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INTRODUCTION

The Senate of the University of Waterloo establishes regulations that guide graduate studies and the most current regulations are published yearly in the University of Waterloo Graduate Calendar. This manual describes the Faculty of Engineering graduate studies policies as well as the Department of Electrical and Computer Engineering requirements for graduate degrees, which can be more extensive than Faculty and/or University requirements.

The Associate Chair for Graduate Studies is the official representative of a department for graduate studies and works closely with the Faculty Program Coordinators. They are responsible for ensuring that University, Faculty and Department policies are implemented, and for monitoring the academic performance of graduate students. The ECE Graduate Office, the Faculty Program Coordinators, and the Associate Chair of Graduate Studies are the primary contacts for students on administrative matters.

Graduate students are invited to consult documents related to rules, regulations, guidelines, and practices at UW by visiting Graduate Studies and Postdoctoral Affairs website, by consulting the Guide for Graduate Research and Supervision at the University of Waterloo, or by visiting the ECE department website.

Degree Programs offered by Electrical and Computer Engineering

The Department of Electrical and Computer Engineering offers programs for the degrees of Master of Engineering (MEng), Master of Electric Power Engineering (MEng-Power), Master of Applied Science (MASc), and Doctor of Philosophy (PhD).

The MEng degree is a course based program in which students must complete a minimum of 8 graduate courses. The Department of Electrical and Computer Engineering also offers optional diplomas in core and emerging areas such as Computer Networking and Security, Software Engineering, Sustainable Energy, Nanoelectronics (*NEW*), Embedded Systems (*NEW*), and Management Science (offered in collaboration with the Department of Management Science) to those completing an MEng degree.

The MEng-Power degree is a part-time, on-line, course based program in which students must complete a minimum of 9 graduate courses. This is an industry-oriented graduate program.

The MASc degree is a research based program in which students must complete a minimum of 5 graduate courses, a seminar, and a research thesis.

The PhD degree is a research based program in which students must complete a minimum of 4 graduate courses, a two-part comprehensive exam, a seminar, a research thesis, and an oral defence.

TUITION AND FEE STRUCTURE

The University of Waterloo Graduate Calendar contains the University regulations governing the payment of fees and the amount of these fees. The fees for graduate studies consist of two major components; tuition fees and incidental fees.

Fees must be paid for each active term of registration. International graduate students pay a higher term fee which is specified in the University of Waterloo Graduate Calendar. The incidental fees cover a variety of graduate student-related charges that have been approved by the Board of Governors of the University of Waterloo. For complete details, please refer to the Student Accounts website.
FINANCIAL SUPPORT

MEng and MEng-Power Students

All MEng programs are fully self-funded. Information about other sources of financial aid is available in the Awards and Funding section of the Graduate Studies and Postdoctoral Affairs website. Please note that there are little to no scholarships or awards for MEng and MEng-Power students.

MASc and PhD Students

All full-time MASc and PhD candidates receive a Graduate Research Studentship (GRS) from their supervisor(s). The value of a GRS, as of May 2018, is $17,500/year for the MASc program and $23,043/year for the PhD program. Generally MASc students are guaranteed funding for two years and PhD students are guaranteed funding for four years. Your original offer letter will have outlined the conditions for financial support and the duties required of you as the recipient. The offer letter will also have indicated the conditions under which financial support may be withdrawn.

Eligible, full-time, international students will also receive an International Student Award. International MASc students will receive an IMSA valued at $2,045 per term for 2 years (6 terms). International PhD students will receive an IDSA valued at $4,090 per term for 4 years (12 terms). These amounts are subject to change annually.

Each term, the Department gives out Faculty of Engineers Awards (FOEs), in the amount of $1,500 each to students who have shown strong merit in the previous term (grades, publications, conferences, etc.). The ECE Graduate Studies Committee meets once a term to determine who will receive the awards. The minimum eligibility requirements for this award are as follows;

- max. 3 awards within 6 terms of a MASc program.
- max. 6 awards within 12 terms of a PhD program
- cannot have incomplete (INC) or did not write (DNW) grade
- cannot have Probationary status
- must be a full-time active student within your program time limits at time of receiving award
- must have at least 80% Overall Average
- must have submitted an Activity Report for previous term with a satisfactory evaluation
  - must be correctly completed with the relevant information in the appropriate section
- must be a registered student in the term in which the award will be paid out

Part-time students are not eligible for any awards, scholarships or OSAP and must be self-funded.

Graduate Research Assistantships

Some graduate students obtain work as Graduate Research Assistants (GRAs) on research projects carried out by faculty members. These research assistantships are usually awarded by the professor to qualified students and are dependent on funding. The Department of Electrical and Computer Engineering does not have an abundance of GRAships but they are an excellent opportunity for those who receive them.

GRA salaries are taxed and subject to other deductions. For International Students, research assistantships cannot be taken up nor payment made until the student has obtained a Social Insurance Number from Service Canada (refer to the “International Students - Employment” section of this document).

Teaching Assistantships

There are Graduate Teaching Assistantships (GTAs) available each term to assist in the teaching, tutoring and marking of undergraduate courses. Approximately 2 months prior to the start of the term, an e-mail is sent out to all eligible graduate students with application instructions. Typically, students in their
first term of study do not receive a TAship. Graduate Teaching Assistantships are not guaranteed for any ECE graduate students.

Teaching Assistantships involve an average of 10 hours per week for one term and the compensation rate it set annually by University. A student may not hold more than one position per term or multiple positions per term that require more than 170 cumulative hours of work (this includes GTAships, GRAships, etc. in other departments and faculties).

All Teaching Assistants are required to attend an ExpecTAtions workshop held twice each year. You only need to complete this workshop once. You may apply for Teaching Assistantships each term, but preference is given to those who have completed the workshop. Approximately two months prior to an ExpecTAtions workshop, there will be an email registration reminder sent to all currently registered students. TAs are also required to complete additional safety training including Supervisor Safety Awareness and Accessible Customer Service Training (AODA).

TA salaries are taxed and subject to other deductions. For International Students, teaching assistantships cannot be taken up nor payment made until the student has obtained a Social Insurance Number from Human Resources Canada (refer to the “International Students - Employment” section of this document).

For more information on GTAships please see the ECE TA Manual.

Other Funding Sources

For more information on other funding sources please see the following websites or contact the ECE Graduate Scholarship Administrator:

- Funding for International Students
- Students in Financial Need
- GSPA Funding and Awards Database (Including Tri-Council and OGS)
- Faculty of Engineering Funding and Awards website

FACULTY AND SUPERVISORS

Faculty members and supervisors are a major part of graduate studies. They teach your classes, guide your research, manage your TAships, act as mentors, and directly impact the success of your graduate studies at Waterloo. At all times, the student-faculty relationship must be professional in all matters including academics and research.

While all MEng students are assigned the same supervisor at the time of admission to the program, MASc and PhD students are personally selected by a faculty member to be part of their research group at the time of admission.

All MASc and PhD students in Electrical and Computer Engineering must have a full-time ECE faculty supervisor. If an adjunct or cross-appointed faculty member wishes to supervise an ECE graduate student they must also have a full-time ECE faculty co-supervisor.

Academic Supervisors for MASc and PhD Students

Academic supervision requires complex interaction between graduate students and their supervisors. The role of a supervisor is threefold: to advise, to monitor, and to act as mentor. Supervisors not only provide guidance, instruction and encouragement in the research activities of their students, but also take part in the evaluation and examination of their students' progress and performance. Supervisors are responsible for fostering the intellectual and scholarly development of their students. This being said, in any highly creative and intellectual environment, conflicts may arise. It is important that every effort must be made to maintain a professional relationship with your supervisor even in cases where any disagreements/conflicts may arise.
In the event that a conflict escalates beyond the point where the student and the supervisor can deal with it independently, students are encouraged to speak to their Program Coordinator/Advisor and/or Associate Chair of Graduate Studies for support and guidance on the situation.

Co-Supervisors

In the event that you have two or more supervisors it should be noted that both supervisors must be present at all Milestones (in person) and both must sign all administrative paperwork done over the course of your program (i.e. Term Activity Reports, Change of Status forms, etc.). In the case of committees (i.e. thesis readers or comprehensive/defence committee members) both supervisors must serve on the committee but only count as one member.

To add or remove a co-supervisor you must complete a Change of Supervisor Form and submit it with the necessary signatures to your Program Coordinator/Advisor.

Student-Supervisor Relationship

When you meet with your supervisor ensure that there is clear and frequent communication of their, and your, expectations and responsibilities. The most common reason for conflict between graduate students and their supervisors is mismatched expectations of the relationship. Think about your own needs and what you require from a supervisor but also be realistic about what any one other person can do for you. Supervisors have many demands on their time and resources but they are also there to mentor you and support you in your program. Use time with your supervisor wisely by preparing in advance for meetings and prioritizing your questions/issues. Be on top of your deadlines and be sure to give your supervisor enough time to meet them.

If you experience conflict with your supervisor remember that failing to address the problem early on will lead to increased feelings of frustration and will make the problem more difficult to resolve in the long run. Open and honest communication with your supervisor is the best way to avoid these situations but if you do require support the ECE Grad Staff and the Associate Chair of Graduate Studies are an excellent resource for advice and support and all conversations are kept confidential unless you request otherwise.

Changing Supervisors

If a MASc or PhD student needs to change their academic supervisor they can do so by finding another faculty member who is willing to take them on and completing a Change of Supervisor Form. Once the form is completed with the necessary signatures it must be approved by the ECE Department and the Associate Dean. When all changes have been approved all of the affected parties will be informed and financial responsibility for the student will be transferred to the new supervisor.
PROGRAM ENROLMENT EXPECTATIONS

Program Time Limits

All Graduate programs are subject to time limits (minimums and maximums), shown in the table below along with target program times.

<table>
<thead>
<tr>
<th>Program</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Months</td>
<td>Terms</td>
</tr>
<tr>
<td>MEng (All)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-Time</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td>Part-Time</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>MASc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-Time</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Part-Time</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>PhD Full-Time from MASc</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>BASc</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>PhD Part-Time from MASc</td>
<td>N/A</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 1: Program Time Limits

Program Extensions

Students who have reached the University maximum time limit allowable for their program must submit a petition for a formal extension of the program time limits to their department Associate Chair, Graduate Studies if they want to continue in their program. If a Petition for Extension of the Program Time Limit is not submitted and approved by the end of the preceding term (Fall-August 31, Winter-December 31, Spring-April 30), students will be automatically ‘discontinued’ from their program. In such cases an academic decision of “Required to Withdraw” will be applied to the student’s academic record and reapplication to the program for a future term will be required. Students who have reached their maximum limit allowable for their program will receive notice from the Department that they must submit a formal extension. For more information on program extensions please see the PhD Program Coordinator/Advisor.

Notes:

1. Up to three terms of extension are approved at the department level.
2. More than three terms of extensions must be approved at the Faculty level by the Faculty of Engineering, Associate Dean, Graduate Studies.
3. PhD students petitioning for an extension must also complete the PhD Advisory Committee Report which must be signed by all committee members. This report should contain a schedule which identifies a reasonable sequence of events which are expected to lead to the completion of the academic program, with target dates clearly indicated.
4. PhD students should strive to submit their theses within 36 calendar months after the date of their comprehensive examination. Program extensions are not granted automatically, and students may have to take a second comprehensive examination, if their Department so recommends. Under appropriate circumstances, program termination may be required.
PROGRAM CHANGES
You can apply for a graduate program change rather than submit a new graduate application provided you meet the requirements of the new program and the change is approved by all departments and faculties involved.

The most common program changes in ECE are MEng to MASc and MASc to PhD but can also include MASc to MEng, PhD to MEng, PhD to MASc, Nano/QI to regular, regular to Nano/QI and interdepartmental changes. Students wishing to complete a program change will need to complete a Program Change Form and obtain the necessary signatures as well as any additional paperwork required. Please speak with your Program Coordinator/Advisor before starting the program change process in order to ensure a smooth transition.

Students changing from a course-based program to a research-based program are responsible for finding an academic supervisor who is willing to fund them and oversee their research.

Specific instructions for changing from MEng to MASc can be found in the MEng “Transfer to the MASc Program” section of this document and instructions for changing from MASc to PhD can be found in the PhD “Transfer to the PhD Program without Completion of the MASc Program” section of this document.

Interdepartmental/Faculty Changes
In the event that you wish to move to another department or faculty, signatures from each area must be obtained. For example, if you wanted to transfer from Systems Design Engineering into Electrical and Computer Engineering you would have to get the signatures of your SYDE supervisor, the SYDE Associate Chair, your ECE supervisor, the ECE Associate Chair, and the Associate Dean of Engineering. All signatures from your original home department (SYDE in this case) must be obtained before you collect signatures from your new department (ECE).

In the event that you will be changing faculties, in addition to the above mentioned approvals, you will also need to acquire the signatures of the Associate Dean of Graduate Studies for your home Faculty as well as the Associate Dean of Graduate Studies for your new Faculty. These signatures are usually obtained via your Program Coordinator/Advisor. Similarly, you will need to collect the signatures from your home department before you collect the signatures from your new department.

You should keep in mind that interdepartmental and faculty program changes take longer to complete due to the number of approvals needed. Be sure you are aware of term deadlines before submitting your program change paperwork to ensure that your transfer will occur in the appropriate term.

STATUS CHANGES
All status change requests (full-time/part-time, inactive, on-campus/off-campus and voluntary withdrawal) must be filed using the Change of Enrolment Status/Withdrawal form. All requests must be approved by your supervisor, the Associate Chair, and the Associate Dean.

Full-Time to Part-Time and Part-Time to Full-Time
A full-time student may be allowed to change to part-time status (either temporarily or permanently) for reasons relating to personal health issues, family responsibilities, or employment. A part-time student may be allowed to change to full-time status (either temporarily or permanently) with the permission of their supervisor. Part-time students are not eligible for most external/internal scholarships, GRS, and other types of Waterloo financial support but pay a lower tuition rate.
Students with full-time jobs are not permitted to have full-time student status and students who are employed by the University of Waterloo for more than 10 hours per week may not continue as a full-time student.

**Inactive Registration**

All graduate students are expected to maintain continuous active registration until the completion of their program. If students are unable to participate in their program of study for one term, they may, with the permission of the Associate Dean of Engineering, register as inactive for that term. Students cannot be inactive for more than two consecutive terms and probationary students cannot go inactive until they clear their probationary requirements. Students will not be granted inactive status if (i) they have an incomplete course, (ii) they have already had two consecutive inactive terms, or (iii) a written departmental recommendation does not accompany the request. Acceptable reasons for applying for inactive status include maternity/paternity leave, illness, work opportunity (CPR only), family emergency, etc. Students who are inactive do not pay any tuition fees. It is highly recommended that students going abroad on their inactive term read the section of this manual entitled “Off Campus Research and Work.”

*Note:* students are not permitted to complete their degree requirements and graduate from an inactive term. This includes degree completion prior to the 100% refund deadline in the following term.

**Full-Time Off-Campus Registration**

Requests for full-time, off-campus status are only considered when a student will be undertaking work directly related to their degree requirements (i.e. research, work, or courses) where the activity requires the student to be away from campus for more than four weeks in an academic term. Students who are full-time off-campus pay full tuition fees. It is highly recommended that students going abroad on their inactive term read the section of this manual entitled “Off Campus Research and Work.”

**The Difference Between Inactive and Full-Time Off-Campus Registration**

When applying for a status change, students are often confused on the differences between Inactive Registration and Full-Time Off-Campus Registration especially when it comes to work opportunities. None of the ECE degree programs offer formal “Internships.” While many companies and supervisors refer to them this way, most work opportunities are, in fact, not internships. The best way to decide whether or not you should be full-time off-campus or inactive is to ask yourself whether or not you will be doing work directly related to your degree requirements.

For example, if you received an offer for a four month contract at Blackberry which is within your area of interest (cell phones) but the work you will be doing is not directly related to your thesis research or course work then you should be inactive for that term.

Alternatively, if you have a MITACS scholarship that requires you to go work at a partner company as part of your scholarship agreement you would need to be full-time off-campus for that term as the work you are doing is part of your degree/funding requirements. Similarly, if you were going overseas to Austria to do research for your thesis in their national library or take a course you would also need to be full-time off-campus as you are doing work towards your degree requirements.

When in doubt it is best to come speak with your Program Coordinator/Advisor as they will be able to advise you on the best course of action.

*Note:* Effective March 2018, International Students are no longer permitted to go inactive to pursue a work opportunity which is outside the scope of their degree requirements. If you have any questions regarding your particular situation you should contact one of the University’s International Student Advisors.
Voluntary Withdrawal

It is important that you inform your supervisor and Program Coordinator/Advisor of your decision to withdraw from the program. Once you have been withdrawn from your program, you are no longer a student at the University of Waterloo and may not use any of the University’s resources.

Voluntary withdrawal may require the repayment of certain scholarships (including GRS, IDSA, and IMSA). Repayment amounts are calculated based on the University of Waterloo tuition refund policy outlined in the Graduate Studies Calendar.

100% Refund Deadline

In the event that you have paid your tuition fees for a given term and your status changes to Degree Complete, Inactive, or Withdrawn before the 100% refund deadline for that term (usually the end of the third week of term) you will automatically receive a full refund of your fees for that term.

If you have received a GRS and/or an IMSA/IDSA and change your status to Degree Complete, Inactive, or Withdrawn by the 100% refund deadline it will need to be repaid to the Department. If you have used your GRS and/or an IMSA/IDSA to pay your tuition fees the money from your tuition will be automatically be refunded to the department. It is your responsibility to return any additional money that has been disbursed to your personal bank account. Failure to repay the amount in full will result in a default on your account and you will be unable to graduate, return to your studies or obtain an official transcript until the balance has been repaid.

50% Refund Deadline

In the event that you have paid your tuition fees for a given term and your status changes to Degree Complete, or Withdrawn before the 50% refund deadline for that term (usually the end of the seventh week of term) you will automatically receive a refund of half your fees for that term.

If you have received a GRS and/or an IMSA/IDSA and change your status to Degree Complete or Withdrawn by the 50% refund deadline the amount to be repaid to the Department is at the discretion of your supervisor. You should be sure to discuss financial arrangements with your supervisor prior to any status changes.

OFF CAMPUS RESEARCH AND WORK

Internships

None of the ECE degree programs offer formal “Internships.” Some students take time away from their studies (an inactive term) to pursue various work experiences but these opportunities are external to the University of Waterloo and are not internships. Students seek out these jobs independently of their degree program and do not receive any academic credit for their work on an inactive term. Similarly, some scholarships require students to do work in industry but this work is arranged through the scholarship agency and, again, is external to their UW degree program.

It should be noted that, effective March 2018, international students are no longer eligible to take an inactive term for the purposes of pursuing a work opportunity. As per the Immigration, Refugees, and Citizenship Canada (IRCC) Program Delivery Instructions (PDI) for working off campus, “If a program of study does not provide for a regularly scheduled break and a student creates their own break in a program, it is considered a leave from studies, rather than a regularly scheduled break. Students who create their own break in a program are not eligible to work on or off campus during that break.”
Inactive Students

If you plan on taking an inactive term during your degree program (for a limited external research or work opportunity *which is not related to your uWaterloo program*) you will need to complete the following forms:

- Change of Status
- Acknowledgement of Risk and Responsibility Form (if going abroad)
- Emergency Information Form (if going abroad)

Since inactive students do not pay fees for the term they are inactive, you will not automatically be enrolled in the UHIP health coverage program or the “I Have a Plan” extended benefits program. It is mandatory for all International students to maintain their UHIP health coverage while inactive so you will need to go to the Student Finance Office in Needles Hall and arrange to have your coverage continued over your inactive term and pay just your UHIP fees. If you have dependants also enrolled in the UHIP program you will also need to arrange to extend their coverage as well. In order to retain your “I Have a Plan” extended benefits coverage (for students without private medical insurance) while inactive you will need to contact Rose Vogt (rvogt@uwaterloo.ca) in the GSA and request to have your coverage continued over your inactive term and pay the necessary fees for yourself and any dependants.

Full-Time Off-Campus Students

If you plan on registering as a full-time off-campus student during the course of your degree program (for an internship or research opportunity *that is related to your uWaterloo program*) you will need to complete the following forms:

- Change of Status
- Acknowledgement of Risk and Responsibility Form (if going abroad)
- Emergency Information Form (if going abroad)

For Both Inactive and Full-Time Off-Campus Students Going Abroad

If your research/work opportunity is taking you out of the country you should consider the following:

- Review the University of Waterloo’s Policy on Travel (*Policy 31*)
- Canadian Citizens and Permanent Residents should register with *Foreign Affairs and International Trade Canada* in case of an emergency abroad, such as an earthquake or civil unrest, or an emergency at home
- **Make two photocopies of your passport identification page** and leave a copy with a trusted friend or relative who is not travelling with you. Keep the other copy with you when you travel and leave it in a safe place separate from your passport.
- Many countries require that your **passport be valid for several months** after your planned departure date from that country. Because each country sets its own rules, you should consult the **travel reports** of the countries you will be visiting to confirm their requirements
- Non-Canadians who will be traveling between Canada and another country (in which they have no citizenship in) should apply for the appropriate **travel documents**
- Confirm all transportation, accommodation, and financial information YOURSELF and make sure someone you trust has copies of all of your travel itineraries and documents

Field Work

Graduate students participating in any fieldwork activity related to their research must familiarize themselves with the University of Waterloo’s policies and procedures governing such activity. Field work
refers to any activity undertaken by members of the University in any location external to UW campuses for the purpose of research, study, training or learning.

**GRADUATE STUDIES COURSES**

Graduate courses offered by the Faculty of Engineering are in the 600 and 700 series and are normally assigned a weight of 0.5. Graduate courses in other faculties, numbered 600 and above, also normally carry a weight of 0.5. The most notable exception to this is NANO courses and some QI courses which carry a weight of 0.25.

Not all courses are offered each term. Course listings for the current and upcoming terms can be found on Quest as well as the [Schedule of Classes](#) for Graduate Students.

All course selection should be done in consultation with your supervisor(s) and no course can be taken more than once.

Some courses are assigned both undergraduate and graduate course numbers, with the graduate versions normally requiring additional work. In order to receive credit for these courses you must enroll using the graduate course number.

**Core Courses**

All incoming MASc and PhD students are required to complete 2 core courses in the area of specialization, outlined in the their offer letter, as part of their degree course requirements. The list of core courses will be updated annually by the department and can be found in the Courses section of the ECE Current Student website. The choice of core courses must be made in consultation with your supervisor(s).

**Course Registration Categories**

Students may register for courses in one of three categories: credit, extra and audit.

By default, every course in which a student registers is a *Credit* course and is counted towards their GPA. Even if the course is not part of your degree requirements, the grade of each credit course is included on your transcript and is counted in your overall average. For example, if you took French 101 and got 75% that course that grade would appear on your transcript and would be factored into your overall average along with your degree requirement courses.

If you want to receive full graduate credit for a course but not use this credit towards your degree requirements you should register for this course as an *Extra* using the [Course Add/Drop form](#) which we will discuss later in this manual. The grade obtained in an extra course will be included in your transcript along with the designation XTRA indicating that the course was completed outside the degree requirements. The grade will not be included in your overall average.

If you want to participate in a graduate course without being examined on its content you should register for this course as an *Audit* using the [Course Add/Drop form](#). At the beginning of the course you must establish with the course instructor the conditions that will have to be satisfied for the course to appear on your transcript as an audit. This may mean just sitting in on the class or it may include completing assignments and other course activities; it is at the discretion of the course instructor. No grade will be assigned for this course therefore it will not be included in your average. In the case of unsatisfactory audits, the course will be removed from your record. Courses taken for audit cannot be taken for credit at a later date.
Dropping and Adding Courses

For regular, credit graduate courses, students can add and drop courses using the Quest system from the beginning of the open enrolment period to the end of the fourth week of term. All course selection should be done in consultation with your supervisor(s).

If you wish to enroll in a course as Extra or Audit, or enroll in an undergraduate course you must use the GSPA Course Add/Drop form. This form must be filled out and signed by you, your supervisor, and the course instructor before being submitted to your Program Coordinator/Advisor. The form must then be approved by the Associate Chair before being added to your course schedule. This process must be completed between the start of the open enrolment period to the end of the fourth week of term.

In the unusual case that a course is to be added or dropped after the deadline date, special approval may be required from the Associate Dean of Engineering in addition to your supervisor, the course instructor, and the Associate Chair.

Course Assessment and Expectations

MASc and MEng students are required to have an overall average of at least 70% and obtain a final grade of at least 65% in each course. Any grade below 65% is considered a failed course and must be made up in another term.

PhD students are required to have an overall average of at least 78% and obtain a final grade of at least 75% in each course. Any grade below 75% is considered a failed course and must be made up in another term.

Failed courses will be counted in your overall average but will not be counted as part of your minimum degree requirements. Failed courses cannot be retaken, converted to extra or removed from your official transcript.

If you receive a failing grade or an overall average below the required minimum for your program you will receive an Academic Progression Letter informing you of your situation and any action required on your part. In the event that you receive a second Academic Progression Letter there will be an automatic review of your status within the department. Only one of two decisions is possible:

1. You will be required to withdraw from the program; or
2. Permission is granted to continue, with conditions specified in writing by the departmental Graduate Studies Committee.
   a. Students who receive a warning letter will be required to take at least one course for credit in the subsequent term so that their academic progression can be followed up on.
   b. No requests for inactive status will be approved except in extraordinary circumstances.

You will receive a formal letter informing you of the Committee’s decision. In the event that you are required to withdraw, you can appeal the decision by following the steps outlined in Policy 70.

Academic Integrity Module (AIM)

The Graduate AIM is an online course (ACINTY 620) that all new graduate students are required to take through Waterloo LEARN. Students must read the information about academic integrity and then receive a mark of at least 75% in an online quiz before the end of the second month of your first term. The goal of the Graduate AIM is to ensure that all graduate students are given the resources and information to work, study, and play with integrity.

You will be automatically enrolled in the course once you are matriculated into your program. The whole course will take approximately two hours to complete. You will only have to do this module once during the course of your degree.
Ontario Visiting Graduate Student (OVGS)

The Ontario Visiting Graduate Student agreement permits a graduate student registered at an Ontario University (Home University) to take graduate courses at another Ontario University (Host University) without completing further admission formalities. You would pay fees to your Home University and be classified as a visiting student at the Host University, where you pay no fees. Graduate students cannot take a course at another University while registered at the University of Waterloo unless it is through the OVGS program.

Graduate students at the University of Waterloo are permitted to take a maximum of two courses via the OVGS agreement. The course(s) selected must be at the graduate level and there must be no comparable course(s) offered at the University of Waterloo. The courses must be relevant to your program of study and cannot be taken as Extra or Audit. Graduate students are not permitted to take an OVGS course in their final term of study since it is unlikely that the official grade will be received by Graduate Studies and Postdoctoral Affairs before the degree completion deadline.

In order to apply to be an OVGS student you will need to complete an Ontario Visiting Graduate Student Application and submit it to the Master’s Program Coordinator/Advisor in the term prior to the start of the course.

If you need to withdraw from an OVGS course, you will need to complete an OVGS Notification of Withdrawal and submit the form to the Master’s Program Coordinator/Advisor before the last date for withdrawal from courses as published in the Host University’s Graduate Calendar. Failure to do so will result in you receiving a failing grade on your student record for that course.

Note: Students in the collaborative programs (i.e. NANO and QI) cannot take OVGS courses towards their degree requirements

STUDENT PERFORMANCE REVIEW

Term Activity Reports

The academic progress of each researched based graduate student (i.e. MASc and PhD) is reviewed by their supervisor at the end of each term. Each research based student is required to complete an on-line Term Activity Report and submit it by midnight on the first Friday of the second month of the subsequent academic term (i.e. first Friday of February for Fall Term Activity Reports). The report must document your work and achievements from your previous term as well as the objectives you and your supervisor have set for the upcoming term.

Should a student receive a rating of unsatisfactory from their supervisor for failure to make acceptable academic progression the student will be required to meet with the Graduate Studies Committee for a review of their progress.

The activity reports are a program requirement for all research based programs (part-time and full-time), an important part of your record, and are used for assigning scholarships, evaluating requests for extensions, and so on.

MEng students are not required to complete a Term Activity Report at any time as their performance is evaluate solely on the grades from their course work.

MENG PROGRAM

The MEng program is designed with the professional in mind and is based on industry relevant course work. The program may be taken by full-time students or those who wish to study on a part-time basis while remaining in full-time employment external to the University. There is no Departmental or
University funding for MEng students and candidates are expected to be self-supporting. The primary point of contact for all MEng students in the ECE department is the MEng Program Advisor/Coordinator.

**Period of Registration and Residency Requirements**

For full-time students, the minimum period of registration for the MEng program is 3 terms and the maximum allowable time is 6 terms of active registration.

For part-time students, the minimum period of registration for the MEng program is 6 terms and the maximum allowable time is 15 terms of active registration.

The minimum residency requirement (terms on-campus) for the MEng program is 2 terms for full-time students and 4 terms for part-time students.

Students needing program extensions should refer to the “Program Time Limits” section of this document.

**Graduate Courses**

The degree of Master of Engineering is awarded based on the successful completion of 8 graduate level courses. A student may take a maximum of 10 courses (0.5 credits each) in the entire MEng Program.

MEng students are required to maintain an overall average of at least 70% and obtain a final grade of at least 65% in each course. Any grade below 65% is considered a failed course and must be made up in another term. Students in ECE are not permitted to retake failed courses. If you have two or more failed courses you may be required to withdraw from the program (See the “Course Assessment and Expectations” section of this manual for more information)

When selecting courses, MEng students should bear the following notes in mind;

1. A minimum of 5 courses should be taken within the ECE department.
2. MEng students may take a maximum of 3 courses from outside the ECE department. Any non-ECE courses must be completed within the faculties of Engineering, Math, or Science.
3. Full-time MEng students may enroll in a maximum of 3 courses per term while part-time MEng students can enroll in a maximum of 2 courses per term. This includes EMLS, extra, and audited courses.
4. All courses must be taken at the graduate level (600 or 700). A minimum of 5 courses must be taken within the ECE department.
   a. If you are interested in a Graduate Diploma than you should review the course requirements for the applicable diploma before choosing your courses for the term
5. Undergraduate courses (including 400 and 500-level courses) will NOT be recognized towards your degree requirements.
   a. Some courses are assigned both undergraduate and graduate course numbers, with the graduate versions normally requiring additional work. In order to receive credit for these courses you must enroll using the graduate course number.
6. Audit courses, extra courses, and failed courses do not count as a course towards your degree requirements or any of the Graduate Diploma requirements.
7. In order to qualify for a Graduate Diploma, you must fulfil the requirements as specified for each Diploma. Each Diploma has compulsory and elective courses. Since all courses are only offered once a year, it is advisable to take the compulsory courses when they are offered.
8. A course cannot be applied to more than two credentials (e.g., the degree and a single diploma).

All new graduate students are required to complete the Academic Integrity Module (ACINTY 620) through UW Learn in their first term of registration in addition to their other program course requirements.
Graduate Diplomas

Graduate diplomas are an optional part of the MEng Program and are offered so a student can concentrate their studies in a particular area of Engineering. The diplomas have been designed to allow MEng students to specialize their knowledge in order to better match the needs of employers.

Diploma in Computer Networking and Security

You will be exposed to the fundamental, advanced, and practical aspects of computer networks, security, and distributed computing systems in local and wide area networks - both wired and wireless.

To receive the Graduate Diploma in Computer Networking and Security, you will have to successfully complete three compulsory courses and two elective courses.

- **Compulsory courses:**
  - ECE 610: Broadband Communication Networks
  - ECE 628: Computer Network Security
  - ECE 655: Protocols, Software, Issues in Mobile Systems

- **Elective courses (choose any 2):**
  - ECE 653: Software Testing, Quality Assurance and Maintenance
  - ECE 606: Algorithm Design and Analysis
  - ECE 651: Foundations of Software Engineering
  - ECE 654: Software Reliability Engineering
  - ECE 656: Database Systems
  - ECE 657: Tools of Intelligent Systems Design
  - ECE 658: Component Based Software Systems (CBSS)

Diploma in Software Engineering

You will learn the concepts, techniques and methods of modern, effective, software development. You will gain knowledge in software specifications, design and testing and will be exposed to data structures and algorithms, networking lower and upper layers, data-base systems, knowledge modeling, computational intelligence, component-based software engineering, re-engineering, and network security.

To receive the Graduate Diploma in Software Engineering, you will have to successfully complete three compulsory courses and two elective courses.

- **Compulsory courses:**
  - ECE 650: Methods and Tools for Software Engineering
  - ECE 651: Foundations of Software Engineering
  - ECE 653: Software Testing, Quality Assurance and Maintenance

- **Elective courses (choose any 2):**
  - ECE 606: Algorithm Design and Analysis
  - ECE 610: Broadband Communication Networks
  - ECE 628: Computer Network Security
  - ECE 654: Software Reliability Engineering
  - ECE 655: Protocols, Software, Issues in Mobile Systems
  - ECE 656: Database Systems
  - ECE 657: Tools of Intelligent Systems Design
  - ECE 658: Component Based Software

Diploma in Sustainable Energy

You will be exposed to different aspects of sustainable energy sources including the theory of operation and analysis of wind turbines, fuel cells and photovoltaic. Interfacing these energy sources with the electric utility grid and their effects on electricity market pricing will be addressed.
To receive the Graduate Diploma in Sustainable Energy, you will have to successfully complete two compulsory courses and three elective courses.

- **Compulsory courses:**
  - ECE 663: Energy Processing
  - ECE 668: Distribution Systems Engineering

- **Elective courses (choose any 3):**
  - ECE 632: Photovoltaic Energy Conversion
  - ECE 661: HVDC and FACTS
  - ECE 662: Power System Analysis and Control
  - ECE 664: Power System Components and Modelling
  - ECE 665: High Voltage Engineering Applications
  - ECE 666: Power System Operation
  - ECE 667: Sustainable Distributed Power Generation
  - ECE 669: Dielectric Materials
  - ECE 768: Power System Quality

Diploma in Nanoelectronics

You will be exposed to a comprehensive spectrum of nanoelectronics, including nano and organic device physics, nanofabrication, nanomaterials, optoelectronics, microscopy and characterizations, nanoelectronic device modeling and biological devices. Mainstream technologies in nanoelectronics industry will be covered in the courses designed for this diploma.

To receive the Graduate Diploma in Nanoelectronics, you will have to successfully complete two compulsory courses and three elective courses.

- **Compulsory courses:**
  - ECE 633: Nanoelectronics
  - ECE 635: Fab Nanoscale: Tech & Apps

- **Elective courses (choose any 3):**
  - ECE 634: Organic Electronics
  - ECE 672: Optoelectronic devices
  - ECE 730-T29: Computational Nanoelectronics
  - ECE 730-T32: Quantum biology devices & apps
  - NANO 0701-T02: Materials Physics (soon to be NANO 601C – 0.25)
  - NANO 0701-T06: Microscopy (soon to be NANO 602C – 0.25)
  - NANO 0701-T09: From Atoms to Crystals, Quantum wells, wires and dots (soon to be NANO 601D – 0.25)
  - NANO 0702-T10: Thin film analysis by x-ray scattering (soon to be NANO 602D – 0.25)

Diploma in Robotics and Control

A robot is an integrated engineering system consisting of electrical and mechanical components, and requiring computation, sensing and control to interact with the physical world. Robots have traditionally been used to perform accurate and repetitive movements to automate industrial production. These days, robots are moving from traditional industrial automation to a wide range of new applications including search and rescue, service, medicine and entertainment. The diploma introduces students to the multidisciplinary subject of robotics, covering design, modelling, control, and motion planning. Diploma students will obtain the foundation for solving algorithmic and control challenges associated with today's robotic applications.

To receive the Graduate Diploma in Robotics and Control you will have to successfully complete two compulsory courses and three elective courses.

- **Compulsory courses:**
ECE 606: Algorithm Design & Analysis
ECE 682: Multivariable Control Systems

Elective courses (choose 3 from this list including at least one from those marked with *):
*ECE 782: Humanoid Robotics
*ECE 783: Motion Coordination & Planning
*ME 640: Autonomous Mobile Robotics
ECE 657: Computational Intelligence / Intelligent Systems Design
ECE 686: Filtering and Control of Stochastic Linear Systems
ECE 688: Nonlinear systems
SYDE 652: Dynamics of Multibody Systems
SYDE 673: Video Processing and Analysis

Diploma in Embedded Systems

In the Embedded Systems Diploma, you will have an opportunity to be exposed to various aspects essential in understanding, designing and analyzing modern embedded systems. This will include topics related to software, hardware, and their interfacing.

To receive the Graduate Diploma in Embedded Systems, you will have to successfully complete two compulsory courses and three elective courses.

Compulsory courses (choose 3 of 4):
- ECE 606: Algorithm Design & Analysis
- ECE 621: Computer Organization
- ECE 652: Safety-critical Real-time Software
- ECE 682: Multivariable Control Systems

Elective courses (choose any 2):
- ECE 623: Embedded Computer Systems
- ECE 627: Register-transfer-level Digital Systems
- ECE 628: Computer Network Security
- ECE 655: Protocols, Software and Issues in Mobile Systems
- ECE 657: Computational Intelligence / Intelligent Systems Design
- ECE 686: Filtering and Control of Stochastic Linear Systems
- ECE 722: Reconfigurable Computing
- ECE 751: Distributed and Network-Centric Computing
- ECE 781: Adaptive control
- ECE 780-T01: Special Topics in Control: Sampled Data Controlled System

Diploma in Management Sciences

You can augment your technical knowledge with a broad perspective on technology management concepts by learning about production and inventory management or economic concepts in management, organizational behaviour, or even senior management principles.

To receive the Graduate Diploma in Management, you will have to successfully complete one compulsory course and three elective courses.

Compulsory courses:
- ECE 602: Introduction to Optimization

Elective courses (choose any 3):
- MSCI 602: Strategic Management Technology
- MSCI 605: Organizational Theory & Behaviour
- MSCI 607: Applied Economics for Management
- MSCI 632: Discrete Event Simulation
- MSCI 633: Production and Inventory Management
MSCI 638: Information Systems Analysis and Design
MSCI 646: Database Management Systems
MSCI 712: Decision Analysis Under Uncertainty

Transfer of Credits
Course credits may be transferred from other academic institutions provided that the courses have not been used to satisfy the requirements of another degree. The maximum number of credits for a MEng degree that may be transferred from external academic organizations is three. If you are interested in transferring credits from another institution you should speak with the MEng Program Coordinator/Advisor. Credits must have been completed in the last five years to be valid for transfer.

Transfer to the MASc Program
A student enrolled in a MEng program may apply for transfer to the MASc. If you are interested in changing programs you will need to find an ECE faculty member who is willing to supervise you, have an overall average of 80% or higher, and a completed Program Change form. All program changes require the approval of both the Associate Chair of Graduate Studies and the Associate Dean of Graduate Studies. Program Change forms should be submitted to the MASc Program Coordinator/Advisor.

MENG POWER PROGRAM
The focus of the MEng Power Program is advanced level training, skill development, and the education of power engineering professionals employed at various power companies and utilities worldwide.
This is an on-line program wherein all courses are offered in a web-based environment using the latest state-of-the-art communication and multimedia technology. The on-line course delivery mechanism provides an opportunity to working power engineering professionals around the world to participate and upgrade their knowledge, and is based on the “learn while you work” philosophy.

Period of Registration (Residency Requirements)
The minimum period of registration for a MEng Power degree or diploma is 6 terms and the maximum allowable time is 15 terms of active registration.
Students needing program extensions should refer to the “Program Time Limits” section of this document.

Graduate Courses
There are 18 program specific courses which MEng Power students can choose from for their degree requirements.
The MEng Power degree is awarded based on the successful completion of 9 program specific graduate level courses (0.5 credits each).
The MEng Power Graduate Diploma is awarded based on the successful completion of 6 program specific graduate level courses.
The MEng Power Certificate of Completion (non-degree) is awarded for each course successfully taken. Certificates for individual courses will not be awarded where the course is to be counted toward a Diploma or Degree.
MEng Power students are required to maintain an overall average of at least 70% and obtain a final grade of at least 65% in each course. Any grade below 65% is considered a failed course and must be made up in another term. Students in ECE are not permitted to retake failed courses. If you have two or more failed
courses you may be required to withdraw from the program (See the “Course Assessment and Expectations” section of this manual for more information)

All new graduate students are required to complete the Academic Integrity Module (ACINTY 620) through UW Learn in their first term of registration in addition to their other program course requirements.

**MASC PROGRAM**

The objective of the regular Master of Applied Science (MASc) degree program in Electrical and Computer Engineering is to demonstrate individual accomplishment of high professional and academic standard.

The program requirements for the MASc program consist of five courses (2 core courses and 3 elective courses) plus a graduate seminar (Seminar Milestone), and thesis (Thesis Milestone).

**Period of Registration and Residency Requirements**

For full-time students, the minimum period of registration for the MASc program is 2 terms and the maximum allowable time is 6 terms of active registration.

For part-time students, the minimum period of registration for the MASc program is 6 terms and the maximum allowable time is 15 terms of active registration.

The minimum residency requirement (terms on-campus) for the MASc program is 2 terms for full-time students and 4 terms for part-time students.

Students needing program extensions should refer to the “Program Time Limits” section of this document.

**Graduate Courses**

The degree of Master of Applied Science requires the successful completion of a minimum of 5 graduate level courses (0.5 credits each).

MASc students are required to maintain an overall average of at least 70% and obtain a final grade of at least 65% in each course. Any grade below 65% is considered a failed course and must be made up in another term. Students in ECE are not permitted to retake failed courses. If you have two or more failed courses you may be required to withdraw from the program (See the “Course Assessment and Expectations” section of this manual for more information).

When selecting courses, MASc students should bear the following notes in mind;

1. All course selections should be made in consultation with your supervisor(s)
2. A minimum of 2 courses should be from the approved list of core courses for your area of specialization
3. A minimum of 3 courses must be taken from within the Faculty of Engineering
4. You are allowed to take a maximum of two courses from outside the Faculty of Engineering. All courses should be related and relevant to your area of research
5. No more than two courses may be taught by your supervisor(s) (this rule applies no matter how many supervisors you have)
6. MASc students normally will not enroll in more than 3 courses per term
7. Some courses are assigned both undergraduate and graduate course numbers, with the graduate versions normally requiring additional work. In order to receive credit for these courses you must enroll using the graduate course number
8. In special circumstances MASc students are allowed to take one 400 or 500 level undergraduate course for credit (with the exception of any upper-level undergraduate project course such as ECE 499). Students planning to enroll in undergraduate courses for graduate credit must get the
approval of their supervisor(s) and the Associate Chair Graduate Studies. A memorandum of approval from the Associate Dean of Engineering Graduate Studies will also need to be signed prior to the student’s enrolment in the course.

a. In order to enroll in an undergraduate course you will need to complete a *Course Add/Drop form* and obtain all of the necessary signatures (see the section on “Dropping and Adding Courses” in this manual for more information).

9. Audit courses, Extra courses and failed courses do not count towards your degree requirements.

All new graduate students are required to complete the Academic Integrity Module (ACINTY 620) through UW Learn in their first term of registration in addition to their other program course requirements.

**Transfer of Credits**

Course credits may be transferred from other academic institutions provided that the courses have not been used to satisfy the requirements of another degree. The maximum number of credits for a MASc degree that may be transferred from external academic organizations is two. If you are interested in transferring credits from another institution you should speak with the MASc Program Coordinator/Advisor. Credits must have been completed in the last five years to be valid for transfer.

**Research Seminar (Milestone)**

As part of your degree requirements, you are required to present your research in a seminar. The purpose of the seminar is to develop your ability to communicate the results of your research in an organized and informative manner. The seminar is not an oral examination of your thesis. The seminar is usually held during the term the thesis is submitted to the readers. Your supervisor(s), plus one other faculty member must be in attendance at the seminar in order for you to receive credit. For information on how to book your seminar you should speak to the MASc Program Coordinator/Advisor or view the Seminar webpage.

**MASc Thesis (Milestone)**

*(Watch the "How To" Video)*

The topic and scope of your thesis should be jointly determined by you and your supervisor(s). A MASc thesis is expected to define a substantial research problem, provide a comprehensive review of the literature in the research problem area, describe the theoretical, analytical and/or experimental solution, and provide a comprehensive set of conclusions and recommendations.

Theses should be formatted in accordance with the *Graduate Thesis Regulations* published by Graduate Studies and Postdoctoral Affairs. Previously authored theses should not be used as a guide, as the guidelines are revised periodically.

Once your thesis is completed it must be reviewed and approved by three readers. These readers will consist of your supervisor(s) plus two other faculty members. One of your readers can be a faculty member outside of ECE but they must be familiar with your area of research and able to give quality feedback.

One hard copy of your completed MASc thesis must be deposited at the Engineering Graduate Studies Office where it will be available to members of the University community for a period of 15 business days (3 weeks). The readers will return the thesis to you with their comments within these 15 business days.

Students are *not* required to submit a final, hardbound copy of their thesis to the department. If you or your supervisor wishes to obtain a hardbound copy for yourselves they can be ordered through New Media Services located beside the DC library. The hardcopy will be sent to the department when ready and you will be contacted to pick it up.
Complete instructions and timelines for the MASc thesis and degree completion process can be found on the ECE current graduate student website.

**Restricted Circulation of Theses**

*(Watch the "How To" Video)*

Occasionally a research program may result in findings which warrant restrictions on the circulation of the thesis. This may result from constraints imposed by research sponsors, or a belief that the work may produce patentable processes or devices. If a candidate and the supervisor(s) expect that some restrictions should be placed on a thesis, they should submit a *Request to Restrict Circulation of Thesis Form* describing the nature of the restrictions they are seeking and the reasons for these restrictions. Approval is then required from the Department Graduate Officer the Associate Dean of Engineering and the Associate Provost of Graduate Studies. Completion of this form will ensure that the thesis will be withheld for a maximum of one year. Extensions for restriction beyond the one year period must be requested at least two months prior to the date of release from Graduate Studies and Postdoctoral Affairs. If no further extension is requested or approved, the thesis will be released to UWSpace (University of Waterloo Library).

All readers (including the supervisor(s)) and anyone wishing to read a restricted thesis must sign and submit, to the Engineering Graduate Studies Office, a *Confidential Information Thesis Non-Disclosure Agreement*.

**PHD PROGRAM**

The objective of the regular Doctor of Philosophy (PhD) degree program in Electrical and Computer Engineering is to ensure that the student has been trained in the techniques relevant to a field of research and is capable of applying and adapting these techniques independently to other research projects.

The program requirements for the PhD program consist of four courses (2 core courses and 2 elective courses) plus a two-part comprehensive exam (Comprehensive I and II Milestone), a graduate seminar (Seminar Milestone), a written thesis and an oral defence (Thesis Milestone).

**Period of Registration and Residency Requirements**

For full-time students, the minimum period of registration for the PhD program is 4 terms and the maximum allowable time is 12 terms of active registration.

For part-time students, there is no minimum period of registration and the maximum allowable time is 18 terms of active registration.

The *minimum residency requirement* (terms on-campus) for the PhD program is 4 terms for full-time students and 8 terms for part-time students. For students who have been admitted to the PhD program directly from a Honours Bachelor's degree, the minimum residency requirement (terms on-campus) is 6 terms for full-time students and 12 terms for part-time students.

Students needing program extensions should refer to the “Program Time Limits” section of this document.

**Transfer to the PhD Program without Completion of the MASc Program**

A student enrolled in a MASc program at the University of Waterloo may apply for transfer to the PhD program without completing a Master's degree. Transfer from a MASc program to a PhD program will normally be considered if an applicant:

- Has an excellent undergraduate record;
- Has obtained a course work grade average of at least 83% in courses that have been taken for graduate credit;
- Has demonstrated an aptitude for research and developed a clearly defined research program that is likely to satisfy the research proposal component of the PhD comprehensive examination;
- Presents objective evidence of adequate English language skills which should enable the candidate to write a thesis and to communicate orally; and
- Is not beyond the fourth academic term of a MASc program.

The supervisor(s) shall prepare a memorandum which summarizes the candidate's qualifications under each of the above and submit it along with the student’s Program Change form to the PhD Program Coordinator/Advisor.

Students who transfer to the PhD program without completion of the MASc program will be required to complete additional course work (typically 7 courses total).

For full-time students in the PhD program without a completed MASc, the minimum period of registration is 6 terms and the maximum allowable time is 21 terms of active registration.

**Graduate Courses**

The degree of Doctor of Philosophy requires the successful completion of a minimum of 4 graduate level courses (0.5 credits each).

PhD students are required to maintain an overall average of at least 78% and obtain a final grade of at least 75% in each course. Any grade below 75% is considered a failed course and must be made up in another term. Students in ECE are not permitted to retake failed courses. If you have two or more failed courses you may be required to withdraw from the program (See the “Course Assessment and Expectations” section of this manual for more information)

When selecting courses, PhD students should bear the following notes in mind;

1. All course selections should be made in consultation with your supervisor(s)
2. A minimum of 2 courses should be from the approved list of core courses for your area of specialization
3. No more than 2 courses may be taught by your supervisor(s) (this rule applies no matter how many supervisors you have)
4. You are allowed to take a maximum of two courses from outside the Faculty of Engineering. All courses should be related and relevant to your area of research
5. PhD students normally will not enroll in more than 2 courses per term
6. Some courses are assigned both undergraduate and graduate course numbers, with the graduate versions normally requiring additional work. In order to receive credit for these courses you must enroll using the graduate course number
7. Under no circumstances are PhD students permitted to take an undergraduate course towards their degree requirements
8. Audit courses, Extra courses and failed courses do not count towards your degree requirements
9. Candidates admitted to the PhD program who have transferred in directly without a completed Master's degree, are required to complete a minimum of seven graduate courses

All new graduate students are required to complete the Academic Integrity Module (ACINTY 620) through UW Learn in their first term of registration in addition to their other program course requirements.

**Transfer of Credits**

Course credits may be transferred from other academic institutions provided that the courses have not been used to satisfy the requirements of another degree. The maximum number of credits for a PhD degree that may be transferred from external academic organizations is one. If you are interested in
transferring credits from another institution you should speak with the PhD Program Coordinator/Advisor. Credits must have been completed in the last five years to be valid for transfer.

**PhD Comprehensive Examination (Milestone)**

The PhD Comprehensive Examination consists of two parts; an oral background examination to be completed by the end of your third term of registration and an oral proposal examination to be completed by the end of your sixth term of registration.

The first part, the Comprehensive Background Examination, will examine the breadth of the candidate's knowledge in their area of specialization and the adequacy of the candidate's background preparation to pursue that area of research. The specific topics examined are defined by the list of background subjects.

The second part, the Comprehensive Proposal Examination, will examine the research proposal that the candidate intends to develop into a PhD research thesis.

If you have additional questions regarding the PhD Comprehensive Examination please contact the PhD Program Coordinator/Advisor.

**Comp 1 - Comprehensive Background Examination**

*(Watch the "How To" Video)*

The Comprehensive Background Examination will be held in your third term (fourth term if from an incomplete MASc), generally after all course work has been completed, and must successfully be completed before the Comprehensive Proposal Examination can be booked. Students who fail the background exam will be permitted to retake the exam before the end of the subsequent term. Students who fail the re-examination must withdraw from the PhD program.

**Comprehensive Background Examination Committee**

A PhD Advisory Committee should be setup by the PhD supervisor, in consultation with the candidate, prior to the Comprehensive Background examination. This Committee shall remain unchanged for the entire duration of the PhD program of a candidate, culminating with the PhD defence. Changes to this Committee will not normally be permitted, except under extraordinary circumstances.

The PhD Advisory Committee should comprise:

- Two faculty members from within the ECE Department, one of them should preferably be from the same research area as that of the candidate.
- One faculty member external to the ECE Department, referred to as Internal/External, and not holding any appointment with ECE Department.
- PhD supervisor(s).
- Not more than ONE Committee member (excluding supervisors) should hold an adjunct appointment.

A PhD Comprehensive Background Examination form must be submitted to the PhD Program Coordinator/Advisor at least four weeks prior to the desired exam date with the signatures of all committee members. The Comprehensive Background Examination Committee must be approved by the Associate Chair of Graduate Studies. The Comprehensive Background Examination Committee later becomes the Comprehensive Proposal Examination Committee and PhD Thesis Examining Committee. Your supervisor(s) are not present for the Comprehensive Background Examination.

Your supervisor will also need to select a neutral Chair from ECE for the Comprehensive Background Examination. The role of the Chair is to ensure that the examination is conducted according to University comprehensive examination guidelines. The Chair is not an examiner and cannot vote.
All committee members must be in attendance at the comprehensive examination; appointment of
delegates for comprehensive examinations is not permitted. Participation via electronic means
(teleconference or videoconference) will be permitted at the discretion of the Associate Chair of Graduate
Studies and only in cases of emergency. Should an exception be made, no more than one member may
participate via electronic means.

**Conduct of the Comprehensive Background Examination**

The Chair will introduce himself or herself, the candidate and all committee members at the start of the
examination. The Committee will begin the examination with the questioning of the candidate’s
background technical knowledge. The first round of questions will typically last about 20 minutes each.
The Chair may declare a short break during the examination, after which the second round of questions
will continue for about 10 minutes each. Only the Chair and members of the Examination Committee are
permitted in the examination room. At the conclusion of the questioning period, the candidate must leave
the room for the in-camera discussions.

Once a decision has been reached, the Chair will inform the candidate of the Committee’s decision in the
presence of all Committee members, including any conditions imposed on the candidate as a result of the
Examination. The chair will record the results of the Comprehensive Background Examination and submit
the completed paperwork to the ECE PhD Program Coordinator/Advisor.

The PhD Comprehensive Background Examination is a closed book assessment and no aids are permitted.
Recording of the examination process is not allowed, nor is the use of smart phones, video cameras,
cameras, or tape recorders unless used for the purpose of the examination presentation.

**Comprehensive Background Examination Decisions**

The Examination Committee must choose from one of the following four decisions:

- Category 1 - Passed
- Category 2 - Passed subject to completion of recommendations
- Category 3 - Decision deferred/re-examination required
- Category 4 - Failed

**Category 1 - Pass with no conditions**

**Category 2 - Passed subject to completion of recommendations**

Category 2 - Passed subject to completion of recommendations means that the Candidate’s background
preparation is generally adequate but certain deficiencies need to be rectified. The recommendations might
require you to enroll in additional graduate courses, prepare a written report on designated aspects of the
proposed research program, and/or present a public seminar on a background subject. The specific
recommendations of the Comprehensive Background Examination Committee must be clearly identified
on the appropriate forms by the Chair, along with completion due dates and the committee member(s)
responsible for ensuring that the recommendations will be satisfied.

Candidates who are required to complete additional requirements must satisfy the comprehensive
background requirement(s) within one calendar year. Students who fail to meet these conditions will be
required to withdraw. The designated committee member(s) must inform the ECE PhD Program
Coordinator/Advisor when all recommendations have been satisfied.

**Category 3 - Re-examination required**

Category 3 - Re-examination required means that the candidate's background is deficient. Re-
Examination cannot take place within six weeks of the date of the first comprehensive examination but
must be done before the end of the subsequent term. The re-examination date must be established by the
Committee and the Candidate and reported as part of the recommendations. The same committee and
background subjects must be used for the re-examination.

**Category 4 - The decision failed is only applicable to the PhD Background Comprehensive Re-
examination and means that Comprehensive Examination procedure is closed and that the candidate will**
be required to withdraw from the PhD program. A candidate cannot receive this category on their first attempt.

The Chair must inform you, in the presence of the Examination Committee, of the outcome of the Comprehensive Proposal Examination and of all recommendations and/or conditions imposed.

**Comp 2 - Comprehensive Examination Research Proposal**

*(Watch the "How To" Video)*

A research proposal will consist of a report of, typically, no more than fifty pages including tables, diagrams and references. The proposal will identify the research problem, review the relevant literature, describe the tasks planned to solve the problem and propose a timetable for the completion of the project, and the defence of the PhD thesis.

The research proposal must be submitted to the Examination Committee (one copy to each member) at least two weeks before the date of the examination. The Department does not need a copy of the research proposal.

**Comprehensive Proposal Examination**

The Comprehensive Proposal Examination would be held no later than your sixth term (seventh term if from an incomplete MASc) and have the same committee as used for the Comprehensive Background Examination. Your supervisor(s) are also on the committee for your Comprehensive Proposal Examination. All course work must be completed before the Comprehensive Proposal Examination is held.

A *PhD Comprehensive Proposal Examination form* must be submitted to the PhD Program Coordinator/Advisor at least three weeks prior to the desired exam date. The Comprehensive Examination Committee must be the same as the Comprehensive Background Examination Committee with the addition of your supervisor(s).

The Engineering Graduate Studies Office will appoint a neutral Chair for the Comprehensive Examination. The role of the Chair is to ensure that the examination is conducted according to University Comprehensive Examination guidelines. The Chair is not an examiner and cannot vote. The Comprehensive Proposal Examination Committee later becomes, in part, the PhD Thesis Examining Committee (which additionally includes an external examiner from outside of UW).

All committee members must be in attendance at the Comprehensive Examination; appointment of delegates for comprehensive examinations is not permitted. Participation via electronic means (teleconference or videoconference) will be permitted at the discretion of the Associate Dean of Engineering and only in cases of emergency. Should an exception be made, no more than one member may participate via electronic means and the supervisor(s) must be in attendance.

**Conduct of the Comprehensive Proposal Examination**

For the Comprehensive Proposal Examination you will begin with an oral presentation on the main points of the research proposal. This should be presented within 30 minutes. The Chair will then invite members of the Committee to examine the proposal. The Chair may declare a short break in the middle of the examination.

At the conclusion of the questioning period, only members of the examining committee are allowed to stay for the in camera deliberation session following the examination. Once a consensus has been reached, the Chair will inform you of the outcome of the comprehensive examination and of all recommendations and/or conditions imposed. The chair will record the results of the Comprehensive Proposal Examination and submit the completed paperwork to the Engineering Graduate Office.
Recording of the examination process is not allowed, nor is the use of cell phones, video cameras, cameras or tape recorders unless used for the purpose of the examination presentation.

Comprehensive Proposal Examination Decisions

The Examination Committee must choose from one of the following four decisions:

- Category 1 - Passed
- Category 2 - Passed subject to completion of recommendations
- Category 3 - Decision deferred/re-examination required
- Category 4 - Failed

**Category 1 - Pass with no conditions**

**Category 2 - Passed subject to completion of recommendations** means that the Candidate’s proposal is generally adequate but certain deficiencies need to be rectified. The recommendations might require you to prepare a written report on designated aspects of the proposed research area and/or to present a public seminar on the proposal. The specific recommendations of the Comprehensive Examination Committee must be clearly identified on page 2 of the Report of PhD Comprehensive Proposal Examination by the Chair, along with completion dates and the Committee member(s) responsible for ensuring that the recommendations will be satisfied.

Candidates who are required to complete additional requirements must satisfy them within one calendar year of the exam. Students who fail to meet these conditions will be required to withdraw. The supervisor(s) must inform the ECE or Engineering Graduate Studies Office when all recommendations of the Comprehensive Proposal Examination have been satisfied.

**Category 3 - Re-examination required where by the candidate's proposal is deficient.** Re-examination cannot take place within six weeks after the date of the first Comprehensive Proposal Examination. The re-examination must be scheduled no later than one year after the Comprehensive Proposal Examination. The re-examination date must be established by the supervisor(s) in consultation with the examiners and the candidate and reported as part of the recommendations. A student who fails a re-examination will be required to withdraw from the PhD program.

**Category 4 - Failed where by the proposal examination procedure is closed and the candidate will be required to withdraw from the PhD program.** Students who fail the re-examination must withdraw from the PhD program.

The Chair must inform you, in the presence of the Examination Committee, of the outcome of the Comprehensive Proposal Examination and of all recommendations and/or conditions imposed.

**Time of Examination**

The Comprehensive Background and Proposal Examinations will be conducted before the end of your third and sixth terms of registration respectively. Extensions will not be granted except in extenuating circumstances such as medical emergencies and need to be verifiable by a Health Services Verification of Illness form or a doctor’s note detailing the “date and length of illness and the degree of incapacitation.” Non-illness related rationale for these changes/exceptions will only be approved if the student has experienced exceptional circumstances as determined by the Associate Chair and Associate Dean to warrant this approval.

Students requiring an extension due to the above outlined extenuating circumstances, will need to complete a PhD Comprehensive Examination Time Limit Extension Request form. The form must be submitted for approval to delay a Comprehensive Examination in addition to a written request outlining the reasons for the delay and a timetable for the completion of the comprehensive examination, the research program and the thesis defence. The request must be supported in writing by your supervisor(s) and the Associate Chair for Graduate Studies.
Students will only be granted a maximum of one extension per comprehensive exam if they meet the above listed conditions. Students who failed to complete their Comprehensive Exams in the timeline’s specified will be required to withdraw from the program.

Research Seminar (Milestone)

As part of your degree requirements, you are required to present your research in a seminar to be held no later than the end of the third year (9th term) after your initial registration for the PhD program. The purpose of the seminar is to develop your ability to communicate the results of your research in an organized and informative manner. The seminar is not an oral examination of your thesis. Your supervisor(s), plus your Examination Committee must attend at the seminar in order for you to receive credit. For information on how to book your seminar please review the Seminar webpage.

PhD Thesis (Milestone)

(Watch the "How To" Video)

The topic and scope of your thesis should be jointly determined by you and your supervisor(s). A PhD thesis is expected to demonstrate a critical awareness and understanding of the literature in the research field, exhibit a capability of defining original and useful research problems, and a capability of independent thought in solving a research problem. An ability to communicate verbally and in writing the results of the research must be shown. The oral examination of a thesis will assess the ability of a candidate to communicate orally the results of the research and to defend the contents of the thesis.

Originality in a thesis may be reflected in a number of ways. A candidate may have posed and solved an important new problem, or have formulated an existing problem in a novel and useful way. A candidate may offer new and significant insights into problems examined previously by other researchers. Replications of previous investigations may be acceptable, if, and only if, they incorporate significantly new elements in the design or execution of an experiment.

Theses should be formatted in accordance with the Graduate Thesis Regulations published by Graduate Studies and Postdoctoral Affairs. Previously authored theses should not be used as a guide, as the guidelines are revised periodically.

Complete instructions and timelines for the PhD thesis and degree completion process can be found on the ECE current graduate student website.

Appointment of the PhD Thesis Examining Committee

The PhD Defence Package forms and required documentation must be submitted to the PhD Program Coordinator/Advisor at least seven weeks prior to the proposed defence date. The examination date must be established by the supervisor(s) in consultation with the Examining Committee, the External Examiner and the candidate before submitting the forms.

The Associate Dean of Engineering must approve all PhD External Examiners and thesis Committees. When approved, the Engineering Graduate Studies Office will issue a Notice of the Appointment of PhD Thesis Examining Committee. The Associate Dean of Engineering will confirm the appointment of the External Examiner in writing. It is the supervisor(s) responsibility to keep the External Examiner well informed about the examination date and time or any changes.

The External Examiner

The External Examiner must be an expert in the field of the thesis. The best evidence of this is an excellent record of recent publications and other tangible contributions to the field. The Examiner should have knowledge of the supervision and examination of theses through past supervision of their own graduate students.
The External Examiner must be at arm's length from the supervisor and the candidate. Normally, this means the External Examiner is free of potential conflicts of interest (i.e. no collaborative publications or research) for the past seven years with the candidate and/or supervisor(s). The Associate Dean of Graduate Studies is responsible for determining whether the proposed External Examiner is at arm's length through examination of their curriculum vitae which is submitted with the initial defence application forms.

The External Examiner must provide the Associate Dean of Graduate Studies with a written assessment of the thesis at least one week before the defence. Whether the assessment is positive or negative, the Associate Dean will copy the report of the External Examiner to the supervisor(s), who will inform the candidate of any major criticisms of the thesis, so that the student can respond to these, but the evaluation must not be shown to the candidate. The candidate may be shown the evaluation after the defence with the permission of the External Examiner. External Examiners are given an honorarium of $150.00 in appreciation for their contribution to helping ensure the quality of our doctoral programs.

External Examiners are responsible for making their own travel arrangements. Department staff do not arrange for hotels, flights, etc. The Engineering Graduate Office will reimburse the External Examiner for travel expenses after the defence for up to $750.00. Any expenses beyond the $750.00 are split between the department and supervisor.

**Absent Committee Member & Participation via Teleconference/Electronic Media**

If any member of the original examining committee cannot attend the examination, he/she must either be replaced or participate remotely.

If the absent committee is replaced, the replacement member is responsible for reading the thesis and attending the examination as a full Committee member. The replacement nominated must be from the same department as the original committee member.

No more than one member may be absent from the defence and the supervisor(s) must attend the defence. Participation via electronic means (teleconference or videoconference) will be permitted at the discretion of the Associate Dean of Engineering and only in cases of emergency. Should an exception be made, no more than one member may participate via electronic means and the supervisor(s) must be in attendance.

**Submission of the PhD Thesis**

The Appointment of PhD Thesis Examining Committee form with the required signatures and one hard copy of the completed thesis must be deposited at the Engineering Graduate Studies Office where it will be available to members of the University community for a period of 25 business days (5 weeks).

**Restricted Circulation of Theses**

*(Watch the "How To" Video)*

Occasionally a research program may result in findings which warrant restrictions on the circulation of the thesis. This may result from constraints imposed by research sponsors, or a belief that the work may produce patentable processes or devices. If a candidate and the supervisor(s) expect that some restrictions should be placed on a thesis and/or defence, they should submit a Request to Restrict Circulation of Thesis Form describing the nature of the restrictions they are seeking and the reasons for these restrictions. Any request for a closed thesis examination must be forthcoming, at the latest, one week prior to the submission of the thesis to the Associate Dean of Engineering.

Committee members, including the External Examiner will be asked by the University of Waterloo to sign a Confidential Information Thesis Non-Disclosure Agreement regarding the contents of the thesis before examining the thesis. The consent of the External Examiner to sign the non-disclosure agreement with the University of Waterloo must be obtained before the doctoral thesis is sent to her/him for examination.
The examination, including any oral presentation associated with the examination such as a doctoral thesis defence, will be open only to members of the University community who agree to sign a non-disclosure agreement under the same terms.

The requirements for non-disclosure by the committee members as requested by the University of Waterloo and the restriction on the circulation of the thesis will expire after one year from the date of the original thesis submission date, unless you and your supervisor(s) have obtained the consent of all non-disclosing parties to extend the term of the agreement.

**Thesis Defence**

The examination begins with your oral presentation of the thesis, not exceeding 30 minutes in length. The purpose of this presentation is to highlight the principal contributions of the thesis to the field(s) of research related to the subject matter of the thesis and conclusions of the scholarly work. Following the oral summary, the candidate will be questioned on the thesis by members of the Examining Committee.

Recording of the examination process is not allowed, nor is the use of smart phones, video cameras, cameras, or tape recorders unless used for the purpose of the examination presentation.

The decision of the PhD Thesis Examining Committee is based both on the thesis and on the candidate's ability to defend it. At the conclusion of the Thesis Defence the Chair will inform you of the outcome of the examination and of all recommendations and/or conditions imposed.

There are four possible examination outcomes for the PhD defence;

- **Category 1 - Accepted**
  Thesis may require typographical and/or minor editorial corrections to be made to the satisfaction of the supervisor normally within one month. Students who receive a Category 1 must have their thesis uploaded to UWSpace by the 100% refund deadline of the subsequent term.

- **Category 2 - Accepted Conditionally**
  Thesis is acceptable but requires content changes that do not require re-examination. The PhD Thesis Examining Committee's report must include a brief outline of the nature of the changes required and must indicate the time by which the changes are to be completed. In any case, changes must be completed to the Committee's satisfaction within four months of the date of the defence or the student must withdraw from the program.

- **Category 3 - Decision Deferred**
  Thesis requires modifications of a substantial nature, the need for which makes the acceptability of the thesis questionable. The PhD Thesis Examining Committee's report must contain a brief outline of the modifications expected and should indicate the time by which the changes are to be completed. The revised thesis must be re-submitted to the Associate Dean (Graduate Studies) of the Faculty for re-examination. Normally, the re-examination will follow the same procedures as for the initial submission except that the display period may be reduced or eliminated at the discretion of the Associate Dean. Normally, the same PhD Thesis Examining Committee will serve. A decision to defer is open only once for each candidate.

- **Category 4 - Rejected**
  Thesis is rejected. The PhD Thesis Examining Committee shall report the reasons for rejection. A student whose doctoral thesis has been rejected will be required to withdraw from the PhD program. The departmental Graduate Officer/Associate Chair will confirm in writing the decision of the PhD Thesis Examining Committee to the student and the requirement to withdraw within one week of the date of the examination.
It is the supervisor’s responsibility to ensure that all revisions and/or editorial changes, if any, have been completed satisfactorily and confirm that the thesis is ready to be uploaded to UWSpace.

Students are not required to submit a final, hardbound copy of their thesis to the department. If you or your supervisor wishes to obtain a hardbound copy for yourselves they can be ordered through New Media Services located beside the DC library. The hardcopy will be sent to the department when ready and you will be contacted by e-mail to pick it up.

**SPECIAL COLLABORATIVE PROGRAMS**

Within the MASc and PhD programs in ECE it is possible for students to be enrolled in one of two collaborative programs; Nanotechnology (Nano) and Quantum Information (QI).

**Nanotechnology**

The MASc Nanotechnology collaborative program provides a strong foundation in the emerging areas of nanoscience or nanoengineering in preparation for the workforce or for further graduate study and research leading to a doctoral degree.

The PhD Nanotechnology collaborative program prepares students for careers in academia, industrial research and development, and government research labs.

Four key areas of research are: nanomaterials, nanoelectronics design and fabrication, nanoinstruments and devices, and nanobiosystems.

**MASc in Nanotechnology**

The ECE Master’s of Applied Science in Nanotechnology program has the same degree requirements as the regular MASc but with a more specialized course load.

The Nanotechnology MASc program requirements are:

- At least five courses (0.50 unit weight) including the two required core courses (4x0.25) and three elective courses from the approved list,
- Nanotechnology MASc Seminar Milestone
- Research Thesis Milestone

For a list of the core courses and approved electives see the Graduate Calendar website.

**PhD in Nanotechnology**

The ECE Doctor of Philosophy in Nanotechnology program has the same degree requirements as the regular PhD but with a more specialized course load.

The Nanotechnology PhD program requirements are:

- At least four courses (0.50 unit weight) including the two required core courses (4x0.25) and two electives courses from the approved list,
- PhD Comprehensive Exam Milestone
- Nanotechnology PhD Seminar Milestone
- Research Thesis Milestone and Oral Defence

*Students who have transferred directly from a master’s program to the PhD program must complete at least seven courses including two required core courses and five elective courses from the approved list

For a list of the core courses and approved electives see the Graduate Calendar website.
Quantum Information
The MASc Quantum Information collaborative program provides a strong and broad foundation in quantum information science, coupled with knowledge and expertise obtained in electrical and computer engineering. This will prepare them for the workforce and/or further graduate studies and research leading towards a PhD degree.

The PhD Quantum Information collaborative program is designed to provide students with knowledge of quantum information, including both theory and its implementations, advanced expertise in quantum information science and in electrical and computer engineering, as well as training in research.

MASc in Quantum Information
The ECE Master’s of Applied Science in Quantum Information program has the same degree requirements as the regular MASc but with a more specialized course load.

The Quantum Information MASc program requirements are:
- At least five courses from the approved list of core courses and electives
- MASc Seminar Milestone
- Research Thesis Milestone

For a list of the core courses and approved electives see the Graduate Calendar website.

PhD in Quantum Information
The ECE Doctor of Philosophy in Quantum Information program has the similar degree requirements as the regular PhD but with an additional seminar and a more specialized course load.

The Quantum Information PhD program requirements are:
- Depending on your academic background the number of courses you are required to take can vary but all must be taken from the approved list of core courses and electives
  - QI PhD from a UW QI MASc requires four courses
  - QI PhD from a non-QI MASc requires five courses
  - QI PhD from an incomplete MASc requires eight courses
- PhD Comprehensive Exam Milestone
- ECE PhD Seminar Milestone
- Quantum Information Seminar Milestone
- Research Thesis Milestone and Oral Defence

For a list of the core courses and approved electives see the Graduate Calendar website.

RESEARCH
Graduate students are an integral part of all the research projects in the ECE department. All graduate research is considered a joint effort between the student carrying out the research work and the supervisor who guides and advises the student. In carrying out the research and in communicating the results, research ethics, as outlined by the Office of Research Ethics, must be followed.

Any preconditions/restrictions imposed by the funding agencies regarding the dissemination of the research results must be communicated to you, the student, prior to the commencement of the research and there has to be a mutual agreement of these terms between you and the research supervisor.

Any intellectual property (IP) that was possessed (either by you, the student, or by the supervisor) prior to the commencement of the research must be clearly identified.
Copyright

It is very important that faculty, staff and students abide by the provisions of the Copyright Act when making copies for research or academic/instructional purposes. The updated copyright website provides quick access to helpful information.

SAFETY

Electrical and Computer Engineering faculty and staff conduct research in laboratories (labs) that provide educational opportunities to many undergraduate and graduate students. People who work in labs are exposed to potential hazards and need to be aware of the health and safety policies and procedures for safe practices in research and teaching labs.

The ECE Health and Safety Committee has produced a Safety Manual to outline the rules and regulations which govern lab safety on campus. Everyone who works in an ECE lab must read and understand the information in these manuals, and any other relevant documents with regard to laboratory safety and emergency procedures prior to their first laboratory session.

All graduate students must complete the Safety Acknowledgement form and have it signed by their supervisor. Completed forms should be returned to your Program Coordinator/Advisor.

Students are also required to complete SO1001 - Employee Safety Orientation and SO1081 - Workplace Violence Awareness which are both online modules. Students can use their Quest login credentials to access these courses. Additional Lab and Hazard Specific Training may also be required for certain labs. If you are unsure of what training your lab requires please speak to your supervisor or contact the ECE Facilities Coordinator.

All safety training must be completed and the Safety Acknowledgement form submitted before any office or lab keys will be assigned.

WHMIS

All Students at Waterloo (undergraduate and graduate) who have a lab/shop/studio component to their studies that requires them to work with controlled products must have WHMIS training. WHMIS is now available to students as an online course through LEARN. To take the online course, if you have not already done so, you must "self-enroll" in the employee WHMIS course through the UWLearn system. The course will take approximately two hours to complete.

MAILBOXES, KEYS, AND LOUNGES

Mailboxes

All full-time PhD and MASc students are assigned a mailbox which will be shared with one other student in EIT 3020-3023. Part-time, inactive, and MEng students do not have on-campus mailboxes. Their mail is sent to their home address as indicated on Quest.

You should not have any personal mail sent to the department as we cannot be held responsible for lost or missing mail. Mailboxes should be checked regularly; once a week, at minimum.

Keys and Offices

Office space is available to full-time, Electrical and Computer Engineering, MASc and PhD students only. A change of enrolment status to part-time, inactive, or full-time off-campus will mean that you must return your office keys before the end of the current term.
If your office is in need of any kind of maintenance (floor, furniture, lighting, custodial needs, etc.), at any time, please contact the Facilities Coordinator directly. Students are not permitted to have fridges or microwaves in their offices at any time for safety reasons. A fridge and a microwave are available to all students in the ECE Graduate Student Lounge in EIT 3020-3023. If you have a kettle or other small appliance in your office you must unplug it when it is not in use to prevent fire hazards.

Keys for offices, labs, the graduate student lounge, and other areas you might need access to are controlled by the Facilities Coordinator. In order to acquire keys you will need to get a Key Contract from your Program Advisor/Coordinator and return it, with your supervisor’s signature to the Facilities Coordinator.

You must maintain personal possession of all University issued keys and/or FOBs and are responsible for their physical security. Key transfer from one person to another is strictly prohibited. Lost or stolen keys must be reported immediately to the department.

You are responsible for the security of any space to which you have keys and should not admit unauthorized or non-registered persons into that space. Do not “prop” doors open or leave them unlocked during hours when the facility is normally locked/closed.

When you vacate your office space, in consideration of the next occupant, remove all personal belongings from the office and leave the space tidy. You should leave the desk and cabinet keys in the desk drawer/hutch and return all other keys directly to the Facilities Coordinator.

Lounges

MASc and PhD students have access to the mailroom/lounge in EIT 3020-3023. There are couches, tables, chairs, refrigerators and microwaves for your convenience. The refrigerators and microwave are provided by the department but maintained by the students. This is a privilege. Do not leave food in the refrigerator after it has expired and clean the microwave if spills occur. The refrigerators are cleaned out every Friday. If you have concerns about the state of the lounge please contact the ECE GSA.

MEng students have access to a common room in E3 1101. The code for accessing this room can be obtained from the MEng Program Coordinator/Advisor. There are couches, tables, chairs, a small kitchen, a large study area with computers, and a small meeting room for your convenience. The refrigerators and microwave are provided by the department but maintained by the students. This is a privilege. Do not leave food in the refrigerator after it has expired and clean the microwave if spills occur. The refrigerators are cleaned out every Friday.

INTERNATIONAL STUDENTS

International Student Experience (ISE)

The best resource for international students on campus is the International Student Experience (ISE) office. The advisors at the ISE can help you with questions pertaining to immigration, medical coverage, finances, employment, and transition into Canadian life. They are an excellent source of information and support for international students and their families and you are encouraged to seek their support whenever you need it.

The ECE Department is unable to assist students with issues related to study permits, work permits, and immigration due to strict government regulations. Any inquiries of this nature should be directed to the International Student Experience Office whose staff are trained to assist you in these matters. For more information you can also refer to the Citizenship and Immigration Canada (CIC) website.
Employment

On Campus

Graduate students who hold a valid Study Permit must adhere to government regulations regarding hours of employment. At present, students can work part-time on campus (up to 10 hours per week) while they are registered full-time students. These positions are typically teaching assistantships and research assistantships. A Work Permit is not required for registered students to work on-campus.

Off Campus & After Graduation

If you wish to obtain off campus employment or employment in Canada after you graduate from the University of Waterloo you should visit the International Student Experience Finding Work webpage and the Citizenship and Immigration Canada (CIC) website for information on the latest policies and procedures. You can also visit the International Student Experience Office on the second floor of South Campus Hall to speak with a certified CIC specialist.

Social Insurance Number and Employment Contracts

You will need to apply for a Social Insurance Number (SIN) to work anywhere in Canada, including the University of Waterloo. A SIN is how the Government of Canada keeps track of income for tax purposes. Students can apply for a SIN at any time and it will be valid for the duration of your study permit.

Most ECE students will require a SIN for work as TAs. In order to apply for a SIN you will need to take your passport and study permit to a Service Canada Centre.