in the statement of interest.
- If required, submit a brief description of the courses listed on the official transcripts or provide a copy of the relevant calendar where they are listed.

The aforementioned requirements are the minimum required for entry into graduate studies at UOIT. Some faculties may have additional requirements for entry into a specific program.

17.10.3.1 Offers of admission

All offers of admission are based on the recommendation of the Graduate Committee of the graduate program in question. Regular student offers of admission may include, but are not limited to, pre-admission or post-admission conditions. Pre-admission conditions may include, but are not limited to, requirements for full official documentation, or the completion of a previous degree or other requirements before the student is admitted. Offers of admission with post-admission conditions may include, but are not limited to, taking additional courses to make up for deficiencies or meeting other requirements or standards of performance. Post-admission conditions may have time limits. Meeting post-admission conditions is required for successful completion or continuation in a program. In the latter case the offer of admission will be rescinded if conditions are not met.

17.10.3.2 Refusal of admission

Due to enrolment limitations and additional requirements in some programs, meeting the minimum requirements does not guarantee admission to the program. UOIT may, at its sole discretion, refuse admission to an applicant even if the above minimum admission criteria have been met.

17.10.3.3 Appeal of admission decisions

Individuals may appeal their admission decision in writing within 10 working days to the Registrar's office. There may be a charge assessed for such appeals. Admission appeals are directed to the dean of Graduate Studies who will refer the appeal to the Graduate Studies Committee of Academic Council.

17.10.3.4 Letters of permission (students from other universities)

Students completing graduate programs at other Ontario universities may register under the Ontario Visiting Graduate Student Plan (see section 17.13.8). Students completing graduate programs at Canadian universities outside of Ontario may register through the Canadian University Graduate Transfer Agreement. (See section 17.13.8.)

Students completing graduate programs at universities outside Canada can apply to complete individual courses on a Letter of Permission (LOP) from their home university. Such students shall be admitted to UOIT as non-degree students.

LOP students will still be required to complete the UOIT Application for Admission form, as well as submit a letter from the dean of Graduate Studies at the student's home university to the Office of Graduate Studies at UOIT, outlining the expectations of work to be completed while at UOIT.

17.10.4 Description of graduate students

Regular student: Applicants meeting the minimum admission requirements are considered for admission as a regular student.

Probationary student: Applicants who do not meet the minimum admissions requirements may be considered for admission to a probationary year. Applicants must be approved by the graduate program director who will prescribe a program of studies to meet the admission requirements for a master's program. During this time, the student will be admitted as a non-degree student until the qualifications outlined have been met and the student can be moved into regular student status.

Special student: Applicants who are non-degree-seeking students may apply to take graduate-level courses for professional upgrading or personal interest. Applicants will apply through the Registrar's office and successful students must receive faculty consent prior to registering for the course.

17.11 Student status

17.11.1 Classification of graduate students

Full-time: Graduate students are considered full time if they meet the following criteria:

- Pursue their studies as a full-time occupation;
- Formally identify themselves as full-time students on all documentation;
- Maintain regular contact with their faculty advisor or research supervisor, if applicable, and be geographically available and visit the campus regularly; and
- If employed by UOIT, work no more than an average of 10 hours per week at diversionary employment while they are registered as a full-time student. Diversionary employment is work that takes a student's time away from his or her program of study and research. For example, teaching assistant positions are diversionary employment while most graduate research assistantships are not, if they directly support students in their programs of study and research. In calculating this diversionary work average it is recognized that employment opportunities for full-time students may fluctuate throughout the year. Students have a diversionary work allocation of 510 hours in any 12 month period and no more than 255 in any of each of three terms: fall (September to December), winter (January to April) and spring/summer (May to August).

Part-time: Graduate students who do not meet the above criteria are deemed part-time students. Part-time students may have course load restrictions. Students should consult the individual faculty with regard to the availability of part-time studies within their program.

17.11.2 Absences from studies

Graduate students are expected to be uninterruptedly registered in their designated program of study in order to support the timely completion of their degree. However, the university recognizes that under certain circumstances students may need to absent themselves from regular study while maintaining their relationship with UOIT.

Such circumstances must have sufficient cause and an official leave of absence must be requested through the Office of Graduate Studies and approved by the dean of Graduate Studies.

Acceptable circumstances include:

- Exceptional circumstances: medical, extraordinary demands of employment, compassionate circumstances;
- Maternity leave – available to students during or following a pregnancy; and
- Parental leave – available to students who face extraordinary demands in parental responsibilities, or whose duties require that they be absent from their studies for a period of time.

17.12 Financial aid

UOIT endeavours to help support graduate students in their programs by offering teaching assistantships, research assistantships, scholarships and bursaries. The Office of Graduate Studies and individual graduate program directors have the most up-to-date information on external and internal awards and other financial support.

For further details regarding scholarships, awards and bursaries, visit **www.uoit.ca**.

17.13 Registration policies and regulations

17.13.1 Session dates

Graduate students normally register for three academic semesters per year: fall (September to December), winter (January to April) and summer (May to August).

17.13.2 Registration

Students must be registered in all terms commencing with the term specified in their letter of acceptance and continuing until graduation. Failure to register in all terms will result in withdrawal from the program. If a student does not register within one term of acceptance, readmission to the program is required. All courses in the student's program must be approved by the graduate program director.

Students will be automatically registered in a graduate continuance course until graduation, withdrawal or program termination. Students must actively register for all other program courses.

17.13.3 Changes in course registration

Students may add courses with the approval of the graduate program director within the first two weeks of lectures in any given semester. Students may drop courses without academic penalty within the first 75 per cent of the semester, with the approval of the graduate program director. Students should see the academic timetable for specific add and drop deadlines. Financial deadlines may differ from these dates.

17.13.4 Residency requirement

At least half of a graduate student's courses must be from the UOIT course offerings in order to meet the residency requirements for graduation.

17.13.5 Program changes

Changes to a graduate student's program must be approved by the graduate program director.

17.13.6 Provision for waiver of regulations

Waivers of course prerequisites/corequisites may be granted by the graduate program director. Waivers of faculty, degree or general regulations may be granted by the dean of Graduate Studies.

17.13.7 Transfer credits

All course credit transfers into graduate programs require the approval of the graduate program director of the faculty delivering the equivalent course. Transfer courses may not have been used to satisfy other degree requirements. Graduate courses will not be considered for transfer credit if they were completed more than eight years prior to admission or if the grade received in the course is below B- (70 per cent). Transfer credits are not included in the calculation of the GPA at UOIT.

17.13.8 Visiting students

The Ontario Visiting Graduate Student Plan (OVGSP) permits a graduate student to take courses at other Ontario universities while remaining a registered student at his or her home institution. UOIT students must complete the OVGSP form (available from the Office of Graduate Studies) and provide an outline of the course, desired term, and the reasoning for requesting such permission. The course must be a requirement of the student's program and must be formally approved by the graduate program director as well as the student's faculty advisor or research supervisor before submission to the Office of Graduate Studies. Students from other universities wishing to register for graduate-level courses at UOIT should contact the Office of Graduate Studies at their home

institution for more information regarding the process.

Similarly, UOIT students wishing to take courses at institutions outside Ontario but within Canada may do so through the Canadian University Graduate Transfer Agreement (CUGTA). This Agreement provides students in good standing enrolled in a graduate degree or diploma program at a CAGS member university the opportunity to avail themselves of courses offered at another member institution (host) for transfer credit to the program at their institution (home). The conditions for eligibility, documentation and process are similar to those of the OVGS Plan. Details and forms are available from the Office of Graduate Studies. The CUGTA Agreement requires students to pay tuition for the course(s) concerned and applicable incidental fees at the host institution.

UOIT students wishing to take courses at universities outside Canada may do so on a letter of permission. Such a course must be approved in advance by the student's graduate program director, in consultation with the student's faculty advisor or research supervisor, as applicable. A letter of permission ensures that the courses to be taken at the host institution will be recognized for credit at UOIT and are applicable to the student's program of study. This allows the student to attend the host institution without formal admission. If the student is in clear academic standing and has the necessary prerequisite courses, the student shall complete a Letter of Permission Request form and submit the course outline(s) to the Office of Graduate Studies. Students are responsible for having copies of the final transcript from the host institution forwarded to the UOIT Office of Graduate Studies for award of transfer credit. The minimum mark a student must achieve to have the course transferred is B- (70 per cent). The grade from the transfer credit will not be included in the calculation of the GPA at UOIT.

UOIT students must apply for a letter of permission before taking a course elsewhere.

Failure to do so could result in revocation of admission.

Only students who have been admitted without conditions or who have fully satisfied any conditions specified at the time of admission will be approved to apply for graduate courses at other universities through the Ontario Visiting Graduate Student (OVGS) Plan, the Canadian University Graduate Transfer Agreement (CUGTA) or a letter of permission.

17.13.9 Repeating courses

Students who fail one required course may be permitted to continue their program with permission of their graduate program director. If the failed course is designated as a mandatory course in the program, students may re-take the same course with the approval of the graduate program director. If the failed course is an elective course, students may be able to take an alternative elective approved by the graduate program director. The approved alternative course or the second attempt of the failed course must be completed within 12 months of receipt of the failing grade. Students who have a second failure will be dismissed from the university.

All instances of a course will appear on the academic transcript. The highest grade earned will be used to calculate the student's grade point average.

Students approved to continue in the program will be assigned probationary status and will remain on probation until such time as they have successfully completed the required course (within a maximum period of 12 months). They will be required to maintain good standing (minimum B- grade) in all coursework and satisfactory performance in all project/thesis work undertaken during this probationary period. The graduate program director or designate will provide progress reports to the Office of Graduate Studies each term for the duration of the probation. Once the course in question has been completed successfully, the probationary status will be removed. Students who fail to maintain clear academic standing or earn a second failing grade will be dismissed from the university.

17.13.10 Deferral of course examinations

Students whose religious obligations conflict with a scheduled final examination will be permitted to write a deferred examination. Such students are required to give three weeks' notice to their graduate program director and to document the religious obligations involved.

Graduate program directors may grant deferred examinations on medical or compassionate grounds where sufficient documentation exists. A request for deferral on medical or compassionate grounds, along with supporting documentation, must be provided to the graduate program director within four days after the scheduled writing of the examination.

A graduate program director may also grant a deferred examination to a student who is scheduled to

write three examinations in a 24-hour period. In this case, the exam in the middle of the three is normally the one that will be considered for deferral.

Scheduling is conducted in such a way as to minimize the instance of consecutive examinations for students.

If a technical difficulty prevents the writing of a computer-based examination, the graduate program director may arrange for a deferred examination for all students in the class. Such an examination will be scheduled no later than the end of the first week of classes in the following semester.

17.13.11 Supplemental examinations

In some circumstances students may be allowed to write one supplemental examination. The mark from a supplemental examination may replace or otherwise augment a mark previously obtained in an examination in the same course. Students should contact their graduate program director for regulations concerning supplemental examinations.

17.13.12 Grading scheme and academic standing

Grade	Percentage	Grade Points	Description
A+	90-100	4.3	**Very Good to Excellent**—Student demonstrated mastery of the course material
A	85-89	4.0	
A-	80-84	3.7	
B+	77-79	3.3	**Acceptable to Good**—Student demonstrated adequate knowledge of course material
B	73-76	3.0	
B-	70-72	2.7	
F	0-69	0	**Inadequate**—Student did not perform to academic expectations

Courses designated for pass and fail grading will be assigned a grade of PAS or FAL. For such courses, only failing grades will be included in the calculation of grade point average.

17.13.12.1 Academic standing

Academic standing is calculated and recorded on academic transcripts at the end of each semester for every full-time student.

Academic standing is determined by the semester and cumulative grade point averages and the student's academic standing in the previous semester. The minimumcumulative grade point average required for graduation is 2.7.

Clear Standing: Students are required to maintain a minimum cumulative grade point average of 2.7 to remain in clear standing.

Probation: Students are placed on probation if they receive a failing grade in a course and receive approval from the graduate program director to continue in the program. Students will remain on probation until such time as they have successfully completed the failed course or an approved alternate course. This must be done within a maximum period of 12 months. Students will be required to maintain good standing (minimum B- grade) in all coursework and satisfactory performance in all project/thesis work undertaken during the probationary period. Term reports on student progress will be provided to the dean of Graduate Studies by the graduate program director or designate for the duration of the probation. Once the course in question has been completed successfully and the student has clear standing, the probationary status will be removed.

Dismissal: Students who fail to maintain the academic requirements for clear standing during a probationary period or earn two failing grades will be dismissed from the university.

17.13.13 Minimum average

In order to continue in a prescribed program of study at the graduate level, a student must maintain a minimum B- average overall.

17.13.14 Grade changes

After grades have been officially approved and released, any grade changes must be submitted in writing to the registrar. Grade changes may result from the submission of course work, the writing of a deferred examination, clerical errors, or an approved examination reread. All grade changes must be approved by the course instructor and the graduate program director or designate.

If a student's grade is not available when final grades are approved at the end of the term because of special circumstances, a special designation will be temporarily added to the student's record. If a deferred examination has been granted, a grade of DEF will be assigned. If a portion of the work required for the course is incomplete, a grade of INC may be recorded. These grades may satisfy prerequisites for further courses on a temporary basis, but not beyond the end of the subsequent term after which these grades revert to "F."

Graduate continuance courses will be assigned a grade of CO (continuance) and will not be included in grade point average calculations.

17.13.15 Grade appeals

Students may, with sufficient academic grounds, request that a final grade in a course be appealed (which will comprise only the review of specific pieces of tangible but not oral work). Grounds not related to academic merit are not relevant for grade appeals.

Students are normally expected to contact the course instructor first to discuss the grade received and to request that their tangible work be reviewed. Students should be aware that a request for a grade appeal may result in the original grade being raised, lowered or confirmed. The deadline for submitting grade appeals is three weeks after the release of final grade reports in any term.

If the student wishes to formally appeal the grade, the student shall lodge a request with the Office of Graduate Studies, which will contact the graduate program director and collect any fees incurred for the appeal. Students must specify the rationale for their appeal by making clear the component of the final grade upon which they seek appeal. The graduate program director will be responsible for ensuring that the work is reappraised by an appropriate faculty member, ensuring anonymity of both the student and the reappraiser, and for communicating the result of the appeal (including the reappraiser's comments) and the route of appeal to the student and the course instructor. The reappraiser will be given the nature of the assignment and the rationale for the original grade. It is expected that every effort will be made to render the decision within 30 days of the reviewer having received the work.

In the event that a student feels that the appeal procedures have not been followed appropriately, a student may submit, in writing, a formal request for a grade appeal to the Graduate Studies Committee of Academic Council. Such appeals can only be considered on the grounds of procedural irregularity.

Appeals must be submitted within 15 working days of notification of the decision. Appeals shall be heard by a panel of a minimum of three committee members, as determined by the dean of Graduate Studies, including at least one student and at least two faculty members. The appeal hearing shall be chaired by the dean of Graduate Studies or designate, who shall be counted as a panel member.

At the discretion of the relevant appeals panel, the student and/or the course instructor may be invited to meet with the panel to present their case(s) orally. The panel's decision will be taken in camera and it is expected that parties will be informed of the decision in writing within 20 working days of the filing of the appeal.

17.13.16 Conferral of degrees

Students expecting to graduate in any given term are required to contact the Registrar's office to complete the necessary forms. All applications must be received no later than February 4 for June graduation.

Degrees will be conferred at the time of Academic Council approval and notation of the degree awarded will be entered on the student's record. All students who are awarded a degree are eligible to attend the session of Convocation that immediately follows the date of conferral.

17.14 Degree requirements

All candidates pursuing a master's degree shall enrol in an advanced course of study approved by the graduate program director of the program where the graduate student is registered.

Each student must meet the program requirements laid out by the host faculty, while maintaining the required average to qualify to graduate in a timely manner.

17.14.1 Time limits

The minimum time allowed for full-time students to complete all requirements for a master's program is one year, and the maximum time is three years from the time of initial registration as a full-time student. Students registering on a part-time basis have a maximum of six years to complete the degree. Terms for which a student is granted a leave of absence shall not be included in these time limits.

Students needing to exceed the normal allotted time for completion of their program must formally request an extension to their program. Extension requests are to be made after the normal program length to the dean of Graduate Studies.

Students who do not complete degree requirements within the allotted time and have not been granted an extension may be required to withdraw from the program. Under exceptional circumstances and on the recommendation of the chair of the Supervisory Committee, a student who did not complete the degree requirements within the allotted time may be readmitted for one semester only to complete those requirements. Final approval for readmission must be granted by the dean of Graduate Studies.

17.15 Academic conduct

17.15.1 Code of Academic Conduct

Faculty members and students share an important responsibility to maintain the integrity of the teaching and learning relationship. This relationship is characterized by honesty, fairness, and mutual respect for the aims and principles of the pursuit of education. Academic misconduct impedes the activities of the university community and is punishable by appropriate disciplinary action.

UOIT and its members have the responsibility of providing an environment which does not facilitate the inadvertent commission of academic misconduct. Students and faculty should be made aware of the actions which constitute academic misconduct, the procedures for launching and resolving complaints, and the penalties for commission of acts of misconduct.

17.15.1.1 Academic misconduct: offences

Academic misconduct includes, but is not limited to:

- Unreasonable infringement on the freedom of other members of the academic community (i.e. disrupting classes or examinations, or harassing, intimidating or threatening others);
- Violation of safety regulations in a laboratory or other setting;
- Cheating on examinations, assignments, reports or other work used to evaluate student performance (cheating includes copying from another student's work or allowing one's own work to be copied, submitting another person's work as one's own, fabrication of data, consultation with an unauthorized person during an examination, and use of unauthorized aids);
- Impersonating another student or allowing oneself to be impersonated for purposes of taking examinations, or carrying out laboratory or other assignments;
- Plagiarism, which is the act of presenting the ideas, words, or other intellectual property of another as one's own (the use of other people's work must be properly acknowledged and referenced in all written material);
- Obtaining by improper means examination papers, tests or similar materials, or the use or distribution of such materials to others;
- Falsifying academic records, including tests and examinations, or submitting false credentials for the purpose of gaining admission to a program or course, or for any other purpose;
- Misrepresentation of facts, whether written or oral, which may have an effect on academic evaluation; this includes making fraudulent health claims, obtaining medical or other certificates under false pretences, or altering certificates for the purposes of misrepresentation;
- Submission of work when a major portion has been previously submitted or is being submitted for another course, without the express permission of all instructors involved; and

- Professional unsuitability, such as behaviour inconsistent with the norms and expectations of the profession.

17.15.2 Procedure for resolution

With respect to all accusations of academic misconduct, students are presumed innocent until the contrary has been established. Decisions regarding the commission of academic misconduct are based on the balance of probabilities. A record of all allegations of misconduct, along with details of the resolution, will be entered into the central academic records kept by the Registrar's office.

Faculty, staff, or students who have reason to believe that an academic offence has been committed should report the matter promptly to the appropriate dean. A written report of the alleged offence shall be prepared, together with any relevant evidence.

The dean must decide promptly whether an attempt is to be made to resolve the matter informally; otherwise, the dean shall follow the procedures for formal resolution.

In either case, a student will not be permitted to withdraw from the course in which the offence was alleged to have been committed until the matter is resolved and penalty imposed, if applicable.

17.15.2.1 Informal resolution

The dean must inform the student of the accusation of academic misconduct. The student will have five working days in which to respond to these allegations. If the alleged offender responds with an admission of guilt and agrees to the terms of a resolution as set out by the dean, the matter will be considered closed. The terms of the resolution shall be detailed in writing and signed by the dean and the student in question. A copy of this document will be sent to the dean of Graduate Studies.

Informal resolution may not result in the expunging of grades, the revoking of degrees, or in the student being suspended or expelled.

17.15.2.2 Formal resolution

When an attempt at informal resolution fails or is deemed inappropriate, the dean must inform the student in writing of the charge, the possible penalties and provide a copy of the pertinent policy statement. The student will be given five working days to prepare a response. The dean will then meet with the student to hear the response.

Both the dean and the student are entitled to be accompanied by up to two advisors at this meeting, provided the identity of the advisors is given no less than 48 hours before the meeting.

The dean shall then conduct a thorough investigation of the allegations and response, to be concluded within 10 further working days and notify the parties of the decision in writing. A copy of the decision will be provided to the dean of Graduate Studies and, on a need to-know basis, to administrative units (i.e. the graduate program director, other faculties, the registrar).

17.15.3 Penalties

If a student is deemed to have committed academic misconduct, one or more of the disciplinary penalties in the following list may be imposed. The severity of the penalty will be determined by the nature of the offence and the student's past record of conduct. Students found guilty of successive acts of misconduct will receive increasingly severe penalties.

The disciplinary penalties are:

- Resubmission of the piece of academic work in respect of which the misconduct was committed, for evaluation;
- A written reprimand, warning the student that the behaviour was unacceptable and that further misconduct will lead to additional penalties. A copy of the reprimand will be placed in the student's file, but no notation will appear on the academic record;
- Submission of a failing grade in an examination, test, assignment or course;
- Disciplinary probation for the remainder of the student's registration in his current program of study. A note to this effect will be placed in the student's file, but no notation will appear on the academic record. Any further offence will lead to a more severe penalty;
- Expunging of grades or revoking of degrees;
- Restraining orders or monetary restitution where appropriate in the case of threats, harassment, or damage to property;

- Suspension from attendance in a course, program, faculty or UOIT itself, for a period not exceeding three years as deemed appropriate. While suspended, a student may not register, and loses the right to attend lectures, write examinations, and receive payment from UOIT sources. Courses taken elsewhere during the period of suspension are not eligible for transfer credit. Notice of suspension will be placed in the student's file and will appear on the student's academic record. The conditions of suspension will specify the length of time such notice will remain on the student's academic record;
- Permanent expulsion from UOIT. A note to this effect will be placed in the student's file and will remain on his academic record; and
- Such other penalty as deemed appropriate.

17.15.4 Termination of student enrolment

UOIT may terminate a student's enrolment in a graduate program on any of the following grounds:

- Failure to achieve the required grades to continue as outlined in the degree regulations;
- Failure to achieve the required grade on a comprehensive exam or project;
- Failure to successfully complete a thesis, project or major paper;
- Failure to register in any semester;
- Failure to report, in advance, courses being taken at another institution;
- Lack of progress toward completion of the program;
- Recommendation of termination from the Supervisory Committee;
- Failure to meet the conditions of admission;
- Academic misconduct;
- Professional unsuitability as defined by the program; or
- Research misconduct and/or non-compliance with UOIT's research ethics guidelines or policies.

17.15.5 Academic appeals

All decisions of the university relating to academic conduct or program termination may be appealed to the Graduate Studies Committee of Academic Council. The student will be given 10 working days to gather new evidence and to submit a letter of appeal to the dean of Graduate Studies. Under normal circumstances, disciplinary penalties will not be imposed before an appeal is decided; however, official transcripts will not be issued during this period. Formal registration may be revoked where warranted. In the case of suspected professional unsuitability, a student may be withdrawn from classes, practica, work placements or other program-related activities pending resolution of the case.

A student may apply to the dean of Graduate Studies for continued attendance in classes and related activities while the appeal is being heard. In order for such a request to be granted, the dean of Graduate Studies must be satisfied that there would be no detrimental effect of such continued attendance. If the appeal is granted, formal registration will be reinstated.

17.15.5.1 Graduate academic appeals procedures

1. Appeals shall be heard by a panel of a minimum of three committee members, as determined by the dean of Graduate Studies, including at least one student and at least two faculty members.
2. The appeal hearing shall be chaired by the dean of Graduate Studies or designate, who shall be counted as one of the panel members.
3. Decisions with respect to the final disposition of an appeal will be carried by a simple majority of panel members hearing the appeal.
4. An appellant must have completed any prior levels of appeal open to him or her before filing a Notice of Appeal with the committee.
5. An appeal to the committee shall be commenced by filing a Notice of Appeal in the required form no later than 4 p.m. on the 10th working day after the date of the decision which is being appealed.
6. The chair may refuse to give a hearing to an appeal on the grounds that it is not within the jurisdiction of the committee.

7. The panel of the committee hearing an appeal may dismiss an appeal by unanimous decision after considering the written submissions notwithstanding a request for an oral hearing on the grounds that there is no real case for an appeal (i.e. the appeal is frivolous or vexatious and without merit).
8. In the Notice of Appeal, the appellant shall elect whether an oral hearing is requested. If no election is made, the appeal shall be determined in writing.
9. Where an appeal is to be determined in writing:

   As soon as reasonably practicable the panel shall provide a copy of the Notice of Appeal to the responding faculty;

   The responding faculty has 10 working days to deliver to the panel a written response to the Notice of Appeal, attaching any documents relevant to the decision under appeal. A copy of the written response and attached documents shall be mailed to the appellant; and

   The appellant shall have 10 working days from the mailing date of the responding faculty's response to provide any final written response. A copy of this shall be mailed to the faculty.
10. Where the appeal is to be determined by oral hearing:

    a. Upon receipt of the Notice of Appeal, the panel, in consultation with the appellant and the responding faculty, will schedule a date for the oral hearing;

    b. No less than 10 working days prior to the hearing, the appellant shall deliver to the panel (three copies) and the responding faculty (one copy) of:

       i. Any written submissions to be relied upon at the hearing;

       ii. Copies of all documents to be referred to at the hearing; and

       iii. A list of persons attending as witnesses and a brief summary of each witness' intended evidence.

    c. No less than five working days prior to the hearing, the responding faculty shall deliver to the panel (three copies) and the appellant (one copy) of the material listed at paragraph 10.1(b), (i) to (iii), above.
11. Where the appeal is to be determined in writing, the members of the panel may convene in person or via teleconference.
12. For an oral hearing, the following procedures shall apply:
    - At the commencement of the hearing, the chair shall identify the parties and the members of the panel;
    - The appellant or a representative shall briefly describe the case to be presented, and provide factual support for the case through documentary evidence and testimony of the appellant and any witnesses, if relevant;
    - The responding faculty or a representative shall briefly reply to the appellant's case and provide facts in opposition to the case through documentary evidence and the testimony of witnesses, if relevant;
    - Panel members may ask questions at the conclusion of each person's statement or testimony, or at the conclusion of the appellant's or responding faculty's case;
    - Normally, neither the appellant nor the responding faculty may ask questions of the other's witnesses. Where facts important to the decision of the appeal are in dispute, however, either party may ask permission and, if appropriate, the panel may grant permission for the cross-examination of some or all witnesses;
    - Following the presentation of the appellant's and the responding faculty's cases, the appellant and the responding faculty may each make brief closing statements to summarize the main points of their respective positions;
    - Following the foregoing steps, the parties will withdraw and the panel will move in camera for its deliberations; and
    - The decision of the panel will be in writing and shall include the names of the panel and all who appeared, a brief summary of the issues on the appeal, the panel decision and reasons in support of the decision.
13. The time limits specified under these procedures may be extended by the chair at the request of the appellant or responding faculty, if reasonable grounds are shown for the extension.

    The following UOIT policies and guidelines also apply to graduate studies:

- Student Conduct;
- Protection of Privacy and Access to Information;
- Research Guidelines;
- Intellectual Property; and
- Use of Turnitin.com's Plagiarism Detection System.

These can be found at **www.uoit.ca**.

17.16 Fees and financial assistance

17.16.1 Tuition and miscellaneous service fees

To view current tuition and miscellaneous service fees, visit **www.gradstudies.uoit.ca**.

17.16.2 Financial assistance

Various types of financial support are available from the university, government or other sources. All are offered on a competitive basis except bursaries and OSAP assistance; these are awarded on the basis of financial need. Tuition and accommodation costs are the student's responsibility. Canadian students are strongly encouraged to apply to provincial and federal granting agencies for graduate scholarships and foreign students are encouraged to apply to granting agencies in their own countries.

Qualified full-time students are eligible for financial support through research assistantships funded by their faculty supervisor's research grants, government scholarships such as NSERC, SSHRC, and OGS, or other merit scholarships and/or teaching assistantships. Further details can be found on **www.gradstudies.uoit.ca**

17.17 Graduate Studies: Faculty of Business and Information Technology

17.17.1 Contact information

Faculty of Business and Information Technology
University of Ontario Institute of Technology (UOIT)
2000 Simcoe Street North
Oshawa, Ontario, L1H 7K4
Canada

E-mail: **mits@uoit.ca**

Telephone: 905.721.8668 ext. 2830

Fax: 905.721.3167

Website: **www.businessandit.uoit.ca**

17.17.2 Degree offered

Master of Information Technology Security (MITS)

17.17.3 Program faculty

Khalil El-Khatib, BCompSc, MCompSc, PhD

Wilfred Fong, BSc, MLIS

John Friedlan, BSc, MBA, PhD, CA

William M. Goodman, BA, MA, PhD

Ali Grami, BSc, MEng, PhD, PEng
(Cross-appointment with the Faculty of Engineering and Applied Science)

Shahram S. Heydari, BSc, MSc, MASc, PhD

Patrick C.K. Hung, BSc, MPhil, MASc, PhD

Clemens Martin, Dipl-Ing (Master), Dr-Ing (PhD)
(Cross-appointment with the Faculty of Engineering and Applied Science)

Carolyn McGregor, BAppSc, PhD
(Cross-appointment with the Faculty of Health Sciences)

Bernadette Schell, BA, MSc, PhD

Miguel Vargas Martin, BCompSc, MEng, PhD

(Cross-appointment with the Faculty of Engineering and Applied Science)

Terry Y. S. Wu, BA, MA, PhD

Ying Zhu, BSc, MSc, PhD
(Cross-appointment with the Faculty of Engineering and Applied Science)

17.17.4 Program information

The Master of Information Technology Security (MITS) program is a graduate professional program that prepares graduates to work in the high-demand information technology (IT) security industry. The program is designed to enable students to "learn how to learn" in the rapidly evolving IT security field. The program adopts a project method that provides students with the experience to apply core course materials to a substantial project in the workplace during their second year.

UOIT's Master of Information Technology Security (MITS) program is the first of its kind in Canada and one of few specialized IT security graduate degree programs available in the world. Through theory and applied learning, the program enables students to develop an extensive understanding of business and information technology security, while polishing communication skills and examining business and IT ethics in a team environment.

To achieve the objectives of the program and to enhance students' learning experience, it is important for the program to provide students with the necessary security hands-on skills and knowledge. The Faculty of Business and Information Technology provides a Hacker Research Lab to enhance the curriculum of the MITS program. This lab facility hosts an array of network settings and consists of a variety of network equipment and wireless devices in a secure setting. It offers students a secluded environment within which to work on various IT security projects and experiments.

The MITS curriculum contains the 10 domains found in the CISSP exam (Certified Information Systems Security Profession). The curriculum, which includes an IT security capstone project, provides students with the experience to apply core course concepts to a substantial project in the workplace. This plan of study introduces students to the fundamental knowledge of the ever-changing IT security field. MITS graduates will understand and be able to apply the best of current practice, but they will also be able to act as managers of transformation to improve that practice as the field evolves. Our graduates are prepared to work in different levels as IT Security professionals.

17.17.5 Admission requirements

In addition to the general admission requirements described in section 17.10.3, students applying to the MITS program must meet the following program-specific requirements.

1. A four-year bachelor's degree from an accredited institution with an overall undergraduate GPA of at least a B average (3.0 GPA based on a 4.0 scale). The undergraduate degree is preferred to be in the field of information technology, engineering, science or related fields.
2. Submit two letters of reference from persons having direct knowledge of the applicant's professional and academic competence to succeed in the MITS program.
3. Submit a portfolio indicating relevant work experience and skills in information technology, including a work history (minimum two full years or part-time equivalent).
4. To ensure that the students have an adequate background in mathematics, programming skills and computer technology, the program requires that the applicant has successfully completed course credits in the following areas:
   - Discrete Mathematics (as offered in the Bachelor of Information Technology or the Bachelor of Electrical and Software Engineering degree programs)
   - Computer Architecture/Machine Organization (as offered in the Bachelor of Information Technology degree program)
   - One advanced programming course like Object Oriented Programming, Algorithm Design and Data Structures (as offered in the Bachelor of Electrical and Software Engineering or in the Bachelor of Information Technology degree programs).

In the application process, the student has to indicate which courses already taken may satisfy these requirements. These courses have to be successfully completed with a minimum grade of B before the student can be accepted into the MITS program.

Students, who have not completed the credits, but who can claim to have gained knowledge in these

fields through work experience and/or self study, will be required to take an assessment exam for each of these fields. Exam outlines, exam dates, and registration details for these exams will be published through the UOIT's MITS web page. A student who fails one of these exams twice must take one of the listed corresponding courses or an equivalent course.

17.17.6 Degree completion time limit and part-time studies

Full-time students must complete all degree requirements within three years of their initial enrolment. Students can complete this program on a part-time basis but, because the IT security field changes rapidly, any students who wish to pursue security certification are encouraged to enrol full-time. Part-time students are expected to complete all degree requirements within six years of their initial enrolment. It is essential that part-time students seek approval from their faculty advisor or the graduate program director regarding their study plan.

17.17.7 Degree requirements and proposed progression through program

The degree program requires a total of 36 credit hours. The proposed progression through the program is listed below.

YEAR 1 (18 CREDIT HOURS)

MITS 5100G Law and Ethics of IT Security
MITS 5200G Advanced Communications Networks
MITS 5300G Operating Systems Security
MITS 5400G Secure Software Systems
MITS 5500G Cryptography and Secure Communications
MITS 5600G Elective*
Begin work on capstone project

YEAR 2 (18 CREDIT HOURS)

MITS 6100G Attack and Defence
MITS 6200G eCommerce Infrastructure Security
MITS 6300G IT Security Capstone Research Project I
MITS 6400G Biometrics/Access Control and Smart Card Technology
MITS 6500G Incident Handling, Recovery, Policies and Risk Management
MITS 6600G IT Security Capstone Research Project II
*Elective Courses
MITS 5610G Special Topics in IT Security – Cybercrime
MITS 5620G Special Topics in IT Management – Contemporary Management for IT Security Professionals
MITS 5700G Advanced Network Design

17.18 Graduate Studies: Faculty of Engineering and Applied Science

17.18.1 Contact information

Faculty of Engineering and Applied Science
University of Ontario Institute of Technology (UOIT)
2000 Simcoe Street North
Oshawa, Ontario L1H 7K4
Canada

E-mail: **engineering@uoit.ca**

Telephone: 905.721.3268

Fax: 905.721.3370

Website: **www.engineering.uoit.ca**

17.18.2 Degrees offered

The Faculty of Engineering and Applied Science offers graduate programs leading to the degrees of Master of Applied Science (MASc) and Master of Engineering (MEng) and Doctor of Philosophy (PhD).

The disciplines in which these degrees are offered are shown below.

Automotive Engineering

- Master of Applied Science (MASc)
- Master of Engineering (MEng)

Electrical and Computer Engineering

- Master of Applied Science (MASc)
- Master of Engineering (MEng)

Mechanical Engineering

- Master of Applied Science (MASc)
- Master of Engineering (MEng)
- Doctor of Philosophy (PhD)

The MASc degree involves a research thesis, whereas the MEng program has two options. The MEng-Project option consists of both courses and a project, while the MEng-Course option consists only of courses. The PhD degree involves the completion of a dissertation.

17.18.3 Admission requirements

In addition to the general admission requirements listed in section 17.10.3, the following are minimum admission requirements for the MASc and MEng programs:

- Completion of an undergraduate engineering degree in a relevant field from an accredited engineering program at a Canadian university, or its equivalent from a recognized institution.
- Overall academic standing of at least a B (GPA = 3.0 on a 4.0/4.3 scale), with a minimum B in the last two full-time years (four semesters) of undergraduate work or equivalent, although a B+ is preferred for MASc applicants.
- A minimum of two letters of reference from persons having direct knowledge of the applicant's academic competence. Academic references are preferred; however, professional references will be accepted. Letters of reference should come from individuals under whom the applicant has worked closely or studied. The quality of the letters will be assessed by the graduate committee of the Faculty of Engineering and Applied Science to ensure that relevant requirements have been met.
- Applicants must possess maturity and self-motivation. Close technical contact with a faculty member is an essential part of graduate education in engineering. Prior to being accepted into the program, MASc students must find a professor who specializes in the applicant's desired area of research and who is willing to act as a supervisor. MEng students who select the MEng-Project option must also find a professor who is willing to act as a project supervisor. In the event the MEng student cannot find a project supervisor, the student must transfer into the MEng-Course option.

The minimum admission requirement for the PhD program is completion of a MASc level degree in engineering at a Canadian university or its equivalent, with a minimum of a B+ average.

Under exceptional circumstances, MASc students may transfer directly to the PhD program after completing one academic year in the MASc program if they complete a full master's program of course work (five courses worth a total of 15 credits) with at least an A average, if they show strong evidence of research ability, and the thesis supervisor(s) and Supervisory Committee approve the direct transfer. The transfer must also be approved by the graduate programs director. The Faculty will usually require up to a further 12 credits of course work in the PhD program.

17.18.4 Degree objectives and general degree requirements

The MASc programs involve a combination of courses and a thesis. The PhD program involves a combination of courses and a dissertation. These programs are research oriented and they provide excellent preparation for a career in research, development, advanced engineering and/or teaching.

The MEng programs are professional master's programs for upgrading and expanding technical skills and knowledge and have an emphasis on course-based learning, sometimes accompanied by a major project. The MEng programs have two options:

1. MEng-Project – Consists of a combination of courses and a project.
2. MEng-Course – Consists of only courses.

Specific graduate course requirements for each degree are listed individually in sections 17.18.8 (Automotive Engineering), 17.18.9 (Electrical and Computer Engineering) and 17.18.10 (Mechanical Engineering). In addition to the required graduate courses, MASc and MEng-Project students may take

one senior year engineering or applied science (i.e., a course with the prefix ENGR) undergraduate course in lieu of a graduate level course, provided they have not already taken a similar course during their undergraduate degree and the course is approved by both the student's supervisor and the faculty graduate programs director. MEng-course students may take up to two senior year engineering or applied science undergraduate courses in lieu of up to two graduate level courses, again provided they have not taken similar courses during their undergraduate degree and the courses are approved by the faculty graduate programs director.

Students will be allowed to take graduate courses offered by other faculties, provided they are approved by the faculty graduate programs director. Students who are uncertain about the academic background needed for a graduate course should consult the course instructor before registering for the course.

PhD students may not take any undergraduate level courses in lieu of their graduate course requirements. Courses in other graduate programs at UOIT may be taken provided that students have not taken similar courses during their undergraduate or master's degrees and the courses are approved by the graduate programs director.

17.18.5 Part-time studies

To facilitate access to all potential students, part-time studies will be permitted.

Engineers in local industries, in particular, may wish to access a MEng program through part-time studies.

17.18.6 Degree completion time limit and residency requirements

The maximum time for completion of the MASc or MEng degree is three years for full-time students, measured from the date the student enters the program, or six years for students with part-time status. MASc students must spend a minimum of one academic year of full-time study in residence at UOIT. No financial support will be available from the faculty after two years.

PhD students must spend a minimum of two years of study in residence at UOIT. The maximum time for completion of a PhD degree is six years, eight years for those who switch to part-time status, measured from the date of entry into the program. No financial support will be available from the faculty after four years.

17.18.7 Financial assistance

Qualified full-time MASc and PhD students are eligible for financial support through research assistantships funded by their faculty supervisors' research grants, scholarships such as NSERC and OGS, or other merit scholarships and/or teaching assistantships.

MEng students are expected to be self-supporting.

17.18.8 Automotive Engineering

17.18.8.1 Graduate faculty

Peter Berg, Dipl-Phys, PhD (Faculty of Science)

Ibrahim Dincer, BSc, MSc, PhD

Mikael Eklund, BSc, MSc, PhD

Ebrahim Esmailzadeh, BSc (Hons)(Eng), MPhil, PhD, PEng, CEng, FCSME, FASME, FIMechE, SMIEEE

Kamiel Gabriel, BSc, MSc, MBA, PhD, PEng

Yuping He, BASc, MASc, PhD, PEng

Ramiro Liscano, BScEng, MScEng, PhD, PEng, SMIEEE

Greg Naterer, BMath, MASc, PhD, PEng, FCSME

Scott Nokleby, BEng, MASc, PhD, PEng

Remon Pop-Iliev, BSc, MASc, PhD, PEng

Ghaus Rizvi, ME, MS, MASc, PhD, PEng

Greg Rohrauer, DEC, BEng, PhD, PEng

Marc Rosen, BASc, MASc, PhD, PEng, FCSME, FEIC, FASME, FIEF

Dan Zhang, BASc, MASc, PhD, PEng

17.18.8.2 General information

The MASc and MEng programs in Automotive Engineering provide students with a detailed understanding of advanced technologies and processes related to automotive systems. These programs allow students to study all of the main areas associated with automotive systems. This includes scientific principles, analysis techniques, and design methodologies. The programs are also designed to provide students with the broad and advanced education necessary for productive careers in the public or private sectors, as well as academia. Students will develop skills necessary for clear communication and responsible teamwork and to inspire professional attitudes and ethics. This will prepare them for modern work environments and lifelong learning.

Students having undergraduate degrees in mechanical engineering, electrical engineering, or other fields of engineering or science may apply to the Automotive Engineering graduate programs. The multi-disciplinary nature of automotive systems, ranging from manufacturing and powertrains to electrical power/control systems and others, provides opportunities for students to gain broad exposure to various disciplines at an advanced graduate level.

17.18.8.3 Research areas

The automotive industry includes automotive design, manufacturing, parts supply and servicing. The manufacturing component is particularly important to the Canadian economy and relies heavily on a range of engineering disciplines (mechanical, electrical, energy, components, software, chemical, materials, and manufacturing). Advances in automotive technologies and processes are key to maintaining and increasing the competitiveness of the automotive industry. Faculty members are involved in research in a variety of areas. These include:

- Vehicle dynamics;
- Fuel cells and hydrogen;
- Automotive aerodynamics;
- Noise, vibrations and harshness;
- Automotive materials and manufacturing;
- Chassis design;
- Automotive electrical and software systems;
- Automotive modeling, simulation, optimization and design;
- Alternative fuels;
- Hybrid vehicles;
- Automotive control systems; and
- Vehicle emissions.

Students enrolled in our graduate programs will have access to our state-of-the-art research facilities and laboratories, including the Automotive Centre of Excellence (expected to open in 2009).

17.18.8.4 Degree requirements

Master of Applied Science (MASc) – Automotive Engineering

The main objective of the MASc program in Automotive Engineering is to prepare students for careers in research, development and advanced engineering. Graduates of the program can work as engineers in research and development and other areas in the automotive sector, other advanced technology companies, or government agencies. They are also well prepared to continue their education and pursue a PhD degree. The objectives of the MASc program are achieved through a combination of course work, supervised research, a research seminar, and a research thesis.

General MASc degree requirements are stipulated in section 17.18.4. In addition, a student must complete five courses for a total of 15 credits and a thesis worth 15 credits for the MASc program in Automotive Engineering. The course ENGR 5300G (Automotive Engineering) is a required course for all automotive engineering graduate students. It gives an advanced overview of the automobile as an integrated system. Students must also select at least two additional courses from the group of ENGR 53xxG courses (focusing on automotive engineering), plus remaining electives from the series of ENGR 50xxG, 51xxG, 52xxG, 56xxG, 57xxG, 58xxG and 59xxG courses. In addition to these five graduate courses, students must successfully complete ENGR 5003G – Seminar, as well as ENGR 5001G – MASc Thesis.

Master of Engineering (MEng) – Automotive Engineering

The main objective of the MEng program in Automotive Engineering is to provide the opportunity for engineers in industry to upgrade and expand their skills. Graduates of the program will apply their education to various advanced technologies and processes in the automotive sector and other industries. The objective of the MEng program is achieved through either a combination of course work and a project or solely course work, depending on which option the student selects. MEng students will have exposure to research through projects included in most of the graduate courses. General MEng degree requirements are stipulated in section 17.18.4. In addition, for the MEng-Project option, a student must complete seven courses for a total of 21 credits and a project worth nine credits. ENGR 5002G-MEng Project. This includes the required course (ENGR 5300G), at least three other courses from the ENGR 53xxG group and remaining courses from the electives. For the MEng-Course option, a student must complete 10 courses, worth a total of 30 credits. In this option, the student requires ENGR 5300G, plus at least three other courses from the ENGR 53xxG group and the remaining courses from the electives.

The core area of automotive systems (ENGR 53xxG) focuses on courses specifically aimed at engineering systems for automobiles, rather than general applications to other mechanical, electrical and non-automotive systems. It is beneficial for students to take some of the remaining electives from the same concentration area. However, it is not required that all electives are completed from a single concentration area, as it is also valuable for students to receive breadth of knowledge at the graduate level.

17.18.8.5 Courses

Courses offered in the MASc and MEng programs are sub-divided into an automotive core area (ENGR 53xxG) and specific concentration areas of energy and thermofluids (ENGR 51xxG), mechatronics and manufacturing (ENGR 52xxG), communications and signal processing (ENGR 56xxG), software (ENGR 57xxG) and electronics and control systems (ENGR 58xxG, ENGR 59xxG). The following list shows all courses relevant to the Automotive Engineering graduate programs.

ENGR 5001G MASc Thesis
ENGR 5002G MEng Project
ENGR 5003G Seminar
ENGR 5004G Directed Studies
ENGR 5005G Special Topics
ENGR 5010G Advanced Optimization
ENGR 5011G Advanced Engineering Design
ENGR 5012G Advanced and Smart Materials

Concentration Area – Energy and Thermofluids:

ENGR 5100G Advanced Energy Systems
ENGR 5101G Thermal Energy Storage
ENGR 5102G Fuel Cells and Hydrogen Systems
ENGR 5120G Advanced Fluid Mechanics
ENGR 5121G Advanced Turbo Machinery
ENGR 5122G Computational Fluid Dynamics
ENGR 5140G Advanced Heat Transfer
ENGR 5141G Heat Exchanger Design and Analysis
ENGR 5160G Advanced Thermodynamics
ENGR 5161G HVAC and Refrigeration Systems Design and Analysis

Concentration Area – Mechatronics and Manufacturing:

ENGR 5221G Computer-Integrated Manufacturing
ENGR 5222G Polymers and Composite Processing
ENGR 5223G Advanced Manufacturing Processes and Methodologies
ENGR 5240G Advanced Dynamics
ENGR 5241G Advanced Mechanics of Materials
ENGR 5242G Advanced Vibrations

ENGR 5260G Advanced Robotics and Automation
ENGR 5261G Advanced Mechatronics: MEMS and Nanotechnology
ENGR 5263G Advanced Control

Core Area of Automotive Systems:
ENGR 5300G Automotive Engineering
ENGR 5310G Automotive System Dynamics
ENGR 5320G Automotive Aerodynamics
ENGR 5330G Automotive Powertrains
ENGR 5340G Automotive Noise, Vibrations and Harshness
ENGR 5350G Automotive Materials and Manufacturing
ENGR 5360G Automotive Electronics and Software
ENGR 5370G Automotive Design Engineering

Concentration Area – Communications and Signal Processing:
ENGR 5610G Stochastic Processes
ENGR 5620G Digital Communications
ENGR 5630G Statistical Signal Processing
ENGR 5640G Advanced Wireless Communications
ENGR 5650G Adaptive Systems and Applications
ENGR 5670G Cryptography and Secure Communications

Concentration Area – Software:
ENGR 5720G Pervasive and Mobile Computing
ENGR 5750G Software Quality Management
ENGR 5760G Software Metrics

Concentration Area – Electronics and Control Systems:
ENGR 5850G Analog Integrated Circuit Design
ENGR 5860G Digital Integrated Circuit Design
ENGR 5910G Embedded Real-Time Control Systems
ENGR 5920G Analysis and Control of Nonlinear Systems
ENGR 5930G Adaptive Control
ENGR 5940G Intelligent Control Systems
ENGR 5970G Power Electronics

17.18.9 Electrical and Computer Engineering

17.18.9.1 Graduate faculty

Michael Bennett, BS, MA, PhD

Mikael Eklund, BSc, MSc, PhD

Ebrahim Esmailzadeh, BSc (Hons)(Eng), MPhil, PhD, PEng, CEng, FCSME, FASME,

FIMechE, SMIEEE

Rao Gorantla, Adjunct Professor, CEng, BEng, MS, PhD

Ali Grami, MSc, MEng, PhD, PEng, SMIEEE
(Cross-appointment with the Faculty of Business and Information Technology)

Mark Green, BSc, MSc, PhD (Faculty of Science)

Shahram Heydari, BSc, MSc, MASc, PhD (Faculty of Business and Information Technology)

Patrick Hung, BSc, MPhil, MASc, PhD, Faculty of Business and Information Technology

Ramiro Liscano, BScEng, MScEng, PhD, PEng, SMIEEE

Lixuan Lu, BESc, MESc, PhD
(Cross-appointment with the Faculty of Energy Systems and Nuclear Science)

Richard Marceau, BEng, MScA, PhD, PEng, FCAE

Clemens Martin, Dipl-Ing (Master), Dr-Ing (PhD)
(Cross-appointment with the Faculty of Business and Information Technology)

Carolyn McGregor, BAppSc, PhD (Cross appointment with the Faculty of Business and Information Technology and Faculty of Health Sciences)

Ruth Milman, BASc, MASc, PhD

Scott Nokleby, BEng, MASc, PhD, PEng

Jing Ren, BA, MSc, PhD

Shahram Shahbazpanahi, BSc, MSc, PhD, PEng

Vijay Sood, BSc, MSc, PhD, FIEEE, FEIC

Miguel Vargas Martin, BCompSc, MEng, PhD
(Cross-appointment with the Faculty of Business and Information Technology)

Ying Wang, BEng, MASc, PhD

Ying Zhu, BSc, MSc, PhD
(Cross-appointment with the Faculty of Business and Information Technology)

17.18.9.2 General information

The MASc and MEng programs in Electrical and Computer Engineering allow a student to study in all areas associated with electrical and computer engineering. These areas include electrical, electronics, computer, telecommunications, biomedical, power generation and related industries. The discipline focuses on the design and manufacture of electrical and computer technologies and their component parts, as well as on the integration of components into complex systems. This industrial sector is continually advancing and giving rise to new opportunities. Some examples of technological challenges include opportunities to develop more advanced telecommunications networks (including wireless and the Internet), more powerful computers (with more memory and lower cost), and electric vehicles.

17.18.9.3 Research areas

The Faculty of Engineering and Applied Science undertakes innovative research in electrical, computer and communications fields. Faculty research in this area includes satellite development and design, wireless and multimedia communications, and server-based software components of Internet technology. Activities are also being carried out that relate to information technology systems and their security.

Current research activities in the faculty are listed below:

- Electric circuits;
- Wireless communications and antenna design;
- Digital signal processing and transmission systems;
- Cryptography and secure communications;
- Network intrusion detection;
- Real-time and embedded computing;
- Image processing;
- Computer network design and management;
- Internet technologies;
- Control systems;
- Instrumentation; and
- Power electronics.

Students enrolled in our graduate programs will have access to our state-of-the-art research facilities and laboratories.

17.18.9.4 Degree requirements

Master of Applied Science (MASc) – Electrical and Computer Engineering

The objective of the MASc program in Electrical and Computer Engineering is to prepare students for careers in research, development and advanced engineering, in disciplines involving electrical and

computer engineering. Graduates of the program will be able to work as engineers in R&D and other areas in advanced technology companies or government agencies, or to continue their education and pursue a doctorate degree. The objectives of the MASc program are achieved through a combination of course work, supervised research, a research seminar, and a research thesis. General MASc degree requirements are stipulated in section 17.18.4. Students must complete five courses for a total of 15 credits and a thesis worth 15 credits for the MASc program in Electrical and Computer Engineering. Also, students must successfully complete ENGR 5003G – Seminar, as well as ENGR 5001G-MASc Thesis.

Master of Engineering (MEng) – Electrical and Computer Engineering

The objective of the MEng program in Electrical and Computer Engineering is to provide the opportunity for engineers in industry to upgrade and expand their skills, including developing research skills. Graduates of the program will be able to apply what they have learned in a variety of applications in industry, government, and academia.

The objective of the MEng program is achieved through either a combination of course work and a project or solely course work, depending on which option the student selects. MEng students will have exposure to research through projects included in most of the graduate courses.

General MEng degree requirements are stipulated in section 17.18.4. For the MEng-Project option, students must complete seven courses worth a total of 21 credits and a project worth nine credits. For the MEng-Course option, students must complete 10 courses worth a total of 30 credits, ENGR 5002G-MEng Project.

17.18.9.5 Courses

Graduate courses offered are listed below. Courses related to the Communications and Signal Processing areas are numbered as ENGR 56xxG. Courses related to the Software and Computer Systems areas are numbered as ENGR 57xxG. Courses related to Electronics and Mechatronics areas are numbered as ENGR 58xxG. Courses related to Control Systems and Power Systems areas are numbered as ENGR 59xxG.

ENGR 5001G MASc Thesis
ENGR 5002G MEng Project
ENGR 5003G Seminar
ENGR 5004G Directed Studies
ENGR 5005G Special Topics
ENGR 5010G Advanced Optimization
ENGR 5610G Stochastic Processes
ENGR 5620G Digital Communications
ENGR 5630G Statistical Signal Processing
ENGR 5640G Advanced Wireless Communications
ENGR 5650G Adaptive Systems and Applications
ENGR 5660G Communication Networks
ENGR 5670G Cryptography and Secure Communications
ENGR 5710G Network Computing
ENGR 5720G Pervasive and Mobile Computing
ENGR 5730G Algorithms and Data Structures
ENGR 5740G User Interface Design
ENGR 5750G Software Quality Management
ENGR 5760G Software Metrics
ENGR 5770G Service Computing
ENGR 5780G Advanced Computer Architecture
ENGR 5850G Analog Integrated Circuit Design
ENGR 5860G Digital Integrated Circuit Design
ENGR 5910G Embedded Real-Time Control Systems
ENGR 5920G Analysis and Control of Nonlinear Systems
ENGR 5930G Adaptive Control
ENGR 5940G Intelligent Control Systems

ENGR 5950G Computational Electromagnetics

ENGR 5960G Power System Operations, Analysis and Planning

ENGR 5970G Power Electronics

ENGR 5980G Advances in Nuclear Power Plant Systems

Courses will be offered on the basis of demand with the expectation that most courses will be offered at a minimum of once every two years.

17.18.10 Mechanical Engineering

17.18.10.1 Graduate faculty

George Bereznai*, BE, MEng, PhD (Faculty of Energy Systems and Nuclear Science)

Peter Berg*, Dipl-Phys, PhD (Faculty of Science)

Ibrahim Dincer, BSc, MSc, PhD

Ebrahim Esmailzadeh, BSc (Hons)(Eng), MPhil, PhD, PEng, CEng, FCSME, FASME, FIMechE, SMIEEE

Kamiel Gabriel, BSc, MSc, MBA, PhD, PEng

Rao Gorantla, Adjunct Professor, CEng, BEng, MS, PhD

Marnie Ham, BSc, MASc, PhD

Glenn Harvel, BEng, MEng, PhD, PEng (Faculty of Energy Systems and Nuclear Science)

Yuping He, BASc, MASc, PhD, PEng

Brian M. Ikeda, BSc, MSc, PhD (Faculty of Energy Systems and Nuclear Science)

Greg Naterer, BMath, MASc, PhD, PEng, FCSME

Eleodor Nichita*, BSc, MSc, PhD (Faculty of Energy Systems and Nuclear Science)

Scott Nokleby, BEng, MASc, PhD, PEng

Igor Pioro, MSc, PhD (Faculty of Energy Systems and Nuclear Science)

Remon Pop-Iliev, BSc, MASc, PhD, PEng

Bale Reddy, BTech, MTech, PhD

Jing Ren, BA, MSc, PhD

Ghaus Rizvi, ME, MS, MASc, PhD, PEng

Greg Rohrauer, DEC, BEng, PhD, PEng

Marc Rosen, BASc, MASc, PhD, PEng, FCSME, FEIC, FASME, FIEF

Edward Waller, BSc, MScE, PhD, PEng (Faculty of Energy Systems and Nuclear Science)

Dan Zhang, BASc, MASc, PhD, PEng

*Master's programs

17.18.10.2 General information

The Master's programs in Mechanical Engineering allow a student to study all of the main areas associated with mechanical engineering. In addition, the programs feature two primary fields of study in which students can focus and addresses key technical areas for the future that are expected to be in high demand by employers:

- Energy and thermofluids engineering
- Mechatronics and manufacturing engineering.

The PhD program includes the above two fields of study, as well as an additional third field of Automotive Engineering.

A student can choose not to focus, but rather to cover many facets of the broad discipline of mechanical engineering. Topics can vary widely, from robotics, automation and mechatronics, through mechanics, controls and computer-aided design, to thermofluids and heat transfer.

Mechanical engineering is often interdisciplinary, overlapping significantly with such disciplines as electrical, computer and software engineering, and opportunities exist for graduate students to explore these areas.

17.18.10.3 Research areas

A range of research activities are being undertaken in the faculty, reflecting the breadth of mechanical engineering.

Research on manufacturing technologies focuses on the processes, methods and technologies involved in manufacturing and their applications. Some of the faculty's research activities in these fields include the development of advanced cellular materials and processes for their manufacture, as well as substitutes for biological materials such as bone and wood. The use of intelligent robots to assist in manufacturing is also of interest. Furthermore, faculty interests include lean, flexible and high-performance manufacturing systems, and computer-integrated manufacturing.

In the fields of thermodynamics, energy, heat transfer and fluid mechanics, the objective of much of the research is to improve energy systems and reduce their environmental impacts. The research includes investigations of advanced energy technologies, efficiency improvement methods, alternative energy sources, and environmentally conscious engineering.

Research in the area of dynamics, vibration and noise is critical to many applications where dynamic systems must be understood and controlled for maximal benefit. Important applications exist in the automotive and aerospace fields, and many others. The faculty's research in these areas includes active control of vibration and sound, non-linear dynamics and chaos. The control of robotic systems is also of interest.

Ongoing research on robotics, automation and controls is leading to frequent and numerous technological advances. Some of the faculty's research activities in these fields include the development of high-performance, visually guided robots and studies on the control of engineering devices. Applications are ongoing of advanced control systems in a range of fields.

Extensive faculty research is being carried out into the mechanics of solids and structures. This research includes the characterization and analysis of materials and structures for mechanical and automotive applications. Investigations are planned into the vibrations and buckling of structures, thermal stresses, creep and plasticity. Computational mechanics research is being applied to devices.

17.18.10.4 Degree requirements

Master of Applied Science (MASc) – Mechanical Engineering

The objective of the MASc program in Mechanical Engineering is to prepare students for careers in research, development and advanced engineering. Graduates of the program will be able to work as engineers in R&D and other areas, in advanced technology companies or government agencies, or to continue their education and pursue a doctorate degree. The objectives of the MASc program are achieved through a combination of course work, supervised research, a research seminar, and a research thesis.

General MASc degree requirements are stipulated in section 17.18.4. In addition, a student must complete five courses for a total of 15 credits and a thesis worth 15 credits for the MASc program in Mechanical Engineering. Also, the student must successfully complete ENGR 5003G – Seminar, as well as ENGR 5001G-MASc Thesis.

Master of Engineering (MEng) – Mechanical Engineering

The objective of the MEng program in Mechanical Engineering is to provide the opportunity for engineers in industry to upgrade and expand their skills, including developing research skills. Graduates of the program will be able to apply what they have learned in a variety of applications in industry, government, and academia. The objective of the MEng program is achieved through either a combination of course work and a project or solely course work, depending on which option the student selects. MEng students will have exposure to research through projects included in most of the graduate courses.

General MEng degree requirements are stipulated in section 17.18.4. In addition, for the MEng-Project option, a student must complete seven courses worth a total of 21 credits and a project worth nine credits, ENGR 5002G-MEng Project. For the MEng-Course option, a student must complete 10 courses worth a total of 30 credits.

Doctor of Philosophy (PhD) – Mechanical Engineering

For the PhD program, a student must complete four courses worth a total of 12 credits and a

dissertation worth 40 credits (ENGR 6001G Dissertation). In general the PhD dissertation involves intensive research and requires determination and enthusiasm to deliver a scholarly innovative contribution through the dissertation of the candidate. The duration of the PhD program is normally three to four years and financial support for the student must be secured.

In addition to the four courses and dissertation, the student must successfully complete ENGR 6001G Dissertation, ENGR 6002G Workshops and ENGR 6003G Seminar. Courses in other graduate programs at UOIT may be taken provided students have not taken similar courses during their undergraduate or master's degrees and the courses are approved by the graduate programs director.

For a student who has transferred directly from a MASc program into the PhD program, the student must complete nine courses worth a total of 27 credits and a dissertation worth 40 credits (ENGR 6001G Dissertation). In addition to the nine courses, the student must successfully complete ENGR 6002G Workshops and ENGR 6003G Seminar.

Within 18 months of entry into the PhD program, PhD students must prepare a written research proposal and pass an oral candidacy exam. Also, PhD students must successfully defend their dissertation in front of an Examining Committee.

17.18.10.5 Courses

In the list of ENGR graduate course descriptions below, courses related to the Energy and Thermofluids Engineering field are numbered as ENGR 51xxG. Courses related to the Mechatronics and Manufacturing Engineering field are numbered as ENGR 52xxG.

Courses numbered ENGR 50xxG are common to both fields. Note that ENGR 6xxxG level courses are restricted to PhD students only.

ENGR 5003G Seminar
ENGR 5004G Directed Studies
ENGR 5001G MASc Thesis
ENGR 5002G MEng Project
ENGR 5003G Seminar
ENGR 5004G Directed Studies
ENGR 5005G Special Topics
ENGR 5010G Advanced Optimization
ENGR 5011G Advanced Engineering Design
ENGR 5012G Advanced and Smart Materials
ENGR 5100G Advanced Energy Systems
ENGR 5101G Thermal Energy Storage
ENGR 5102G Fuel Cells and Hydrogen Systems
ENGR 5120G Advanced Fluid Mechanics
ENGR 5121G Advanced Turbo Machinery
ENGR 5122G Computational Fluid Dynamics
ENGR 5140G Advanced Heat Transfer
ENGR 5141G Heat Exchanger Design and Analysis
ENGR 5160G Advanced Thermodynamics
ENGR 5161G HVAC and Refrigeration Systems Design and Analysis
ENGR 5180G Advanced Nuclear Engineering
ENGR 5181G Advanced Radiation Engineering
ENGR 5221G Computer-Integrated Manufacturing
ENGR 5222G Polymers and Composite Processing
ENGR 5223G Advanced Manufacturing Processes and Methodologies
ENGR 5240G Advanced Dynamics
ENGR 5241G Advanced Mechanics of Materials
ENGR 5242G Advanced Vibrations
ENGR 5260G Advanced Robotics and Automation
ENGR 5261G Advanced Mechatronics: MEMS and Nanotechnology
ENGR 5262G Manipulator and Mechanism Design

ENGR 5263G Advanced Control
ENGR 6001G Dissertation
ENGR 6002G Workshops
ENGR 6003G Seminar

17.19 Graduate Studies: Faculty of Energy Systems and Nuclear Science

17.19.1 Contact Information

Faculty of Energy Systems and Nuclear Science
University of Ontario Institute of Technology (UOIT)
2000 Simcoe Street North
Oshawa, Ontario, L1H 7K4
Canada

Telephone: 905.721.8668
Fax: 905.721.3046
Website: **www.nuclear.uoit.ca**

17.19.2 Degrees Offered

Nuclear Engineering

- Master of Applied Science (MASc)
- Master of Engineering (MEng)

17.19.3 Graduate Faculty

Dhavide Aruliah, BSc, MS, PhD
Emma Bartfay, BSc, MMath, PhD
Wally Bartfay, RN, MN, PhD
Michael Bennett, BS, MA, PhD
George Bereznai, BE, MEng, PhD, PEng
Peter Berg, Dipl-Phys, PhD
Luciano Buono, BSc, MSc, PhD
Ibrahim Dincer, BSc, MSc, PhD
Shari Forbes, BSc, PhD
Kamiel Gabriel, BSc, MSc, MBA, PhD, PEng
Mark Green, BSc, MSc, PhD
Julia Green-Johnson, BSc (Hons), MSc, PhD
Glenn Harvel, BEng, MEng, PhD
Doug Holdway, BSc (Hons), MSc, PhD
Brian M. Ikeda, BSc, MSc, PhD
Holly Jones-Taggart, BSc, (Hons), PhD
Matthew Kaye, BASc, MSc, PhD
Greg Lewis, BSc, MSc, PhD
Lixuan Lu, BESc, MESc, PhD
Richard Marceau, BEng, MScA, PhD, PEng, FCAE
Greg Naterer, BMath, MASc, PhD, PEng, FCSME
Eleodor Nichita, BSc, MSc, PhD
Scott Nokleby, BEng, MASc, PhD, PEng
Igor Pioro, MSc, PhD
Jing Ren, BA, MSc, PhD
Marc Rosen, BASc, MASc, PhD, PEng, FCSME, FEIC, FASME, FIEF

Anthony Waker, BSc, PhD

Edward Waller, BSc, MScE, PhD

17.19.4 General Program Information

The University of Ontario Institute of Technology (UOIT) offers a graduate program leading to the degree of Master of Applied Science and Master of Engineering in Nuclear Engineering. The MASc program has a strong research focus and consists of courses and a thesis. The MEng program emphasizes course-based learning and has two options: the MEng-Course consists entirely of courses, while MEng-Project has courses and a project. In all options there is an emphasis on the development of research skills and on the presentation of research results. While the MEng-Course option does not require a major research report, research projects are undertaken in a number of the graduate courses.

The Nuclear Engineering graduate program encompasses the nuclear power industry, from fuel manufacture to radioactive waste disposal and the many and varied applications of radiation in industrial and medical disciplines, with a strong emphasis on health physics. The master's program is comprised of two fields: Nuclear Power and Radiological and Health Physics. Typical workplace activities include fundamental and applied research, design and development of new equipment, systems and procedures, maintenance and modifications, commissioning and decommissioning of equipment and complete facilities, operation, analysis and regulatory affairs. The graduate of a Master of Nuclear Engineering program must, therefore, be competent in a wide range of disciplines that impinge on the safe and reliable operation of the many and varied systems that comprise radiological equipment, nuclear power plants and related facilities. They must understand the complex interrelationships between humans, non-human biota and the physical, chemical, economic and social components of the environment. The program provides the depth and breadth of knowledge necessary for a practicing professional in nuclear engineering. Under the guidance of a thesis supervisor and a multi-disciplinary team of scientific and engineering faculty, each student has the opportunity to engage in in-depth study of particular problems that emphasize theory and/or experimentation.

17.19.5 Admission Requirements

The minimum admission requirements for the MASc and MEng programs are as follows:

- Completion of an undergraduate science or engineering degree from a Canadian university, or its equivalent from a recognized institution;
- Overall academic standing of at least a B (GPA = 3.0 on a 4.0/4.3 scale), with a minimum B in the last two years (four semesters) of full-time undergraduate work or equivalent (although a B+ is preferred for MASc applicants).
- Submission of one certified copy of each previous undergraduate and graduate transcript directly from the granting institute is required. It is the student's responsibility to provide a certified English translation of the transcript if the original is in another language. Applicants may be required to submit a brief description of the courses listed on their official transcripts or to provide a copy of the relevant calendar where they are listed.
- A minimum of two letters of reference from persons having direct knowledge of the applicant's academic competence. Academic references are preferred; however, professional references will be accepted. Letters of reference should come from individuals under whom the applicant has worked closely or studied. The quality of the letters will be assessed by the Graduate Committee of the Faculty of Energy Systems and Nuclear Science to make sure relevant requirements have been met.
- Proof of English proficiency is needed from those applicants whose first language is not English.

Close technical contact with a faculty member is an essential part of graduate education in engineering and science. Prior to being accepted into the program, MASc students must find a professor who specializes in the applicant's desired area of research and who is willing to act as a supervisor. In the event the MASc student cannot find a project supervisor, the student must transfer into the MEng-Course option.

17.19.6 Degree Objectives and General Degree Requirements

Master of Applied Science (MASc)

The objective of the MASc program is to prepare students for a career as engineers in fields that

require specialized knowledge and skills. It is expected that graduates of the program will be able to work as engineers in industry, companies and government agencies with strong R&D programs, or to continue in their education and pursue a doctorate degree. The objective of the MASc program is achieved through a combination of course work, supervised research, a research seminar, and a research thesis. Students must complete five courses for a total of 15 credits and a thesis worth 15 credits for the MASc program in Nuclear Engineering.

Master of Engineering (MEng)

The objective of the MEng program is to provide the opportunity for engineers in industry to upgrade and expand their skills, including developing research skills. Graduates of the program will be able to use what they have learned in a variety of applications in industry, government and academia. The objective of the MEng program is achieved through either a combination of course work and a project or solely course work, depending on which option the student selects. All MEng students are required to engage in research activities as part of projects in many of the courses.

General MEng degree requirements are stipulated in section 17.18.4. In addition, for the MEng-Project option, a student must complete seven courses worth a total of 21 credits and a project worth nine credits. For the MEng-Course option, a student must complete 10 courses worth a total of 30 credits.

Students in the MEng-Graduate Research Project option must complete seven courses (21 credits) as well as the MEng Graduate Research Project (nine credits). Under the supervision of a faculty member, students have the opportunity to integrate and synthesize knowledge gained throughout their program of study. The chosen topic will be dependent on the area of specialization of the student, using the resources normally available on campus. Students are required to write a report and give a presentation on their completed project.

Students in the MEng-Industrial Research Project option must complete 8 courses (24 credits) and an Industrial Project (six credits). Students enrolled part-time in this program option may designate a period of approximately four months in an industrial laboratory to carry out an industry-oriented project under the supervision of a suitably qualified staff engineer or scientist, as well as a university co-supervisor. The faculty will work with the candidate and consult the candidate's employer to arrange a suitable project. A satisfactory project topic and appropriate arrangements are required for the project to be approved by the faculty; it is possible that, in some cases, this may not be feasible. Upon completion, the candidate will submit a substantial report on the project and make a presentation on it at the university. The Industrial Research Project can only be undertaken after at least half the required courses have been taken.

Students in the Nuclear Engineering graduate program may take no more than one-third of their courses from the undergraduate courses listed in section 17.19.10 or other 4xxxU courses specifically approved by the faculty dean or designate, provided the student did not take similar courses during his or her undergraduate degree.

Students must take at least half of their graduate courses from the list of NUCL 5xxxG courses in section 17.19.10. Courses not listed and offered by other faculties at UOIT or other universities can only be taken for credit if approved by the faculty dean or designate.

Courses will be offered on the basis of demand with the expectation that courses will be offered at a minimum of once every two years.

17.19.7 Part-time studies

To facilitate access to all potential students, part-time studies will be permitted. Engineers in local industries, in particular, may wish to access a MEng program through part-time studies.

17.19.8 Residency requirements and degree completion time limit

The maximum time for completion of the MASc or MEng degree is three years measured from the date the student enters the program, or six years for students who switch to part-time status. MASc students must spend a minimum of one academic year of full-time study in residence at UOIT. No financial support will be available from the faculty after two years.

17.19.9 Financial assistance

Qualified full-time MASc students are eligible for financial support through research assistantships funded by their supervisor's research grants, scholarships such as NSERC and OGS, or other merit scholarships and/or teaching assistantships. MEng students are expected to be self-supporting.

17.19.10 Courses

Core graduate courses to be offered by the Faculty of Energy Systems and Nuclear Science:
NUCL 5001G MASc Thesis
NUCL 5003G Seminar
NUCL 5004G Directed Studies
NUCL 5005G Special Topics
NUCL 5006G Industrial Research Project
NUCL 5009G Graduate Research Project
NUCL 5010G Project Management for Nuclear Engineers
NUCL 5020G Mathematical Methods in Nuclear Applications
NUCL 5030G Transport Theory
NUCL 5040G Monte Carlo Methods
NUCL 5050G Applied Risk Analysis
NUCL 5060G Nuclear Concepts for Engineers and Scientists
NUCL 5070G Environmental Modelling
NUCL 5080G Advanced Topics in Environmental Degradation of Materials
NUCL 5090G Occupational Health and Safety
NUCL 5200G Reactor Physics
NUCL 5210G Advanced Reactor Physics
NUCL 5215G Advanced Reactor Engineering
NUCL 5220G Fuel Management in Nuclear Reactors
NUCL 5230G Advanced Nuclear Thermalhydraulics
NUCL 5240G Heat Transfer in Nuclear Reactor Applications
NUCL 5250G Power Plant Thermodynamics
NUCL 5260G Reactor Containment Systems
NUCL 5270G Control, Instrumentation and Electrical Systems in CANDU based Nuclear Power Plants
NUCL 5280G Advanced Reactor Control
NUCL 5290G Advances in Nuclear Power Plant Systems
NUCL 5300G Advanced Topics in Radioactive Waste Management
NUCL 5400G Advanced Radiation Science
NUCL 5410G Physics of Radiation Therapy
NUCL 5420G Aerosol Mechanics
NUCL 5430G Advanced Dosimetry
NUCL 5440G Advanced Radiation Biophysics and Microdosimetry
NUCL 5450G Non-destructive Analysis
NUCL 5460G Industrial Radiography
NUCL 5470G Nuclear Forensic Analysis

Elective graduate courses from the Faculty of Engineering and Applied Science
ENGR 5010G Advanced Optimization
ENGR 5121G Advanced Turbo Machinery
ENGR 5122G Computational Fluid Dynamics
ENGR 5740G User Interface Design
ENGR 5750G Software Quality Management
ENGR 5910G Embedded Real-Time Control Systems
ENGR 5920G Analysis and Control of Nonlinear Systems
ENGR 5930G Adaptive Control
ENGR 5940G Intelligent Control Systems
ENGR 5960G Power System Operations, Analysis and Planning

Elective graduate courses from the Faculty of Science

MCSC 6010G Mathematical Modelling
MCSC 6030G High-Performance Computing
MCSC 6120G Numerical Methods for Ordinary Differential Equations
MCSC 6125G Numerical Methods for Partial Ordinary Differential Equations

Undergraduate Nuclear Engineering courses available for graduate credit

ENGR 4510U Nuclear Plant Chemistry
ENGR 4520U Nuclear Plant Safety Design
ENGR 4610U Corrosion for Engineers
ENGR 4620U Radioactive Waste Management Design
ENGR 4640U Nuclear Plant Operations
ENGR 4660U Risk Analysis Methods
ENGR 4670U Shielding Design
ENGR 4680U Nuclear Materials
ENGR 4700U Nuclear Plant Design and Simulation
ENGR 4730U Reactor Control
ENGR 4780U Nuclear Reactor Design
ENGR 4810U Nuclear Fuel Cycles
ENGR 4880U Principles of Fusion Energy

Undergraduate Health Physics and Radiation Science courses available for graduate credit

RADI 4220U Radiation Biophysics and Dosimetry
RADI 4430U Industrial Applications of Radiation Techniques
RADI 4440U Radioisotopes and Radiation Machines
RADI 4550U Radiation Detection and Measurement

17.20 Graduate Studies: Faculty of Science

17.20.1 Contact information

Faculty of Science
University of Ontario Institute of Technology (UOIT)
Science Building UA4000
2000 Simcoe Street North
Oshawa, Ontario L1H 7K4
Canada
E-mail: **facultyofscience@uoit.ca**
Telephone: 905.721.3050
Fax: 905.721.3304
Website: **www.science.uoit.ca**

17.20.2 Degrees offered

- Master of Science (MSc) in Applied Bioscience
- Master of Science (MSc) in Materials Science
- Master of Science (MSc) in Modelling and Computational Science

17.20.3 Master of Science (MSc) in Applied Bioscience

17.20.3.1 Program faculty

Emma Bartfay, BSc, MSc, PhD
Wally Bartfay, RN, MN, PhD
Dario Bonetta, BSc, MSc, PhD
Carolyn Byrne, MHSc, PhD

Shari Forbes, BSc, PhD

Sean Forrester, BSc, MSc, PhD

Julia Green-Johnson, BSc (Hons), MSc, PhD

Douglas Holdway, BSc (Hons), MSc, PhD

Holly Jones-Taggart, BSc (Hons), PhD

Ayush Kumar, BSc, MSc, PhD

Fedor Naumkin, MSc, PhD

Krisztina Paal, BSc, PhD

Otto Sanchez, MD, MSc, PhD

Janice Strap, BSc, MSc, PhD

17.20.3.2 Program information

The Master of Science (MSc) in Applied Bioscience program was launched in September 2007. The objectives of the MSc program are achieved through a combination of course work, supervised research, a research seminar, and a research thesis. The expected length of time for degree completion is 24 months.

The primary objective of the Applied Bioscience program is to train students to become high-quality researchers at the interface between chemistry and biology. The Faculty of Science, with no traditional departments, exposes students to interdisciplinary research, allowing them to gain experience working successfully within collaborative networks. The program equips students with a wide array of both practical and conceptual scientific skills that prepares them for leadership roles in the life sciences. These goals are achieved through independent research and rigorous interdisciplinary coursework. The program brings together students and faculty from a variety of scientific backgrounds, which further enriches the learning experience of the students. In addition, in keeping with UOIT's strategic plan, research is aimed at creating innovations that will improve the lives of Canadians.

The two main fields of research in the Applied Bioscience (APBS) program are Biomolecular Science and Environmental Science and Health (ESH). Biomolecular Science focuses on the use of molecular and cellular tools to investigate new approaches for combating infectious organisms and disease; drug resistance; biomaterials and bio-based products; the mode of action of pharmaceuticals; and potential drug targets, drug formulations and site-specific drug delivery. The field of Environmental Science and Health includes an emphasis on environmental toxicology, whose goal is to determine the implications of external toxicants on the health of organisms and the discovery of indicators for environmental problems and methods to lessen human exposure to toxicants. In addition, researchers in the APBS program investigate the pathophysiology of environmental disorders and the micro and macro environmental factors causing cancer.

The Applied Bioscience program is a unique collaborative program involving faculty in the Faculties of Science and Health Sciences at UOIT. The participating faculty members are made up of an interdisciplinary network of chemists, biologists and health scientists. Graduate students participating in this program will therefore be exposed to interdisciplinary research while they undertake their thesis projects in laboratories at UOIT.

17.20.3.3 Admission requirements

In addition to the general admission requirements described in section 17.10.3, students applying to the Applied Bioscience program must meet the following program-specific requirements:

1 An honours undergraduate degree in biology, chemistry, life or health sciences, with a minimum grade point average of a second class B average (3.0 on 4.3) in the last two years (four semesters) of their respective BSc (Hons) program.

2. To assist with the assessment of the application, the student should provide relevant course numbers, titles, brief descriptions of course content, textbooks used and/or chapters covered, and grades received.

3. Admission depends on the availability of a research supervisor. Students should contact the graduate program director before formally applying.

17.20.3.4 Degree completion time limit and residence requirements

Students who enrol in the Applied Bioscience program are expected to complete the program in two years. All program requirements must be completed on site at UOIT.

17.20.3.5 Degree requirements

Students must successfully complete three, three-credit courses, including APBS 6010G (Research in Applied Bioscience). In addition, they must complete the required non-credit course APBS 6030G (Seminar in Applied Bioscience) and prepare and orally defend a thesis (APBS 6020G) and receive a pass.

Core courses (required)

APBS 6010G Research in Applied Bioscience (3 credits)

APBS 6030G Seminar in Applied Bioscience (0 credits)

APBS 6020G MSc Thesis in Applied Bioscience (21 credits)

Elective courses

Students will also select two of the following:

APBS 6100G Advanced Cell and Molecular Biology (3 credits)

APBS 6200G Environmental Determinants of Health (3 credits)

APBS 6300G Advanced Topics in Biological Chemistry (3 credits)

17.20.3.6 Proposed progression through program

YEAR 1

APBS 6010G Research in Applied Bioscience
Two elective courses
Initiation of research program

YEAR 2

Master's thesis research
APBS 6020G MSc Thesis in Applied Bioscience
APBS 6030G Seminar in Applied Bioscience

17.20.4 Master of Science (MSc) in Materials Science

17.20.4.1 Program faculty

Peter Berg, Dipl-Phys, PhD

Dario Bonetta, BSc, MSc, PhD

Anatoli Chkrebtii, BSc, MSc, PhD

Brad Easton, BSc (Hons), PhD

Franco Gaspari, BSc, MSc, PhD

Brian M. Ikeda, BSc (Hons), MSc, PhD

Matthew Kaye, BASc, MSc, PhD

Fedor Naumkin, MSc, PhD

Ghaus Rizvi, BE, MS, MASc, PhD

William Smith, BASc, MSc, MASc, PhD, PEng

17.20.4.2 Program information

This graduate program is offered jointly by UOIT and Trent University and leads to the degree of Master of Science (MSc) in Materials Science. Materials Science is a broad multi-disciplinary area of science that lies at the intersection of physics and chemistry and includes many sub-fields including nanotechnology, electronic materials, surface science, biomaterials, and materials characterization. An important goal of the Materials Science program is to advance the understanding and prediction

of the properties of matter. Such understanding facilitates the design of new materials with particular properties. The development of experimental and theoretical predictive tools applicable to size scales ranging from the molecular to the macroscopic levels is an integral component of the MSc in Materials Science program. The program provides both a broad and integrated overview of materials science and the opportunity for in-depth study of a particular problem emphasizing either theory or experimentation, under the guidance of a research supervisor and a multi-disciplinary team of faculty from UOIT and Trent University. The program is comprised of coursework and a research thesis.

17.20.4.3 Admission requirements

Students applying to the program must meet the general admission requirements listed in section 17.10.3. In addition, they must meet the following program-specific requirements.

Students are admitted to the MSc program in Materials Science after having earned an honours BSc degree in chemistry, physics or engineering, or holding equivalent qualifications as judged by the admissions committee. This committee is made up of the graduate program directors and one faculty member from each of the two universities. Prospective students must hold at least a B average (75 per cent or greater) in the last two years of their BSc program, be well recommended, and be accepted by a prospective supervisor who guarantees RA support for the duration of the student's program.

International students whose first language is other than English must meet the university's language requirements or achieve the minimum score in an approved English Language Proficiency Test. The recommended scores for English Language Proficiency Tests are slightly higher than those required by other UOIT programs. These are listed below:

TOEFL (computer based)	237
TOEFL (paper based)	580
IELTS	7
MELAB	85
CAEL	70

17.20.4.4 Degree completion time limit and residence requirements

The residency requirements of the university in which the student is registered must be satisfied. The normal length of time for completion of the MSc is expected to be five semesters. A sixth semester may be needed to complete the thesis. Students are expected to complete the program in consecutive semesters. All program requirements must normally be completed on site at UOIT or Trent University.

17.20.4.5 Degree requirements

The formal requirements for the MSc degree in Materials Science are the following:

- Each student must complete the "core" courses MTSC 6010G (Physics and Chemistry of Materials) and MTSC 6020G (Advanced Topics in Materials Science).
- Each student must attend and successfully complete the non-credit courses MTSC 6000G (Graduate Seminar in Science Communication I) and MTSC 6100G (Graduate Seminar in Science Communication II) in each fall and winter semester of their program.
- At least four one-term courses acceptable for graduate credit must be completed with at least a 70 per cent final grade in each course. Normally, courses taken for credit are those designated as graduate courses within the program. One of the four courses may be a fourth-year undergraduate course, approved by the student's supervisor and the graduate program director.
- The student must meet with his/her Supervisory Committee within the first six months of registration, and subsequently at least once every six months. The committee consists of the student's research supervisor and at least two other faculty members in the program; each Supervisory Committee must include at least one faculty member from each institution. While one meeting in a year must be a formal one, the other meeting may be held informally; in the latter case, in addition to the student and the supervisor, the meeting must involve at least one other member of the committee. A Supervisory Committee meeting must be held if a student requests it and the graduate program director approves.

- An acceptable thesis on a research topic must be submitted. Detailed specifications of the format of the thesis are available from the appropriate graduate office. Acceptance of the thesis requires the approval of an Examining Committee following an oral defence of the thesis.

17.20.4.6 Courses

Core Courses

MTSC 6000G (non-credit) Graduate Seminar in Science Communication I
MTSC 6100G (non-credit) Graduate Seminar in Science Communication II
MTSC 6010G Physics and Chemistry of Materials
MTSC 6020G Advanced Topics in Materials Science
MTSC 6050G MSc Thesis

Elective Courses

MTSC 6110G Thermodynamics and Statistical Mechanics of Materials
MTSC 6120G Theory of the Solid State
MTSC 6130G Surface Science and Catalysis
MTSC 6140G Experimental Techniques in Materials Characterization
MTSC 6240G Biomaterials
MTSC 6250G Polymer Science & Engineering
MTSC 6260G Topics in Applied Materials Science I
MTSC 6270G Topics in Applied Materials Science II
MCSC 6170G Computational Chemistry
MCSC 6180G Computational Physics
MCSC 6280G Advanced Topics in Computational Science

17.20.4.7 Proposed progression through program

YEAR 1

Semester 1
Two three-credit courses – MTSC 6010G Physics and Chemistry of Materials and one elective
MTSC 6000G Graduate Seminar in Science Communication I
Begin thesis research

Semester 2
Two three-credit courses – MTSC 6020G Advanced Topics in Materials Science and one elective
MTSC 6100G Graduate Seminar in Science Communication II
Thesis Research

Semester 3
Thesis Research

YEAR 2

Semester 1
Thesis Research and MTSC 6000G Graduate Seminar in Science Communication I

Semester 2
MTSC 6050G MSc Thesis and MTSC 6100G Graduate Seminar in Science Communication II

17.20.5 Master of Science (MSc) in Modelling & Computational Science

17.20.5.1 Program faculty

Dhavide Aruliah, BSc, MS, PhD

Emma Bartfay, MMath, PhD, BSc, Faculty of Health Sciences

Peter Berg, Dipl-Phys, PhD

Sean Bohun, BSc, MSc, PhD

Jeremy Bradbury, BSc, MSc, PhD

Pietro-Luciano Buono, BSc, MSc, PhD

Anatoli Chkrebtii, BSc, MSc, PhD

Mark Green, BSc, MSc, PhD

Ken Pu, BASc, MASc, PhD

Brian Ikeda, Ph.D, BSc, MSc, PhD, Faculty of Energy Systems and Nuclear Science

Greg Lewis, BSc, MSc, PhD

Emmanuel Lorin de la Grandmaison, BSc, MSc, PhD

Lixuan Lu, BES, MES, PhD, Faculty of Energy Systems and Nuclear Science

Fedor Naumkin, MSc, PhD

Eleodor Nichita, BSc, MSc, PhD, Faculty of Energy Systems and Nuclear Science

William R. Smith, BASc, MASc, MSc, PhD

Mark Staley, BSc, MSc, PhD, Adjunct Professor

Anthony Waker, BSc, PhD Faculty of Energy Systems and Nuclear Science

Ed Waller, BSc, MScE, PhD Faculty of Energy Systems and Nuclear Science

17.20.5.2 Program information

The Faculty of Science offers a graduate program leading to the degree of Master of Science (MSc) in Modelling and Computational Science. Mathematical modelling is an important tool in the study of several physical and biological phenomena. The new emerging field of computational science combines the implementation of mathematical models, computer algorithms, and knowledge in a particular area of application, in order to provide an additional tool for the study of phenomena and, in particular, to facilitate the study of problems that are intractable or difficult to study using conventional approaches. Mathematical models and computational science are powerful methods to study problems such as atmospheric phenomena, climate variability, molecular dynamics, protein folding, option pricing in financial markets, and many other physical, biological, medical, environmental and economic problems. The MSc in Modelling and Computational Science takes advantage of the interdisciplinary nature of the Faculty of Science and the Faculty of Energy Systems and Nuclear Science to offer students a course of study that introduces them to all aspects of the modelling process. UOIT's membership in the SHARCNET (Shared Hierarchical Research Computer Network) provides access to state-of-the-art computational facilities.

A survey of industrial experts recently undertaken by the Canadian Advanced Technology Alliance (CATA, the largest business development association dedicated to making Canadian organizations world-class producers and users of advanced technology) found that there is a critical need for Highly Qualified Personnel (HQP) who possess skills and knowledge in High-Performance Computing (HPC). Many companies from all sectors acknowledged this need for HQP, indicating the significant extent of the skill requirement. The jobs in these areas are expected to be almost exclusively within interdisciplinary groups that perform a number of different interrelated tasks; thus, problem-solving ability and the ability to communicate and work with people from a variety of disciplines are critical. Graduates of the MSc in Modelling and Computational Science graduates are in an excellent position to fill these positions and to contribute to the province's and the country's economy.

Depending on the background of the student, completion of the MSc in Modelling and Computational Science (in either the thesis or the course-based option) also prepares the student to enter PhD programs in applied mathematics, physics, chemistry and engineering.

17.20.5.3 Admission requirements

In addition to the general admission requirements listed in section 17.10.3, each applicant to the MSc program in Modelling and Computational Science must have earned an honours undergraduate degree in mathematics, science, or engineering with a minimum average grade of B (3.0 on 4.3 scale). At a minimum, the student must be acquainted with basic numerical methods, linear algebra, differential equations, and possess some computing skills. To assist with the assessment of the application, the student should provide relevant course numbers, titles, brief descriptions of course contents, text books used and/or chapters covered, and the grades received, if applicable. Admission depends on the availability of a research supervisor.

17.20.5.4 Degree completion time limit and part-time studies

Students who enrol in the MSc in Modelling and Computational Science program are expected to complete the program in five consecutive semesters. All program requirements must be completed on site at UOIT. Part-time students must gain approval from their faculty advisor regarding their study plan.

17.20.5.5 Degree requirements

MSc thesis-based option – Students must successfully complete 30 credits, including six three-credit courses and a 12-credit thesis. The six three-credit courses must include three core courses and three elective courses, and a minimum grade of B- must be achieved in each course. No more than one elective course may be a fourth-year undergraduate course not included in the list of graduate course electives (see below). This course must be approved by the student's Supervisory Committee. Students must also successfully complete the non-credit Graduate Seminar in Modelling and Computational Science course and the 12-credit final thesis which will be evaluated by an Examining Committee and will involve an oral presentation.

MSc course-based option – Students must successfully complete 30 credits, including eight three-credit courses and a six-credit research project. The eight three-credit courses must include 3 core courses and 5 elective courses, and a minimum grade of B- must be achieved in each course. No more than two elective courses may be fourth-year undergraduate courses not included in the list of graduate course electives (see below). These courses must be approved by the student's Supervisory Committee. Students must also successfully complete the non-credit course -

Graduate Seminar in Modelling and Computational Science course and a six-credit Research Project, including a research project report.

17.20.5.6 Proposed progression through program

Thesis option

YEAR 1

Semester 1
MCSC 6010G Mathematical Modelling
MCSC 6020G Numerical Analysis
One elective*

Semester 2
MCSC 6030G High-Performance Computing
Two electives*

Semester 3
Thesis research

YEAR 2

Semester 1
Thesis research

Semester 2
MSCS 6001G MSc Thesis
Note: Required non-credit course in year two – MCSC 6000G Graduate Seminar in Modelling and Computational Science

Course-based option

YEAR 1

Semester 1
MCSC 6010G Mathematical Modelling
MCSC 6020G Numerical Analysis
One elective*

Semester 2
MCSC 6030G High-Performance Computing
Two electives*

Semester 3
Research Project

YEAR 2

Semester 1
Two electives*
Research Project

Semester 2
MSCS 6002G MSc Research Project

***Elective courses**

MCSC 6060G Advanced Statistical Mechanics (cross-listed with PHY4010U)
MCSC 6070G Advanced Quantum Mechanics (cross-listed with PHY4020U)
MCSC 6120G Numerical Methods for Ordinary Differential Equations
MCSC 6125G Numerical Methods for Partial Differential Equations
MCSC 6140G Dynamical Systems and Bifurcations
MCSC 6150G Fluid Dynamics
MCSC 6160G Transport Theory
MCSC 6165G Monte Carlo Methods
MCSC 6170G Computational Chemistry
MCSC 6180G Computational Physics
MCSC 6210G Advanced Topics in Mathematical Modelling
MCSC 6220G Advanced Topics in Numerical Analysis
MCSC 6230G Advanced Topics in High-Performance Computing
MCSC 6240G Advanced Topics in Dynamical Systems
MCSC 6280G Advanced Topics in Computational Science