

# PhD Handbook

Department of Electrical and Computer Engineering

Boston University

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## Overview of PhD Programs in Electrical and Computer Engineering

The Department of Electrical and Computer Engineering offers PhD degrees in Electrical Engineering and Computer Engineering. For each of these majors, there are two PhD programs: a post-BS PhD program (which awards MS and PhD degrees) and a post-MS PhD program (which awards a PhD degree only). The post-MS option is for students who have already earned an MS in electrical or computer engineering or a closely related field. Students should check for correct program enrollment in BU Student Link under Academic Summary. Post-BS students have Program of Study codes 48 and 88; post-MS students have Program of Study code 81. Discuss any discrepancies or questions with the Academic Program Manager.

The Electrical Engineering and Computer Engineering programs are identical except for the courses that satisfy the major requirement for the MS degree. Students select their choice of major when they apply to the PhD program. Changes can be requested through the Academic Program Manager and are subject to approval by the Doctoral Committee. The remainder of this document describes both majors together.

PhD students are expected to work toward their degrees full-time during every regular (fall or spring) and summer term unless on an approved leave of absence or approved internship. This full-time effort includes taking courses, performing research, and assisting with teaching, with emphases varying through the program. With the exception of approved internships or activities during a leave of absence, students are not permitted additional employment without prior written approval from both the student's advisor and the Associate Chair of Doctoral Programs. Approval for off-campus employment concurrent with a research assistantship is not routinely granted.

The main requirements for the PhD are as follows:

- Technical preparation criterion (TPC): GPA of at least 3.7 on eligible ECE graduate-level courses
  - Post-BS: 2 courses completed within the first two regular semesters and 4 courses completed within the first three regular semesters
  - Post-MS: 2 courses completed within the first two regular semesters
- Research preparation criterion (RPC): An examination with written and oral components completed at the end of the second semester
- PhD candidacy: Applied for upon completion of TPC and RPC
- Teaching practicum: Two semesters
- Total credits and coursework:
  - Post-BS: 64 credits; at least 7 formal graduate-level technical courses (including TPC courses)
  - Post-MS: 32 credits; no requirement for formal graduate-level technical courses beyond the TPC
- Prospectus defense: A specification of proposed dissertation research with written and oral components completed within two years of candidacy
- Dissertation: Orally defended and filed within five years of candidacy

This is only a brief summary; students should be familiar with detailed requirements later in this document.

## Summary of PhD Timeline and Milestones

Details of the PhD milestones and requirements are covered in more detail later in the handbook. Additional information is also available in [Doctoral Programs Overview](#) for the College of Engineering.

### First year

**Matriculation** – Mandatory orientation takes place before the start of classes.

**Coursework** – The majority of required coursework is usually completed during the first year. All first-year students are required to attend and participate in the seminar courses EC 890 and EC 891, which aim to launch them into their doctoral studies.

**Research home** – The most important task for first-year students is to find a research home. By the end of the second semester, students must establish a working relationship with a faculty member who has agreed to supervise their research and provide funding for the remainder of their PhD studies.

**RPC** – Students must satisfy the Research Preparation Criterion (RPC) within one year of matriculation. The RPC has written and oral components. RPC oral exams take place at the end of the spring semester of the first year. A student who fails or conditionally passes on their first attempt may request to retake the exam during their first summer term, provided they have a research home and their research advisor endorses the request. Conditional passes may require specified coursework that must be completed in the second year.

**Candidacy** – Students are eligible to apply for candidacy once they have satisfied the TPC and RPC requirements, and they are required to do so promptly upon becoming eligible.

### Second Year

**Teaching Practicum** – Students must complete EC801 and EC802. Typically, one or both are completed during the second year.

**Responsible Conduct of Research (RCR)** – Students are required to complete [RCR training](#) before the end of the third year. They are encouraged to do so in the second year. Newly introduced in fall 2023 is the ENG EK 800 course for this training.

### Third Year

**Prospectus** – Within two years of achieving PhD candidacy, students are required to present a dissertation proposal to their prospectus committee. Upon completion of the prospectus, most post-BS students will have earned the MS degree. (Coursework requirements are detailed elsewhere in this handbook.)

### Fifth Year

**Dissertation** – A PhD candidate is required to complete an independent and original research project in partial fulfillment of the dissertation requirement.

**Final Oral Examination** – Students shall present themselves for a final oral examination in which they must defend their dissertation as a worthy contribution to knowledge in their field and show proficiency in their field of specialization as related to the dissertation.

**Time Limit** – PhD candidacy expires 5 years after it is attained. Extension of candidacy requires a petition, with a supporting statement from the research advisor. Such petitions are considered by the Associate Chair of Doctoral Programs and the remainder of the Doctoral Committee. PhD program deadlines can be found on the [Graduate Program Deadlines](#) page.

## Summary of Credit Requirements

### Credit Requirements for Post-BS PhD Students

The post-BS PhD program requires 64 credits, of which 32 credits must satisfy [MS Electrical Engineering](#) or [MS Computer Engineering](#) program requirements and a minimum of 16 credits must come from research (EC 900, EC 991). The 32 credits for the MS are satisfied by 7 courses and 4 credits of EC 900 in the semester in which the prospectus is completed. Upon completion of the requirements, students must [apply for graduation](#) to receive the Master's degree. Students are required to apply for the MS degree promptly upon becoming eligible.

Students may take graduate-level technical courses applicable to their research specialization outside of the department, e.g., ENG BE, ENG ME, ENG MS, ENG, SE, CAS CS, CAS MA, or CAS PY courses, in consultation with their research advisor. Courses outside of ENG require a petition form to be completed and approved. Courses below the 500-level or from MET College will not be accepted toward the MS or PhD credit requirement.

### Credit Requirements for Post-MS PhD Students

The post-MS PhD program requires 32 credits, of which a minimum of 8 credits must come from research (EC 900, EC 991). Courses cannot be transferred from another university to reduce the 32-credit requirement.

A student who obtained a master's degree at Boston University may petition to release up to 8 credits to fulfill PhD requirements provided those credits were not used to fulfill master's degree requirements. Only credits that apply to degree requirements are acceptable (500- and 700-level in areas relevant to the student's research specialization). The student must submit a Graduate Petition Form to the Academic Program Manager.

### Physical Education Classes (PDP)

While the student is registered for a full-time course load (12 credits) they may add PDP classes at no extra cost provided that the total credits is below 18.

### College of Engineering GPA Requirement for Awarding Graduate Degrees

Doctoral students must complete all degree program requirements and earn a cumulative grade point average of at least 3.0 to be awarded a degree. The cumulative grade point average includes all coursework taken after matriculation and all courses completed prior to matriculation submitted in fulfillment of degree requirements.

## Registration Requirements

A PhD student must register each term (fall, spring, and summer) unless on an approved leave of absence. In particular, registration is required while completing an internship and in the semester in which the dissertation is filed, even if the defense occurred in the previous semester. Failure to register before the registration deadline may cause delayed stipend payments and late fees that must be paid by the student. Students should inform the Academic Program Manager of any changes in registration from 12 or more credits to fewer than 12 credits. This may prevent an automated removal of the student from the payroll.

### Full-Time Status

Students are required to maintain full-time status throughout the program, with the sole exception of an authorized leave of absence. Full-time status is achieved either by registering for at least 12 credits or by departmental certification of full-time status. Certification is applicable only when a student has a service appointment (teaching or research) or has completed all course requirements for their degree program. Thus, in particular, all students must register for at least 12 credits in the first semester.

### Typical Registration

**First year** – All students register for EC 890 for 1 credit in the fall and for EC 891 for 1 credit in the spring. These seminar courses require attendance and participation in activities to attain a passing grade. The other credits to reach full time (12 credits) do not have to come from formal graduate-level technical courses, though students should be aware that undergraduate and non-technical courses do not satisfy graduation requirements. A student's choices should depend on their academic preparation and their strategies for establishing a research home.

Since finding a research home is an essential part of the first year – and research itself is the primary focus of a PhD degree program – students are encouraged to have research credit in the first semester. There are two forms of research credit for first-year students: an EC 900 section associated with a single faculty member and EC 791 for rotations. Note that the first option is not equivalent to a commitment from the faculty member to advise and fund the student unless it is for more than 4 credits; if a student and faculty member have informed the Academic Program Manager of an advisor–advisee agreement, EC 900 registration may be for 5 to 8 units. Such an agreement obligates the faculty member to give advance notice of termination as detailed elsewhere in this handbook.

In the case of EC 791, the student will split the semester across two research groups, with recommended rotation dates discussed in the orientation session. *The student bears the responsibility to secure agreements to host rotations.* A list of interested faculty members may be provided. Any ECE faculty member can serve as a rotation host; others require approval of the Associate Chair of Doctoral Programs.

Full-time registration (at least 12 credits) is required in the second semester unless the TPC course requirement has been satisfied in the first semester. Post-MS students should be aware of the requirement to complete the TPC course requirement in the second semester. Many post-BS students also complete the TPC in the second semester.

**Second year and beyond** – With the exception of students with external fellowships who have not yet completed course requirements, full-time registration is immaterial after the first year; the department will certify full-time status.

Post-BS students should be aware of the requirement to complete the TPC course requirement in the third semester, along with the minimum progress toward the TPC course requirement by end of the second semester.

**Research credits** – Students register for EC 900 (“PhD Research”) prior to completing the prospectus and for EC 991

("PhD Dissertation") after completing the prospectus. When full-time registration is immaterial, students register for 4 credits per semester until the minimum number of credits for graduation has been reached. Subsequently, they register for 2 credits per semester. Only grades of P, F, or J are assigned to research or dissertation credits.

**Internships** – Students register for 4 credits of EC 810 ("PhD Internship in Electrical and Computer Engineering") in semesters in which they complete off-campus internships. Note that this requirement applies to *all* students, not only those who require additional processes to have off-campus activity to comply with a student visa status. Additional details appear elsewhere in this handbook. Only grades of P, F, or J are assigned to internship credits.

### Leave of Absence or Withdrawal

A leave of absence is a temporary interruption in studies; it affects campus housing, financial assistance, and visa status. Students are allowed a maximum of one year of leave without having to apply for reinstatement to the program. Beyond one year, reinstatement requires a petition approved by the student's advisor and the Associate Chair of Doctoral Programs. An authorized leave of absence does not extend deadlines for completion of degree requirements such as the period of PhD candidacy.

Withdrawal is a permanent discontinuation of a student's academic program.

An international student must also contact the International Students and Scholars Office when taking a leave of absence or when withdrawing from the University.

Forms: [Request for Leave of Absence](#); [Permanent Withdrawal](#). See also the [College of Engineering Graduate Policy on Withdrawal, Leave of Absence, and Reinstatement](#).

### Childbirth and Adoption Accommodation for a Full-time PhD Student

The childbirth and adoption accommodation policy for a full-time or certified full-time PhD student in good academic standing provides for extensions for academic coursework and other requirements to the primary caregiver of an infant or adopted child. It also provides for a continuation of stipend support for a funded student during the accommodation period. You can find the form [here](#). Additional information: <http://www.bu.edu/academics/policies/childbirth-and-adoption-accommodation/>

### Auditing Courses

An auditor is a student who attends a class for edification but not to earn credits or a grade. Audited courses do not count toward completing degree requirements. An auditor may not change his or her status after the fifth week of classes for standard (semester-long) courses. Auditors must attend classes regularly, complete assigned reading, and participate in discussions, but they are excused from examinations.

Auditors are admitted to a course on a space-available basis and with the approval of the instructor. Auditors are subject to the full tuition and fees of the course.

PhD students who have completed all departmental course requirements are entitled to audit one course each semester, excluding Summer Term, without further tuition charge. Students may not audit ENG 900-level, language, physical education, studio, or laboratory courses. You may find the relevant form [here](#).

## Satisfactory Academic Progress Requirement for PhD Students

### Good standing: Academics

The academic progress of each graduate student is reviewed at the end of each semester. Failure to make satisfactory progress and remain in Good Standing can result in Academic Probation, Suspension for a stated time or until stated conditions are met, or Dismissal, as detailed in [College of Engineering policy](#).

Boston University's [Academic Conduct Code](#) is designed to assist in the development of a supportive and productive learning environment. It is both a description of the University's ethical expectations of students as well as a guarantee of students' rights and responsibilities as members of a learning community. The Code provides clarity related to policy and procedure regarding academic conduct. Any egregious violation of academic or research ethics may result in immediate dismissal from the program with no opportunity for re-admission.

### Good standing: Research

Students are expected to find a research home and funding before May 1 of their first academic year. Once a funded research home has been secured, the department guarantees continued funding until the end of the 5th year, provided the student is making satisfactory progress, including maintaining research supervision; see Gap Funding paragraph for additional stipulations. Students who receive an unsatisfactory assessment must meet with their advisor and the Associate Chair of Doctoral Programs to set expectations for the next year. In some cases, unsatisfactory progress will result in a notice of dismissal, as described below.

Satisfactory progress in research does not have an unambiguous, objective definition. Students should work with their advisor to understand what satisfactory progress entails. Faculty advisors should provide feedback when progress is not satisfactory.

Students' required annual reporting is one basis for progress evaluation. From the beginning of the third year until the prospectus is completed, PhD students must complete an ECE Annual Research Progress Form. The deadline is typically early in the fall semester. This is an opportunity for students to describe progress during the past year and set goals for the upcoming year in consultation with their faculty advisor. After the prospectus is completed, students must not allow more than one year between submissions of the Annual Post-Prospectus Progress Report Form. Completion of this form requires similar progress reporting and outlining of goals, but with the entire prospectus committee rather than the student's advisor alone.

### Inability to find a research advisor

If a PhD student is unable to find a faculty research advisor willing to mentor and fund the student by the beginning of the summer of their first academic year, it is a form of failure of satisfactory progress toward the PhD degree. It is sufficient cause for dismissal from the PhD program. A student who has failed to find a research advisor and has (unconditionally) satisfied the RPC on the first attempt may request an extension to the end of the summer term to find a research home. This extension is not guaranteed and generally obligates the student to serve as a graduate student teacher (GST) during Summer Term.

### Program dismissal

Causes for dismissal include but are not limited to (i) failure to return to good standing one semester after being placed on academic probation; (ii) failure to satisfy the TPC; (iii) failure to satisfy the RPC; (iv) failure to maintain research supervision; (v) failure to complete the prospectus within two years of achieving PhD candidacy; (vi) failure to complete a dissertation within the period of candidacy; and (vii) failure to complete required annual reporting.

### Termination of a student by a research advisor

In the event that a research advisor seeks to terminate their supervisory and financial support responsibilities due

to unsatisfactory student performance, a notice of impending termination must be provided to the student, copying the Associate Chair of Doctoral Programs. The termination date must be at least 3 months from the notice date and not sooner than the end of the current academic term. During this time, the student is encouraged to find a new research home. The department may provide some guidance, but it is ultimately the responsibility of the student to find a new research home.

This requirement for notice does not apply in the case of egregious violation of academic or research ethics, or workplace conduct that constitutes a terminable offense by community standards.

### **Student voluntarily leaving a research group**

A student is free to leave one research group for another at any time in their doctoral studies. They should give ample notice to the current research advisor to allow for a smooth transition. For example, the student should facilitate the transfer of knowledge that the student acquired in the group, e.g., by providing training for another student and leaving thorough documentation. The student must meet with the new advisor and their former advisor to discuss the transition schedule and duties. A student who wishes to leave an advisor and join a different group should be aware of the need to have continuous research funding; there is no obligation for a research advisor to continue the funding of a student who is voluntarily leaving their group.

A change of research group should not be taken lightly. Students are encouraged to discuss the situation with senior students, mentors, and the Associate Chair of Doctoral Programs.

### **Comment on security of financial support**

Ordinarily, the policies above provide a student with a rolling 3-month guarantee of financial support once a funded research home has been secured. However, any such guarantee is moot if the student has committed a terminable offense or has been dismissed from the PhD program. Though dismissals based on missing milestone deadlines are rare, students should be mindful missed milestones can be a reason for rejection of a gap funding request.

## PhD Student Funding

An incoming PhD student is typically funded by the college and department through a **Distinguished Electrical or Computer Engineering Fellowship**. All incoming PhD students on a fellowship receive the same monthly stipend at the base rate.

PhD student funding has two levels:

1. Pre-candidacy            Base pay
2. Post-candidacy        Base pay +10%

Stipend increases are implemented at the beginning of the next semester (spring, fall, or summer) following achievement of eligibility.

### Distinguished Electrical or Computer Engineering Fellowship

The Distinguished ECE Fellowship is awarded to most students for their first academic year. It covers tuition, BU's basic individual health insurance, the student services fee, and a monthly stipend at the pre-candidacy level. It is not renewable.

### Research Assistantship (RA)

The most common funding mechanism after the first academic year is a Research Assistantship (RA). An RA is offered by an individual faculty member, usually with funds from a sponsored research grant. RAs are paid weekly and are expected to work full time, with time allowed for courses (including teaching practicum assignments) during the academic year.

### Gap Funding

When an advisor lacks funding for a student, they may apply for "gap funding" from the department. (The application form is available from a web page with access restricted to faculty.) If approved, the gap funding obligates the student to serve as a graduate student teacher (GST). This gap-funded teaching does not count toward the two-semester teaching practicum requirement. A student who receives poor performance evaluations in EC 801 or EC 802 may be denied gap funding on this basis, even if they received a passing grade. Gap funding may also be denied for failure to meet PhD program milestone dates. When gap funding is not approved, lack of funding by the advisor may necessitate a leave of absence or withdrawal by the student.

### External Fellowships

ECE encourages PhD students to seek external fellowships. Accepting these funds in lieu of internal fellowships and assistantships allows the ECE department to support the greatest number of eligible students. If an external award is less than the ENG stipend rate, ECE will supplement it to make up the difference. A student who accepts an external fellowship should check for any stipulations that are inconsistent with ECE PhD program regulations. Please consult with the Academic Program Manager for assistance.

### BU Fellowships

There are several BU fellowships for which an ECE PhD student is eligible to apply or be nominated. Some fellowships give extra support for a student, e.g., for travel or supplies, while others are full graduate fellowships covering the stipend, tuition, etc. The deadlines change each year. Historical dates are noted below; check the program websites below for up-to-date information.

- [Hariri Fellowship](#)                      April

- [Clare Boothe Luce Fellowship](#) March
- [BUnano Fellowship](#) Deadline May

### Competitive External Funding

It is in the best interests of PhD students and their advisors for students to seek competitive external funding. To incentivize the submission of applications and reward students who win prestigious awards, ECE will provide a \$1500 bonus for each year a student is funded by an external source, provided that the award covers at least \$20,000 of the student's annual stipend and the student wrote a scientific proposal that was subjected to rigorous review. This bonus may be matched by the research advisor to create a bonus of up to \$3000. Students must reapply each year to receive the bonus.

The following databases, maintained by other institutions, are good for learning of potential opportunities:

- [Cornell University](#)
- [Duke University](#)
- [Harvard University](#)
- [UCLA](#)

### Travel Awards

The ECE Department will support travel for students who have achieved PhD candidacy. Travel must be to a conference at which the student will present research completed at Boston University. Awards should be requested at least two weeks in advance of the travel date. A student may receive at most one travel award for the duration of their PhD program.

If approved, the department will provide an initial \$250. In addition, the department will match the student's advisor's contribution up to \$250 (i.e., the maximum award from the ECE is \$500). Requests may be made by filling out the [PhD Travel Award Request Form](#). Note that submitting the form requires the following:

- Notification of your presentation acceptance
- Copy of your abstract
- Anticipated amount of financial support to be provided by faculty (if applicable)
- Account to be charged for faculty contribution (if applicable).

# Doctor of Philosophy Detailed Degree Requirements

All engineering PhD students must meet the PhD degree requirements set forth by the College of Engineering. Additionally, ECE PhD students must also meet any specific degree requirements set forth by the department. The general requirements for all PhD students in ECE include:

- Fulfillment of course requirements
- Qualification: TPC, RPC, and candidacy
- Teaching practicum: EC 801 and EC 802
- Responsible Conduct of Research (RCR) training
- Prospectus defense
- Dissertation defense

At graduation time, PhD students must submit a Program Planning Sheet for approval by their advisor and the Associate Chair of Doctoral Programs. A cumulative grade point average of 3.0 must be maintained, and no course with a grade lower than B- can be counted toward the degree.

## ECE Qualifying Process: TPC, RPC and Candidacy

The ECE PhD qualifying process requires a student to satisfy the **Technical Preparation Criterion (TPC)** and **Research Preparation Criterion (RPC)**. The process is designed to evaluate the suitability of the student for the PhD program and provide diagnostic information on areas that need improvement. Likewise, the preparation and examination provide opportunities for the student to acquire and demonstrate skills that will be important for their research. Failure to satisfy the requirements of the ECE PhD qualifying process results in withdrawal of the student from the PhD program.

### Technical Preparation Criterion (TPC)

The TPC is for students to demonstrate sufficient technical preparation and mastery through their coursework. To satisfy the TPC, a student needs to earn a GPA of at least 3.7 across a set of eligible ECE graduate courses. All EC 500- and 700-level courses satisfy the TPC criterion, with the stipulation that at least one of these courses must have a strong analytical/theoretical component. It is expected that the courses chosen to satisfy the TPC requirement are relevant to the student's future thesis work. Post-BS and post-MS students have different requirements for the number of courses and the deadlines for completion.

**Post-BS PhD** – The student is required to satisfy the TPC within their first 3 regular semesters (i.e., by the end of the fall semester of the second year) by obtaining a GPA of at least 3.7 across 4 eligible ECE graduate courses. Additionally, at the end of the second semester, the student must be on pace to complete the TPC by obtaining a GPA of at least 3.7 across 2 eligible ECE graduate courses.

**Post-MS PhD** – The student is required to satisfy TPC within their first 2 academic semesters (i.e., by the end of the spring semester of the first year) by obtaining a GPA of at least 3.7 across 2 eligible ECE graduate courses.

### Research Preparation Criterion (RPC)

The RPC is for students to demonstrate sufficient potential for research, through written and oral components evaluated by an examination committee of three ECE faculty members. RPC oral exams are held at the end of the spring semester of the first year in the PhD program. The assessment is carried out in the context of a research article from the field of the student's intended PhD research. The presentation of the research article provides a starting point for exploring the student's mastery of the general research area and potential for making original contributions to it. The student is expected to know the research context of the article, be able to demonstrate an understanding of the general field, and be able to suggest and evaluate some potential research directions.

Any student who does not pass the RPC on their first attempt is allowed one additional attempt later that same summer; a second failure results in withdrawal from the program. (Note that the second attempt is contingent on satisfying the requirement of having a research home at the beginning of the first summer term; the student's research supervisor must endorse the student's request for a second attempt.) The student may appeal the outcome of a second failed exam. The appeal must be completed within one week after notification of failure and must be reviewed and approved by the student's faculty advisor before submission. Such appeals are reviewed by both the ECE Doctoral Committee and the College of Engineering Graduate Committee.

### **ECE PhD Candidacy**

A student is eligible for PhD candidacy upon successful completion of both the TPC and RPC requirements. They are required to formally apply for candidacy promptly (before the start of the next semester) when eligible. This is done by submitting a [PhD Candidacy Application](#) to the Academic Program Manager. The date on which a student achieves candidacy is the basis for their prospectus defense and dissertation defense deadlines.

### **Expiration of Candidacy**

PhD candidacy expires on its fifth anniversary. Students should plan to finish and defend their dissertations in advance of this deadline.

If it becomes clear that this will not be feasible, before candidacy expires, a student and their advisor should agree on a proposed timetable for completion assuming an extended candidacy. The student must submit a petition that includes the student's CV; accomplishments toward the dissertation to date; a timeline for completion; an explanation of why the dissertation has not been completed on time; and confirmation from the advisor that they approve of the plan. Note that there are no Doctoral Committee meetings scheduled during the summer, so a September candidacy expiration should be addressed during the previous April.

### **Responsible Conduct of Research (RCR)**

All College of Engineering PhD students are required to complete (pass) ENG EK 800 Responsible Conduct of Research by the end of their third year. This 1-unit course is a new way to satisfy RCR training requirements introduced in the 2023-'24 academic year. Students are encouraged to enroll in this course while completing EC 801 or EC 802, provided they are taking no other courses that semester; otherwise, in their first semester without a teaching practicum assignment.

### **Teaching Practicum Requirement: EC 801 and EC 802**

All ECE PhD students are required to complete two semesters of teaching practicum, during which they assist faculty by performing teaching-related duties, such as preparing and teaching labs and discussion sections, developing teaching materials, assisting with homework preparation and grading, proctoring exams, and grading exams or papers. Course assignments are made by the Associate Chairs of the department with input from students and faculty. Typically, both teaching assignments are completed within the second year or are split between the second and third year.

During any semester in which a student is enrolled in EC 801 or EC 802, it is common to enroll in no other courses. Registering for more than one regular course in addition to EC 801 or EC 802 requires the approval of the Associate Chair of Doctoral Programs.

The pass or fail grade is determined by the Associate Chair of Doctoral Programs based on both the assessment of the supervising course instructor and participation in any other required activities. Even with a passing grade, a negative performance assessment may be filed, which may be the basis for denial of gap funding. Completion of a teaching practicum assignment is not associated with funding from the department.

## Prospectus Requirements and Guidelines

In the prospectus, the student outlines the proposed research for their dissertation. The student must be familiar enough with the field of study to know the most prominent current work and to pick a dissertation topic. The prospectus requires a written document and an oral defense presentation that is publicized to the department. The student secures agreements from faculty to serve on their prospectus committee, which evaluates the prospectus and may approve or recommend further preparation. The prospectus committee typically becomes a subset of the student's dissertation committee.

### Prospectus Completion Timeline

A student is required to complete their prospectus within two years of attaining candidacy. The prospectus defense cannot be completed before attaining PhD candidacy. Failure to complete the prospectus on time may result in academic probation.

### Prospectus Topic

A research problem is selected after discussions between the faculty research advisor and the student. For the prospectus defense, the student is expected to demonstrate understanding of the literature and state-of-the-art work in their specific area as well as propose and motivate a novel research topic.

### Prospectus Committee

A prospectus committee must have at least three BU faculty, of which at least two must be tenured or tenure-track with primary affiliation in ECE. Note that the [online faculty listing](#) merges primary and affiliated faculty; for each faculty member, the first listed department is the primary affiliation. The prospectus committee may have additional members as well. For a committee member outside of Boston University, the student must submit a [Request For A Special Service Appointment in Engineering](#). Typical uses of Special Service Appointments are to facilitate guidance from a prominent researcher with expertise closely aligned to the student's dissertation research. A single request can apply for the prospectus committee and dissertation committee.

The student must report the composition of the prospectus committee to the Associate Chair of Doctoral Programs prior to scheduling the prospectus defense. The department will assign one member of the committee to serve as prospectus defense chair. The prospectus defense chair must be a tenured or tenure-track ECE faculty who is not the student's research advisor.

### Written Prospectus Guidelines

The student must provide a copy of the prospectus document to all members of the prospectus committee and to the Academic Program Manager at least three weeks ahead of the planned oral defense date. The preferred format is similar to that of proposals submitted to a federal agency.

Students should adhere to the following guidelines:

- A title page should contain the proposed dissertation title, author's name, research advisor's name and an abstract of approximately 250 words.
- The proposal should document the anticipated contribution that this work will have to the wider body of knowledge.
- There is a 10-page limit on the scientific portion of the proposal, which includes tables and figures but does not include the title page, the bibliography, or the student's CV.
- The document should be single-spaced with 11-point font size.
- Students are encouraged to use the department's [LaTeX template](#).
- Additionally, a [Prospectus Template](#) may prove helpful, as well as the [Prospectus example](#)

Suggested content includes a statement of the problem to be investigated; approaches to be followed for its resolution; background, status, and significance of the proposed work; preliminary results; and an anticipated timetable for completion. The work should be annotated with pertinent citations that should also be listed in the bibliography. An up-to-date copy of the student's curriculum vitae should be included (not counted toward the 10-page limit).

### Prospectus Defense Scheduling

Upon agreeing that the student is ready to defend their prospectus, all prospectus committee members indicate their approval by signing the [PhD Prospectus Defense Form](#). It is the student's responsibility to obtain the necessary signatures and select a date, time, and location for the defense based on the availability of committee members. The form (with abstract attached, maximum of 250 words) is submitted to the Academic Program Manager for approval by the Associate Chair of Doctoral Programs.

The [PhD Prospectus Defense Form](#) must be submitted at least **two weeks** before the prospectus defense date. **Failure to adhere to this deadline may necessitate rescheduling of the prospectus defense.**

### Prospectus Defense Oral Presentation

The ECE department will assign a committee member to serve as chair of the prospectus defense. It is the prospectus defense chair's responsibility to bring the original form containing the committee members' signatures to the oral presentation.

The chair of the prospectus defense will introduce the student, including a brief description of their academic background. The student should restrict the length of the presentation to approximately 45 minutes. During this period, committee members and the audience may ask clarifying questions. The chair should guard against digressions and inappropriate questioning during the presentation, but invite longer questions from the audience after the presentation is completed. Following a reasonable public question period, the chair shall excuse the general audience while the committee remains to complete its assessment of the prospectus.

The oral defense must include a proposed dissertation completion timetable and 12-month milestones; these are conventionally included in the closed-door portion of the defense.

### Prospectus: Assessment and Reporting

The prospectus committee is charged with assessing the appropriateness of the problem and the student's preparation based on the written proposal and the oral presentation. The committee must decide if the student passes, passes with conditions, or fails. The chair of the committee must complete the "Prospectus Defense Results" sections on the Prospectus Defense Form, documenting all required revisions to the written proposal, or additional coursework, including a timeframe for completion.

Before the prospectus defense concludes, the committee shall agree to meet within one year and designate expected milestones to be completed by that date. It is recommended to set a tentative date for the meeting.

The Academic Program Manager records and confirms the results of the prospectus defense to the candidate in writing. If the results indicate that more work must be done and/or that specific conditions must be met, these conditions will be indicated in the letter to the student. The student must complete the required revisions to the proposal satisfactorily before a final "Pass" grade is given.

### Annual Progress Reports

After completion of the prospectus, a student must never allow more than one year to pass between meetings with their prospectus committee. The first meeting should be at least tentatively scheduled at the prospectus

defense. At each subsequent meeting, the student shall discuss progress and possible roadblocks with the committee and determine new milestones. The student shall upload a copy of the signed [Annual Post-Prospectus Progress Report Form](#) and an updated CV as one file [here](#).

## Dissertation Requirements and Guidelines

A dissertation is an independent and original research project that creates and disseminates new knowledge in the major field of study. It should contain contributions that are appropriate for publication in peer-reviewed journals and conference proceedings in the student's discipline. The dissertation is primarily guided by the research advisor, with the advice of the dissertation committee. A student undergoes a final oral examination in which they publicly defend their dissertation as a worthy contribution to knowledge in their field and show a proficiency in their field of specialization in relation to their dissertations.

### Dissertation Completion Timeline

A student is required to be a PhD candidate to defend and file their dissertation; thus, they must complete their dissertation within five years of attaining candidacy unless they have successfully petitioned for an extension of candidacy. The dissertation defense cannot be completed before a successful prospectus defense. Failure to complete the dissertation on time may result in academic probation.

Degrees are issued on three dates each year. To appear on the degree list of a particular semester, a student must adhere to the current [deadlines](#) for completing the final oral examination and submitting their dissertation.

### Dissertation Committee

The dissertation committee must have four or more scholars, of which at least three must be tenured or tenure-track ECE faculty, and of which at least two must be primarily affiliated with ECE. For a committee member outside of Boston University, the student must submit a [Request For A Special Service Appointment in Engineering](#). A single request can apply for the prospectus committee and dissertation committee. Typically, the dissertation committee contains the prospectus committee.

### Dissertation Document

The Mugar Library regulates the formatting of all dissertations at Boston University. Students are expected to follow the latest edition of the [Boston University Libraries Guide for the Writers of Theses and Dissertations](#) while preparing their dissertation and abstract. Include all required elements such as the preliminary pages, references, and your CV. The library has created [Samples of Preliminary Pages](#), which show these requirements in practice.

The dissertation committee must be given ample time to scrutinize a draft of the dissertation before the defense. Three weeks is an absolute minimum, and any committee member may insist upon more time for review. A draft must also be submitted to the Academic Program Manager at least three weeks before the defense. The Associate Chair of Doctoral Programs may review the draft and deem it inadequate for the defense to be scheduled. Any such rejection will be conveyed within one week of draft submission, and it may be based on consultation with other faculty members.

Students are advised to also allow ample time for format review and final approval by the library. If the defense is scheduled close to the deadline for a desired degree date, it is recommended to submit a dissertation draft as a PDF to [theses@bu.edu](mailto:theses@bu.edu) at least three weeks before the defense for a format review.

### Dissertation Defense: Scheduling

Upon agreeing that the student is ready to defend their dissertation, all dissertation committee members indicate their approval by signing the [PhD Final Oral Examination form](#). It is the student's responsibility to obtain the necessary signatures and select a date, time, and location for the defense based on the availability of committee

members. The form (with abstract attached, maximum of 350 words) is submitted to the Associate Chair of Doctoral Programs for final approval.

The [PhD Final Oral Examination form](#) must be submitted at least **two weeks** before the dissertation defense date. **Failure to adhere to this deadline will generally necessitate rescheduling of the dissertation defense.** Encouraging community attendance of the dissertation defense is a core principle of the department; thus, exceptions to this deadline will rarely be granted.

The student must provide the dissertation abstract to the Academic Program Manager electronically for emailed publicity. Although the student will have an opportunity to make final revisions to the abstract after their oral defense, they should be mindful that the abstract provided for the defense is circulated to all ECE faculty, graduate students, and research staff.

Students are advised to schedule the defense with ample time for revisions.

### **Dissertation Defense: Oral Presentation**

The department will assign a faculty member to serve as chair of the oral defense. The chair is not a member of the dissertation committee. The student should arrange a meeting with the chair prior to the defense if they have any questions about defense procedures.

Dissertation defenses are open to the entire Boston University community. No final oral examination may begin unless all approved committee members, as listed on the Final Oral Examination Form, are present. It is the committee chair's responsibility to enforce this requirement. The student's faculty research advisor or the committee chair should introduce the candidate and include a brief description of their academic background.

The candidate should restrict the presentation to approximately 45-60 minutes. It is the chair's responsibility to ensure proper decorum. Clarifying questions should be welcomed from anyone present, but the chair should guard against digressions. Following a reasonable question and answer period open to all, the chair shall dismiss everyone but the candidate and the committee. The committee may ask additional questions of the candidate at this time. Following this additional questioning, the candidate shall be excused so that the committee may complete its assessment of the defense and dissertation.

### **Dissertation Defense: Assessment and Reporting**

The dissertation committee assesses the completeness of the research, contribution to knowledge, and the candidate's proficiency in their research area, based on the written dissertation and the oral presentation. The vote may be by ballot or voice. A unanimous vote is required for a candidate to pass. After the committee has reached a decision, the chair shall call the candidate back and inform them of the committee's decision. At this time, the candidate is informed of any changes that must be made to the dissertation document, with a deadline provided by the dissertation committee.

The committee members and chair must submit a Program Evaluation at Dissertation form. This assessment does not identify the student; it will only be reviewed in aggregate form to evaluate the PhD program.

The chair must fill in the PhD Final Oral Examination Form, including indications of whether the title, abstract, and dissertation are acceptable as submitted. The chair must note any required revisions and the deadline for completion on the form or in an attachment. Committee members sign off on the Final Oral Examination Form at this time but should refrain from signing the dissertation signature page until all conditions have been met. The Associate Chair gives final approval on the Final Oral Examination Form.

## Readers' Approval Process

Readers' approval pages are now created and signed via DocuSign. After a student enters the names and email addresses of their readers via a web form, DocuSign will email each reader with instructions on how to sign the Readers' Approval page. Students must initiate the eSignature collection by following the instructions on [ENG Dissertations eSignature](#).

## Format Check and Dissertation Library Submission

The student shall deliver a copy of their final dissertation to the ECE office and follow the [electronic submission guidelines provided by Mugar Library](#). The student should consult the [ETD Administrator Walk-through](#) for help.

Dissertation research should be shared with scholars. In some cases, a delay in dissemination may be warranted. While University policy allows a renewable embargo for any period between six months and seven years, the department allows only a single non-renewal embargo up to one year, upon written approval of the Associate Chair of Doctoral Programs. Students are also expected to disseminate their research contributions through papers in journals and conference proceedings.

The Academic Program Manager will convey departmental approval to the College of Engineering Graduate Programs Office upon seeing the library approved formal thesis submission to the ETD site. This will ensure that University records reflect that the candidate has completed all necessary requirements for their PhD degree. Students must complete the [BU Doctoral Exit Survey](#) and the [NSF Survey of Earned Doctorates](#) (SED). Upon completion of the BU Exit Survey, a link will redirect to the [NSF SED](#). Students **must** send [enggrad@bu.edu](mailto:enggrad@bu.edu) a copy of the SED completion certificate. Both surveys must be received for the degree to be awarded.

## Graduation

To meet a particular degree date, students must submit [an application for graduation](#) by [the deadline](#).

The hooding ceremony for PhD students is held once each year, in May. Students who graduate in August or January are invited to the May hooding ceremony following their graduation date. Students must confirm their participation to be included.

## Departmental Student Awards

### Graduate Teaching Assistant of the Year

This award is given based on recommendations from faculty and student evaluations. It is presented on ECE Day.

### Outstanding Dissertation Awards

The winner of the Outstanding Computer Engineering Dissertation Award and the Outstanding Electrical Engineering Dissertation Award are selected by an ad hoc committee convened by the Associate Chair of Doctoral Programs. These awards are publicized in the College of Engineering Graduate Convocation Ceremony in May. Accordingly, a cutoff date is set in April, and all dissertations filed since the cutoff date of the previous year are considered. Criteria include merit of the scholarly work, publication record, and impact.

### Doctoral Achievement Award

The Electrical and Computer Engineering Doctoral Achievement Award has the same annual eligibility window as the outstanding dissertation awards and it is selected by the same ad hoc committee as the Outstanding Dissertation Awards. The awardee is selected for outstanding achievements in at least two of the following areas:

- Research: quality and recognition of research during doctoral studies
- Teaching and Mentoring: contributing to the educational mission of the department, for example, through

- graduate student teaching and mentoring
- Service: enhancing the breadth and culture of the department and/or university, for example, through graduate student leadership or outreach

## Internships in Electrical and Computer Engineering

Internships are valuable opportunities to gain practical experience integral to a student's program of study, thereby allowing them to develop additional technical and professional skills. Students are eligible after completing two full semesters. **The student's faculty advisor and the Associate Chair of Doctoral Programs must approve all internships.** The Academic Program Manager registers the student for EC 810 during internships. The student must submit an [ECE PHD Internship Summary](#) upon completing an internship or at semester boundaries for grading purposes.

### Domestic Students

Domestic students must be authorized for an internship placement. To apply for authorization:

- Secure a job offer and obtain a written offer letter
- Complete the supporting letter ([Sample Support letter from Advisor](#))
- Submit the supporting letter with advisor's signature to the Academic Program Manager

Students must not start an internship prior to authorization.

### Curricular Practical Training (CPT) or Academic Training (AT) for International Students

A student with an F-1 visa must be authorized for Curricular Practical Training (CPT) for an internship placement. A student with a J-1 visa must be authorized for Academic Training (AT) for an internship placement. To apply for CPT or AT authorization, follow these steps before contacting ISSO:

- Secure a job offer and obtain a written offer letter
- Complete a [CPT Form](#) (sections 1, 2, 3 only and the Student Acknowledgement page) or the [Academic Training Application for J-1 Students](#), as applicable
- Submit the completed CPT or AT form along with a supporting letter ([Sample Support letter from Advisor](#)) to the Academic Program Manager
- The support letter must include:
  - topic of thesis and expected defense date;
  - start and end dates of internship (keep in mind that CPT must follow semester calendar dates and can only be authorized one semester at a time);
  - explanation of the research objectives of the placement as they relate to the student's thesis or dissertation and why they cannot be accomplished using Boston University facilities;
  - name of the faculty advisor, who will monitor the progress of the off-campus research; and
  - signatures of the faculty advisor and Associate Chair of Doctoral Programs.

The College of Engineering notifies the student when the CPT or AT recommendation is complete and they may proceed to ISSO.

## Finance

A student receiving any form of financial support for graduate studies is not permitted additional employment without prior written approval from both the student's advisor and the Associate Chair of Doctoral Programs.

### Stipend Paychecks

Direct deposit payments to a US bank account is the norm for most students. (A Social Security Number is required for direct deposit; international students should apply for one as early as possible.) If you elect not to use direct deposit, or while you are waiting for your SSN, paychecks can be picked up at the "Paycheck Express" counter located in the First Point Lobby, 881 Commonwealth Ave, 2<sup>nd</sup> Floor. Paychecks are issued on the Friday following each week of work.

### Research Assistantships

Research Assistantships and academic obligations constitute a full-time commitment. In exchange for the stipend provided, the student agrees to work a minimum of 20 hours/week during the academic year and 39 hours/week during the summer term. Because this appointment is considered employment, the student should be aware that taxes may be deducted from the stipend portion of their award. The student must have prior written approval from their research advisor and the Associate Chair of Doctoral Programs before undertaking any other employment, either inside or outside the University. The student must also sign the University's standard patent agreement form.

As an RA, the student will receive a tuition scholarship for credits leading toward their degree during the period of employment. They must obtain written approval from their advisor if they wish to register for standard courses (not counting research credit) totaling more than 10 credit hours per semester. The student is required to register for each semester in a timely manner and complete required payroll forms as requested.

PhD students may only work under one Research Assistantship at a time.

RAs are paid weekly; this breaks down to 17 weeks in the fall and spring and 18 weeks in the summer. Fall semester paychecks are issued from September through December, spring semester paychecks are issued from January through April, and summer paychecks are issued from May through August.

### Vacation and Sick Leave

University policies for [vacation](#) and [sick leave](#) apply to ECE PhD students.

### International Students

An international student's visa and work-permission status must be up to date before they can begin work. US visa regulations prohibit any additional work, either on or off campus, during the duration of the RA appointment.

### US Citizens and Permanent Residents

The RA scholarship is a form of financial aid and may affect eligibility for certain need-based funds, including but not limited to: Direct Loans, Federal Work-Study, and Perkins Loans. If the student has already received need-based funds prior to the RA appointment, the terms of their financial aid package may be adjusted.

### Payroll

The Academic Program Manager will coordinate with the ECE Finance Manager to make sure that student funding is set up each semester prior to the account settlement date. To be set up on Payroll, students must register according to the [Student Payroll-Related Deadlines](#). First-Year PhD students must notify the Academic Program Manager when a research advisor and summer funding is confirmed. If the information is not communicated, the

student will not be set up on student payroll.

- Fall payroll: Continuing students must be registered and have an RA by July 1 to be set up for the fall semester on time.
- Spring payroll: Students must register by December 1 and have an RA commitment by November 1 to be set up for the spring semester on time.
- Summer payroll: All students must register for fall by April 1 and have an RA commitment to be set up for summer Payroll on time. (PhD students graduating in September must register for 2 credits of research in SUM1.) First-Year students must have a research advisor and funding secured by April 30.

### Tuition

RAs supported full-time by a faculty's sponsored research grant receive tuition coverage up to 18 credits. RAs who have completed their course requirements may still take courses but must inform their advisor. (Please note that tuition on any credits past the first 18 will not be covered.)

### Summer Stipends and Tax Withholding

PhD students must be registered for EC900S or EC991S for the Summer I term (2 credits) prior to the start of the summer session. International students must also pre-register for the fall semester, prior to the start of the summer term.

Students funded on fellowships other than NIH will have FICA taxes withheld from their paychecks during the summer (May, June, July, and August).

Students will find information about direct deposit, International, U.S. Citizen, and Permanent Resident, and Student Employment forms under [Student Resources](#).

## Resources

### Electrical and Computer Engineering

Vivek Goyal – ECE Associate Chair of Doctoral Programs, [goyal@bu.edu](mailto:goyal@bu.edu)

Syed Nanna – Academic Program Manager, [snanna@bu.edu](mailto:snanna@bu.edu) (617)353-1048

Faculty/Staff directory – ECE website <http://www.bu.edu/eng/departments/ece/people/>

PhD Resources - <https://www.bu.edu/eng/academics/departments-and-divisions/electrical-and-computer-engineering/resources/resources-current-students/>

### Graduate Programs Office Administration (617) 353-9760

Stacey Herman – Director, Graduate Programs Office, [smherman@bu.edu](mailto:smherman@bu.edu)

Kirstie Miller – Director of Professional Education & Corporate Relations, [kimiller@bu.edu](mailto:kimiller@bu.edu)

Vacant – Assistant Director, Graduate Student Support, [emily18@bu.edu](mailto:emily18@bu.edu)

Andrew L. Martin – Assistant Director, Enrollment Services, [andmarti@bu.edu](mailto:andmarti@bu.edu)

Debby Chiu – Assistant Director, Financial Aid, [dwchiu@bu.edu](mailto:dwchiu@bu.edu)

David Apostol – Data Analyst/Graduate Records, [dapostol@bu.edu](mailto:dapostol@bu.edu)

George Zhang – Senior Program Coordinator, [hession@bu.edu](mailto:hession@bu.edu)

### Professional Development

Sarah Hokanson – Director, Professional Development & Postdoctoral Affairs

Runs professional development workshops open to PhD students <http://www.bu.edu/postdocs>

Center for teaching and learning has some programs focused on graduate students

<https://www.bu.edu/ctl/programs/>

### Health, Wellness & Safety

Student Health Services - [Resources](#)

Mental and Emotional Health - [Resources](#)

Fitness - [Resources](#)

Disability Services <http://www.bu.edu/disability/>

### Advocacy

Title IX Issues - <http://www.bu.edu/safety/sexual-misconduct/title-ix-bu-policies/>

ENG representative- Stacey Herman, [smherman@bu.edu](mailto:smherman@bu.edu), (617)-353-9763

BU representative - Jean Estevez, [titleix@bu.edu](mailto:titleix@bu.edu), (617) 358-1796

LGBTQ - <https://www.bu.edu/admissions/student-life/community-diversity/lgbtq/>

Ombuds - <http://www.bu.edu/ombuds/>

### International

ISSO - <https://www.bu.edu/isso/>

ISSO Contact - Julianne Cabour, Advisor; [jcabour@bu.edu](mailto:jcabour@bu.edu)

International Community <https://www.bu.edu/admissions/student-life/community-diversity/international/>

### Campus Life

<https://www.bu.edu/campus-life/> and [community](#) to help you navigate your way through life at BU!