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Academic Milestones of PhD in EECS

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Background

Choosing the pursuit of a PhD degree is complicated as one weighs job opportunities available today with career potential in the future. Doctoral degree requirements, along with research achievement expectation, are considered. Naturally, uncertainty revolving around the time to complete the degree factors into this important decision. Earning the PhD degree is a lofty goal.

For decades, the requirements of the EECS PhD degree have remained essentially identical with one addition which is the Professional Perspective requirement (PPR).[1] The EECS PhD degree is a milestone-based degree; subject requirements are relatively minimal (4 TQE + 2 minor subjects + 2 PPR). Unlike the past, today, EECS doctoral students have the option of remote employment, professional leaves, as well as additional employment (or consulting) for up to 8 hours per week, potentially resulting in conflict of commitment to the PhD effort. At MIT, graduate student tuition is set annually and is assessed each year of the PhD degree with no reduction in rate even when the student is a fully qualified doctoral candidate. As an option, graduate student tuition is reduced when non-resident status is approved (approved only when all milestones are satisfied with only the doctoral thesis and defense left to be done). However, non-resident status does not allow financial support via a RA or TA. Together these various factors impact the time needed for the PhD journey and ultimately may increase the overall cost (both dollar amount and opportunity cost) of the doctoral degree. With earnest, the department and its faculty continue to strive to provide financial support for the duration of the PhD degree with satisfactory academic and research progress by the graduate student.

Goals

Clearly there are numerous benefits to completing the PhD degree in a timeframe that is reasonable to develop the needed research acumen and independence, to make important and impactful contributions to one's field, and to then continue to a rewarding employment opportunity. As the cost of completing the EECS-at-MIT PhD degree rises (due to lost wages

[1] The Professional Perspective requirement was required for all students enrolling in 2019 and consists of completing two subjects 6.9940 (1 unit) and 6.9950 (1 unit).

from student status), management of the time-to-degree becomes important and necessary. EECS is implementing a new initiative to support our doctoral graduate students in the completion of their PhD milestones with the goal of managing the time required to complete the degree. In addition, the department strives to add clarity to the PhD milestones and the associated timelines. Greater transparency and having the ability to plan for and complete each milestone will reduce the stress and anxiety that accompanies milestones that are overdue.

All new incoming EECS PhD graduate students and all current continuing EECS PhD graduate students (individuals who are working towards the Master of Science (SM) degree and those working towards the PhD degree) will be part of the new initiative beginning in the fall 2025 semester. The new *Academic Milestones of PhD in EECS*[2] program will provide academic credit (units) for the time engaged in completing a few PhD milestones. Furthermore, with enthusiastic endorsement from the EECS department leadership, research supervisors will be expected to support the timely completion of the milestones that ultimately will result in steady and regular progress toward the PhD degree.

Implementation

The Academic Milestones program provides academic credit during the semester in which a graduate student completes a milestone. These PhD milestones[3] will have a new subject associated with their completion: the Master of Science thesis proposal, the Master of Science thesis, the research qualifying exam (RQE), the PhD proposal (and creation of PhD committee), and activities associated with meeting with the PhD committee in preparation for scheduling the defense and completing the thesis. At the end of this document, the new Academic Milestone subjects and their MIT Bulletin listing are provided. It is important to point out that the subjects do not have any in-class component (no lectures) but provide academic credit for the time required to fulfill the milestone. Each EECS PhD student (and their research supervisor and graduate counselor) can find all information regarding the milestones and timelines by accessing the PhD status page, which is found here https://eecsis.mit.edu/phd_status.cgi?

[2] MIT's Committee on Graduate Programs (CGP) has carefully reviewed the *Academic Milestones of PhD in EECS* program and the committee has unanimously supported the design of the program and its planned implementation on March 12, 2025.

[3] Since the technical qualification evaluation (TQE) consists of completing four subjects in a period of five semesters, this PhD milestone is awarding subject credit (48 units) for its completion and hence is not part of the Academic Milestones program.

The Academic Milestones program will work as follows (the illustration assumes the EECS PhD student matriculates this fall semester 2025). The first PhD milestone is the SM thesis proposal which is due August 31st (or end of the first year of the PhD program). In the spring semester (which will be spring 2026 for a person matriculating fall 2025), the PhD student will enroll in 6.9991 for 6 units. The grad student will work with their research supervisor to determine the goals and activities for the SM thesis and will prepare a proposal; the research supervisor will approve the final SM thesis proposal for submission to the EECS graduate office. Although the proposal is due Aug. 31st, the student can submit the proposal at any time in the spring semester or during the summer period. If the proposal is approved by the research supervisor and signed and submitted to the graduate office (by August 31), the student will receive a grade of P=pass for 6.9991. If the proposal is not submitted, a grade of J- will be assigned for 6.9991. The student will then enroll for a second time in 6.9991 during the fall 2026 term (term #3). Again, if the SM proposal is signed and submitted to the grad office, during the fall semester, a grade of P=pass is awarded replacing the J- grade from the transcript. However, if the SM thesis proposal is not submitted, a grade of U (or unsatisfactory) is assigned for 6.9991. For one final semester, the student will enroll in 6.9991 in spring semester 2027 (term #4). If the SM thesis proposal is submitted, a grade of P=pass is assigned which replaces the J- grade and the U grade from the transcript. [Note: grades of P, J-, U do not affect the GPA.]

Enrolling in 6.9991 for a third semester will trigger an assessment of issues that may be contributing to the inability to complete the milestone. The graduate officer/graduate administrator in consultation with the research supervisor, graduate counselor and the grad student will convene a conversation to determine a plan for completing the SM proposal in the third semester of enrollment in 6.9991. At the end of the spring 2027 semester, if the SM proposal is not submitted, the department may request the Committee on Graduate Academic Performance for a warning letter from the MIT Vice Chancellor due to insufficient academic progress.

For these additional milestones, SM thesis submission (enroll in 6.9992 6 units), completion of the RQE (enroll in 6.9993 6 units), submission of the PhD proposal and creation of the PhD committee (enroll in 6.9994 6 units), and meetings with the PhD committee (enroll in 6.9995 6 units), the academic credit will support the completion of the milestone at the timeline established for the EECS PhD degree. Like the illustration previously described, the graduate student may enroll in the academic milestone subject three different semesters (not in summer), and the grading and assessment will follow that described for the example of the

SM thesis proposal. In the case of 6.9995, enrollment in the subject can occur annually to award credit for the work needed to engage with the PhD committee in preparation for scheduling the defense and submitting the PhD thesis.

Of course, there may be situations where the timeline associated with a milestone is not achievable or is problematic. In such circumstances, the EECS graduate student will complete and submit a departmental petition for consideration of a different timeline for a milestone. Since we are implementing this new Academic Milestones program for current PhD students who enrolled into the PhD program before its existence, those students may elect to 'opt out' of completing the PhD milestone subjects (6.9991, 6.9992, 6.9993, 6.9994, 6.9995) if your current progress in the PhD degree is satisfactory and there are no milestones that are overdue. For EECS graduate students who have more than one milestone that is overdue, we recommend that you work to complete the milestone that is most overdue, and once that milestone is completed, you work to complete the next milestone that is overdue. The EECS graduate administrators and the EECS graduate officer are available to determine a plan to get back on track and complete those PhD milestones that are overdue.

Timeline and Future Plans

The new *Academic Milestones of PhD in EECS* program will begin effective in the fall semester 2025 for all EECS doctoral graduate students. The PhD status page, found here https://eecsis.mit.edu/phd_status.cgi?, or electronic record, for each graduate student provides information regarding the status of each milestone and provides guidance regarding the enrollment of each milestone subject and what semester enrollment is needed. An academic status check, carried out in spring semester 2025, has been sent by email to each EECS graduate student. The *Academic Milestones of PhD in EECS* program will be evaluated after two years, or in the summer of 2027, to assess if the program was helpful for students who were overdue on milestones and helped these students to get back on track. The program will be thoroughly evaluated after five years or in the summer of 2030 to see the impact on time-to-degree and to assess its efficacy in supporting steady academic progress and improved understanding of the 'Road to the PhD' in EECS at MIT.

Academic Milestones of PhD in EECS

6.9991: Academic Progress in PhD – Technical Proposal for Master of Science (SM) in EECS
Prereq: none
G (Spring, Fall)
6 units
Can be repeated for credit.
For Course 6 graduate students, a technical proposal is required as part of the Master of Science (SM) degree; the SM degree is a milestone of the EECS PhD degree. This subject provides academic credit for the preparation of the SM proposal. A properly formatted SM proposal, approved by the thesis supervisor is required. Proposals subject to departmental approval. [Grade Options: J/J-/U/P/D/F]
L. A. Kolodziejski

6.9992: Academic Progress in PhD- Thesis for Master of Science (SM) in EECS
Prereq: none
G (Spring, Fall)
6 units
Can be repeated for credit.
For Course 6 graduate students, a thesis is required as part of the Master of Science (SM) degree; the SM degree is a milestone of the EECS PhD degree. This subject provides academic credit for the preparation of the SM thesis. A properly formatted SM thesis, approved and signed by the supervisor, is required. The thesis is subject to departmental approval. [Grade Options: J/J-/U/P/D/F]
L. A. Kolodziejski

6.9993 Academic Progress in PhD – Research Qualifying Exam
Prereq: none
G (Spring, Fall)
6 units
Can be repeated for credit.
For Course 6 graduate students, completion of the research qualifying exam is a milestone of the EECS PhD degree. This subject provides academic credit for the preparation and completion of the exam. [Grade Options: J/J-/U/P/D/F]
L. A. Kolodziejski

6.9994- Academic Progress in PhD – Technical Proposal for PhD in EECS
Prereq: 6.9993
G (Spring, Fall)
6 units
Can be repeated for credit.
For Course 6 graduate students, a thesis proposal is required as part of the doctoral degree; the proposal is a milestone of the EECS PhD degree. This subject provides academic credit for the preparation of the technical proposal for the PhD degree. A properly formatted PhD proposal, approved and signed by the supervisor, is required. In addition, the PhD committee is formed by the submission of thesis reader agreement forms. PhD proposals are subject to departmental approval. [Grade Options: J/J-/U/P/D/F]
L. A. Kolodziejski

6.9995: Academic Progress in PhD - PhD Thesis Committee Meeting
Prereq: none
G (Spring, Fall)
6 units
Can be repeated for credit.
For Course 6 graduate students, following the submission of the PhD proposal, convening of the PhD thesis committee is expected on an annual basis. This subject provides academic credit for the preparation of materials needed for the PhD committee meeting. [Grade Options: J/J-/U/P/D/F]
L. A. Kolodziejski