

2016 – 2017 ECE GRADUATE HANDBOOK

SCHOOL of ELECTRICAL and COMPUTER ENGINEERING GEORGIA INSTITUTE of TECHNOLOGY

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The *ECE Graduate Handbook* can be accessed online at

http://www.ece.gatech.edu/academics/graduate/internal/graduate/current_grad_handbook.pdf

Some of the information included in this handbook is derived from the Georgia Institute of Technology General Catalog, which can be accessed at <http://www.catalog.gatech.edu>

Individuals with disabilities, who wish to acquire this publication in an alternate format, should contact the Graduate Affairs Office of the School of Electrical and Computer Engineering at (404) 894-2900 or at <http://www.ece.gatech.edu/academics/graduate/contact.html>.

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INTRODUCTION

Purpose of this Handbook

The administrative and academic units of Georgia Institute of Technology endeavor to provide policy and procedural information as well as the personal guidance needed by students to successfully complete degree programs at Tech. The ECE Graduate Handbook provides information about ECE's graduate degree programs as well as the policies and procedures of the School. Its purpose is to familiarize ECE graduate students with degree program requirements, policies, procedures, and the resources available to students through the ECE Graduate Affairs Office and other Georgia Tech administrative offices.

This manual is not intended to be an exhaustive set of rules. The policies and procedures of the Board of Regents of the University System of Georgia, as well as those issued by the central administration of the Georgia Institute of Technology, supersede the information contained in this document.

It is the responsibility of each student to know and understand the information in this manual and the Georgia Institute of Technology general catalog. The administrative staffs of the ECE Graduate Affairs Office, the Georgia Tech Registrar's Office and the Graduate Studies – VPR office are additional sources of information regarding departmental, institute and university system policies and regulations.

The Georgia Institute of Technology General Catalog is a web-based document, located at:

<http://www.catalog.gatech.edu/>

All ECE graduate students are expected to know and understand the information provided in the General Catalog, paying specific attention to the “Information for Graduate Students” (<http://www.catalog.gatech.edu/students/grad/index.php>) and “Rules and Regulations” (<http://www.catalog.gatech.edu/genregulations/>) sections for valuable procedural and policy information.

A Welcome From The Chair

Georgia Tech School of Electrical and Computer Engineering

Welcome to the School of Electrical and Computer Engineering! Your admission to the School is a clear indication that you are in an elite group of the very best engineering students in the nation. There is no question that you have the capability and potential to succeed at Georgia Tech and in your subsequent professional career. It is the goal of the School's faculty and staff to assist you in realizing your potential.

Georgia Tech's School of Electrical and Computer Engineering is one of the largest such schools, annually being one of the leading producers of electrical engineering and computer engineering graduates. There are some obvious size-related compromises in student-faculty relationships compared to smaller schools, where students frequently have the same instructor for several subjects. On the other hand, because of our size, we can offer an unmatched richness and diversity of educational experiences. The School offers courses and programs across the breadth and spectrum of electrical and computer engineering. The School's curricula are specifically designed to enable you to tailor your programs to suit your individual needs by selecting appropriate electives, both from electrical and computer engineering course offerings and from courses available from other units of Georgia Tech.

Your program of studies will provide you with technical preparation for a professional career. Equally important is the matter of professional ethics, which is implicitly and explicitly woven throughout your program of studies. Our Faculty Credo and our student Honor Code are presented on the following pages. It is essential that you understand, fully endorse, and commit to the ethical practice of your profession.

We are pleased that you have chosen to join the School of Electrical and Computer Engineering. We are committed to the notion that you will continue to regard that a wise choice during your tenure at Georgia Tech and beyond.

Dr. Steve McLaughlin
Professor and Steve W. Chaddick Chair
School of Electrical and Computer Engineering
Georgia Institute of Technology

Honor Code

Georgia Tech School of Electrical and Computer Engineering

It is expected that all students in the Georgia Tech School of Electrical and Computer Engineering will maintain the high degree of professionalism held standard for all engineers. We, as engineers, expect academic honesty and integrity from ourselves at all times.

Students shall conduct themselves in a professional manner as described in, but not limited to, the list below, taken from the *IEEE Code of Ethics* and the Georgia Tech Student Conduct Code.

1. Accept responsibility for your actions.
2. Respect and treat fairly your instructors and fellow students regardless of any personal characteristics.
3. Engage in no acts of cheating, as defined by each instructor.
4. BE HONEST:
 - (a) Never lie to or mislead an instructor.
 - (b) Never use improperly acquired information.
 - (c) Never collaborate with others in an unauthorized manner.
 - (d) Never misuse data.
 - (e) Never plagiarize.
 - (f) Never engage in unethical conduct in general.

The Student Advisory Board of the School of Electrical and Computer Engineering generated this Honor Code in October 1992.

In order for any Honor Code to be successful, the EE/CmpE Student Advisory Board feels that the following must be accomplished:

- (1) Require each professor to clearly define cheating for each class. Whatever standards a given professor sets should be handed out in writing to each student at the beginning of each term along with the course syllabus. *Instructors in the School of Electrical and Computer Engineering are expected to provide access to old quizzes and examinations so that students may use them as a study resource.*
- (2) Clearly define and adhere to punishment for anyone caught cheating.

IMPORANT - This Honor Code is subject to the provisions of the Institute Honor Code, which became effective October 1996.

Faculty Credo

Georgia Tech School of Electrical and Computer Engineering

UNITY OF PURPOSE

Our purpose is to provide students at all degree levels with highest quality preparation for successful professional careers, and, through dedicated scholarship, to advance our profession. We will contribute to the expansion and responsible application of knowledge to the benefit of society. Our relentless pursuit of these goals will fulfill our vision of a Georgia Tech preeminent in information and telecommunications systems, energy and automation systems, and in the underlying enabling technologies.

DIVERSITY OF FUNCTION

We recognize and embrace the technical diversity of our profession. We seek to enhance this diversity by active engagement with relevant associated Georgia Tech and external professional activities. We will encourage cultural diversity within the ranks of the profession by being a leader in the education of minority and women electrical and computer engineers, students attracted and taught by a faculty equally rich in role models.

PROFESSIONALISM OF METHOD

We participate in the noblest aspect of a noble profession. We will honor that profession by example, instilling in our students by our own conduct the highest standards of professional behavior.

ACADEMIC ADVISEMENT

The Graduate Affairs Office

With approximately 1,200 undergraduate and 1,200 graduate students, the School of Electrical and Computer Engineering is one of the largest EE/CmpE programs in the USA. Because of the large numbers of both students and faculty, we have established certain policies and procedures in order to operate efficiently. Students should consult this manual and the ECE Graduate Affairs Office staff for policy, procedure and advisement information. Guidance provided by fellow students may not be the most up to date and may be unreliable.

For graduate students, the primary contact with the administration of the School will be through the Graduate Affairs Office, which is located in **Room W-208 of the Van Leer (ECE) Building**. The Graduate Affairs Office is administered by the Associate Chair for Graduate Affairs, Professor George Riley. Professor David Hertling, Emeritus Associate Chair for Graduate Affairs, works part time and assists with many of the responsibilities of the office. The staff in the office consists of Mr. Tristin Carmichael, Ms. Ashley Johnson, Dr. Daniela Staiculescu, Ms. Tasha Torrence, and Ms. Jacqueline D. Trappier.

The primary functions of the ECE Graduate Affairs Office are:

- Process and make recommendations to the Graduate Admissions Office of the Institute on all applications for admission to the graduate program.
- Process and make recommendations to the ECE school chair on all applications for financial assistance in support of graduate programs.
- Initiate and maintain a file on each incoming graduate student.
- Coordinate the assignment of examination and reading committees for thesis and dissertation activity.
- Receive, process, and validate all petitions and applications for graduate degrees.
- Process information on graduate assistantships and monitor eligibility for tuition waivers.
- Prepare draft requests for student (F and J) visas; assure compliance with Bureau of Citizenship and Immigration (BCIS) and SEVIS rules and regulations.
- Provide academic advisement and guidance to ECE graduate students.
- Make teaching assistantship assignments.
- Issue registration permits for ECE graduate level classes.

The preferred way to contact the ECE Graduate Affairs Office is through the “Contact Us” website at <https://www.ece.gatech.edu/contact-graduate-office-current-students>. Our fax number is 404-894-3047 and the office number is 404-894-2900.

The ECE Graduate Affairs Office provides academic advisement to ECE students in a variety of ways:

Daily Advisement Hours

- Students desiring one-to-one advisement are welcome to visit the ECE Graduate Affairs Office.
- The office staff is generally available from 9:30 a.m. to 12:00 noon and 1:30 p.m. to 4:30 p.m. on Monday through Friday.
- All staff members may not be available during the posted office hours.
- Students wishing to meet with the Associate Chair for Graduate Affairs must make an appointment. An appointment request should be requested through our “Contact Us” site at <https://www.ece.gatech.edu/content/contact-graduate-affairs-office-current-students>. The appointment request should include specific information regarding the purpose of the meeting.
- Suggesting dates and times when you could be available for a meeting could speed up the process.

New Students

- New, on-campus ECE graduate students are **required** to attend an orientation program prior to the start of classes.
- Online Master’s Degree students residing in the Atlanta are welcome to attend this program as well.
- Students admitted into the Georgia Tech – Lorraine (GTL) program or Georgia Tech - Shenzhen participate in an advisement program on their campus.

Continuing Students

- Advisement sessions for continuing students are provided prior to the first phase of registration each term. Advisors are available during the hours listed above for any students needing assistance.

Web-based Materials

- The ECE website (www.ece.gatech.edu) serves as a means by which students may obtain information about graduate degree requirements, policies and procedures.
- Degree program information, frequently used forms, handbooks, preliminary examination materials are all available on the Student Resources page of the ECE website (<https://www.ece.gatech.edu/current-students/graduate>).

Email Communication

- At both the administrative and the academic levels, email is the official means of communication with Georgia Tech students. The list grads@ece.gatech.edu includes the email addresses of all enrolled ECE graduate students. This list is updated after the close of registration each term and is used to send information related to academic issues - policies, procedures, registration or deadlines, etc. - to the entire ECE graduate student body.
- The OIT website <https://lists.gatech.edu/sympa> provides access to the “GT Mailing List Services” site where a variety of subscription-based lists may be accessed. This is the web interface for Georgia Tech's mailing list server, lists.gatech.edu. Using this website, you can

subscribe to lists, unsubscribe, manage lists you own, review archives, etc. (The availability of these actions for a particular list will depend on that list's configuration.) If you are a Georgia Tech student, faculty, or staff member, you can log in using your GT Account username and password. This will allow you to manage lists attached to your published e-mail address.

Faculty Advisors

- Faculty (or research) advisors are not required for students pursuing a non-thesis master degree. Incoming graduate students and continuing master degree students are advised through the ECE Graduate Affairs Office.
- Ph.D. students and M.S. students choosing the thesis option must have research advisors and are expected to select an advisor early in their degree program.
- Students selecting advisors outside of ECE must have a co-advisor who is ECE faculty.

Ph.D. Research Advisor

- Ph.D. students are expected to select an advisor by the end of the term in which they pass the Ph.D. preliminary examination.
- The advisor selection form is available through our website at: https://www.ece.gatech.edu/sites/default/files/documents/grad/Select_Advisor.pdf. This form should be completed and returned to the ECE Graduate Affairs Office as soon as an advisor selection is confirmed.
- Students in the process of choosing an advisor may use the ECE website (<http://www.ece.gatech.edu/research>) for up-to-date information on faculty research interests.

M.S. Thesis Advisors

- M.S. thesis option students should select a research advisor during their first term and no later than the end of registration for their second term in residence.
- The ECE Graduate Affairs Office is informed of the advisor selection by the submission of the signed "Select M.S. Thesis Advisor" form. This form is available through our website at: <https://www.ece.gatech.edu/masters-degrees>
- Only after the submission of the form can the student register for ECE 7000 (M.S. Thesis Research) under the selected advisor.

Changing Advisors

- Circumstances may arise which make it necessary for a student pursuing the Ph.D. or M.S. thesis option degree to change advisors. The decision to change advisors is not to be made lightly. Students considering a change of advisor are urged to meet with the Associate Chair for Graduate Affairs for guidance before making a change. It is important that all involved (student, current advisor and new advisor) are aware of the situation and that a mutually acceptable resolution results from the change of advisor.
- Students are expected to make good progress in completing their chosen degree program. A single change of advisor, where warranted, is understandable. Multiple advisor changes are viewed as an indication of poor degree completion progress and may have a negative impact on the student's funding and future academic status.

REGISTRATION

Registration Structure

New Student Information Sessions

- Prior to the start of each term, ECE holds a general advisement session for students entering our graduate program. The specific dates and times of these sessions are announced to new students approximately four to six weeks before the term starts. Attendance at the advisement sessions is mandatory, even for recent bachelor degree graduates of Georgia Tech.
- The Graduate Office staff is very busy at the beginning of each term and students cannot be guaranteed individual advisement outside of the general sessions before the close of registration.
- Other Georgia Tech entities may also provide orientation/advisement sessions. Students are expected to be aware of these programs and to participate in those that apply to them.
- ECE makes every effort to schedule our advisement program so that it does not interfere with other sessions that ECE students may be required to attend.

Web-based Registration

- Registration for classes takes place on-line through the Georgia Tech's OSCAR ("On-line Student Computer Assisted Registration") system at <https://oscar.gatech.edu/>.
- The Registrar's Office staff is available to handle questions regarding registration from 9:30 a.m. to 3:30 p.m. Monday through Friday during registration periods.
- Registration-related questions may be sent to comments@registrar.gatech.edu or filed through the registrar's "Contact Us" site at: <http://www.registrar.gatech.edu/contact.php>.
- Additional registration assistance and/or information may be found at www.registrar.gatech.edu under the "Registration" or "Student" tabs.

Registration at Georgia Tech is divided into two phases:

Phase I Registration

Phase I is for continuing students and co-op students at work.

- Specific dates for this phase of registration are available on the OSCAR System and through the Registrar's website (<http://www.registrar.gatech.edu>).
- Current graduate students, especially those holding graduate research or teaching assistantships, are expected to register during Phase I.
- To provide maximum access to ECE graduate classes for our students, all ECE graduate level classes are restricted to ECE majors through the first phase of registration.
 - Major restrictions are lifted after all ECE students have had ample opportunity to register.
 - Failure to register during Phase I can limit access to popular ECE classes.
 - Registering during Phase I enables the ECE administration to assess expected enrollments. Classes may be cancelled due to low enrollment in Phase I registration enrollment.

Phase II, Registration/Schedule Changes

- Newly admitted students, readmitted students, and continuing students who need to make schedule adjustments register or changes do so during Phase II.
- Specific dates for this phase of registration are available on the OSCAR System and through the Registrar's website (<http://www.registrar.gatech.edu>).
- This registration period runs through Friday of the first week of classes for the term.
- All students are required to pay their tuition and fees no later than the Monday after registration is closed. Failure to do so will result in a late fee being added to the assessment for the term.
- Students who were not able to finalize their schedule during Phases I must do so during Phase II.
- **Phase II is the last chance students have to add courses to their schedules or to change hours on variable hour classes (for example: ECE 8997, 8998, 7000, 8900, 9000).**
- Students may change the grade basis of classes listed with multiple grade options (e.g. letter grade, pass/fail, and audit). Changes from letter grade to audit can be made through the close of registration in each term. Changes from letter grade to pass/fail may be made through drop day of the term. However, ECE classes are generally offered with a single grade basis, so this option may not be available for ECE classes. Please check degree requirements before changing to an audit or pass/fail basis for a course.
- There is **no way** to add classes after registration for the term closes at 4:00 p.m. on Friday of the first week of school.
- Students should be aware of the difference between *schedule changes* made prior to the close of the final phase of registration for a term and *withdrawing from (or dropping)* a course between the close of registration and "Drop Day."
 - A course that is removed from the schedule before the close of registration, using the "schedule change" procedure, will not appear on the transcript for that term. A grade of 'W' will appear on the transcript for any class that is "dropped" (withdrawn from) following the close of registration for the term. "W" grades will be recorded on the transcript for all classes of any students withdrawing from school after the close of registration and/or the final withdrawal deadline.

Course Meeting Places

- Each school and department posts a list of the meeting places for the classes it offers.
- For ECE classes, this list is posted on the bulletin board on the southwest corner of the second floor of the Van Leer Electrical Engineering Building, near the Academic Affairs Office.
- Course meeting locations are also available online on Oscar <https://oscar.gatech.edu>

Registration Restrictions

- A student attempting to register for classes may not be able to do so because of registration restrictions that have been placed by an academic or administrative unit at Georgia Tech. A permit must be issued by the unit that placed the registration restriction before one is able to register.
- A registration hold may prevent registration until required documentation is provided to the Institute or a change in the student's status or classification is made.
- The ECE Academic Affairs Office is able to assist in dealing with restrictions, but it may be necessary to seek assistance from another academic or administrative unit in some cases.

Some of the registration restrictions that students may encounter include:

Campus Restriction

- Georgia Tech classes are offered on campus in Atlanta, at Georgia Tech Lorraine in France, at Georgia Tech Shenzhen in China, and the Online Master's Degree.
- Registration is structured so that students can only register for the classes taught through the specific program and/or at the specific campus to which they were admitted.
- **Students who attempt to register for classes in a program other than the one in which they are enrolled will receive a “CAMPUS RESTRICTION” error message.** A student cannot take classes on different programs/campuses during the same term.

Major Restriction

- Academic units may place enrollment restrictions on their classes to insure that students in their major area have full access to the classes they offer. For example, ECE graduate level classes are restricted to ECE majors until the Monday of the second phase of registration. This way we can be sure that ECE students (especially new ones) have access to our classes.
- Each academic unit determines its own criteria for awarding permits. **Students attempting to register for classes with this restriction receive a “MAJOR RESTRICTION” error message.**
- Permits to override the “Major Restrictions” can only be issued by the academic unit that offers the classes.
- Additional information regarding “Major Restrictions” can be found on OSCAR.
- The academic affairs office of the unit offering the class is also a good place to ask for a major restriction permit.

Maximum Hours Restriction

- The maximum number of hours for which a student may register in fall or spring semester is 21; in summer term the maximum allowed is 16.
- **Students attempting to register for more hours will receive a “MAXIMUM HOURS EXCEEDED” error message** and must see the Registrar's Office to request an exception.
- Students wishing to be approved for this exception should advise the ECE Graduate Affairs Office of their plans, as the Registrar's Office will contact us for additional information regarding the request.

Permit Required

- Some classes are set up so that no one can register for them without permission. **Students attempting to register for classes with this restriction receive a “PERMIT REQUIRED” error message.**
- In ECE, Special Problem (ECE 8901, 8902, 8903) classes are restricted to those with registration permits. ECE 8999 (Search for a Research Topic and/or Advisor) and ECE 8022 (Professional Communications Seminar) are also offered on a permit-only basis.
- The “permit required” restriction for classes offered by other academic units can only be handled by the unit offering the class.

Time Conflicts

- **Students attempting to register for two classes that meet at the same time will receive a “TIME CONFLICT WITH XXXX” error message.**
- Assuming that the instructors of both classes are willing to accommodate a student in this situation, a permit to register for both classes may be obtained. A time conflict form has to be signed by the student and both instructors to receive this permit.
- Students with “time conflict” permits must adhere to the on campus schedule for each class unless other arrangements are made with the faculty instructor(s).

Course Overload Policy

A specific number of registration spaces are allotted for each class offered through Georgia Tech. When the number of students enrolled in a class reaches the allotted number, registration for that class is closed.

- **Students attempting to register for classes that are closed will receive a “CLOSED SECTION” error message.**
- Although ECE graduate level classes are very popular with ECE and non-ECE graduate students as well as some upper class undergraduate students, **we do not accept requests from students to be considered for overloads into our graduate level classes**. ECE makes every reasonable effort throughout registration to manage enrollment availability in order to accommodate as many ECE students as possible in our courses.
- Senior ECE undergraduate students or non-ECE graduate students who are attempting to register for ECE classes that have space available and are denied access to register for the class by the registration system, should file either a Non-ECE or Undergrad "Seeking Permission to Register for a Graduate Level Class" permit request through the ECE website (<https://www.ece.gatech.edu/coursework-planning>).
- Students attempting to register for a graduate class that is full should continue to monitor registration for openings. It is common for spaces to become available in classes that once appeared to be filled to capacity. This is especially true after the first few days of classes and throughout the final phase of registration.
- Students who are unable to gain access to a class during the first week of the semester and require an overload for it, must speak with the class instructor and obtain his/her permission to overload. The faculty member **must** advise the ECE Graduate Affairs Office in person or by email of their willingness to grant permission to students to overload into their classes. After the faculty member's authorization is received, the ECE Graduate Affairs Office will review the student's request and notify them when the overload permit has been issued.
- To seek permission to register for a non-ECE course that is closed, students should contact the school or department offering the course and follow that academic unit's overload procedure. Contact information for other academic units can be found in OSCAR.

Prerequisite Restriction

The course listings in the General Catalog of Georgia Institute of Technology (<http://www.registrar.gatech.edu>) and on-line at <https://oscar.gatech.edu/> contain information regarding class prerequisites.

- Graduate students lacking prerequisites (or who are unsure as to whether they have the required background) for a graduate level class are urged to contact the course instructor for an assessment of their background before registering for the class.
- Prerequisite requirements for graduate level (6000 and higher) classes are not hard-wired into the registration system. Students taking graduate classes may register for and take classes for which they do not have the specific prerequisite. Students undertaking classes for which they do not have the listed prerequisite (or its equivalent from another school) do so at their own risk.
- Prerequisite requirements for undergraduate level (1000-4999) classes are hard-wired into the registration system.
 - **Students attempting to register for classes with this restriction receive a “LACKS PRE-REQUISITE” error message.**
 - Permits for ECE undergraduate classes are handled by the **undergraduate advisors** in the ECE Academic Affairs Office.
 - Graduate students seeking to enroll in undergraduate classes with prerequisites must file a registration permit through the web-based permit request system found at <https://www.ece.gatech.edu/coursework-planning>)
 - The ECE undergraduate advisors may require that students requesting prerequisite permits meet with them before a registration permit is awarded.
- Prerequisite permits for classes in areas other than ECE are handled by the schools or departments offering the classes.

Registration Holds

Registration holds are used by various Georgia Tech academic or administrative units as a way to get the attention of students. When a hold is issued, students cannot register for classes, remove classes from their schedules, withdraw from school, etc. A hold may even prevent graduation. A very brief explanation of the reason for the hold and an indication of the unit placing the hold are indicated in OSCAR.

- **Holds can only be removed by the academic unit that placed the hold.**
- Although the ECE Graduate Affairs Office can only remove holds that we have placed, we can help determine which unit placed a non-ECE hold if that is not clear.
- To have a hold removed so that one may register (drop a class, withdraw from school, etc.), it is necessary to contact the unit that issued the hold.
- Graduate students with registration holds placed by ECE must contact us via email through the “Contact Us” site <https://www.ece.gatech.edu/content/contact-graduate-affairs-office-current-students> or by coming to the ECE Graduate Affairs Office during regular office hours.

Proper Registration

Students who use the facilities and/or the services of Georgia Tech's personnel (faculty, staff) in a term must be registered. Only students who have been approved for enrollment waivers in their graduating term or who are taking a term off from school are able to not be enrolled in a term.

- Full-time enrollment for graduate students is defined as a minimum of 12 hours, at least 9 of which must be on a letter grade and/or pass fail basis. This status applies to the following groups of students:
 - International students (on F1 or J1 visas)
 - Students supported on fellowships, scholarships, and/or other sponsorships that require full-time enrollment to be eligible to receive funds
 - Students supported with Graduate Research or Teaching Assistantships

- All students who are working on research should register for 21 hours in the Fall/Spring and 16 hours in the Summer.
 - Ph.D. students who have passed the preliminary exam and selected a research advisor should register for ECE 9000.
 - M.S. thesis students should register for ECE 7000. Non-thesis M.S. students should not register for ECE 7000.
 - Students who are working on research but are not eligible to register for thesis hours should sign up for ECE 8900 under the professor who is directing their research.
 - All students who are registered for ECE 9000, ECE 7000 and ECE 8900 should register for 21 hours in Fall/Spring and 16 hours in the summer.
 - Students studying for the preliminary exam should register for max 3 hours of ECE 7999 only on the term in which they take the exam.
 - Students who are searching for a research advisor or research topic should register for ECE 8999, which is a permit-restricted class. For more details on ECE 8999 restrictions see "Variable Credit Hour Courses".
 - Students who are GTAs should register for ECE 8997 and GRAs for ECE 8998.

WARNING:

- Students who have received a tuition waiver have to be enrolled full time. **Full time status has to be maintained after dropping classes with a W grade.** Students who are not enrolled full time or who lose the full time status after dropping classes will lose their tuition waiver and will be charged full tuition (around \$14,000 for out of state students). Additionally, international students who lose full time status will fall out of compliance with their visa status and will be required to leave the country until their status is cleared.

- Summer Term: All of the above requirements are in place during the Summer semester, as summer is considered a standard term for Georgia Tech. Students who are on-campus in summer term and meet one or more of the criteria above are expected to be registered on a full-time basis during that term as well.
 - International students (on F1 or J1 visas) may take summer term as a vacation term and may be permitted to register on a part-time basis in summer without jeopardizing their visa status. Visa requirements are independent of GTA/GRA requirements.

- If students plan to be away from campus for a large part of the summer and, therefore, are not eligible to register as a full time student cannot hold GRA/GTA positions. They might be eligible to be hired as an hourly employee. Note that hourly employees are very limited in the number of hours that they are allowed to work.

Change Course Grade Basis

In order to be able to make a change in the grade basis of a course, it must be offered with multiple options (letter grade, pass fail, and/or audit). With the exception of marker courses, ECE classes are only offered on a letter grade basis.

Care should be taken to remain within the degree requirement parameters when seeking to make grade basis changes for both ECE and Non-ECE classes. One could delay completion of the degree by opting to take a class on a pass fail or audit basis. ECE restricts the use of pass fail hours toward graduate coursework requirements and does not approve the use of audit hours other than those associated with the marker courses. The audit marker classes are the ones that document employment as a graduate research or teaching assistantship (ECE 8998 and 8997) and the preparation for the ECE preliminary examination (ECE 7999).

COURSES AND SCHOLASTIC REQUIREMENTS

The information in this section is a synopsis of general graduate school requirements, especially those policies for which there are special ECE requirements. Additional information regarding specific Institute rules and regulations may be found in the Georgia Institute of Technology General Catalog. The information in this handbook is by no means exhaustive; students are **required** to be familiar with policies, rules, and regulations as recorded in the General Catalog available at <http://www.catalog.gatech.edu>. The Student Rules and Regulations (<http://www.catalog.gatech.edu/rules/>) section of the catalog is especially useful for students.

Academic Standing

Students whose grades and/or grade point averages fall below the applicable minimums in any term will have academic standings of “Warning,” “Probation,” “Review,” or “Dismissal” depending upon their specific situation. The Georgia Institute of Technology General Catalog at <http://www.catalog.gatech.edu/> provides the official description of these academic standings and their consequences.

ECE students whose overall and/or term grade point average is below that required by the Institute will be contacted by the Associate Chair for Graduate Affairs to discuss their progress and plans for improving their academic performance.

Withdrawal from Classes

Withdrawing from (or dropping) a course is a serious decision. Students are expected to make good progress toward completing their degrees. Graduate Research and Teaching Assistants, students holding F or J Visas or on fellowships, and active duty military are expected to be full-time students.

- A Georgia Tech student is entitled to withdraw from a course during the early weeks of the term. Students withdrawing from classes after the close of registration for the term will receive "W" grades in the classes from which they withdraw. **Students who must have full time status must make sure that they will retain that full time status after the withdrawal.**
- The exact date of the deadline for withdrawal from classes is posted in the **Official School Calendar** (<http://www.registrar.gatech.edu>) and are also found on the OSCAR system. **It is each student's responsibility to know the exact deadline for each term.**
- Students withdraw from classes electronically through the OSCAR System. Prior to dropping a class, all students are encouraged to check with an Academic Advisor if their full time status and/or degree progress will be affected by dropping the class. If you are not sure, **ALWAYS** ask an Academic Advisor! You can send your inquiry online at <https://www.ece.gatech.edu/content/contact-graduate-affairs-office-current-students> or visit the Academic Office.

Withdrawal from School

A student who needs to leave school does so by withdrawing from all classes.

- **Students are responsible for completing the electronic withdrawal from school before the official (Institute) deadline.**
- **Full-time graduate students who withdraw from school during a term are required to remain out of school in the following term as well.** A petition to the faculty (available on the registrar's website) requesting a waiver of this requirement may be filed.
- If the student is not registered in **two consecutive terms** (including the one in which the withdrawal occurred), an application for readmission must be filed. An application fee is charged when submitting an "Application for Readmission."
- Part-time graduate students who withdraw during a term are not required to remain out of school for an additional term.

Readmission

- Any student in "Good" academic standing who is not enrolled for a single term (fall, spring, or summer) is eligible to re-enroll without applying for readmission to the Institute.
- Any student who is not enrolled for two or more consecutive terms (including summer) must apply for readmission.
- An "Application for Readmission" form is used for this purpose and can be obtained by accessing <http://www.registrar.gatech.edu> and clicking on "Forms and Student Records," then "Readmission" and following the directions provided. A fee will be charged for readmission.
- For purposes of readmission, there is **no distinction** between the terms of the regular academic year (fall and spring) and the summer term.

Graduate Level Course Structure

ECE's graduate level courses are grouped among 11 Technical Interest Areas (TIAs), listed below. For a list of the current classes under each TIA, check the projected class schedule on the ECE website at http://www.ece.gatech.edu/academics/graduate/course_schedule.pdf.

Bioengineering (BioE)

Computer Systems & Software (CSS)

Digital Signal Processing (DSP)

Electrical Energy (EE)

Electromagnetics (Emag)

Electronic Design & Applications (EDA)

Microelectronics/Microsystems (Micr)

Optics & Photonics (Opt)

Systems & Controls (S&C)

Telecommunications (Comm)

VLSI Systems & Digital Design (VSS)

Cross-Listed Courses

The term "cross-listed courses" is used in two different ways in the School of Electrical and Computer Engineering.

- Some ECE courses are cross-listed between two ECE technical interest areas.
 - Students using these classes toward the degree program must be especially careful not to overlook the cross listing when planning the programs of study since there are limitations on how cross-listed courses can be used to satisfy degree requirements. The cross-listed courses are indicated in the TIA Course listings of this handbook. For details on degree requirements for the M.S. and for the Ph.D., consult those sections of this handbook.
- The other use of "cross-listed courses" has an Institute-wide connotation and refers to classes that are offered with the same number and same course content in more than one discipline. (For example: ECE 6789 is also listed as BMED 6789, CHE 6789, ME 6789 and MGT 6789.)
 - These classes generally have course numbers beginning with "67," but not all "67xx" courses are cross-listed.
 - The Georgia Tech General Catalog indicates which "67xx" courses are cross-listed and the disciplines with which they are cross-listed.
 - Classes that are cross-listed with ECE cannot be used toward the minor requirement for the Ph.D. degree.

Examples ECE courses cross-listed with other disciplines are as follows. To confirm that a specific class is cross-listed, check the current term on Oscar.

Course #	Course Name	TIA(s)	GT Cross Listing
6771	Optoelectronics: Materials, Processes, Devices	Opt/Micro	Physics
6780	Medical Image Processing	Bio/DSP	Computer Science and BME
6767	Quantitative Electrophysiology	Bio	BME and Physics

GTA/GRA Marker Courses:

- GRAs must sign up for ECE 8998, which is a one credit hour audit course that shows up on a transcript indicating the GRA status.
- GTAs must sign up for ECE 8997, which is a three credit hours audit course that shows up on a transcript indicating the GTA status.
- In addition, all GTA/GRAs must be registered full time.

Variable Credit Hour Courses:

There are several variable credit hour courses. The default is usually 1 credit hour when students try to register for the courses, so students must change the number of credits when they register. Many of these courses allow up to 21 hours, and we ask all students who plan to take these courses to sign up for the maximum load, which is 21 hours in Fall/Spring and 16 hours in Summer.

- Research Hours: Students undertaking research must register for research hours to document their activities on their GT transcript, and should register for 21 hours in the Fall/Spring and 16 hours in the Summer.
 - ECE 9000 Ph.D. Thesis (P/F): Doctoral degree students who have passed the Ph.D. Preliminary Exam, have selected a research advisor, and have submitted a completed Ph.D. Research Advisor Selection form to the ECE Graduate Affairs Office should register for Ph.D. dissertation hours (ECE 9000) under the supervision of their advisors.
 - ECE 7000 M.S. Thesis (P/F): Master's degree students who are undertaking the "Thesis Option" should register for M.S. thesis hours (ECE 7000). M.S. thesis option students must also provide a completed M.S. Thesis Advisor Selection form to the ECE Graduate Affairs Office before registering for ECE 7000 hours.
 - ECE 8900 Special Problems (P/F): Students who do research under the supervision of an ECE faculty member and are not pursuing the M.S. thesis option degree or have not passed the Ph.D. Preliminary Examination may register for the section of ECE 8900 assigned to their research advisor. This course is pass/fail and does not count towards degree credit. It should not be confused with ECE 8901, ECE8902, and ECE8903, also called "Special Problems", which are letter grade courses.
- ECE 8999 Ph.D. Dissertation Preparation (P/F): For students who are seeking an advisor or a research topic. This class is permit only and can be taken for a maximum of 9 credit hours. It is limited to one semester for M.S. students who seek a M.S. Thesis advisor and to two semesters for Ph.D. students who seek a Ph.D. advisor.
- ECE 7999 Ph.D. Qualifier Preparation (Audit): For students who are studying for the preliminary exam. Up to 6 credits recommended, only the semester that the student is taking the exam. ECE 7999 cannot be taken in the Summer term.

Special Problems Hours

Special Problem hours, ECE 8901, ECE 8902, ECE 8903 and CS 8903 are independent study courses under the direction of a faculty supervisor. Special Problem courses are an excellent way to get to know faculty members and to become involved in research that is going on at Georgia Tech. Please note that students may not count Special Problems course credit towards their degree if they simultaneously were paid for doing the work (as a GRA or as a Graduate Assistant) or if they were registered for thesis hours to do the same work.

- Master's students may include up to a total of six special problem credits in their graduate program as free elective hours.
- Ph.D. students, under specific circumstances and with approval by the Associate Chair for Graduate Affairs, may use up to six hours of special problem credits as free elective hours in their graduate programs.
- A registration permit is required to be able to register for special problem hours.
- The last digit in the course number refers to the number of credit hours awarded for the ECE Special Problem; i.e. 8901 = 1 credit, 8902 = 2 credits, and 8903 = 3 credits.
- CS special problem hours can also be used towards the elective course requirements, both for M.S. and Ph.D. students. CS 8903 is a variable hour course that has to be taken for letter grade. ECE accepts CS 8903 only for 1, 2 or 3 credit hours and only with the letter grade option. Please visit the Academic Office before taking a special problem in CS that you plan to use towards your degree requirements.
- Students wishing to undertake a special problem should

- Meet with a faculty member and define a research problem to be undertaken.
- After the problem is defined a special problem form is prepared and signed by the student and faculty advisor. The forms are found as follows:
 - ECE <https://www.ece.gatech.edu/coursework-planning>
 - CS <http://www.cc.gatech.edu/current/masters/forms>.
 - Paper versions of the special problem form can also be found in the ECE/CS Academic Affairs offices.
- A one-page proposal of the problem is included with the special problem form. The proposal should state the problem, study method to be applied, and expected results.
- The completed paperwork is submitted to the Graduate Affairs Office for approval. Once approved, a registration permit will be issued for the particular faculty member's section.

Audit Hours

- The GRA/GTA marker courses ECE 8998 and 8997 and the Ph.D. Preliminary Exam Preparation marker course ECE 7999 are the only audit hours that ECE students should be using toward their full-time course loads.
- ECE classes are not offered on an audit basis, therefore, no ECE courses other than ECE 7999, 8997, or 8998 can be scheduled on an audit basis.
- Students wishing to take classes in other schools or departments on an audit basis must contact that school to inquire if this is possible.
- Since ECE classes are only offered on a letter grade basis, students wishing to take an ECE class on an audit basis may only do so informally by “sitting in” on the class in agreement with the class instructor.
- Students who are studying for the Ph.D. Preliminary exam may make arrangements with a course instructor to “sit in” on a course. The student must adhere to the criteria set by the course instructor for “sitting in”.

Seminar Courses

Seminar courses are one credit hour pass/fail courses. Some of the following courses may be allowed to be used as free electives towards ECE graduate level courses (M.S. and Ph.D. degree requirements differ): ECE 8001, ECE 8002, CS/CSE 800x, ECE 8022, ECE 6792, PHIL 6000.

PLEASE NOTE: Throughout Master of Science and Ph.D. degree sections which follow in this handbook, the term “6000 level” is used frequently when referring to graduate classes. Included under the heading of “6000 level” are courses at the 7000, 8000 and 9000 levels. An indication that a “6000 level class” is needed to meet a requirement, means that an appropriately approved 7000 or 8000 level class may also be used.

It should be further noted that **not all ECE 6000, 7000, 8000 level courses are approved** for use toward the graduate degree coursework requirements. Specific notations as to the type of classes that must be used to fulfill requirements are indicated in the information that follows.

THE MASTER OF SCIENCE DEGREE

The School of Electrical and Computer Engineering offers an extensive graduate program encompassing a broad range of areas of specialization. When designing the M.S. curriculum, the ECE faculty intended that the graduate degree requirements would be flexible enough to meet the individual needs of ECE graduate students while at the same time insuring that all graduates complete a well-rounded program of study that will support their professional goals. The school offers two options: a thesis option and a non-thesis option.

M.S.E.C.E. Degree Requirements

The following table summarizes the requirements for the Masters degree in the School of Electrical and Computer Engineering.

Requirement	Class Hours (Non-Thesis Option)	Class Hours (Thesis Option)
Group I - ECE 6000 level classes in one or two Technical Interest Areas (TIAs)	9	6
Group II - ECE 6000 level classes, at least two of which come from TIA(s) other than those in Group I	9	6
Group III - Elective Hours (4000 level or above)	12	6
M.S. Thesis Research	0	12
Total Hours	30	30

Groups I and II – Selection of ECE 6000 Level or Higher Classes

6000-level or higher ECE courses offered by specific TIAs can be used to satisfy these requirements, including Special Topics courses.

- Technical Interest Areas (TIAs) are groups of related courses within electrical and computer engineering and include: Bioengineering, Computer Systems & Software, VLSI Systems & Digital Design, Digital Signal Processing, Electrical Energy, Electromagnetics, Electronic Design & Applications, Microelectronics/Microsystems, Optics & Photonics, Systems & Controls, and Telecommunications.
- Nine hours of 6000 level or higher coursework in one or two Technical Interest Areas (TIAs) are needed to fulfill the Group I requirement for non-thesis master's candidates and six hours for the thesis master's students.
- In Group II, at least six hours of 6000 level or higher coursework must be completed outside the TIA(s) of Group I. These courses must not be cross-listed with the TIA(s) chosen for Group I. Group II classes may be selected from one, two or three TIAs, provided degree requirements are

met. ECE courses not designated to belong to a TIA cannot be used for Group II or Group II requirements.

- To verify the technical interest area of a particular course, look at the course listings in the “Graduate Level Course Structure” Section of this manual or on the ECE website at http://www.ece.gatech.edu/academics/courses/course_menu.php.
- To determine the TIA of a Special Topics course, students may examine the Projected Course Schedule available on the ECE website at http://www.ece.gatech.edu/academics/graduate/course_schedule.pdf
- Pass/Fail, audit, and Special Problems courses cannot be used to satisfy Group I and Group II requirements.
- M.S. students planning to pursue the Ph.D. degree should note that all nine hours of classes in Group II must be from TIAs other than those in Group I to fulfill the Ph.D. coursework requirement.

Group III (Electives): 12 Hours

- These hours may be selected from most disciplines offered at Georgia Tech (including ECE). Students choosing elective hours outside of ECE or other technical/engineering/math/science disciplines may be asked to justify their choices.
- No courses below the 4000 level can be used toward Group IV (Electives) or any other portion of the M.S. program.
- In the thesis-option M.S. degree, only 6 Group III ECE electives are needed. The rest of the degree requirement is fulfilled by 12 hours of 7000 hours (M.S. thesis research).
- Special Problems courses, ECE8901, ECE8902, and ECE8903 (but not ECE8900), and CS 8903 can be used to satisfy Group III requirements only for the non-thesis option.
- Pass/fail hours may only be used in the Group III portion of the program, and no more than **three** hours of pass/fail coursework may be used toward the non-thesis M.S. degree. The **only** pass/fail courses that are acceptable elective hours are the ECE seminars (ECE 6792, 8001, 8002, 8022), CS/CSE seminars (CS/CSE 800x) or PHIL 6000 (Responsible Conduct of Research).
- Ph.D. students, who have completed the Professional Communications Seminar (ECE 8022) and are petitioning for an M.S. degree, may use ECE 8022 as one of the three pass/fail classes that may be used in the elective portion of their M.S. degree requirements.

General Requirements

- A minimum grade of “C” is required in all classes used toward the master’s degree.
- A master’s degree student must have a minimum GPA 2.70 in order to graduate. Georgia Tech does not round GPAs, they truncate them. So a 2.67 is not sufficient to graduate.
- A cumulative grade point average of 2.70 must be maintained to remain in “Good” academic standing in the M.S. program.
- **No more than 9 hours of 4000 level courses** can be used toward a graduate level ECE degree.

- ECE 7999, 8900, 8997, 8998, 8999, 9000 and CETL courses cannot be used to satisfy degree requirements

Thesis Option

- Students registered for M.S. thesis hours are expected to complete the M.S. thesis option degree. However, circumstances might arise that impede the completion of the thesis. The student is allowed to switch to non-thesis option if in agreement with the thesis advisor, but will not be able to count any of the thesis hours toward the non-thesis degree requirements.
- Students choosing the M.S. thesis option must complete a **minimum** of 12 hours of ECE 7000 to meet degree requirements. These hours are shown in the Group III (Electives) portion of the M.S. coursework plan.
- Thesis option students are required to have a research advisor who will indicate their commitment to serve as advisor by signing the "M.S. Thesis Advisor Selection" form and submitting the completed form to the ECE Graduate Affairs Office.
- M.S. thesis option students present a research review (proposal) to their M.S. Thesis Reading Committee (research advisor and two additional ECE faculty members) when a significant portion of their research is completed.
- The research advisor determines the manner in which this review is to be presented.
- After the research progress is reviewed, the committee provides a signed "Masters Thesis Topic Approval" form to the ECE Graduate Affairs Office for processing. The form has to be submitted together with a Thesis Summary of maximum 10 pages. The M.S. Thesis topic will be posted on the ECE website for faculty review and a copy of the Summary will be provided to ECE faculty who wants to learn more about the thesis.
- **There must be a minimum of 90 days between when the ECE Graduate Affairs Office submits the "Masters Thesis Topic Approval" form to the GT Graduate Studies – VPR office and submission of the M.S. thesis to the reading committee for their final approval.**
- Detailed guidelines related to the M.S. thesis option degree, along with a link to the M.S. Thesis Topic Approval Form, can be found on the ECE website at: <https://www.ece.gatech.edu/masters-degrees>.
- Georgia Institute of Technology thesis preparation and submission guidelines are available at: <http://grad.gatech.edu/theses-dissertations>.
- The links for all the above listed documents and forms, along with a checklist, are available at <http://www.grad.gatech.edu/theses-dissertations-forms>.
- The format of the thesis and other related reporting are controlled by the Graduate Studies – VPR office (Savant Building). The student must keep in touch with that office in order to insure that all degree requirements are met.
- The Graduate Studies – VPR office strongly urges M.S. thesis students to have their thesis format checked before submitting the final version of the thesis to them. A thesis checking deadline is posted on their website at: <http://www.grad.gatech.edu/theses-dissertations-deadlines>.

- If, at any time, there is uncertainty about the M.S. thesis process, check with the ECE Graduate Affairs Office. Do not rely on secondhand information!

RCR Requirement for M.S. Thesis

- The Responsible Conduct of Research (RCR) Academic policy requires M.S. students enrolled in 7000 thesis hours to complete the appropriate RCR training requirement before the Request for Approval of Master’s Thesis Topic Form can be processed.
 - **First Option** - Successfully complete the online CITI RCR course (rcr.gatech.edu/online-training/)
- OR**
- **Second Option** - Successfully complete an in-person requirement - PHIL 6000 has been approved for ECE doctoral students and may also be used for M.S. Thesis students. ECE does not have its own in-house RCR course but will accept an academic program's in-house RCR training approach (Please see the Ph.D. section of this handbook for approved courses).
- For more additional information pertaining to this new policy, please visit <http://rcr.gatech.edu/masters-policy>.

Degree Completion Progress

Graduate students in the ECE degree programs are expected to make diligent progress toward completion of degree requirements. It is in the best interests of both students and faculty for all students to progress through the program expeditiously. The following recommendations indicate reasonable progress in the M.S. program:

Non-thesis Option

- A full-time Master’s student seeking the non-thesis M.S.E.C.E. should complete all degree requirements in a maximum of three semesters of enrollment, not counting summer terms, or a maximum of four semesters of enrollment if that student participates in the Cooperative Education (co-op) program.
- It is possible to complete the requirements in fewer terms.
- Students are permitted to spend one regular (non-summer) semester as an intern in an industrial or government position during their program of study. For more information about the co-op program please refer to the “**Graduate Co-Operative Program**” section of this handbook.

Thesis Option

- A full-time Master’s student seeking the thesis-option M.S.E.C.E. should complete all degree requirements in four semesters of enrollment, not counting summer terms.
- Students are permitted to spend one regular (non-summer) semester as an intern in an industrial or government position. For more information about the co-op program please refer to the “**Graduate Co-Operative Program**” section of this handbook.

Transfer Credits

- Up to six semester hours of graduate-level credit from another graduate school in the United States or an international partner school may be transferred toward the ECE M.S. degree. The grades for classes to be transferred must be at the “B” level or higher.
- Students who are enrolled at Georgia Tech may not receive credit for courses completed at another institution during the same academic term, unless prior permission has been obtained for cross enrollment or concurrent registration.
- A completed “Request to Transfer Classes” form, original transcript showing completion of the class(es), and a syllabus and other descriptive materials must be submitted to the Academic Office for use in arranging transfer credit.
- An original letter from the registrar of the institution where the classes were taken must be provided. This letter certifies that the classes to be transferred were not used toward any degree at that school.
- The ECE Faculty will evaluate this material and make a decision. Not all classes completed elsewhere will be allowed to transfer.

Change from M.S. to Ph.D.

Students admitted as M.S. who want to switch to Ph.D. will have to reapply to the ECE Academic Office in order to be admitted as Ph.D. students alongside the other applicants to the Ph.D. program.

M.S. students who wish to be admitted into the Ph.D. program have to meet the following requirements:

- Pass the Ph.D. Preliminary examination
- Find a research advisor
- Have a funding source
- Maintain a 3.5 graduate GPA

The following papers will have to be submitted to the Academic Office for approval prior to filling out a Change of Major form with the Registrar’s Office:

- Advisor selection form
https://www.ece.gatech.edu/sites/default/files/documents/grad/Select_Advisor.pdf
- Recommendation letter from the Ph.D. advisor submitted to the Academic Office
- Proof of funding
- Statement of purpose form
<https://www.ece.gatech.edu/sites/default/files/documents/grad/Change-from-MSECE-to-Ph.D.-ECE.pdf>

Additional requirements, to be verified in the Academic Office, are:

- Pass the preliminary examination
- Maintain a 3.5 minimum graduate GPA

THE PH.D. DEGREE

The Doctor of Philosophy degree requires concentration in a particular area of electrical or computer engineering as well as demonstrated mastery over the fundamentals of electrical and computer engineering. It is awarded in recognition of demonstrated proficiency and high achievement in the student's major field within electrical or computer engineering. A significant contribution to the knowledge in the area of electrical and computer engineering is made through successful dissertation research.

The Ph.D. degree requirements include:

- 43 credit hours of coursework
- Responsible Conduct of Research training
- Passing the Ph.D. Comprehensive Exam, including the Proposal Exam
- Conducting research, writing and successfully defending a Ph.D. dissertation

Coursework

The following table summarizes the coursework requirements for the Ph.D. degree in the School of Electrical and Computer Engineering.

Requirement	Hours	Description
Group I: ECE 6000 level classes in one or two TIAs:	9	Nine hours of classes from one or two technical interest areas (TIAs) of the student's choice. All for letter grade credit.
Group II: ECE 6000-level classes	9	Nine hours of classes, <u>all of which</u> must be from one or more TIAs that are outside of and not cross-listed with the TIA(s) in Group I. All for letter grade credit.
Group III: Minor in an area outside ECE	9	Nine hours of classes in a <u>single discipline</u> outside of ECE. All for letter grade credit.
Group IV: Electives	14	(Up to 12 M.S. thesis hours, <u>recorded as such on an official transcript</u> , may be used in this area)
ECE 8022 (Professional Communications Requirement)	1	Pass/fail. Permit required. Students have to pass the preliminary examination to receive a permit.
Responsible Conduct of Research (RCR) requirement (PHIL 6000)	1	Pass/fail. Students entering Ph.D. program in Fall 2011 or later and M.S. students who were admitted for Fall 2011 or later and then transition to Ph.D. must take an RCR course to fulfill this requirement.
Total hours required	43	

Groups I and II – Selection of ECE 6000 Level or Higher Classes

6000-level or higher ECE courses offered by specific TIAs can be used to satisfy these requirements, including Special Topics courses.

- Technical Interest Areas (TIAs) are groups of related courses within electrical and computer engineering and include: Bioengineering, Computer Systems & Software, VLSI Systems & Digital Design, Digital Signal Processing, Electrical Energy, Electromagnetics, Electronic Design & Applications, Microelectronics/Microsystems, Optics & Photonics, Systems & Controls, and Telecommunications.
- Nine hours of 6000 level or higher coursework in one or two Technical Interest Areas (TIAs) are needed to fulfill the Group I requirement for non-thesis master's candidates.
- In Group II, all nine hours of coursework must be completed outside the TIA(s) of Group I. These courses must not be cross-listed with the TIA(s) chosen for Group I. Group II classes may be selected from one, two or three TIAs, provided degree requirements are met. Courses that do not belong to any TIA cannot be used to satisfy Group I or Group II requirements.
- Pass/Fail, audit, and Special Problems courses cannot be used to satisfy Group I and Group II requirements.
- To determine the TIA of a course, students may examine the Projected Course Schedule available on the Graduate Website at http://www.ece.gatech.edu/academics/graduate/course_schedule.pdf

Group III (Minor): 9 Hours outside ECE as a Minor Field of Study

A minor consists of nine credit hours of courses in a **single discipline** (e.g. Math, Physics, Mechanical Engineering, etc.). 4000 level or higher classes may be taken subject to the following guidelines:

- Minors are expected to be in subject areas that enhance and relate to Ph.D. students' research. Students may choose Math, CS, any non-ECE engineering or science discipline. Other fields would need to be approved by the ECE Graduate Committee. Minor courses in non-technical areas (for example, Management) need special approval.
- **Minor courses cannot be cross-listed with ECE classes.**
- All minor courses must be taken for letter grade.
- 6000 level minor courses are preferred, 4000 level or a combination of 4000 and 6000 level courses will be considered for approval, provided the overall degree requirements are met.
- All minor course selections are approved as part of the coursework plan approval process. Math and CS have some additional requirements. Not all the 4000 level Math and not all CS classes are approved. A list of approved 4000 level Math and approved CS classes for the minor are listed in the Appendix and on the ECE website at <https://www.ece.gatech.edu/coursework-planning>. 6000 level Math courses are all approved.
 - Approval of the minor courses is secured from the ECE Graduate Affairs Office via the web-based Ph.D. coursework completion plan at <https://www.ece.gatech.edu/coursework-planning>. When all the coursework is completed, Ph.D. minors are submitted by the ECE Academic Affairs Office to the Georgia Tech Graduate Studies – VPR office for approval.

- Additional information about a course might be requested during the approval process, including information listed below as required for approval of Special Topics courses.
- The PhD minor courses must have a minimum grade average of 3.0/4.0.

Important Note: ISYE 6739 (Basic Statistical Methods) cannot be used toward the Ph.D. minor requirement. This restriction also applies to any course in which the catalog description or syllabus includes the stipulation that it cannot be used toward degree requirements by the majors of the school offering the course.

Group IV General Elective Courses

- General electives are to enhance the technical background of students. Non-technical classes should be pre-approved by the ECE Graduate Office.
- Up to 6 credit hours of Special Problems (ECE 8901, 8902, 8903 and CS 8903) may be used as general elective courses, subject to approval by the ECE Graduate Office. **Faculty supervisors must certify that the work done for these courses is not simultaneously being done for pay (as in a GRA) or for other credit (as for ECE 9000, ECE 8900, or ECE 7000).** To receive approval for these courses to be counted towards the Ph.D. degree, complete the approval form found on the ECE website at <https://www.ece.gatech.edu/coursework-planning>. It is expected that these courses are rigorous and the level of work is commensurate with the equivalent credit of a graduate level course.
- Non-ECE Special Topics courses can be used for general electives.
- Pass/fail courses cannot be used in any other Group except for Group IV General Electives. The only pass/fail hours that can be used are ECE seminars (ECE 8001, 8002, 8022 or 6792), CS/CSE seminars (CS/CSE 800x), and the RCR requirement (PHIL 6000). No more than **four** pass/fail hours can be used towards the Group IV General Electives.
- Only 4000 level or higher courses can be used for degree requirements, but note that there is a total limit of 9 hours of 4000 level courses that can be used for the Ph.D. degree
- Students are welcome and encouraged to take additional elective courses to enhance their background. These courses would be for the student's benefit and would not count towards degree requirements.

The Professional Communications Requirement

- All ECE Ph.D. students are required to complete ECE 8022, a one-hour professional communications seminar, in order to fulfill the Ph.D. coursework requirement.
- Permits are required for ECE 8022. Only students classified as "Ph.D." and who have passed the preliminary examination will be allowed to take ECE 8022.
- Students are encouraged and may be required by their research advisor or their proposal review committee to take additional communications courses offered by CETL or the Language Institute.

Responsible Conduct of Research (RCR) Requirement

Georgia Tech requires all Ph.D. students who were admitted for Fall 2011 or later to complete an RCR requirement that consists of on-line training and in-person training. M.S. students who were admitted for Fall 2011 or later and then transition to Ph.D. students must also meet this requirement.

Additional graduate students may need to complete this requirement, depending on their source of funding. Students may refer to the applicability criteria listed in the *Georgia Tech RCR Compliance Policy* to determine if their source of funding requires RCR training (http://www.compliance.gatech.edu/forms/GT_RCR.pdf).

The On-line CITI Requirement: The online portion of the requirement, a CITI RCR course, must be successfully completed within 90 days of when applicable students begin the first full semester in their doctoral program. The CITI RCR course can be found here: <https://www.citiprogram.org>.

If a student goes past the 90 day time frame, a hold may be placed on course registration until the student completes the online training.

The In-Person Requirement: Students covered by this policy are required to successfully complete PHIL 6000 OR an academic program's in-house RCR training approach. Students are strongly encouraged to complete in-person training within the first 12 months of their doctoral program. In general, applicable students will be expected to take PHIL 6000 **during the first summer session after they begin their doctoral program at Georgia Tech**. Additional sections will be available during the fall and spring semesters for those students who would not otherwise be enrolled during the summer session.

As of January 24, 2012, the following academic programs have an approved in-house RCR training approach for their doctoral students. ECE does not have its own in-house RCR course but would accept any of the following courses approved for other schools:

- Applied Physiology – PHIL 6010: Biotechnology and Research Ethics
- Biology – BIOL 8106: Tools of Science
- Chemical & Biomolecular Engineering – ChBE 6003: Chemical Process Safety and ChBE 8801: Introduction to Research (both courses are required)
- Chemistry – CHEM 8902: Information Resources for Chemists and Biochemists
- Psychology – PSYC 8900: Special Problems in Experimental Psychology - RCR

These courses or PHIL 6000 can be counted in the Group IV General Elective category or approval may be requested to count one of these courses in the Group III Minor category. More information as well as an FAQ can be found at <http://www.rcr.gatech.edu/resources>.

Additional Restrictions and Conditions on Coursework

- Students with prior graduate work, including an M.S. degree from another institution may have up to 30 hours of courses applied towards the ECE Ph.D. degree requirements, subject to approval.
- No more than three senior (4000) level courses (9 semester hours) permitted to be used toward the Ph.D. coursework requirement. 4000 level classes can only be used toward the elective (Group IV) or minor (Group III) areas of the Ph.D. coursework requirements.

- No more than a total of four pass/fail hours can be used toward the Ph.D. coursework requirement—this includes 8022 and PHIL 6000.
- Georgia Institute of Technology requires that Ph.D. students maintain a cumulative grade point average of 3.0/4.0 to remain in good standing and must have at least a 3.0/4.0 to graduate.
- The minor courses (Group III) must have a minimum grade average of 3.0/4.0.
- All classes used to fulfill the Ph.D. coursework requirement must have grades of “C” or above.
- Ph.D. students are required to complete a minimum of two full-time terms on campus while taking ECE9000 (Ph.D. dissertation hours). ECE expects that most if not all of one’s Ph.D. coursework and research will be completed on campus, under the supervision of an ECE faculty member.

Filing a Coursework Plan

- All ECE Ph.D. students are required to file a coursework plan no later than the Ph.D. proposal submission.
- Coursework plans are filed through a secure ECE website (<https://secure2.ece.gatech.edu/PHP/gradforms/login.php>)
- When filing a coursework plan it is important to be sure to select the campus at which one is based. The system is set up so that the coursework plan is not saved unless a campus is selected.
- In addition to clicking the “Save” button when the coursework plan is completed, the “Submit” button should be clicked as well. Plans for which “Submit” has been clicked will be added to the list of those ready to be reviewed by our office.

Applying M.S. Coursework Completed at other Schools toward the Ph.D. Coursework

There is no formal transfer of credit for the Ph.D. degree, that is, classes taken elsewhere would not appear on the Georgia Tech transcript. However, M.S. coursework completed at other schools can be used toward the ECE Ph.D. coursework requirement. An approved Ph.D. coursework plan serves as an agreement between the student and ECE (on behalf of Georgia Tech) to permit the student to count courses from another school toward the Ph.D. coursework requirement.

- When submitting the coursework plan for the Ph.D. degree, students who have completed an ECE M.S. degree will list classes completed at the M.S. school along with classes to be completed at Georgia Tech. These classes should be listed as they appear on the M.S. school's transcript, using that school's number (if any), course name, grade awarded.
 - To request approval of these courses, students should submit a transcript and a syllabus and other descriptive materials to the ECE Graduate Office.
 - The credit hours for classes completed elsewhere should be reported in semester hours. If the M.S. classes were recorded in quarter hours, those hours are to be converted to semester hours by multiplying the number of quarter hours by 2/3, making a three quarter hour class equal to two semester hours.
- If a thesis was completed at the M.S. school, it may be possible to apply up to 12 semester hours of thesis credit toward the 43 hour Ph.D. coursework requirement. The following items are needed in order for this option to be considered for approval:

- English version of the M.S. thesis
- Documentation on the official transcript of completion of the M.S. with a thesis
- Completion of M.S. thesis research hours on the M.S. school's transcript
- Six hours of the previously completed coursework that was transferred toward a Georgia Tech ECE M.S. degree may be applied toward the Ph.D. coursework requirement.

Preliminary Examination

Students must pass the Preliminary Exam, which is a written exam on undergraduate material spanning all the technical interests of ECE. Students must do 8 out of 22 questions on the exam. The Ph.D. Preliminary Exam is given each fall (on the Monday of the Fall Semester mid-term break) and Spring Semester (on a Saturday approximately seven weeks into spring semester).

- Students intending to take the exam must submit a registration form to the ECE Graduate Affairs Office by the deadline indicated on the form. The registration form is available on the ECE website. Registration for the prelim exam is open to all ECE graduate students.
- ECE undergraduate students with GPAs of 3.5 or higher may also register for the exam.
- Students admitted with the Ph.D. classification and M.S. students intending to pursue the Ph.D. degree should take the exam at the earliest opportunity.
- Students who are studying for the Ph.D. Preliminary Exam are encouraged to register for ECE 7999 for up to 6 credit hours. ECE 7999 should only be taken the semester when the student is registering to take the examination. **Do not register for ECE 7999 during the Summer term!**
- How many times students are allowed to take the exam:
 - Students classified as Ph.D. at the time of admission must pass the Ph.D. Preliminary Examination within their first four semesters (not counting the summer) in the program. All Ph.D. students are permitted three opportunities to take the exam while enrolled in the ECE graduate program at Georgia Tech.
 - Students admitted into the graduate program as M.S. students and wish to become Ph.D. students are allowed to take the preliminary examination while in the M.S. program.
- Students registering for their final attempt to take the Preliminary Exam must sign a letter of agreement acknowledging that they are taking the test for the final time and that they agree to leave the program if they do not pass.
- Students who registered for the exam and are unable to take it for reasons beyond their control (illness, family emergency, etc.), should contact the Academic Office as soon as they know that they cannot take the exam. Every effort must be made to advise the Associate Chair for Graduate Affairs of an absence from the exam before the examination starts, not after the test has been given.

Examination Format

- The Preliminary Examination is administered in a double-blind fashion. The ECE Graduate Affairs Office issues the exam code numbers to students taking the exam. Each student records their code number on the materials submitted for grading; no name is recorded on the exam

materials. The graders are not aware of any of the students' codes. Students are not provided with information regarding the specific faculty members responsible for prelim exam questions.

- A score of 65% (52 points/80) is needed in order to pass the exam.
- The prelim exam consists of 22 problems from both ECE undergraduate core courses and elective courses. The problem distribution is as follows:
 - **CSS** provides **2** problems from the material covered in ECE 2035, ECE 2036, ECE 3020, and ECE 3056. The exact two courses for a specific term are announced prior to the exam.
 - **EDA** provides **1** problem from ECE 2040 and **1** problem from ECE 3400.
 - **EMAG** provides **1** problem from ECE 3025 and **1** problem from ECE 4350.
 - **Power** provides **1** problem from ECE 3072 and **1** problem from ECE 3300.
 - **Microsystems** provides **1** problem from ECE 3040 and **1** problem from the material in ECE 3450 and ECE 4752.
 - **BIO** provides **2** problems from the material covered in ECE 4781, ECE 4782, and ECE 4784.
 - **Systems & Controls** provides **2** problems from the material covered in ECE 3084 and ECE 3550.
 - **VLSI** provides **1** problem from ECE 2020, **1** problem from ECE 3030, and **1** problem from ECE 3150.
 - **Optics & Photonics** provides **1** problem from ECE 4500 and **1** problem from ECE 4501.
 - **Telecom and DSP** provide **1** problem from ECE 2026, **1** problem from ECE 3077, and **1** problem from ECE 3600.

The relevant courses are listed below:

Core Courses:

2020	Fund of Dig. Sys. Design	VLSI
2026	Into to Signal Processing	DSP
2035	Programming for HW/SW	CSS
2036	Eng Software design	CSS
2040	Circuit Analysis	EDA
3020	Mathematics for CE	CSS
3025	Emag	Emag
3030	Phys Foundations for CE	VLSI
3040	Microelectronic circuits	Microsystems
3056	Arch, Concur, Energy in Comp	CSS
3072	Energy Systems	Power
3077	Prob and Stat for ECE	DSP/Telecom
3084	Signals and Systems	Controls

Breadth Courses:

3400	Analog Electronics	EDA
3150	VLSI and Adv. Dig Design.	VLSI
3450	Semiconductor Devices	Microsystems
4350	Electromagnetic Applications	Emag
3300	Energy Conversion	Power
3600	Computer Communications	Telecom
3550	Feedback Control Systems	Controls

Undergraduate Elective Courses:

4500	Optical Engineering	Optics
4501	Fiber Optics	Optics
4752	Int Circuit Fabrication	Microsystems
4781	Biomed Instrumentation	Bio
4782	Biosystems Analysis	Bio
4784	Electrophysiology	Bio

- From the 22 problems of the overall examination, each student must select 8 to work and submit for grading and discard the other 14. Students are given four hours to work the exam problems.
- A detailed list of the exam topics is listed in the ECE Preliminary Examination Study Guide which is available on the ECE website at <https://www.ece.gatech.edu/phd-degrees>.
- The exam is closed book, closed notes. A calculator is allowed as long as it is from the approved list that is given on the ECE Website at <https://www.ece.gatech.edu/phd-degrees>.

Advisor Selection

- Students who are looking for advisors and/or research topics should register for ECE8999.
- After passing the Ph.D. Preliminary Examination, a student is expected to identify a research advisor and report that advisor's name to the ECE Office for Graduate Affairs.
- An advisor selection should be reported before the end of the term during which the student passes the Preliminary Examination.
- It may be necessary and appropriate for a student to change advisors during the process of identifying a suitable dissertation topic. Any change should be coordinated through the ECE Graduate Affairs Office.

Dissertation Proposal

The Dissertation Proposal Exam is the second part of the ECE Comprehensive Exam (the Preliminary Exam being the first part.) As such, there are strict regulations on help that students may receive from other people. The Ph.D. Proposal Committee is comprised of 3-4 faculty members: the advisor (and a

co-advisor, if one exists), and two faculty members selected by the student. Additional members can be added upon request.

Purpose of the Proposal Examination

- Allow the committee to judge the student's ability to execute a research task and to communicate the results.
- Evaluate the proposed topic to ensure that, if completed as posed, it constitutes an original contribution to knowledge.
- The second half of the Ph.D. Comprehensive Examination (the first being the Preliminary Examination). Only after passing the Ph.D. Proposal a student is admitted to Ph.D. Candidacy.

Timing of the Proposal Exam

- The student is expected to make reasonable and consistent progress toward identifying a Ph.D. dissertation topic, which typically involves performing preliminary research under the guidance of the advisor. Once the student and advisor identify a mutually satisfactory dissertation topic, the student should plan to take the Proposal Examination.
- It is recommended that a student schedule the Proposal Examination within two years of passing the Preliminary Examination, and within three years of beginning the graduate program.
- The Proposal Exam must occur at least 6 months before the Defense Examination.
- Under no circumstances will the student be allowed to take the Proposal and Defense Exams during the same term.

Proposal Process

- The format for the Proposal Examination involves a written report and an oral presentation.
- The written proposal is no more than 35 pages including references and appendices.
- The proposal must contain a chapter or sub-chapter entitled "Literature Survey", appearing anywhere in the document that the student finds appropriate. The "Literature Survey" section is a minimum of five pages and must be written by the student with no outside help.
- The rest of the proposal document contains at minimum a concise statement of the Ph.D. dissertation topic, summary of the research completed, outline of the research to be completed and clearly summarizes the contributions of the research. The student can get help in preparing the rest of the proposal document.
- The Ph.D. coursework plan needs to be preferably completed at the time of the Ph.D. Proposal. If the coursework has not been completed, the Academic Office needs to approve the coursework form indicating very clearly when the remaining classes will be completed.
- The documents are submitted to the Academic Office, who is in charge of assigning the Ph.D. Proposal chair and sending the Ph.D. proposal documents to the members of the committee. The committee needs to be given at least two weeks to read the Ph.D. Proposal before scheduling the oral portion of the exam.
- If the Ph.D. Committee is satisfied with the written report, the oral presentation is scheduled. The presentation usually lasts about 40 minutes. There is a general audience question and answer period followed by a closed door examination period with the committee.

The official detailed information about preparing and presenting the proposal is available in the Ph.D. Proposal section at <https://www.ece.gatech.edu/phd-degrees>. If, at any time, there is uncertainty about what to do next or what is expected of the student, check with the ECE Graduate Affairs Office. Do not rely on secondhand information!

Proposal outcomes

- **Pass:** The committee may pass the student but give recommendations for the student's research direction. Students should generally follow this advice, in consultation with their advisors, since those committee members will also be on the Final Defense Committee.
- **Conditional Pass:** If the committee has reservations about the student's performance or the proposed material, they may vote for a conditional pass. A "Conditional Pass" is a pass but certain conditions set forth by the committee **must** be met. A sample of common conditions include
 - completion of additional courses that the committee feels are important for proper preparation
 - specific steps to take to improve oral presentation skills and/or written communication skills
 - adding an addendum to the proposal
 - redoing the oral presentation (unless the arrangements for a conditional pass specifically require that the oral presentation be repeated, it generally does not need to be done again)
 - additional concerns determined by the committee may also apply and should be communicated to the student and advisor in writing.
- **Fail:** The committee may also consider the student's proposal and/or presentation to be of insufficient quality to warrant a pass or conditional pass. If this occurs, the committee specifies to the student (advisor and ECE Graduate Affairs) why the "Fail" decision was reached and may make recommendations on what the student should do, for example, continuing the preliminary research until a better definition of a proposed topic is forthcoming.
 - In accordance with Institute requirements, a student may only attempt the proposal exam twice.
 - A student who fails the proposal examination on the first attempt will be expected to consult with the Associate Chair for Graduate Affairs for guidance as to how to proceed at that point. If a student chooses to attempt the proposal exam again, then he/she would resubmit a proposal document. The committee may or may not be the same.
- **Hung Committee:** If the committee is not in agreement at the time of the examination, the Graduate Affairs Associate Chair will follow up with the committee and negotiate a solution. If the agreement is not reached after mediation, the student will restart the proposal process from the very beginning. The student has two more attempts and has the option to form a new proposal committee.

After passing the proposal

- The Ph.D. Proposal Committee members chosen by the student, including the advisor, become the Ph.D. Reading Committee Members. Only these people need to sign the "Request for Admission to Ph.D. Candidacy Form".
- Because the proposal examination may occur relatively early in the process of defining the dissertation topic, it may be necessary to modify the topic as the research progresses. Any substantial modification requires approval of the reading committee and a submission of a revised "Request for Admission to Ph.D. Candidacy" form with the new dissertation title and abstract, signed by the student and advisor/co-advisor.

- The proposal should not be construed as a “binding contract” between the committee and the student, but as a somewhat flexible agreement that is expected to evolve as the research progresses.

Dissertation and the Final Defense

- The primary requirement of the Ph.D. student is to do original and substantial research that is reported in the Ph.D. Dissertation and at the Final Defense. The quality of the dissertation depends upon the conscientious work of both the student and the Reading Committee. The School entrusts the standards of the School in this area to this committee.
- **The Final Defense Committee** is composed of five people including the Reading Committee members plus two extra members. All faculty members who signed the “Request for Admission to Ph.D. Candidacy Form” must be on the Final Defense Committee. The two extra members are chosen as follows:
 - One of the members has to be Academic Faculty outside the School of Electrical and Computer Engineering. This person can be from another university, with the restriction that they are not within one year of having earned the Ph.D. degree. If the person is not a Georgia Tech faculty member, then that person must provide a current CV in order to be approved by the Institute Graduate Office. Outside ECE faculty who have an adjunct position in ECE are approved, but not faculty with double appointments in ECE and another department.
 - The last committee member can be ECE faculty. At minimum, he/she must hold a Ph.D. and be active in research. If the extra person is not a Georgia Tech faculty member, then a CV must be provided to the ECE Graduate Office for approval.
- This Final Defense Committee is recommended to the Institute Office of Graduate Studies – VPR office. The Director of Graduate Studies may modify the recommended committee if so desired.
- The student should submit the dissertation to the Reading Committee with sufficient time to examine, typically at least two weeks but preferably a month. Once the Reading Committee is satisfied that the Final Defense can be held, the student must submit the Reading Committee Memo authorizing the scheduling of the Final Defense.
- Once the Reading Committee Memo is submitted to the ECE Graduate Office, the Final Defense can be scheduled.
 - The full committee should receive a copy of the dissertation at least two weeks prior to the Final Defense date.
 - The Ph.D. Final Defense must be publicized for two weeks, and it must be open to the public. The Graduate Office must receive the Schedule Defense Memo and Reading Committee Memo at least two weeks in advance of the event. The memos can be found online in the “Dissertation and Final Defense” section at <https://www.ece.gatech.edu/phd-degrees>.
- The Certificate of Thesis Approval which is available through the Graduate Studies – VPR office website at <http://www.grad.gatech.edu/theses-dissertations-forms> should be signed by the final examination committee at the dissertation defense and submitted to the Academic Office for the final signature from the School Chair/Graduate Coordinator signature.

- After all signatures are collected, the form is submitted to the Graduate Studies – VPR office together with the rest of the documents on the checklist found at <http://www.grad.gatech.edu/sites/default/files/documents/checklist-documents201603.pdf>.
- The Graduate Studies – VPR office controls the format of the thesis and other related reporting. The student must keep in touch with that office in order assure that all degree requirements are met. Guidelines for preparing and submitting the dissertation are available at the Graduate Studies – VPR office website (<http://www.grad.gatech.edu/theses-dissertations>)
- A document which discusses the timing of events leading up to and including the thesis defense is available in the “Dissertation and Final Defense” section at <https://www.ece.gatech.edu/phd-degrees>.
- If, at any time, there is uncertainty about what to do next or what is expected of the student, check with the Associate Chair for Graduate Affairs. Do not rely on secondhand information!

Degree Completion Progress

- A “Ph.D. student” is defined as one who has accepted an admission offer that indicated "Ph.D." rather than "M.S." degree.
- M.S. students who wish to be reclassified as Ph.D. students should contact an Academic Advisor for additional information.
- The Institute requires that Ph.D. students (full-time or part-time) complete all degree requirements within 7 years of passing the comprehensive examination, that is, the Ph.D. Proposal Exam in ECE.
- Graduate students in the ECE degree programs are expected to make diligent progress toward the Ph.D. degree. It is in the best interests of both students and faculty for all students to progress through the program expeditiously. Recommendations for reasonable progress are defined as follows:
 - Students obtaining the M.S.E.C.E. degree on the way to a Ph.D. degree are expected to complete the Master’s degree within the first two years of graduate study.
 - Students seeking a Ph.D. degree are expected to take the ECE Preliminary Examination at each available opportunity until they pass the exam.
 - Ph.D. Students are expected to complete all required coursework, including the Professional Communications requirement and the minor, by the end of the third year in the program (if entering from a B.S. degree program) or the end of their second year in the program (if entering with an M.S.).
 - Students are expected to identify a Ph.D. research advisor as early as possible in the program, and are urged to do so by the end of the term in which they pass the Preliminary Examination and no later than the term following the one in which they pass the Preliminary Examination.
 - Each individual student must take the initiative to connect with an advisor within technical interest area within their first year at Georgia Tech.
 - It is recommended that all Ph.D. students take the Proposal Examination within two years of passing the Preliminary Exam, or by the end of their third year of graduate studies.
 - It is recommended that the Proposal Examination will be successfully completed at least one year prior to the Final Defense examination, and that it **must be** completed at least 6 months in advance of the Defense Examination.

- When the ECE Graduate Office determines that a Ph.D. student has not met the milestones described above, they will be classified as “not making reasonable progress” toward the Ph.D. degree and notified of this status immediately.
 - This notification will normally occur at the beginning of Spring or Fall semester.
 - By the end of that semester, the student must provide a written explanation to the ECE Graduate Office as to why they have not met the indicated milestones, and what action they intend to take to correct the situation.
- Exceptions may be made by the Associate Chair for Graduate Affairs after reviewing the circumstances involved as presented by the student and the research advisor.

Additional Considerations

- During their Ph.D. program, students are permitted an unlimited number of summer terms of non-residence, during which they may be employed as interns at industrial or government employers. A student’s research advisor, however, may advise against summer leave if circumstances so dictate.
 - Students supported as GRA are expected to coordinate internships with their advisor.
 - Only one non-summer term may be used for internships or other employment without the prior permission of the ECE Associate Chair for Graduate Affairs.

FINANCIAL ASSISTANCE

Financial Aid

- Financial Aid in the form of fellowships and loans is available to qualified students. Long and short-term student loans are handled through the Office of Scholarships and Financial Aid. Interested students should contact that office directly.
- Many national graduate fellowships consider applicants who are “at or near” the beginning of their graduate programs. ECE encourages qualified graduate students to apply for national graduate fellowships in their studies. Information about fellowships and links to important fellowship information can be found at <http://fellowships.gatech.edu/>.
- Students who have been awarded the President's Fellowship or other Georgia Tech supplemental fellowships are also strongly encouraged to apply for national fellowships early in their tenure at Tech.
- ECE permits faculty members whose students obtain fellowships to withdraw or reduce the GRA appointments in order to be able to fund additional students in their research groups.
- ECE has imposed a maximum yearly stipend from fellowships plus GA/GTA/GRA to be \$45,000. A student may receive external fellowships beyond that amount, subject to conditions on those fellowships, but GA/GTA/GRA supplements beyond \$45,000 are not allowed.

Graduate Co-Operative Program

- The Graduate Co-Operative Program provides both masters and doctoral students with opportunities to include specialized work experiences in their studies. This program is managed through the Georgia Tech Center for Career Discovery and Development <http://www.careerdiscovery.gatech.edu/>. Information on the co-op program can be obtained through their website <http://www.gradcoop.gatech.edu>.
- Students who apply for assignments through the Graduate Cooperative Program must advise the ECE Graduate Affairs Office of their intentions **before** participation can be approved. Co-op students need to be registered the semester of the co-op for 12 hours.
 - A co-op approval request form is available on the ECE website in the Student Employment and Financial Assistance area of the website <https://www.ece.gatech.edu/current-grad-finaid>.
 - This paperwork should be signed by the research advisor (where applicable) indicating that the plans outlined are approved before the forms are submitted to the ECE Graduate Office for approval.
 - An offer letter from the co-op company should be provided along with the co-op approval form. The letter must include the full time/part time nature of the job, as well as the starting and ending date of the internship.
- Timing of Co-Op: ECE does not encourage our students to co-op during Fall and Spring semesters as a significant number of courses are offered in these two terms and most faculty are on campus. ECE graduate students seeking outside work assignments should plan to be gone during summer term and be in school during fall and spring.
 - Students may be permitted to spend one regular Fall/Spring semester as an intern/co-op in an industrial or government position per degree (that is, once while seeking the M.S. degree and once while seeking the Ph.D. degree).

- Students desiring more than one semester (Fall, Spring) of internship/co-op or other employment must have the expressed permission of the ECE Associate Chair for Graduate Affairs.
- Students supported as GRAs are expected to coordinate internships/co-ops with their advisor.
- Subject to the approval of the research advisor, Ph.D. students are permitted an unlimited number of summer terms of non-residence, during which they may be employed as interns/co-ops at industrial or government employers.
- International students who have completed less than two semesters of full-time graduate level study in ECE's graduate program will not be given approval to participate in the graduate co-op program.
- Approval to work off campus will also not be granted to any student who is not in good academic standing or is not making good progress toward the completion of their degree program.

Graduate Teaching and Research Assistantships

Some students are offered assistantships as part of their admissions package. Others arrange assistantships through direct contact with faculty working in an area of shared research interest. Graduate Research Assistants (GRA) and Graduate Teaching Assistants (GTA) positions come with a tuition waiver, with the requirement that the students are registered full time.

- Common Rules for GRAs and GTAs:
 - To be eligible for the tuition waiver, GRA/GTAs must be employed at a minimum rate of one-third time (13-15 hours per week) and must be enrolled full time (at least 12 hours of credit, no more than 3 of which are audit). **Students who fail to meet one of these criteria are assessed full tuition and fees based on their residency status.**
 - As a courtesy to students, the ECE Graduate Affairs Office monitors the registration status of students with GRA/GTAs. Email messages are sent to individuals who are not registered properly or have underpaid their tuition and fees. Do not ignore an “improper registration” message. Failure to comply with Institute requirements may result in a loss of the fee waiver, cancellation of classes, or loss of employment.
 - No student can be employed as a GTA/GRA for more than 50% time (20 hours per week).
 - ECE requires that all students who hold GRAs carry a total load of 21 hours in fall and spring semesters, 16 hours in summer term.
 - GRA/GTAs must be hired no later than the end of the final registration period for the term.
 - It is the responsibility of the hiring faculty member to supervise the assistantship efforts of the students in their employ each term.
 - It is the responsibility of the student to insure that all criteria necessary for fee reduction eligibility are met and that the assistantship supervisor's employment requirements are fulfilled.
 - More specific details regarding employment as a GRA/GTA are available in the ECE Graduate Assistant Handbook located on the ECE website.
 - ECE graduate students are permitted to seek GRA/GTA appointments outside of ECE. The hiring department must report the appointment to the ECE Accounting Office so that the assistantship tuition waiver can be recorded.

- Those wishing to be considered for Graduate Teaching Assistantships (GTAs) in the School of Electrical and Computer Engineering may indicate their interest by filing the Position Request form on the secure website (<https://secure2.ece.gatech.edu/PHP/gradforms/login.php>).
 - The priority for GTA hires is the following: 1) students to whom GT has a commitment (such as fulfilling an admission offer obligation), 2) students who have a unique qualification to TA a specific course, 3) Ph.D. students who have temporarily lost funding and are otherwise making good progress towards their degree, 4) students who are well-qualified and making good progress towards their degree.
 - Ph.D. students who wish to be hired under category 3) above must have their advisor request the position by contacting the Associate Chair for Graduate Studies. That request should contain the following information: why the student needs funding, how long the support is expected to be needed, and the last time that such a request was made from that advisor (for any of their students). Priority for these cases will be to students who are making good progress towards their degree and whose advisors have not received recent GTA funding for any of their students.
 - An exception to the priorities above is for instructors of ECE 3710, the course for non-majors. Only students who have an M.S. degree or who have completed 30 hours towards their degree are allowed to teach this course. **We strongly encourage any student who is interested in an academic career to consider teaching ECE 3710.** We typically guarantee at least two terms of support for these instructors. These instructors are also required to take a teaching practicum class.
 - All GTAs must register for ECE 8997 each semester in which they are a GTA.
 - **All GTAs must take CETL 8000**, a one credit hour pass/fail class, during their first term as GTA, even if they are continuing students.
- Students who wish to be considered for Graduate Research Assistantships (GRAs) should make direct contact with faculty members researching in their interest area to discuss the possibility of being hired.
 - Faculty members wishing to employ a student as a GRA initiate the process by filing a hire request through a secure ECE website, providing an account number for stipend funds as well as information as to the start term and length of employment.
 - Once available funds have been certified by an ECE accountant, the student will receive an offer letter that includes additional information on ECE and Institute policies and paperwork for accepting the assistantship.
 - Hiring paperwork will not be initiated without completed forms.
 - **No** assistantship offer in the School of Electrical and Computer Engineering is valid without an offer letter from the Associate Chair for Graduate Affairs.
 - All GRAs must register for ECE 8998 each semester in which they are a GRA.

Hourly (or Graduate Assistant) Positions

- Students may be hired as a Graduate Assistant (GA) and paid on an hourly basis. However, Georgia Institute of Technology applies significant restrictions to the hiring of graduate students as GAs.

- Hourly appointments **must be** approved by the Associate Chair for Graduate Affairs **before** the student is hired since ECE must be able to justify the hourly appointment to the College of Engineering and to the GT Graduate Studies Office.
- Hourly (GA) hires are appropriate only in the following circumstances:
 - Students are not eligible to be hired as a GRA or GTA since they are employed for less than 12 hours per week, will be away from campus for a significant portion of the semester and are not registered as full time.
 - Students whose position does not entail research or education may be hired as a GA.
 - Students whose fellowship pays for tuition are hired as a GA rather than a GTA or GRA.
- Students who are employed must be registered and will pay tuition and fees based on their residency status for the course hours in which they are registered.

Tuition Waivers

- Georgia Tech provides a limited number of out-of-state tuition waivers to exceptional graduate students. These waivers permit full-time students to pay Georgia resident fees instead of out-of-state fees.
- Most of these waivers are used to fulfill agreements made with external funding agencies such as The Fulbright Commission.
- Students wishing to be considered for a tuition waiver nomination must contact an academic graduate advisor before submitting the tuition waiver requests.
- Military personnel and international students who are becoming permanent residents of the US should contact the Registrar's Office for tuition waivers specific to their statuses.

Direct Deposit

- Georgia Institute of Technology requires that all employees (including student employees) arrange to have their salary/stipend payment directly deposited with the financial institution of their choice.
- Arrangement for direct deposit of the GRA or GTA stipend can be made at the time one completes the GT hiring paperwork with the Office of Student Employment
- Non-employment related payments such as tuition refunds, fellowship payments, etc. are made to students through the Bursar's Office.
- The Bursar's Office also offers a direct deposit option to students who may receive tuition refunds, fellowship payments, etc. through their office.
- Information on arranging direct deposit of funds handled through the Bursar's Office can be found at: <http://www.bursar.gatech.edu/>.

GRADUATION

The culmination of the efforts made to fulfill the M.S. and/or Ph.D. degree requirements is the awarding of the degree – GRADUATION!

- All the instructions and necessary forms needed to apply for graduation are available online at <https://www.ece.gatech.edu/masters-degrees> for the M.S. degree and <https://www.ece.gatech.edu/phd-degrees> for the Ph.D. degree.
 - Ph.D. students submit only the Online Application for Graduation (OAG). This is done through OSCAR.
 - M.S. students submit OAG, a paper program of study found at http://www.registrar.gatech.edu/docs/pdf/GRAD_PETITION_FOR_DEGREE.pdf, and a printed copy of the coursework completion form that can be accessed at <https://www.ece.gatech.edu/coursework-planning>.
 - The program of study has to be printed “landscape” style and has to be typewritten, not handwritten.\
- The completed “Graduate Petition for Degree” and all related forms must be submitted to the ECE Graduate Affairs Office by the deadlines listed at <https://www.ece.gatech.edu/sites/default/files/documents/grad/ecegradcalendar.pdf>.

Enrollment in the Graduation Term

- It is an Institute requirement that students be enrolled for a minimum of three hours in the term in which they graduate.
- M.S. thesis option and Ph.D. students who have no requirement to be enrolled on a full-time basis (i.e. no GRA or GTA, no fellowship support, no visa requirements) are permitted to register for a single hour **in their final term**. The one-hour option can only be used **one time**. Students who do not graduate in their expected term may have to enroll in the next term in order to graduate.
- Students who complete all of their degree requirements before the close of registration in the next term, may be eligible to graduate without being enrolled (with an enrollment waiver). This option is also only available on a one-time basis.
 - In order to request an enrollment waiver, the student must complete a form (signed by the thesis advisor - where applicable - and the ECE Graduate Affairs Office) certifying that all degree requirements have been met and that the student will not be making use of any of Georgia Tech’s facilities during the term of graduation.
 - In cases where a thesis is being submitted, this waiver is filed with the required thesis submission paperwork after the thesis or dissertation has been uploaded electronically.
 - Where a thesis is not required, the enrollment waiver is filed with the degree petition.

NOTE: International students (those with F or J visa) who plan to register for less than a full-time course load in their graduation term must file additional paperwork for reduced course load with the Office of International Education. Failure to do so, could result in the student being considered "out of status" in their final term.

Candidates for degrees are not required to attend commencement. However, Georgia Tech's commencement program is worth attending. Information concerning each commencement is available on the GT website at: <http://www.gatech.edu/commencement>.

Graduation Invitation Letters

It is Georgia Tech policy that **neither academic nor administrative units** provide “Graduation Invitation Letters.” Student wishing to have family members who would need visas in order to enter the U.S. attend their graduation ceremony may write invitation letters for their relatives, but no official letter from ECE or Georgia Tech will be issued.

The counselors in the Office of International Education can provide further guidance to students seeking to have family members who need visas in order to attend a graduation ceremony.

Online Master’s Degree Students

- It is Georgia Institute of Technology policy that Online Master’s Degree students must graduate in the term following the one in which they complete their degree requirements.
- In addition to submitting the degree petition materials mentioned above, online students must include a completed enrollment waiver form with their degree petitions.
- Online Master’s Degree students must file their degree petitions and related forms with the ECE Academic Office.

Students Outside of Atlanta

GT Lorraine and GT Shenzhen students should submit their degree petition materials by email directly to the Academic Office in Atlanta.

Online Master’s Degree students mail their degree petitions to the ECE Academic Office.

All of the materials described above **must be submitted on time**. Incomplete degree petitions will not be processed. Late packets will be processed at the discretion of the ECE Graduate Affairs Office or the Georgia Tech Registrar's Office, depending upon which deadline was not met.

Reactivating/Reapplying to Graduate

- M.S. students who do not graduate in the term for which they petitioned, must submit a reactivation degree petition and submit an Online Application for Graduation (OAG) no later than the deadline date listed on ECE’s website.
- Ph.D. students are only required to submit another OAG to reapply for graduation.
- Reactivation petitions **must** be filed no later than the deadline dates listed on ECE’s website.

ADDITIONAL INFORMATION FOR ALL STUDENTS

Absence from School

ECE students are expected to complete their degrees in a timely manner. It is understood that professional conferences, internships, employment opportunities, vacations, family obligations, and personal emergencies may warrant time away from school. In addition, accurate student contact information must be maintained on the OSCAR system. The ECE Notice of Absence form is located in the ECE Academic Office.

Students travelling away from campus during times other than formal break periods (or who will be away from campus longer than a scheduled break period, holiday, or weekend), must file an “Absence Request” form with the ECE Graduate Affairs Office. This form, located on the ECE Website, is prepared by the student and must be reviewed by the student’s advisor. If the advisor supports the absence request, he/she should sign the form which is then submitted to the ECE Graduate Affairs Office for a final review and approval decision. Not all absence requests are approved. It should be noted that these forms do help us to locate a student in case of an emergency or some other valid reason requires knowledge of their whereabouts.

International students (those holding F or J visas) must check in with the Office of International Education before traveling away from Georgia Tech. Students traveling abroad should be aware of global conditions that may impede their return to Tech.

International students should also be aware that the only term that they are able to take as a “vacation term” is summer. International students should take care to make travel plans with this stipulation in mind.

International Ph.D. students seeking authorization to undertake “Optional Practical Training” (OPT) should keep in mind that all requirements excluding the dissertation must be completed in order to be recommended for the work authorization. In ECE, this means that completion of the Ph.D. proposal process (including the oral exam, submission of the signed “Admission to Candidacy” form, and the minor letter) is **required** before such authorization will be considered.

All students, regardless of their citizenship status, are expected to plan leave time based upon the official Georgia Institute of Technology calendar maintained by the Registrar’s Office.

Graduate Research and Teaching Assistantships are part-time, temporary positions. As such, students employed in those positions do not accrue vacation or sick time. Students (including those with GRAs or GTAs) wishing to take vacations should do so in accordance with the official school calendar.

Vacations or other non-emergency leaves should not be taken during the official period of a term. Plans should be made so that students who take leave are back on campus no later than the first day of classes and do not leave for a significant period (other than official school holidays) until after the close of the

term. Graduate classes may meet in the first session of each term. Missing class can have significant consequences later in the term.

In situations in which Ph.D. students and/or M.S. thesis option students are permitted by their research advisor to be gone from campus during a term, every effort must be made to limit the time away from campus. Students who are supported with Graduate Research or Teaching Assistantships must comply with GT requirements for funding and fulfill the commitments required in compliance with the employment opportunity they accept.

Alternative Study Opportunities

Online Master's Degree

The M.S. degree in Electrical and Computer Engineering is also offered online. Detailed information about this program is available at www.dlpe.gatech.edu.

Most online students are admitted directly into the Online Master's Degree program. Occasionally an on campus student may wish to switch to online studies. A request sent to <https://www.ece.gatech.edu/contact-ece-graduate-affairs-office> is the best way to start this process. No change from on campus to Online Master's Degree is made until after the student has contacted the distance learning program coordinator.

Georgia Tech – Lorraine

Georgia Tech operates a graduate electrical and computer engineering program at its campus in Metz, France. Nestled in Technopole 2000, an industrial park on the outskirts of Metz, Georgia Tech Lorraine offers a program leading to the M.S.E.C.E. and Ph.D. School of Electrical and Computer Engineering faculty members in residence at GTL teach classes. Dual degree programs with French partner schools are also available. For information about opportunities for study at GTL, please visit the GTL website at <http://lorraine.gatech.edu/>.

Georgia Tech – Shenzhen

Starting in Fall 2014, Georgia Tech offers its existing M.S. degree in Electrical and Computer Engineering in Shenzhen, China, housed at the Shenzhen Virtual University Park (SZVUP). SVUP is an innovative model in China emphasizing university-industry partnerships, technology transfer and business incubation. Situated next to Hong Kong, Shenzhen has the fourth largest GDP in China. It is a clean, green city, has a young population and is very high-tech. GT-Shenzhen will serve as a platform for graduate study abroad for all GT students. A unique program - the Global Engineering Immersion Program (GEIP) - will capitalize on GT's academic presences in Atlanta, GA, Lorraine, France, and Shenzhen, China, and encourage students to complete the GT M.S. degree by studying with GT on 3 different continents as little as 12 months. More information about this program can be found on the Georgia Tech – Shenzhen website <http://www.shenzhen.gatech.edu/index.html> or by contacting the Georgia Tech – Shenzhen Program Coordinator Chelcea Warren at 404-385-5753.

Multidisciplinary Programs

In addition to the specialization within electrical engineering, the School participates actively in several multidisciplinary certificate programs. These programs consist of groupings of courses that cut across

existing disciplinary lines and address specific application areas. A student who successfully completes one of the multidisciplinary programs will receive a certificate from the College of Engineering in addition to the degree in electrical engineering. Examples of such certificates are:

<http://www.manufacturing.gatech.edu/manufacturing-certificate>

<http://www.spp.gatech.edu/graduate/certificates/pubp>

<https://www.scheller.gatech.edu/academics/certificates/management-of-technology-certificate.html>

Please see a graduate advisor for any specifics on how a graduate certificate can be integrated into the ECE course requirements.

ECE also participates in two interdisciplinary degree programs: the Ph.D. in Robotics, and the M.S. and Ph.D. degree programs in Bioengineering. New students seeking admission to Georgia Tech would mark one of these options on the application as the discipline. Existing students transfer into these programs would be required to submit a new application to be considered for admission.

Certification Letters

Graduate students may find that they are requested to provide documentation of their academic status or verification of employment to entities outside of Georgia Institute of Technology. The Office of Human Resources (OHR) is the official source for employment verification information. The Registrar's Office is responsible for providing documentation related to academic matters. The ECE Graduate Affairs Office does not provide documentation of either employment or academic status.

To request documentation of a teaching or research assistantship you should follow the instructions at <http://ohr.gatech.edu/employment-verification>.

Requests for certification of enrollment, academic standing, etc. can be filed through OSCAR (<https://oscar.gatech.edu>) or through the Registrar's Office website (www.registrar.gatech.edu). From the Registrar's website, select the "Students" tab, then "Forms & Student Records" from the menu on the left and "Certifications/Verifications." Select the option that best describes your certification need and follow the directions to file a request. Through OSCAR, log in using the Secure Access Login, then select "Student Services and Financial Aid" and "Student Records." Scroll down the list to "Request Verification" and file your request.

Both the Registrar's and Human Resources websites provide information about the time needed to process certification requests and assistance to guide you through the request process.

Communication with Students

- The Georgia Institute of Technology email account is the official means of communication with Georgia Tech students.
- All ECE graduate students are required to activate their Georgia Tech email accounts.
- Students who prefer to use an email service other than the Georgia Tech email as their primary account, **must** arrange for messages sent to the official address to be forwarded to the preferred email address.
- The ECE Graduate Affairs Office and other Georgia Tech administrative offices use the Georgia Tech email account as a means of conveying important information to students.
- It is the responsibility of each student to be aware of the information sent by email.

- Deadline reminders are sent by the Graduate Affairs Office as a courtesy. All deadline information is available on the ECE website. Stating that a reminder email was not received is not a valid excuse for a missed deadline. It is the student's responsibility to know of and to meet all important deadlines.
- ECE uses three bulk email addresses as a means of getting information to our graduate students.
 - grads@ece.gatech.edu is used to convey academic-related information to all graduate students. This email address is built from the enrollment rolls each term.
 - phds@ece.gatech.edu goes only for the Ph.D. students as they are classified at the beginning of the term.
 - news_grads@ece.gatech.edu is used to convey non-academic information, such as announcements about events in ECE, scholarships, career fairs, upcoming conferences, post-graduate employment opportunities, etc. to students who are interested in receiving that information. Students wishing to subscribe (or unsubscribe) to/from the news_grads@ece.gatech.edu list do so through the OIT website at <https://lists.gatech.edu/sympa>.
 - Students may also subscribe at <https://www.gatech.edu/emergency/notification.html> to an institute-wide service that will send emergency alerts to individual GT email accounts.
- Students are required to update their personal contact information (addresses, phone numbers, etc.) with Georgia Institute of Technology through OSCAR. The ECE Graduate Affairs Office will refer to this information when attempting to contact students.
- ECE recognizes that personnel information is confidential and under no circumstances will this information be shared with outside parties. Written permission must be given before personal information is released to anyone outside of ECE.

Other Requirements and Information

- All graduate students who are employed as Graduate Research or Teaching Assistants and all graduate students attending Georgia Tech on F1 or J1 visas are required to obtain health insurance through a University System of Georgia negotiated health plan. Information on the program can be found at <http://www.bursar.gatech.edu/content/mandatory-student-insurance>.
- The ECE website <http://www.ece.gatech.edu> contains significant information for student reference. In addition to faculty home pages that provide a source of research interest information, course outlines for all ECE courses, degree requirement information, deadlines and important dates, forms, and other relevant degree program materials can be found on the web site.

Mail Service

- Due to limited resources and a large student population, ECE does not provide departmental mailboxes for students.
- Students who reside in campus housing will be assigned campus post office mailboxes.
- Students living off campus may apply for campus post office boxes. There is a fee for this service. More information can be found at <https://studentcenter.gatech.edu/resources/po/Pages/default.aspx>.
- Graduate students must make arrangements to have their mail sent to their local addresses or to their mailbox at the campus post office.

- Mail and/or packages sent to the School of Electrical and Computer Engineering for graduate students should be sent in care of the students' research advisors.
- Mailboxes assigned to specific classes are provided in the ECE mail/copier room (W203, Van Leer). These boxes are for use by graduate teaching assistants (GTAs) with responsibilities for the classes designated. It is each GTA's responsibility to check the mailbox for their assigned class on a daily basis and to be sure that all materials are removed from the mailbox at the end of the term so that assignments for the next term can be made.

INFORMATION FOR ECE UNDERGRADUATES

Permission to take Graduate Level Classes

- The School urges qualified Georgia Tech undergraduates to attend graduate school since the Master's degree is increasingly regarded as the starting point of a professional career.
- The School provides two ways for a qualified undergraduate to get a head start on the Georgia Tech graduate degree requirements: the B.S.-M.S. Program and the Graduate Option.

The B.S.-M.S. Program

- The B.S.-M.S. program permits early admission into the M.S. program, streamline application for graduate school, and double counting six hours of undergraduate or graduate courses (Must be 4000 level or higher) taken as an undergraduate.
- Students applying for the B.S.-M.S. program must have a minimum Georgia Institute of Technology grade point average (GPA) of 3.5 at the time of application. Application must be made during the term in which students complete ECE 3040 (EE) or ECE 3030 (CmpE) or by Drop Day of the term immediately following completion of ECE 3040 or ECE 3030.
- Students interested in applying for the B.S.-M.S. program will submit a graduate school application and a brief Statement of Purpose addressing interests and ambitions, how a graduate level degree will support these plans and offering a brief recap of academic and personal accomplishments that support their interest in graduate level work.
 - One letter of recommendation from an ECE faculty member is also required. Additional recommendation letters are also accepted.
 - The GRE and application fee requirements are waived for students admitted through the B.S.-M.S. program.
- Once admitted, B.S.-M.S. students are expected to maintain a strong grade point average through the remainder of their undergraduate program.
 - The final undergraduate GPA is expected to be 3.50 or higher.
 - Students admitted into the B.S.-M.S. program cannot have an undergraduate term GPA lower than 3.0.
- Students admitted into the B.S.-M.S. program may use up to six credit hours of undergraduate or graduate level ECE coursework for both degrees.
- In order to double count hours towards the B.S. and M.S., the Master's degree must be completed within a two-year period from the award date of the Bachelor's degree.
- Students wishing to apply for the B.S.-M.S. program should first review the B.S.-M.S. materials on ECE's website: <https://www.ece.gatech.edu/current-students/undergraduate/joint-bsms>.

Classes Completed as a GT Undergraduate

- Students who graduated with a B.S. from ECE with at least a 3.5 GPA may choose the “**Graduate Option**” rather than the B.S.-M.S. plan. In this case, they apply to graduate school using the full application and they may double-count 6 credits taken as a Georgia Tech undergraduate towards their M.S. degree provided that the classes meet the requirements for both degrees. In order to double count class toward both the B.S. and the M.S., the M.S. degree requirements must be completed and the M.S. degree awarded within two years of the BS degree.

- Students who completed their undergraduate degree in ECE, including those who are ineligible for the B.S.-M.S. program may be able to count excess courses taken as an undergraduate towards their M.S. degree. This information will be verified by an ECE undergraduate advisor.
 - Under this option, students take hours in excess of those required for the undergraduate degree, at either the graduate or senior level.
 - An undergraduate wishing to take graduate level courses using this option must be classified as a senior, have a minimum GPA of 3.25 and receive an on-line permit before registering for the course.
 - The excess hours so accumulated are considered for use toward the graduate degree by listing them along with the other classes to be used toward the graduate degree on the ECE Coursework Planning Form.
 - These classes are distinguished from those to be taken as a graduate student by recording a grade notation of "UG" and noting the term and year in which each class was completed.
 - The use of hours from undergraduate studies is also subject to approval by the Registrar's Office. This is done when M.S. the degree petition is submitted.
 - Up to nine hours completed as an undergraduate may be used for the Master's degree.
 - B.S.-M.S. students and Graduate Option Students who double-count 6 credits towards their M.S. degree are allowed one additional graduate level course (taken as an undergraduate and not used towards the BS degree) to count towards their M.S. degree.

IMPORTANT NOTE: Undergraduate students are not to delay completion of the bachelor's degree by taking classes intended to be used toward a future graduate degree.

- Requests for permits to register for graduate level classes to be taken while classified as an undergraduate student are filed through the "Overload/Permit Request System" tab at <https://www.ece.gatech.edu/coursework-planning>. When you have to select the level of class for which you are seeking the permit, select "GRADUATE (ECE 6000-9999)". Your request will be forwarded to our office. You will be notified by email of our decision regarding your request.

Ph.D. Preliminary Examination

- Undergraduate students who have a GPA of 3.5 or higher, and who plan to apply for admission into the ECE Graduate Program, are allowed to take the Ph.D. Preliminary Examination one time during their undergraduate studies.
- The prelim exam is offered twice each year: during the midterm break in fall (October) semester and on the first Saturday of March for spring semester.
- Registration forms for the prelim exam are on the ECE website and are due by September 15 for the fall exam, January 15 for the spring exam.
- A preliminary exam study guide and samples of past exams are available on the ECE website at <https://www.ece.gatech.edu/phd-degrees>.
- For additional information regarding this examination, contact the ECE Graduate Affairs Office at <https://www.ece.gatech.edu/content/contact-graduate-affairs-office-current-students>.

INFORMATION FOR NON-ECE GRADUATE STUDENTS

Registration Permits for Graduate (6000-9999) Level Classes

- All ECE graduate level classes are restricted to ECE majors through the first day of classes in each term.
- Non-ECE majors are considered for registration permits after the first day of classes.
- Non-ECE majors seeking permission to register for ECE graduate level courses must submit requests for registration permits through the “Overload/Permit Request System” tab at <https://www.ece.gatech.edu/coursework-planning>. When you have to select the level of class for which you are seeking the permit, select "GRADUATE (ECE 6000-9999)". Your request will be forwarded to our office. You will be notified by email of our decision regarding your request.

Registration Permits for Undergraduate (1000-4999) Level Classes

- Non-ECE graduate students needing prerequisite over-rides or other permission to take ECE undergraduate courses should follow the instructions above.
- Non-ECE graduate students seeking permission to register for ECE undergraduate level courses must submit requests for registration permits through the “Overload/Permit Request System” tab at <https://www.ece.gatech.edu/coursework-planning>. When you have to select the level of class for which you are seeking the permit, select "UNDERGRADUATE (ECE 1000-4999)". Your request will be forwarded to our office. You will be notified by email of our decision regarding your request.

Permission for Non-Majors to Seek an ECE Degree

- Students in other Georgia Institute of Technology graduate programs may request permission to pursue an M.S. degree in ECE as part of their studies at Georgia Tech. Students wishing to change their major to ECE will be required to submit an application through the normal online process. In order to be considered for either of these options the following must occur:
- Non-ECE students who intend to pursue an ECE M.S. degree while attending the Georgia Institute of Technology must make their intentions known to ECE's Graduate Affairs Office before completing **no more than four** ECE courses at Georgia Tech. This is done by filing the following materials with the ECE Graduate Affairs Office:
 - Letter of Intent: With this letter, the student requests permission to pursue an ECE M.S. degree and includes a statement of purpose outlining the reasons for pursuing the ECE M.S. – i.e. describes how the ECE M.S. degree fulfills the student's academic, research, and career goals. The Letter of Intent must be endorsed by the Graduate Coordinator of the major school.
 - Recommendation Letters
 - Students seeking permission to obtain an ECE M.S. while remaining in their major school may use copies of the recommendations provided in the initial application packet, provided the major school will release copies of the letters.
 - A recommendation from the student's advisor addressing the ways in which the ECE M.S. degree supports the student's studies in the major school.
 - A recommendation from another faculty member in the student's major school.

- A current, official GT transcript
- When the items above are received, the ECE Graduate Committee will review the student's request. The student and the Graduate Coordinator of the student's major school will be notified of the committee's decision. If granted, permission to pursue the ECE M.S. would be given with the understanding that the student is also expected to make reasonable progress toward a graduate degree in the student's major school. The major school may impose other requirements before ECE courses can be taken.

THE FINAL WORD

ECE Graduate Affairs

If you are unable to find the information you seek, are unsure about specific requirements, need advise, or just need to talk to someone, contact the ECE Graduate Affairs Office:

- Seek information on ECE's website: <https://www.ece.gatech.edu/>
- Email for guidance at: <https://www.ece.gatech.edu/content/contact-graduate-affairs-office-current-students>
- Telephone 404-894-2900
- Come by during office hours (9:30 a.m. to 12:00 p.m., 1:30 p.m. to 4:30 p.m.) or request an appointment

Registrar's Office

Seek information on their website (<http://www.registrar.gatech.edu>) or contact them at comments@registrar.gatech.edu or <http://www.registrar.gatech.edu/contact.php> for matters concerning:

- Registration, Graduation, Degree Completion Verification
- Enrollment Certification
- Institute Academic Policy

Office of International Education

Seek information on their website (www.oie.gatech.edu)

- Visa and Immigration Matters
- Optional Practical and/or Curricular Practical Training Matters

Bursar's Office

Seek information on their website (www.bursar.gatech.edu)

- Student financial accounts, Fee Payments
- Refunds

Center for Career Discovery and Development

See information on their website (<http://www.careerdiscovery.gatech.edu/>)

- Co-op Opportunities, Internships

GT Graduate Studies Office

Seek information on their website (<http://www.grad.gatech.edu>)

- Thesis Deadlines, Thesis Submission Procedures and Forms

Student Financial Assistance

Seek information on their website (<http://www.finaid.gatech.edu>)

- Loans
- Tuition Waivers
- Fellowships

DO NOT rely upon second-hand advice

Well intentioned faculty and fellow students may not be aware of current policy information and may unintentionally provide inaccurate information. Your degree is too important to rely on second hand information. Contact the ECE Graduate Affairs Office for any questions.