Notes: (1) There are no proposed changes to the dissertation prospectus/outline and dissertation defense process. (2) The previous breadth courses requirement is eliminated.

I. Core Requirement
Every Ph.D. student is required to choose and take one four-course core curriculum (either EE or CSE option) while in residence at UMass-Amherst.

A. Options
1. EE Option: The student takes three courses from the EE core and the fourth course from either the EE or CSE core (total of four courses).
2. CSE Option: The student takes three courses from the CSE core and the fourth from either the CSE or EE core (total of four courses).
3. Course choices:
   - **EE Core:**
     1. ECE 603: Probability and Random Processes (Fall)
     2. ECE 606: Electromagnetic Field Theory (Fall)
     3. ECE 609: Semiconductor Devices (Spring)
     4. ECE 608: Signal Theory (Spring)
     OR
     ECE 604: Linear Systems (Fall)
   - **CSE Core:**
     1. ECE 665: Computer Algorithms (Spring)
     2. ECE 658: VLSI Design Principles (Fall)
     3. ECE 668: Computer Architecture (Spring)
     4. CMPSCI 677: Operating Systems (Spring)
     OR
     ECE 671: Networking (Fall)

Notes:
1. Each of the ten courses above will be offered once per year.
2. The student must complete the core requirement within 24 months of entry into the program.
3. Courses taken via distance learning program will not be counted as core.

B. GPA and Grade requirements
1. The student must obtain an average grade of 3.47/4.0 or better for the four courses. In calculating this average grade, all courses are weighed equally, regardless of the actual number of credits assigned to them, and
2. A grade of at least B must have been obtained in each of these courses.

NOTE: There will be no exceptions granted (example: taking a similar course at another university does not result in an exemption).

C. Completion of a core course (or multiple core courses) at UMass-Amherst with the required grade (minimum “B”) as part of another degree:
1. Such course/courses can be counted toward the core with the grade counting towards the 3.47 required GPA in the core.
2. For each such course, the student must take another 600-level course or a 700 level course, either inside or outside the ECE department. These must be taken while in residence.
3. Each such course must be approved in writing for inclusion in the core requirement by the student’s faculty advisor. The student need only have a C or better in these substitute courses.

II. Research Qualifying Exam (RQE)
Every Ph.D. student must complete the Research Qualifying Exam, which will consist of the documentation and oral presentation of a research project under the direction of the student’s advisor. The purpose of the research qualifying exam is to test the student’s ability to conduct independent research.

A. At the qualifying exam, the student should:
1. Provide a clear definition of the problem
2. Demonstrate a comprehensive understanding of the area (including related research)
3. Present preliminary results at the level of a conference or workshop paper.
4. Have performed the research work pertaining to the exam must be performed while the candidate was enrolled in the ECE Ph.D. or M.S./Ph.D. degree program.

B. Committee
The student will be examined by a committee consisting of four faculty members: the adviser, two faculty members close to the research area (chosen by the advisor in consultation with the student), and one faculty member within the department but significantly outside the research area (chosen by the Graduate Program Director). The student or the student’s adviser makes a request to the GPD to initiate the process. A minimum of two weeks’ advance notice is required for the GPD to choose the external member. Up to one member can be from outside the ECE department. However, all four members must be faculty of UMass-Amherst.

C. Documentation
The student will provide to the committee a four-page two-column document in the standard conference format for their area. A copy of this document will also be provided to the ECE Graduate Program Office in 210 Marcus Hall for the student’s permanent file.

D. Oral Presentation
The student will give a 30-minute presentation describing their research work. After the presentation, the committee will ask questions: (a) directly about the research work (as would be typical at a conference), and (b) in the specific area of the research (to test the student's grasp of the problem area). The student is considered passed at the RQE if at least 3 out of 4 committee members vote to pass. The result of the exam will be communicated to the ECE Graduate Programs Office (ecegrad@ecs.umass.edu) by the committee member appointed by the GPD.

E. Timelines
The student must attempt the Qualifying Exam within 30 months of entry after having met the core course requirements. Failure to do so may jeopardize the student’s candidacy. If the student fails the first attempt at the Qualifying Exam, he/she must take the exam a second (and last) time within three (3) months of that failure.