



**University of New Hampshire**  
College of Engineering and Physical Sciences

# **Electrical and Computer Engineering Graduate Student Handbook**

**ECE Graduate Committee**

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## **1. Introduction**

This manual is intended to provide the Electrical and Computer Engineering (ECE) graduate student with specific information regarding both University and ECE Department rules and regulations. A student should use this document as a guide when questions arise regarding any policies governing graduate students. If a graduate student cannot find the answer to a particular question within this document, the student should meet with the Graduate Coordinator for the ECE Department.

This document is divided into several sections. Section 2 describes the ECE Department requirements for the Master's of Engineering, Master's of Science, and Doctor of Philosophy degrees. Section 3 presents' rules and guidelines for teaching assistants (TA's) and research assistants (RA's) within the ECE Department. Section 4 provides information on general departmental rules and regulations. Section 5 contains University rules, and where necessary, ECE specific rules. The general rules apply to all graduate students who attend the University of New Hampshire (UNH) while the ECE specific rules apply only to ECE graduate students. Section 6 describes both University and ECE Department requirements for the Doctor of Philosophy Degree. Finally, section 7 describes both University and ECE Department requirements for the Master's of Science Degree.

# **Degree Requirements**

**ECE Department**

## 2.ECE Graduate Programs

Our graduate programs are flexible allowing the student a wide choice of courses as well as research topics. We will prepare students for professional skills such as working collaboratively, scholarly writing, and technical presentation and publications. Our programs will provide the students the training needed to pursue a career both in industry and academia. The programs will increase the breadth and depth of the students' electrical and computer engineering knowledge and help them develop the specialized skills in areas including but not limited to biomedical engineering, human-computer interaction, wireless communication, integrated circuit design, cybersecurity, control system and robotics, sensor design, wearable electronics, image processing, Internet-of-Things, computer architecture, and medical instrumentation. Students have internship opportunities such as UNH Interoperability Laboratory (IOL), Center of Coastal Mapping (CCOM), Institute for the study of Earth, Ocean, and Space (EOS), etc.

### 2.1 MASTER'S OF ENGINEERING (M.Eng.)

Before Coming To UNH:

1. Submit your application to the UNH Graduate School.
2. Note that Accelerated Master's program is available for UNH seniors. To qualify you must have a GPA of 3.2 at the time of application. – See *Rules for Accelerated Master's Program*. <https://gradschool.unh.edu/academics/accelerated-masters-program>
3. Find source of full or partial funding. Note that TA and RA positions, scholarships, and tuition waivers are typically not available to M.Eng. students, unless there are special circumstances.
4. All transfers into the ECE M.Eng. program from any of the other three ECE graduate programs will require approval by the ECE Graduate Committee through the existing petition process. If a student holding a TA or RA position in the ECE department transfers into the ECE M.Eng program, they are required to relinquish that position.
5. Students wishing to take an Independent Study, Special Topics or Variable Topics Courses must obtain permission from the course instructor. The instructor and the student then agree on the number of credits the student may earn and scope of work.

The graduation requirement for the ECE M.Eng. degree is based on course credits and concluding experiences. Specifically, students must complete at least **30 credit hours** of coursework, with at least 24 credits being earned in the ECE department or related technical disciplines (those disciplines will be determined by the student in conjunction with his/her adviser); of those 24 credit hours in the ECE department, at least 12 must be at the 900 level. Courses outside the ECE department must be approved by the academic advisor. The

concluding experiences will be in the form of a technical paper suitable for conference publication and two technical presentations.

## **Technical Presentation and Paper Requirements for the Master of Engineering (M.Eng.)**

Students in the M.Eng. program are required to submit a technical paper and to deliver two technical presentations as part of their program. Many of the courses in the ECE graduate program require technical reports and presentations, and some of these may be appropriate for satisfying the technical requirement for students in the M.Eng. program. However, there are other approaches for satisfying this requirement as indicated below.

The objective in requiring a technical paper is to ensure that the student has some facility in documenting technical information. The evaluation of that paper is to be performed by the academic advisor and the ECE Graduate Committee, and the evaluation will result in either acceptance or rejection of the work submitted. The criterion for technical papers to be considered acceptable is that they describe a contemporary technical concept or development with a high degree of depth and clarity. The student must be the sole author on the technical paper, and it is to be submitted to the chair of the ECE Graduate Committee electronically before the last day of classes. As noted above, technical papers associated with regular ECE graduate courses or independent studies may be used to satisfy the requirement, as are papers prepared for technical conferences or publications. Papers accepted for presentation at refereed conferences or for publication in refereed journals will automatically satisfy the technical paper requirement. For these papers, students can petition to have the sole authorship requirement waived.

The objective in requiring the two technical presentations is primarily to ensure that students present in front of a group. For the requirement, presentations need to fulfill one of the criteria below:

1. Presentation of a technical lecture (20 minutes or longer) as part of the requirements for a course in which the student is enrolled.
2. Presentation of a technical lecture in a course as a "stand in" for the faculty member in charge.
3. Presentation of a technical seminar at UNH (for example, presenting a seminar for [ECE 900A](#) Research and Development from Concept to Communication I [ECE 900B](#) Research and Development from Concept to Communication 2) or to a public group or industry.
4. Presentation of a technical paper as part of a professional job function.
5. Presentation of a paper at a professional technical conference.

It is the responsibility of the student to satisfy this requirement before graduation. Students must get approval from their advisor for any activity that is intended to be used as a technical presentation experience. The two presentations required must be different; giving the same seminar twice does not count as two presentations. If the activity does not fall into one of the five categories listed, prior approval of the ECE Graduate Committee must also be obtained.

The student should submit documentation of the two experiences using the forms found on the ECE website in electronic form to the chair of the ECE Graduate Committee. This should be completed by the last day of classes during the semester of graduation. *See appendix for technical presentation forms.*

### How to Complete M.Eng. ECE Program:

1. You will be assigned a UNH ECE academic faculty advisor.
2. With your advisor, identify courses that you wish to take.
3. The graduation requirement for the ECE M.Eng. degree is based on course credits and concluding experiences. Specifically, students must complete at least 30 credit hours of coursework, with at least 24 credits being earned in the ECE department or related technical disciplines (those disciplines will be determined by the student in conjunction with his/her adviser); of those 24 credit hours in the ECE department, at least 12 must be at the 900 level. Courses outside the ECE department must be approved by the academic advisor. The concluding experiences will be in the form of a technical paper and two oral technical presentations. The technical paper must be reviewed and approved by the advisor and the UNH ECE graduate committee. Technical presentations must be observed by a UNH ECE faculty are typically about 20 minutes long. The presentation is approved by the faculty member who observed the presentation and by the UNH ECE Graduate Committee chair. *See appendix for technical presentation forms.*
4. Students wishing to take an Independent Study, Special Topics or Variable Topics Courses must obtain permission from the course instructor. The instructor and the student then agree on the number of credits the student may earn and scope of work.
5. Students must attend 50% of the seminar presentations. The academic advisor will coordinate and keep track of the student's attendance.



## 2.2 MASTER'S OF SCIENCE (M.S.)

At the beginning of your M.S. ECE Studies at UNH

1. You will be initially assigned a UNH ECE academic advisor, most likely your thesis advisor.
2. With your thesis advisor:
  1. Identify a research topic with thesis advisor.
  2. Identify courses that you will need to take to help with your research.
3. Take ECE 900A and B during the first two semesters at UNH for a total of 4 credits. Students in the Accelerated Master's program normally take these courses after completing their B.S. degree.

How to complete M.S. ECE Program

1. After completing ECE 900 A and B, give one research talk in the ECE department each calendar year, and attend at least 50% of all research talks given by all graduate students (M.S. and Ph.D.) and ECE seminars given by invited speakers. The thesis advisor schedules your research talk and certifies your attendance. The oral presentation given for the thesis defense is not considered a research talk.
2. Complete coursework helpful for your research as identified by you and your thesis advisor:
  1. The credit requirement is 30 credits, with 4 credits for ECE 900 A/B, 12 credits at the 900-level, and 6 credits for thesis research. The remaining 8 credits can be either at the 800- or 900-level.
  2. Up to 12 credits earned in non-ECE courses numbered 700-799 may be taken for graduate credit by M.S. ECE degree students provided the courses are petitioned and approved by the dean of the Graduate School. A student may petition that a maximum of 12 graduate credits taken prior to admission in the UNH ECE Master's of Science degree program be applied to fulfill the degree requirements.
  3. Under certain circumstances it may be desirable to take courses outside the ECE department to attain the goals outlined in the student's program of study. In these cases, up to two non-ECE 900-level courses are allowed without petition, but you need to have your thesis advisor's approval. Students need to take at least two 900-level courses (neither of which may be independent studies) within the department. Students must petition to the ECE Graduate Committee before course registration. To take more than 2 non-ECE courses (either 800 or 900 level) students must submit a petition to the ECE Graduate Committee.
  4. Students wishing to take an Independent Study, Special Topics or Variable Topics Courses must obtain permission from the course instructor. The

instructor and the student then agree on the number of credits the student may earn and scope of work.

3. Work with your thesis advisor to assemble your M.S. ECE Thesis Committee.
4. Defend the thesis.

## Thesis Defense Rules

- **Purpose:** Demonstrate ability to use the general tools of science to create new scientific knowledge or to complete engineering development projects. Demonstrate a specific contribution to a field of research in the realm of electrical engineering or computer engineering.
- **When?** M.S. ECE students must defend their thesis within six years after matriculation (enrollment after admission).
- **How is the student tested?** The student should demonstrate that they are able to use the general tools of science to create new scientific knowledge or to complete engineering development projects, and a specific contribution in a field of research in the realm within electrical/computer engineering. The student does this by submitting a written thesis document and giving an oral presentation.
- **Material:** Student supplies a draft version of the thesis to the committee 30 days prior to exam. Student supplies final version 2 weeks prior to the exam; final document is available to entire UNH ECE faculty.
- **Announcement:** Exam is announced to UNH ECE faculty, and the public, 2 weeks in advance.
- **Thesis Committee:** The committee chair is the student's UNH ECE M.S. ECE thesis advisor. The committee has two other members: two UNH ECE professors (affiliate faculty are eligible), or one UNH ECE professor and one non-UNH ECE member (with a Ph.D.). The non-UNH ECE member should be an expert in the student's field of research.
- **Format:** Thesis document is reviewed by Thesis Committee in writing. Thesis is also available to UNH ECE faculty. Oral presentation is open to the public; presentation is followed by a public question period, and a separate committee-only question period. Finally, the committee meets in private to make a recommendation by majority vote. The oral presentation and public questions are no longer than 60 minutes. The entire event takes no longer than 120 minutes.
- **Thesis committee written review:** The thesis committee chair receives written reviews from the other two members before the defense. The suggestion is that each review should provide the following:
  - Thesis overview with assessment of contribution,
  - Overall recommendation (pass/fail).

Thesis committee chair synthesizes recommendations into a committee recommendation, to be accepted by a majority vote of the committee after the oral defense.

- **To pass:** Committee recommends based on written reviews and oral presentation and informs the student of the recommendation immediately after the oral presentation. The committee does not inform the student of the exact vote. Within 7 days of the defense the committee informs the UNH ECE faculty of its vote (with vote count) provides the three thesis review documents. The entire UNH ECE faculty votes on the recommendation within 30 days of the notification. Graduate Committee officially informs the student within 14 days of the faculty vote.
- **Under what circumstances can a student, who failed to defend the thesis, defend it again?** If a student fails to defend the thesis their committee will recommend to the entire UNH ECE faculty either to ask the student to withdraw from the M.S. ECE program, or to allow them to defend the thesis again. The recommendation is decided by majority vote. The entire faculty votes within 30 days of being notified by the thesis committee. Graduate Committee officially informs the student within 14 days of the faculty vote. If the vote is positive, the student must defend the thesis at most one calendar year after the original defense date.
- **Failing to defend thesis twice.** If the student fails to defend the thesis a second time, they must withdraw from the M.S. ECE program.

## 2.3 DOCTOR OF PHILOSOPHY (Ph.D.)

At the beginning of your Ph.D. Studies at UNH

1. Before the first semester starts, you need to contact your ECE academic advisor. By the end of the first semester (at the latest) you should choose your dissertation advisor (mutual agreement is required).
2. With your dissertation advisor:
  1. Identify research topic.
  2. Identify courses that you will need to take to help with your research.
3. Take ECE 900A and B during the first two semesters at UNH for a total of 4 credits. If you completed ECE 900A and B as part of an M.S. ECE at UNH this requirement is waived.
4. After completing ECE 900 A and B (either as part of your Ph.D., or because you completed your M.S. ECE at UNH), give one research talk in the ECE department each calendar year, and attend at least 50% of all research talks given by all graduate students (M.S. and Ph.D.) and ECE seminars given by invited speakers. The dissertation advisor schedules your research talk and certifies your attendance. Oral presentations given for the qualifying exam, dissertation proposal, and dissertation defense are not considered research talks.
5. Students wishing to take an Independent Study, Special Topics or Variable Topics Courses must obtain permission from the course instructor. The instructor and the student then agree on the number of credits the student may earn and scope of work.

6. During the first four semesters at UNH, complete coursework identified by you and your dissertation advisor as necessary for your research.
7. Complete the Qualifying Exam.

## Qualifying Exam Rules

- **Purpose:** Test general knowledge in ECE areas relevant to the student's research, and test ability to create new knowledge.
- **When:** PhD students should complete the Qualifying Exam no later than the end of their fourth semester at UNH.
- **How is the student tested?** The student should introduce a topic of research and proposed paths to complete the research, as well as demonstrate reasonable depth of technical background in that area. The student does this by (a) providing one or more papers co-authored by the student submitted to, or accepted by, peer reviewed publications, (b) discussing plans for research, and (c) introducing 2-3 high impact peer reviewed publications approved by the committee. The student gives an oral presentation on(a), (b), and (c).
- **Material:** Student supplies their paper(s), and the 2-3 reviewed publications to committee 2 weeks prior to exam; these are available to entire UNH ECE faculty.
- **Announcement:** Exam is announced to UNH ECE faculty, and the public, 2 weeks in advance.
- **Committee:** UNH ECE dissertation advisor + 2 UNH ECE faculty (affiliate faculty are eligible). The student can substitute one UNH ECE faculty with a Ph.D.-holding committee member from outside of UNH ECE.
- **Format:** Written documents available to committee and UNH ECE faculty. Oral presentation is open to the public; presentation is followed by a public question period, and a separate committee-only question period. The entire event is no more than 90 minutes long.
- **To pass:** Committee recommends by majority vote, and informs the student of the recommendation immediately after the oral presentation (but does not inform the student of the exact vote). Within 7 days of the Qualifying Exam the committee informs the UNH ECE faculty of its vote (with vote count). The entire UNH ECE faculty decides on the recommendation by majority vote within 30 days of being notified. Graduate Committee officially informs the student within 14 days of the faculty vote.
- **Under what circumstances can a student, who failed the Qualifying Exam, take it again?** If a student fails the Qualifying Exam their committee will recommend to the entire UNH ECE faculty either to ask the student to withdraw from the Ph.D. program, or to allow them to take the exam again. The recommendation is decided by majority vote. The entire UNH ECE faculty decides on the recommendation by majority vote within 30 days of being notified. Graduate Committee officially informs the student within 14 days of the faculty vote. If the vote is positive, the student must take the Qualifying Exam during the next academic semester.

- **Failing twice.** If the student fails the Qualifying Exam a second time, they must withdraw from the Ph.D. program.

## Advance to Candidacy

- After completing your Qualifying Exam work with your dissertation advisor to assemble your Ph.D. Dissertation Committee. Once your committee has been formed you need to fill out the Doctoral Students Dissertation Committee Nomination form. <https://gradschool.unh.edu/academics/forms-policies>
- Defend the Dissertation Proposal to advance to candidacy.

## Dissertation Proposal Rules

- **Purpose:** Declare a topic for dissertation research; demonstrate ability to complete the specific Ph.D. research topic selected by the student.
- **When?** Students must advance to candidacy within five years after matriculation (enrollment after admission) or within four years if they entered with a Master's in Electrical Engineering, in Computer Engineering, or in an equivalent field.
- **How is the student tested?** The student should define their Ph.D. research topic, outline hypotheses, preliminary results, and expected results; demonstrate significant depth of technical background in the area. The student does this by submitting a written proposal document and giving an oral presentation.
- **Material:** Student supplies proposal to committee 2 weeks prior to the exam; document is available to entire UNH ECE faculty.
- **Announcement:** Exam is announced to UNH ECE faculty, and the public, 2 weeks in advance.
- **Dissertation Committee:** The committee is led by the student's UNH ECE dissertation advisor. The committee has two other UNH ECE professors (affiliate faculty are eligible), and two non-UNH ECE members (with a Ph.D.). The non-UNH ECE members should be experts in the student's field of research.
- **Format:** Written proposal document available to committee and UNH ECE faculty. Oral presentation is open to the public; presentation is followed by a public question period, and a separate committee-only question period. The oral presentation and public questions are no longer than 60 minutes. The entire event takes no longer than 180 minutes.
- **To pass:** Committee recommends by majority vote and informs the student of the recommendation immediately after the oral presentation (but does not inform the student of the exact vote). Within 7 days of the Dissertation Proposal defense the committee informs the UNH ECE faculty of its vote (with vote count). The entire UNH ECE faculty decides on the recommendation by majority vote within 30 days of being notified. Graduate Committee officially informs the student within 14 days of the faculty vote.

- **Under what circumstances can a student, who failed to defend the Dissertation Proposal, defend it again?** If a student fails to defend the Dissertation Proposal their committee will recommend to the entire UNH ECE faculty either to ask the student to withdraw from the Ph.D. program, or to allow them to defend the proposal again. The recommendation is decided by majority vote. The entire UNH ECE faculty decides on the recommendation by majority vote within 30 days of being notified. Graduate Committee officially informs the student within 14 days of the faculty vote. If the vote is positive, the student must defend the Dissertation Proposal at most one calendar year after the original defense date.
- **Failing to defend proposal twice.** If the student fails to defend the Dissertation Proposal a second time, they must withdraw from the Ph.D. program.

## Finalizing Your Ph.D.

- Complete your research under the guidance of your dissertation advisor and committee.
- Defend your dissertation.

## Dissertation Defense Rules

- **Purpose:** Demonstrate ability to use the general tools of science to create new scientific knowledge. Demonstrate a specific scientific contribution to a field of research in the realm of electrical engineering or computer engineering.
- **When?** Ph.D. students must defend their dissertation within eight years after matriculation (enrollment after admission) or within seven years if they entered with a Master's in Electrical Engineering, in Computer Engineering, or in an equivalent field.
- **How is the student tested?** The student should demonstrate that they are able to use the general tools of science to create new scientific knowledge, and a specific scientific contribution within electrical/computer engineering. The student does this by submitting a written dissertation document and giving an oral presentation.
- **Material:** Student supplies a draft version of the dissertation to committee 45 days prior to the exam. Student supplies final version 4 weeks prior to the exam; document is available to entire UNH ECE faculty.
- **Announcement:** Exam is announced to UNH ECE faculty, and the public, 4 weeks in advance.
- **Dissertation Committee:** The committee is led by the student's UNH ECE dissertation advisor. The committee has four other members: two UNH ECE professors (affiliate faculty are eligible), and two non-UNH ECE members (with a Ph.D.). The non-UNH ECE members should be experts in the student's field of research.

- **Format:** Dissertation document is reviewed by the Dissertation Committee in writing. Dissertation is also available to UNH ECE faculty. Oral presentation is open to the public; presentation is followed by a public question period, and a separate committee-only question period. Finally, the committee meets in private to make a recommendation by majority vote. The oral presentation and public questions are no longer than 60 minutes. The entire event takes no longer than 180 minutes.
- **Dissertation committee written review:** The dissertation committee chair receives written reviews from the other four members 2 weeks before the defense. The suggestion is that each review should provide the following:
  - Dissertation overview with assessment of scientific contribution.
  - Overall recommendation (pass/fail).
  - Dissertation committee chair synthesizes recommendations into a committee recommendation, to be accepted by a majority vote of the committee after the oral defense.
- **To pass:** Committee recommends based on written reviews and oral presentation and informs the student of the recommendation immediately after the oral presentation. The committee does not inform the student of the exact vote. Within 7 days of the defense the committee informs the UNH ECE faculty of its vote (with vote count) and provides the five dissertation review documents. The entire UNH ECE faculty votes on the recommendation within 30 days of the notification. Graduate Committee officially informs student within 14 days of the faculty vote.
- **Under what circumstances can a student, who failed to defend the dissertation, defend it again?** If a student fails to defend the dissertation their committee will recommend to the entire UNH ECE faculty either to ask the student to withdraw from the Ph.D. program, or to allow them to defend the dissertation again. The recommendation is decided by majority vote. The entire faculty votes within 30 days of being notified by the dissertation committee. Graduate Committee officially informs the student within 14 days of the faculty vote. If the vote is positive, the student must defend the dissertation at most one calendar year after the original defense date.
- **Failing to defend dissertation twice.** If the student fails to defend the Dissertation a second time, they must withdraw from the Ph.D. program.

# **TA and RA Rules**

**ECE Department**



## 3.ECE TEACHING AND RESEARCH ASSISTANT RULES

### 3.1 Teaching Assistant (TA)

The faculty of Electrical and Computer Engineering Department consider it of prime importance to provide quality education to our students. Because teaching assistants participate both directly and indirectly in the instructional process, it is important that they understand their teaching responsibilities and the faculty's expectation of the excellent performance of their duties.

These guidelines are intended to assist the TA in understanding his or her responsibilities. They are divided into several parts. First, general statements apply to all teaching assistants are presented. Then specific guidelines related to laboratory teaching, recitations teaching and grading of homework and lab reports are discussed.

It should be clearly understood that a teaching assistantship is not a scholarship. Rather it is a special teaching appointment, implying confidence of the faculty that the individual chosen is well qualified to perform the duties assigned and the TA will act in a professional manner.

It is expected that the TA will act as a role model. A good guideline for the TA to treat students in the same manner that the TA would expect and wish to be treated by faculty.

### 3.2 General Guides

1. A TA is expected to devote 20 hours per week to teaching related duties. If the assigned responsibilities turn out to require significantly more or less than 20 hours, it is the responsibility of the TA to discuss the situation with their supervisor first. If the situation is not remedied, then the student should contact the Department Chair.
2. The TA is usually employed for the full academic year as specified by the University, generally starting the week before classes of the fall semester and ending after the final exam period of the spring semester. **This means that the student is to be available during winter break.**
3. TA assignments will be made prior to the start of the semester. It is the responsibility of the TA to visit promptly each faculty they are assigned to learn the details and expectations of the assignment.
4. Each TA will be assigned a desk and a computer located in the ECE TA room and will be used in the execution of their TA duties. The student is responsible for following the USNH Information Technology Acceptable Use Policies. <https://www.usnh.edu/policy/usy/viii-cybersecurity-policies-and-standards/acceptable-use> The TA is responsible for their personal items and keeping their desk clean. The computers are only used for the course they will be assigned to.
5. It is expected that the TA will post a schedule of "office hours". There should be at least 5 hours per week during which the TA is at their desk and available to students.

The TA should consult with their faculty supervisor to arrange suitable office hours. These office hours should be at times when it is likely that the students will be free to come.

6. It is expected that a TA is able to answer student questions. If the TA does not know the answer to a question they should say so, and either advise the student where the answer may be found or tell the student that they will find the answer.
7. It is important that the TA meets frequently with their faculty supervisor so that students receive a consistent view of course material.
8. Good teaching does not mean always giving students the answers. Often it is best for the TA to try to coach or guide the students to find the answers for themselves.
9. Department supplies and equipment (paper, pencils, copier, computers, etc.) are available to TA's only in connection with their TA responsibilities, and only with permission of the department administrative assistant.
10. If a TA finds a time conflict between TA responsibilities and courses being taken, the TA should contact their faculty supervisor first. If this approach does not resolve the TA may contact the department chair.
11. It is not the TA's prerogative to grant exceptions to course rules, such as accepting late lab reports or authorizing lab make-up sessions, unless granted specific authority by the instructor.

### 3.3 ECE Laboratory Rules

1. All lab equipment (scopes, power supplies, DMM, etc...) has been assigned and numbered to the room they reside.
2. DO NOT remove or borrow any equipment from any of the ECE labs.
3. DO NOT remove or borrow test leads or cables from any of the ECE labs.
4. DO NOT disconnect, move, or rearrange any of the equipment on the benches in the ECE labs.
5. Lab benches are to be left clean and organized with all test leads/cables stored in the hangers on the wall.
6. ECE labs are not stocked with all the parts that might be needed.
7. See the department's technician for any questions, requests, or equipment failures.
8. Lab doors should remain shut.
9. For key/code access contact the ECE department's administrative assistant.

### 3.4 ECE Laboratory Teaching

1. It is imperative that the TA conduct the laboratory experiment prior to the lab so that the TA clearly understands the operation of all relevant laboratory equipment and the details of the experimental procedure. The TA should also complete any pre-lab sheet required of the students.
2. The TA has a major responsibility to see that the students exercise good sense and perform in a safe manner in the laboratory.

3. Following a laboratory, it is the TA's responsibility to see that the laboratory, and in particular the lab benches, are left clean and organized.
4. Any lab equipment which is observed to be defective should be tagged and reported to the Department technician as soon as possible.
5. The TA is responsible for the security of the laboratory equipment. The lab doors should be shut and locked. The TA should not leave until after the last student departs. The responsibilities for each lab assignment should be discussed with the lab faculty supervisor.

### 3.5 ECE Recitation Teaching

1. In courses where the faculty member gives lectures and the TA conducts the recitation of problem sessions, it is expected that the TA will attend all lectures, unless excused by the faculty member.
2. The TA should meet regularly with the faculty member to ensure that the recitation sessions reinforce and supplement the lecture material.

### 3.6 Grading

1. Homework and lab reports should be graded in a timely manner, using a grading system determined by the faculty member. Although faculty will try to accommodate the deadlines TA's have regarding the courses they take, it is the responsibility of the TA to prepare so that grading assignments are carried out in time.
2. TA's are responsible for the grades they give and should be able to explain the rationale for their grades to students. Above all, they should be consistent in their grading.
3. TA's should keep a neat and accurate record of all grades given and should brief the faculty member periodically on these, noting students who are delinquent and pointing out areas where several students had difficulty.
4. TA's must work with the course instructor on collections and returns of homeworks, quizzes, lab reports, etc.
5. TA's should not loan or give copies of homework problem solutions to students without the faculty member's permission.
6. The policy regarding late homework should be discussed with the faculty member.

### 3.7 Research Assistants (RA)

1. Research Assistants are employed directly on a research project under the direction of a faculty Principal Investigator. They are expected to work 20 hours per week on the project exclusive of time spend on their own project or thesis/dissertation work. If the latter is also directly concerned about the project on which they are employed, they are required to put in an extra amount of time commensurate with the academic credit they are receiving.
2. Departmental education labs are not available to Project Assistants for supplies. Requests for all kinds of supplies should be directed to their research supervisor.

While the department maintains a small stock of electronic components, externally funded projects are expected to purchase major components from their own funds.

3. Necessary building keys may be issued to Project Assistants upon the request of their supervisor.

# **General ECE Department Rules**

## **4. General ECE Department Rules**

### **4.1 Copy, Scan, and Fax Machine Usage**

The office copier can be used for TA related purposes. Students are not allowed to use the office copier for personal copies. The copiers located in the Kingsbury Library can be used for personal copies.

### **4.2 Building, Office, and Door Codes**

When a TA or RA student is assigned an office, that student will be issued a key or door code to that room. The student must use their UNH student ID to swipe into the building, after hours.

When necessary, keys will be issued by the department administrative assistant. It is the responsibility of the graduate student to pick up their key and safeguard them. Keys are not to be lent to others under any circumstances. If a key or keys is lost, it must be reported to the department administrative assistant as soon as possible. The student is responsible for the replacement fee and may also be charged for replacement or alteration of locks that are required for security reasons. All keys should be returned to the UNH's Lockshop when a student is no longer a TA or an RA.

Door Codes will be provided to TAs and RAs from their supervisor. The codes are not meant to be passed out to all students.

Keys need to be returned at the end of the semester.

### **4.3 Research Equipment and Instruments**

While the graduate program is an important and vital part of the department, the primary goal of this public institution is undergraduate education. The undergraduate laboratory courses therefore have priority on instruments and equipment.

### **4.4 Computer Usage**

The ECE department maintains various computers and peripheral equipment. Departmental policy is that this equipment is off limits to undergraduate and graduate students unless they have been given specific approval by an ECE faculty member. Such approval is given only for professional use (e.g., faculty research, TA grading programs, etc.) and not for private use (e.g., student homework, resume's, letters home, etc.) Any exceptions to this policy must be approved by the department chair.

The ECE computer cluster is available to all ECE students and also students who are enrolled in ECE courses. The ECE computer cluster is in Kingsbury Hall room N234. This room is under video surveillance with a digital video recorder. The cluster is open 24 hours a day by a

combination lock. Students who are enrolled in ECE courses are given the combination to the room. The student should not give this code to anyone else or allow others who are not in ECE department courses into the room. Food is not allowed into the room. Covered containers for liquid drinks are allowed. It is the students' responsibility to clean up after themselves when they have finished using the cluster.

The University supports a variety of computers (both microcomputer clusters and mainframe computers) on campus. Specific information concerning such services can be obtained from Computing Services.

#### 4.5 Departmental Library

The departmental library is in the ECE Conference Room. It serves as both a faculty conference room for committee meetings and informal discussions, and for housing collections of donated books, theses, and dissertations. This library is NOT to be used by any student unless specifically instructed to by a faculty member or the department administrative assistant.

# University Rules

## UNH Graduate School

<https://catalog.unh.edu/graduate/academic-regulations-degree-requirements/>



## 5. University Rules

It is the student's responsibility to become familiar with the academic regulations and degree policies of the Graduate School as well as any requirements and policies of the student's academic program. The general requirements and policies of the Graduate School are found in the Graduate Catalog as well as the Graduate School's website. Some of those policies are reproduced here. However, for a complete listing of Graduate School Policies and rules please visit their website. <https://catalog.unh.edu/graduate/>

### 5.1 Academic Honesty Policy

Academic honesty is a core value at the University of New Hampshire. The members of its academic community both require and expect one another to conduct themselves with integrity. This means that each member will adhere to the principles and rules of the University and pursue academic work in a straightforward and truthful manner, free from deception or fraud. The academic honesty policy can be found in the Students Right, Rules, Responsibilities. <https://www.unh.edu/dean-of-students/processes-policies-protocols/student-rights-rules-responsibilities>

### 5.2 Graduate Grading

#### **Letter grades:**

The following grades are used at the University: A (4.0), A- (3.67), B+ (3.33), B (3.0), B- (2.67), C+ (2.33), C (2.0), C- (1.67), D+ (1.33), D (1.0), D- (.67), F (0). Graduate credit is only granted for courses completed with a grade of B- or higher. Individual programs may have stricter requirements, and those are published with their degree program requirements.

**AF Grades:** An "AF" grade, Administrative F, is assigned for failure to either drop or complete a course. An "AF" is considered the same as an "F."

**Credit/Fail Grades:** A "CR" grade is assigned for complete, approved theses and dissertations, as well as other approved courses and seminars.

**Pass/Fail Grades:** Graduate courses cannot be taken pass/fail. A graduate student may petition to take undergraduate courses on a pass/fail basis. Such a petition must be approved by the end of the add period for the term the course is taken. Courses at the 700-level approved for graduate credit cannot be taken for pass/fail.

**Audit Grades:** An "AU" grade is assigned for completion of courses for which an audit was granted. No credit is earned.

**Incomplete Grades:** An "IC" grade is assigned with the approval of the instructor for excused unfinished work only. The work must be completed and submitted to the instructor by the date agreed upon with the instructor, but not later than the last day of classes of the semester immediately following the one in which the incomplete was granted (800- and 900-level courses only; mid-semester deadline for 400-, 500-, 600-, and 700-level courses). If extraordinary circumstances arise, a petition requesting additional time may be submitted. The petition, listing a specific deadline for completion, must be approved by the instructor, the student's adviser, and graduate program coordinator before being submitted to the

Graduate School. An extension will be granted by the dean only under unusual circumstances and will usually not exceed one calendar year from the end of the semester in which the course was originally taken. An incomplete grade becomes an "F" if not resolved or if a petition for an extension is not approved within the allotted time period. This policy also applies to students who withdraw from the University or who are on an approved leave of absence.

**IA Grades:** An "IA" grade is assigned for approved continuing courses such as thesis or doctoral research and remains on the record until the course requirements are completed. In the case of doctoral research, the "IA" grades remain on the official transcript for all semesters prior to the completion of the degree. The "IA" grade for the final term of enrollment will be changed to "CR" to signify successful completion of the dissertation.

**W Grades:** If a student withdraws from school or drops a course prior to the fifth Friday of the semester, the course(s) will not appear on the student's permanent record. If a student withdraws from school or, for compelling nonacademic reasons, submits an approved petition to drop a course after the fifth Friday of the semester, a notation of "W" will be shown on the student's academic record. If the withdrawal or drop is after the midpoint in the class, a grade of "WP" or "WF" is shown on the record. A "WF" is considered a failing grade and will calculate into the GPA as such. Deadlines for courses scheduled for any time period other than a full semester are apportioned at the same rate as semester courses. The actual dates are determined on a term-by-term basis.

**Appeals:** Every instructor must be prepared to discuss and explain the basis for her or his evaluation of students. If, after consulting the instructor, a student still believes that he or she was treated unfairly, he or she has the right to seek redress from the chairperson of the department or program in which the course is offered. Under exceptional circumstances, a final appeal may be made to the dean of the college or school in which the program is offered.

**Repeated courses:** Repeating a course does not remove the original course or grade from the record. If the course numbers and/or titles do not match exactly, graduate students must obtain written permission of their adviser, graduate program coordinator, and the endorsement of the Graduate School dean before the adjustment will be made. Only the most recent grade is included in the cumulative grade-point average; only the most recent credit, if any, is included in the cumulative credits earned. A course may only be repeated once. Only repeated courses taken at UNH will alter the cumulative grade-point average.

### 5.3 UNH Credit Hour Policy

The University of New Hampshire is in compliance with the federal definition of credit hour. For each credit hour, the University requires, at a minimum, the equivalent of three hours of student academic work each week. Academic work includes, but is not limited to direct faculty instruction, e-learning, recitation, laboratory work, studio work, fieldwork, performance, internships, and practica. Additional academic activities include, but are not limited to, readings, reflections, essays, reports, inquiry, problem solving, rehearsal, collaborations, theses, and electronic interactions. Student work reflects intended learning outcomes and is verified through evidence of student achievement.

## 5.4 Graduate Courses

Graduate credits may be earned in courses numbered from 800 through 999, or under limited circumstances in courses numbered at the 700 level.

The faculty of each graduate program prescribes the courses that make up the degree program. In addition, the Graduate School has general requirements for master's and doctoral degree programs.

### 800- And 900- Level Courses

800- and 900- level courses are offered for graduate credit only and therefore are open only to admitted graduate students or non-degree students with a minimum of a bachelor's degree.

### 700- Level Courses

700-level courses are advanced undergraduate courses. Up to 12 credits earned in 700--level courses may be petitioned for graduate credit by a graduate degree student, provided the credits are taken in a program other than the one in which the student is seeking the degree and provided such courses are approved by the student's adviser, graduate program coordinator, and the dean of the Graduate School. Such courses must be taken for a letter grade. Petitions must include what additional requirements or expectations will be required of the student to make the course a graduate level experience. Petition forms are available at <https://gradschool.unh.edu/academics/forms-policies>.

### Simultaneous 700/800 Courses

800-level courses may be cross-listed with 700-level courses and taught simultaneously to both graduate and undergraduate students. While the content of the course is the same, the requirements and expectations of the students differ substantially with assignments, examinations, projects and analyses demonstrating a broader depth of understanding, sophistication and skills for students enrolled at the 800-level.

**Graduate credit will not be given** for any courses (700-level or simultaneous 700/800 level) that have freshmen or sophomores enrolled. The Graduate School monitors those advanced--level undergraduate courses that are co-listed and co-taught with 800-level graduate courses to ensure that only advanced-level undergraduates are enrolled.

## 5.5 Academic Standards

<https://catalog.unh.edu/graduate/academic-regulations-degree-requirements/academic-standards/>

- Graduate credit is only granted for courses completed with a grade of B- or higher. Individual programs may have stricter requirements, and those are published with their degree program requirements.
- Graduate students receiving grades below "B-" in 9 or more credits, including undergraduate courses taken while a graduate student, may be dismissed from the Graduate School.\*
- Graduate students enrolled under the accelerated master's program receiving any grade below "B-" in a graduate course while in dual status may be dismissed and have their admission to the Graduate School withdrawn.
- Graduate students will have a maximum of two opportunities to successfully complete final examinations for the master's degree.
- Doctoral students will have a maximum of two opportunities to successfully complete qualifying or final examinations for the Ph.D. degree.
- Graduate students admitted on a conditional basis must meet the conditions as stated in the letter of admission in order to remain in the Graduate School.
- Graduate students MUST have a cumulative GPA of 3.0 or higher in order to graduate.

\* Each individual program may set and announce standards for coursework, examinations, and/or research achievement that are more rigorous than the Graduate School standard. Thus, students may be dismissed if they accumulate fewer than 9 credits below the "B-" level, and/or fail to make adequate progress in other aspects of their graduate program.

## 5.6 Appeals Procedure

### **Policy and Appeals Procedure for Graduate Students Dismissed for Failure to Make Satisfactory Academic Progress or Professional, Ethical, or Behavioral Misconduct**

The process by which a student can be dismissed for violations of academic standards or violations of professional, ethical, and/or behavioral expectations of the program is outlined below along with the process by which such decisions can be appealed.

#### **Dismissal for Failure to Make Satisfactory Academic Progress**

(Note: This procedure is not available to graduate students who have received failing grades in 9 or more credits.)

A department chairperson or a graduate program coordinator, upon the recommendation of the appropriate faculty committee, may recommend dismissal for a student who is failing to

make satisfactory academic progress in their program. This recommendation shall be forwarded in writing to the associate dean of the Graduate School with a copy to the affected student. The associate dean of the Graduate School will act on the faculty recommendation and inform the student and the graduate program coordinator or department chair of the action taken. A student disagreeing with the action taken should make every effort to resolve the situation through informal discussions with the individuals involved in the decision. If the recommendation to dismiss is changed at this point, the associate dean will be notified and after review will notify the student of the decision. If the decision to dismiss stands, a student wishing to enter a formal appeal shall follow the procedure outlined below. A student who has been dismissed for failure to make satisfactory academic progress may, with the permission of the dean of the Graduate School, enroll as a special student in courses in his/her program pending a final decision on the appeal.

### **Dismissal for Professional, Ethical, or Behavioral Misconduct**

Graduate students shall conduct themselves in a manner consistent with the norms and practices of their program and/or discipline.

A department chairperson or graduate program coordinator, upon the recommendation of the appropriate faculty committee at the department/program level, may recommend dismissal for a student who is failing to meet the professional, ethical, and behavioral expectations of the program or otherwise fails to act in ways that are consistent with the norms and standards of the profession or discipline. This recommendation shall be forwarded in writing to the associate dean of the Graduate School with a copy to the affected student. The associate dean of the Graduate School shall act on the faculty recommendation and inform the student and the graduate program coordinator or department chair of the action taken. A student disagreeing with the action taken should make every effort to resolve the situation through informal discussions with the individuals involved in the decision. If the recommendation to dismiss is changed at this point, the associate dean will be notified and after review will notify the student of the decision. If the decision to dismiss stands, a student wishing to enter a formal appeal shall follow the procedure outlined below. A student who has been dismissed for professional, ethical, or behavioral misconduct may, with the permission of the dean of the Graduate School, enroll as a special student in courses in his/her program pending a final decision on the appeal.

### **Appeals Process for Graduate Students Dismissed for Failure to Make Satisfactory Academic Progress or Professional, Ethical, or Behavioral Misconduct**

**Step 1:** The student shall request that the faculty member or committee making the original recommendation reconsider their decision, generally within 10 working days after the receipt of the official decision from the Graduate School. The student's request shall be written and shall contain any information which the student feels warrants a reconsideration of the

decision. A copy of the request shall be sent to the dean of the Graduate School. As soon as possible after receiving this request, the faculty member or committee group will reconsider their decision and notify the student and the dean of the Graduate School of the result of their deliberations in writing. If the original recommendation is reversed at Step 1, the associate dean will review the new material and act on the recommendation and inform all parties involved.

**Step 2:** If the student is not satisfied with the decision reached in Step 1, they may request that the chairperson of the appropriate department or program convene a meeting of all graduate faculty members in the department or program to review the decision, generally within 10 working days after the receipt of the official decision reached in Step 1. The student's request shall be in writing, and a copy shall be sent to the dean of the Graduate School. After the meeting, the chairperson will provide the student and the dean of the Graduate School with written notification of the decision of the faculty. If the recommendation to dismiss is reversed by the graduate faculty, the associate dean will again review the case, act on the recommendation and inform all parties involved.

**Step 3:** If the student is dissatisfied with the decision reached in Step 2, they may request that the dean of the Graduate School review the decision, generally within 10 working days after the receipt of the official decision reached in Step 2. The student must request such a review in writing and stipulate the reasons for dissatisfaction with the decisions reached in the earlier steps in the review procedure. Within a reasonable period, the dean of the Graduate School will hold separate meetings with the student and the appropriate faculty and the associate dean to discuss the case. After these meetings and after reviewing any other information deemed appropriate, the dean of the Graduate School will inform the college dean about the appeal process to date. In consultation with the Graduate Council, the dean of the Graduate School will then arrive at a final decision, which will be communicated in writing to the student, the department or program faculty, and the college dean. In Steps 1 and 2, the student may, at the discretion of the faculty body involved in hearing the appeal, be present to state their case during the review of the appeal. A member of the University community may appear with the student, as an adviser, before the dean of the Graduate School and before any faculty meeting, which the student is permitted to attend. An adviser may be present, but may not directly participate, in any of these proceedings. Students shall not be present during deliberations.

Approved by the Graduate Council, April 6th, 2010.

Amended with approval by the Graduate Council November 3rd, 2017.

## 5.7 Credit Transfer

A maximum of **12 credits** taken by a student prior to matriculation (internal and external combined) can be applied to a degree program.

## 5.8 External to UNH

Students may request that a maximum of two courses, for up to **8 credits** of graduate level coursework from an accredited institution authorized to grant graduate degrees, be transferred to count toward their graduate program. Courses must be at the graduate level and cannot have been used or be in the process of being used in earning another graduate degree or have been taken while completing a bachelor's degree. A grade of **B** or better must have been earned.

Transfer of credits must be recommended by the program faculty and approved by the dean of the Graduate School. Students taking courses at another university for transfer after enrolling at UNH should obtain approval of their adviser and the graduate dean prior to enrolling in the course.

## 5.9 Internal to UNH

A maximum of **12 credits** completed by a non-degree student in UNH graduate courses (800 or 900 level) at UNH or UNHM may, upon approval of the dean of the Graduate School, be applied to a student's degree program. Each program's faculty retain discretion regarding the maximum number of graduate credits that will be recommended for approval (not exceeding 12).

## 5.10 International Universities

Students requesting credit transfer from an international university must have their transcript evaluated by a third party before submitting a transfer request. World Education Services (WES) <https://www.wes.org/> is the preferred evaluator, but other evaluation services can be accepted. Students can request that the evaluation service send the final transcript evaluation directly to the Graduate School.

## 5.11 Continuing Education Units

The Continuing Education Unit (CEU) is a nationally recognized method of quantifying the time spent in the classroom during professional development and training activities. Ten hours of instruction = 1.0 CEU. One hour of instruction = 0.1 CEU. CEUs are not transferable as graduate credit.

# **University Requirements**

**Doctoral Degree (Ph.D.)**



## 6. Doctoral Degree Requirements

### 6.1 Doctoral Degree Requirements

The degree of **Doctor of Philosophy** is conferred on qualified candidates who have passed an oral or written examination(s) on the subject matter of their field of study, who have completed an original investigation in this field and have embodied the results in an acceptable dissertation, and who have passed an oral examination in defense of the dissertation. This is essentially a research degree.

### 6.2 Responsible Conduct of Research

As a land-grant institution, the University of New Hampshire (UNH) is accountable to New Hampshire residents and to the University community to ensure the ethical and safe conduct of research and scholarly activity. As an institution of higher education that prides itself on extensive research endeavors and the involvement of undergraduates and graduate students in research projects, UNH has an obligation to teach and actively promote integrity in research and scholarship.

To fulfill its obligations, UNH has embarked on a program on the responsible conduct of research and scholarly activity (RCR) to:

- Raise the consciousness of faculty, staff, and students regarding the ethical and responsible conduct of research and scholarly activity;
- Establish a knowledge base that defines normative and/or professional behavior to assist faculty, staff, and students in making ethical and responsible decisions in the conduct of research and scholarly activity; and
- Foster an institutional culture of integrity in research and scholarly activity.

To support these efforts, the Graduate Council has mandated that all incoming Ph.D. students complete RCR training approved by the Graduate School by the end of their first semester. For more information, visit the RCR Website:

<https://www.unh.edu/research/responsible-conduct-research-scholarly-activity>

<https://gradschool.unh.edu/research/responsible-conduct-research-rcr-training>

### 6.3 Guidance Committee\*

A guidance committee is appointed by the dean of the Graduate School upon the recommendation of the program faculty as soon as possible after a student has begun study for the Ph.D. degree. The committee assists the student in outlining a program and preparing for the qualifying examination and administers the examination.

\*In ECE department the guidance committee will be the graduate committee.

## 6.4 Residency

A minimum of three academic years of graduate study is required for the Ph.D. degree. Resident graduate work done at other universities may be counted toward the minimum requirement upon approval of the guidance committee and the dean of the Graduate School, but one full academic year must be in residence at the University of New Hampshire. In individual cases, the major department and the dean of the Graduate School may grant permission to pursue the research for the dissertation at another institution where access to special facilities would be advantageous.

## 6.5 Credits

Each program specifies the number of courses required for the Ph.D. degree.

## 6.6 Doctoral Research (999)

A minimum of two semesters of registration in Doctoral Research is required for Ph.D. students. However, Ph.D. students at candidacy must register for 999 each semester during the academic year, even if the minimum requirement has been met. Although Doctoral Research (999) is 0 credits, it grants full time student status.

## 6.7 Degree Candidacy

A Ph.D. student is advanced to candidacy for the degree by the dean of the Graduate School upon recommendation of the graduate program coordinator after the student has passed the qualifying examination, met the language or proficiency requirements as are deemed desirable by the student's program, and declared a topic for dissertation research. Students are expected to file an Advancement to Candidacy form <https://gradschool.unh.edu/academics/forms-policies> with the Graduate School once all the requirements for candidacy have been met. Ph.D. students at candidacy must register for Doctoral Research (999) each semester during the academic year until the degree is awarded.

**Note:** If doctoral candidacy is reached before the final day to register for the current semester, then candidacy shall be effective immediately. If doctoral candidacy is reached after the final day to register for the current semester, then candidacy shall be effective at the start of the following semester.

## 6.8 Qualifying Examination

The qualifying examination, which must be taken at UNH, is required, and may be written, oral, or both. This examination will test

- The student's general knowledge in the student's major and minor work and
- The student's fitness for engaging in research, particularly in the subject proposed for the dissertation.

The chairperson of the student's program will communicate the examination results to the Graduate School dean. (See academic standards for details.)

## 6.9 Language/Research Proficiency

Each doctoral program has its own language and/or research proficiency requirements. These requirements can be found in the individual program descriptions.

## 6.10 Doctoral Committee

After a Ph.D. student has been advanced to candidacy, a doctoral committee will be appointed to supervise and pass on the dissertation and administer the final examination. This committee will be nominated by the department of major concentration and appointed by the dean of the Graduate School. It shall consist of a minimum of five members, usually three from the major department and two from related departments. The dean of the Graduate School is an ex officio member of all doctoral committees.

## 6.11 Dissertation

The dissertation must be a significant contribution to scholarship in the student's discipline, demonstrating the student's ability to conduct independent and original research and to communicate the results of the research through a coherent, integrated, and mature piece of writing.

## 6.12 Final Defense

A copy of the completed dissertation must be made available to the members of the examining committee two weeks before the final examination date.

The final oral examination is conducted by the doctoral committee and is intended to give the candidate an opportunity to defend the dissertation. While it is desirable for all committee members to participate in dissertation defenses, whether in person or through virtual means such as conference calls or video conferencing, outside scholars are not required to be present at the defense. Departments will determine how to obtain meaningful and substantive evaluations from external members in consultation with the Graduate School. A written final examination, on subject matter not covered in the qualifying examination, may also be required. This written examination is conducted by the major department. These final examinations must be completed by the date listed in the Graduate School calendar. After consultation with the major program, the dean of the Graduate School may appoint, for participation in the final oral examination, additional members of the faculty under whom the student has worked. The doctoral committee alone shall decide on the merits of the candidate's performance by a majority vote.

## 6.13 Submission of Dissertation

The final approved dissertation must be submitted for publication by ProQuest via the UNH ETD Administrator website by the appropriate deadline as published in the Graduate School calendar. Bound copies are available for purchase through ProQuest at the time of submission. Students should check with their department to determine if a bound copy is required. Students may choose to copyright their thesis at the time of publication. All fees are

to be paid by the student at the time of submission. If the dissertation material is further published, it should be designated as having been accepted as a doctoral dissertation by the University of New Hampshire.

#### 6.14 Doctoral Time Limit

The Ph.D. must be completed within eight years of matriculation (enrollment after admission) or within seven years if the student entered with a master's degree in the same field. A Ph.D. student must be advanced to candidacy within five years after matriculation or within four years if the student entered with a master's in the same field.

# **University Requirements**

**Master's Degree (M.S.)**

## 7. Master's Degree requirements

### 7.1 Credits

A minimum of **30 graduate credits** is required for all master's degrees. Many programs require substantially more than the minimum 30 credits. Individual program requirements are outlined in the program descriptions of this catalog. Graduate credits are normally earned in courses numbered 800-999. Up to 12 credits earned in 700-level courses may be petitioned for graduate credit by a graduate degree student, provided the credits are taken in a program other than the one in which the student is seeking the degree and provided such courses are approved by the student's adviser, graduate program coordinator, and the dean of the Graduate School. Such courses must be taken for a letter grade. Petitions must include what additional requirements or expectations will be required of the student to make the course a graduate level experience. Such requests must be made prior to enrolling in the course.

### 7.2 Residency

A student will normally spend at least one calendar year, or the equivalent, in satisfying the requirements for the degree.

### 7.3 Residency

The most appropriate capstone experience(s) for each program is determined by the faculty of each program. Such experiences may include a single integrative course, a performance, an internship or praxis, a portfolio, a scholarly paper or essay, an examination, a research problem, a research project, or a research thesis, and are subject to approval of the dean of the Graduate School. All master's degrees at UNH must include a capstone experience.

#### CAPSTONE - NON-THESIS OPTION

Requirements for non-thesis capstone experiences must be clearly articulated by each program. Capstone experiences, except for capstone courses, must be approved by a committee of at least two faculty members in the student's program and approved by the graduate program coordinator. All capstone experiences must be completed by the end of the final examination period of the graduation date for which the degree is to be conferred.

#### CAPSTONE - THESIS OPTION

Students who are in a thesis program are required to conduct research and prepare a scholarly paper under the guidance of a faculty committee for submission to the Graduate School. Guidelines on the purpose, framework, and process for the thesis should be clearly articulated by each program. Students writing a thesis should obtain a copy of the *Thesis and Dissertation Manual* from the Graduate School website at [www.gradschool.unh.edu](http://www.gradschool.unh.edu). Students in thesis programs may also be required to pass a final examination. The regulations concerning this exam are the same as those in the

non-thesis option. The thesis committee will normally also serve as the examining committee.

## 7.4 Thesis

### Thesis Credit

During their degree program, a student completing a thesis must enroll in at least 6 but no more than 10 thesis credits. Students are not eligible to receive credit for any more than 10 thesis credits although some programs have a lower maximum of thesis credits that can be earned. The exact number of thesis credits that are required for each degree will be determined by the faculty of the individual programs. No thesis credit shall be given until the completed thesis has been approved by the thesis committee and accepted by the Graduate School. Satisfactory acceptance of the thesis will be recorded as a credit (CR).

### Thesis Committee

A master's thesis must be approved by a committee composed of a regular member of the graduate faculty under whose direction it was, and two other members of the graduate faculty nominated by the department chairperson or graduate program coordinator and appointed by the dean of the Graduate School. Individuals who are not regular members of the graduate faculty may be nominated to serve on committees in accordance with individual program policies.

### Submission of Thesis

The final approved thesis must be submitted for publication by ProQuest via the UNH ETD Administrator website by the appropriate deadline as published in the Graduate School calendar. Bound copies are available for purchase through ProQuest at the time of submission. Students should check with their departments to determine if a bound copy is required. Students may choose to copyright their thesis at the time of publication. All fees are to be paid by the student at the time of submission.

### Master's Time Limit

All graduate work for any master's degree must normally be completed within **three years** from the date of matriculation (enrollment following admission) in the program. Progress toward the degree will be carefully monitored by the adviser and the Graduate School to ensure that adequate advancement is made toward the completion of the program and that any deficiencies noted at the time of admission are removed. Students failing to make adequate advancement toward completion of the program are subject to dismissal in advance of the three-year time limit. On a case-by-case basis, extensions to the three-year time limit will be considered.

## 7.5 Dual Degrees

The Graduate School allows UNH students to pursue two degrees at UNH and count credits toward both degrees under the circumstances detailed below. Such credit will be granted only for graded coursework completed with a grade of "B-" or higher. Application of such credit toward a student's program for a second degree is subject to departmental recommendation and approval by the Graduate School. Dual degrees should be interpreted to include separate majors within the same degree, or a combination of two different degrees. Students will receive separate diplomas for each degree program. **Note: Dual degrees will NOT be awarded retroactively.**

1. **Accelerated Master's.** Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures; they must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.20 cumulative grade point average is normally required to be considered for early admission. Students are normally admitted prior to the start of their last undergraduate semester. Students who have been admitted under early admission may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may, upon recommendation of the department and approval of the Graduate School, count toward both a bachelor's and master's degree.
2. **Consecutive Master's Degrees.** Enrollment in consecutive master's degrees refers to admission and matriculation in a second master's degree program at the University of New Hampshire after the completion of the requirements for a first master's degree earned at the University of New Hampshire. A student may apply up to 12 credits earned in the first master's degree awarded at the University of New Hampshire toward a second master's degree with approval of the student's graduate advisory committee and/or graduate program coordinator in the second master's program. Thesis or research credits from the first program may not be counted toward the requirements of the second program.
3. **Concurrent Dual Degrees.** Enrollment in concurrent dual degrees occurs when a student is admitted to and matriculated in two graduate degree programs at the University of New Hampshire simultaneously. A student may pursue concurrent degrees only with approval of the appropriate graduate program coordinator(s) and the dean of the Graduate School. With approval of the student's graduate advisory committee(s) and/or the graduate program coordinator(s), a student may apply up to 12 University of New Hampshire credits earned in one master's degree toward the requirements for a second master's degree. A student must complete the capstone requirements for both programs. Completion of degree requirements for the two programs need not be at the same time.
4. **Integrated Dual Degrees.** Integrated dual degrees occurs when two graduate programs have formalized a program of study which creates an integrated program linking the two disciplines, while continuing to award separate degrees. Students must be admitted to both programs and complete the requirements for



both degrees. Integrated dual degree programs may include a single admissions process, submission of a single thesis or capstone experience, and a single advisory committee composed of members from both programs. The number of required credit hours for integrated dual degrees must not be less than 80 percent of the total minimum hours required to complete each degree separately.

Integrated dual degree programs must be approved by the Graduate Council and the dean of the Graduate School.

All standard policies relating to time to degree, residency requirements, academic standards, and minimum GPA required to graduate apply to any dual-degree arrangement.

If the student withdraws from one of the participating programs, the dual-degree arrangement is automatically nullified.

If a student's tuition is funded by one or more units, it is up to the funding unit to decide if tuition may cover courses taken solely for completion of the second program.

## 7.6 Certificate Programs

Graduate certificate programs require the completion of at least 4 graduate courses for a minimum of 12 credits of graduate course work (800- or 900-level courses) organized in a coherent and logical manner to provide knowledge and expertise relevant to a specific aspect of professional and/or personal development. All coursework in a certificate program must be taken at UNH.

Only courses completed with a grade of B- or higher may be used to fulfill certificate requirements. A student who receives more than one grade below B- will be required to withdraw from the certificate program.

### Certificate Time Limit

All course work for the certificate must be complete within 3 years from the date of matriculation (enrollment) in the program after admission.

### Credit Transfer

A maximum of one full UNH course (3 or 4 credits) or two 1 or 2-credit UNH courses taken prior to matriculation (enrollment in the program after admission) in a certificate program may be applied to fulfill the certificate requirements. Courses may be applied to only one certificate program but may be applied to a master's or doctoral degree program at UNH. There are no upper limits to the number of credits that may be applied to a degree program provided the courses fulfill a degree requirement.

### Registration

Students enrolled only in certificate programs are exempt from the Graduate School's continuous enrollment policy.

## Tuition

Tuition for NH residents in certificate programs will be equal to the rates for NH resident graduate degree students. Tuition for out-of-state students will be 10% above the resident rate, unless the student is also enrolled in a degree program, in which case the nonresident or New England Regional rate will apply. Students enrolled only in certificate programs are not eligible for graduate assistantships or scholarships unless specifically awarded by the sponsoring program but may be eligible for need-based aid through the UNH Financial Aid Office. Students enrolled in degree programs as well as certificate programs are eligible for all forms of graduate financial support.

# **University & Department**

## **RULES FOR ACCELERATED MASTER'S PROGRAM**

## 8. Rules for Accelerated Master's Program from UNH Graduate Course Catalog (M.Eng. and M.S.)

Qualified senior students at the University of New Hampshire may be admitted to the Graduate School provided they have followed normal application procedures; they must have been admitted for the semester in which they wish to enroll in courses for graduate credit. A 3.20 cumulative grade-point average is normally required to be considered for admission to the accelerated master's program.

Such seniors are normally admitted prior to the start of their last undergraduate semester but may be eligible to apply for admission to the first semester of their senior year. Seniors who have been admitted under early admission may register for a maximum of 12 credits of graduate-level courses prior to completing their bachelor's degree. Such courses may upon recommendation of the department and approval of the Graduate School count toward both a bachelor's and master's degree.

When seniors admitted to the accelerated master's program have registered for graduate courses, they must maintain a grade-point average of 3.20, complete their undergraduate degree as planned, and pass graduate courses taken for credit with a grade of B- or better. If these conditions are not met, admission is withdrawn.

Not all graduate programs participate; each program's faculty retain discretion regarding whether their program admits students under the accelerated master's program, as well as the maximum number of graduate credits permitted (not exceeding 12; e.g., some programs will accept one course, others two). Applicants are strongly encouraged to meet with the graduate coordinator in the program's faculty to discuss specifics.

Dual-credit forms must be completed and approved by the dean of the Graduate School at the beginning of the semester for which dual credit is sought.

### 8.1 Rules for Accelerated Master's Program for sponsorship in the Electrical and Computer Engineering Department

Students in the Accelerated Master's program are not eligible for TA and RA positions, scholarships, and tuition waivers before receiving their B.S. degree.

# APPENDIX

CODE OF ETHICS  
UNH ELECTRICAL & COMPUTER ENGINEERING  
Graduate Student- Handbook

I have read and understand the Electrical and Computer Engineering Graduate Handbook.

I understand that high ethical standards are essential for the professional practice of Electrical and Computer Engineering. I will therefore commit myself adhering to the highest level of ethical conduct, both as a student enrolled in the UNH ECE program and as a member of the profession upon graduation.

I understand that high ethical standards start with an adherence to honesty, honor and respect for the rights of others. I will therefore not engage in, nor tolerate in others any activity that violates these standards.

I understand that failure to adhere to this code of ethics may result in punitive action as defined by the section entitled "Procedures for Dealing with Academic Misconduct" of the Student Rights, Rules and Responsibilities published by the UNH Office of the Vice President for Student and Academic Services (<http://www.unh.edu/student/rights/>).

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

**PLEASE RETURN THIS FORM OR EMAIL TO THE ECE DEPARTMENT  
ADMINISTRATIVE ASSISTANT**

## Degree Program Requirements Check Lists:

✓	<b>Master's of Engineering (M.Eng.) Program Requirements</b>		<b>Notes</b>
	ECE 8XX or 9XX	30 Credits	of those 30 credit hours in the ECE department, at least 12 must be at the 900 level.
	GPA	≥ 3.0 GPA	
	Technical Paper	1 Paper	Suitable for conference presentations
	Technical Presentations	2 Separate Presentations	20 Minutes or longer per each presentation
	File an Intent-to-Graduate		Students should check in with the UNH Graduate School.

✓	<b>Master's of Science (M.S.) Program Requirements</b>		<b>Notes</b>
	ECE 8XX or 9XX	20 Credits	of those 20 credit hours in the ECE department, at least 12 must be at the 900 level. Max. 6 credits from non-ECE courses.
	ECE 900 A	2 Credits	Fall Semester
	ECE 900 B	2 Credits	Spring Semester
	ECE 899	6 Credits	Students should not register for more than 6 credits GRAND TOTAL for ECE 899.
	TOTAL	30 Credits	
	GPA	≥ 3.0 GPA	
	Assemble Thesis Committee		
	Fill out and get required signatures Master's Committee Nomination form		Located on the UNH Graduate School Forms Page.
	Work with Committee and Thesis Advisor for defense date		
	Defense Abstract Announcement		Needs to be sent out no later than 2 weeks prior to the date of the defense
	Defend Thesis		Oral presentations and public questions are no longer than 60 minutes. The entire event should last no more than 120 minutes.
	File an Intent-to-Graduate		Students should check in with the UNH Graduate School.
	Go through UNH Thesis & Dissertation Final Submission Checklist		Located on the UNH Graduate School Forms Page

✓	<b>Doctor of Philosophy (Ph.D.) Program Requirements</b>		<b>Notes</b>
	ECE 900 A	2 Credits	Fall Semester
	ECE 900 B	2 Credits	Spring Semester
	ECE 999		Can register multiple times
	GPA	≥ 3.0 GPA	
	Must complete Responsible Conduct of Research		This held by the UNH Graduate School
	Research Presentations		At least one
	Attend at least 50% of all research talks		This includes both MS and PhD. Does not include defenses, qualifying exams, or proposal.
	Qualifying Exam Announcement		Needs to be sent out no later than 2 weeks prior to the date of the defense. Need to pass the qualifying exam at the end of the 2 <sup>nd</sup> year in the Ph.D. program. The entire exam is no more than 90 minutes long.
	Assemble Dissertation Committee and fill out and get required signatures for Doctoral Dissertation Committee Nomination form		Located on the UNH Graduate School Forms Page.
	Dissertation Proposal Announcement		Needs to be sent out no later than 2 weeks prior to the date of the defense.
	Defend Dissertation Proposal to advanced to candidacy		The oral presentation and public questions are no longer than 60 minutes. The entire event takes no longer than 180 minutes.
	Fill out and get required signatures for the Doctoral Advancement to Candidacy		Located on the UNH Graduate School Forms Page.
	Complete dissertation research under the guidance of your advisor and your dissertation committee		
	Work with Committee and Dissertation Advisor for defense date		Student supplies a draft version of the dissertation to committee 60 days prior to exam. Student supplies final version 4 weeks prior to exam; document is available to entire UNH ECE faculty.
	Dissertation Defense Announcement		Needs to be sent out no later than 2 weeks prior to the date of the defense
	File an Intent-to-Graduate		Students should check in with the UNH Graduate School.
	Go through UNH Thesis & Dissertation Final Submission Checklist		Located on the UNH Graduate School Forms Page.





# Technical Paper Approval Form

## Electrical and Computer Engineering Department

### Student Information:

Student Name:		Student ID:	
Email Address:		Phone Number:	
Title of Paper Submitted:		Other Authors, if any:	
Student Signature:		Date:	

### Internal Use Only

Approve or Disapprove:			
Advisor Signature:		Date:	

Approve or Disapprove:			
Graduate Coordinator Signature:		Date:	

### Comments:



# Technical Presentation Approval Form

## Electrical and Computer Engineering Department

### Student Information:

Student Name:			Student ID:		
Email Address:			Phone Number:		
Presentation 1	Title		Presentation 2	Title	
	Presentation Forum			Presentation Forum	
	Presentation Date			Presentation Date	
Student Signature:			Date:		

### Internal Use Only

Approve or Disapprove:				
Advisor Signature:			Date:	

Approve or Disapprove:				
Graduate Coordinator Signature:			Date:	

### Comments: