PhD QUALIFYING EXAMINATION RULES AND PROCEDURES

The procedures followed in assembling and administering the PhD Qualifying Examination (QE) within the School of Electrical and Computer Engineering are set forth in this document.

I. Responsibilities

Overall responsibility for the QE rests with the ECE Graduate Committee. It determines the goals and form of the QE, sets the level of performance students must achieve on the exam, and reviews the results after each offering.

The PhD Qualifying Examination Committee is composed of nine members, a chairperson and one member representing each of the ECE Graduate Areas. The members are appointed by the Head of the School of Electrical and Computer Engineering and serve for a period of two years. Appointments are staggered so that only one-half of the representatives change each year. The sole responsibility of the QE Committee is the administration of the QE. Members assist in assembling the topics and references for the QE, identifying authors, checkers and secondary graders of questions, ensuring that questions and solutions are correct and suitable, proctoring the QE, verifying exam results, and reporting the results to the ECE Graduate Committee.

The ECE Graduate Office handles the registration of students for the QE, distributes the "QE Topics and References" listing, maintains a file of previous QE's for the students to use in their review and preparation, and reports the results of the QE to the students and their advisory committees.

II. General Structure of the QE

1. Students with an MS degree are required to take the QE at the first offering of the exam after their entry into the PhD program. Direct PhD students must take the QE after having completed two academic-year semesters in the program.
2. The QE is a four-hour closed-book examination offered on the Thursday of the week before the start of the Spring semester. The exam begins at 8:30am and terminates at 12:30pm. Check-in begins at 8:10am.
3. Calculators and electronic devices of any type are not allowed during the QE.
4. Each student is assigned a code number which is the only identifier placed on examination booklets.
5. Questions on the exam are based on fundamental area-related topics at the core course level. Topics on a given exam are those previously listed in the “QE Topics and References” handout.
6. Each student is supplied with two groups of at least three questions associated with the Primary and Secondary areas identified by the student. Each question will typically be composed of several sub-questions.

7. Every student must answer at most four questions, typically three Primary Area questions and one Secondary Area question. If allowed by the student’s Primary Area, a student may answer either three Primary Area questions and one Secondary Area question or two Primary Area questions and two Secondary Area questions.

8. Each question is graded on a basis of 100. A score of $\geq 280$ totally satisfies the QE requirement. A score $\geq 240$ but less than 280 is taken to be a conditional pass requiring remediation to be determined by the student’s advisory committee. If the score on the exam is less than 240, the entire exam must be retaken and recommended remediation will be provided.

### III. Pre-Test Timetable

1. Exam topics, references, and possible faculty authors, checkers, and graders of questions are to be supplied to the ECE Graduate Office by the areas through their QE representative no later than the beginning of the third week of classes in the preceding Fall semester.

2. The compilation, "QE Topics and References", which lists the topics on the exam and provides references, will be made available in the ECE Graduate Office by the end of the third week of the preceding Fall semester.

3. By the end of the fourth week of the preceding Fall semester, students expected to take the QE must confirm their participation with the ECE Graduate Office and record the Primary and Secondary areas over which they are to be tested. This notification is accomplished by completing the "PhD Qualifying Examination Registration Form" which is available online. The ECE Graduate Office is to be informed as soon as possible if circumstances beyond the student’s control will subsequently cause the student to miss the exam.

4. The deadline for authors to submit QE questions and associated solutions is the Monday of the third week of November. This is a hard deadline because the QE Committee will meet later in the week to review the questions and solutions. Authors of QE questions are responsible for finding a second faculty member to review their questions/solutions for correctness and suitability and to identify the faculty member who will serve as a second independent grader of the exam question. The faculty member performing the review must sign the ECE Graduate Office form that is submitted with the QE question.

5. After reviewing all questions and solutions, the QE Committee will resolve any outstanding problems. If the submission deadline was not met, the committee has the prerogative to assemble a question from other sources.

6. After a question is submitted, a revised question and solution must be submitted directly to the QE Committee Chairperson and should be approved by the faculty member who reviewed the original question and solution.

7. During the 14th or 15th week of the Fall semester preceding the QE, the chairperson of the QE Committee will meet with the students registered to take the QE so that additional procedural information (notably the “QE Instruction Sheet”) may be distributed and questions regarding the QE may be asked by the students.
IV. Post-Test Processing

1. On the afternoon after the test, the test booklets will be duplicated, sorted by question, and distributed to the question authors and the second grader of each question. It should be noted that prior to informing students of the test results, the test booklets are identified only by code number, not by student name. Also, the time line described below is intended to allow remediation, if required, to be determined before the end of the first week of Spring semester classes. This permits remediation activities, especially possible course registration, to take place as soon as possible.

2. The grading of the examination booklets are to be completed and turned-in to the ECE Graduate Office by 3pm of the Monday following the exam. Except for a comparison of grading results with the other grader of an exam question, graders are not to disclose grades or discuss any aspect of the test question with students or other faculty members. The two graders of a question are to compare their results, if possible agree upon an assigned score, and independently submit their graded booklets to the ECE Graduate Office. If the two faculty members did not agree on an assigned score, the average of the two scores will be the recorded test score.

3. After receiving the graded exams, the ECE Graduate Office will record and transmit the results to the Chairperson of the QE Committee. Meeting on the afternoon of the Tuesday following the exam, the QE Committee reviews the results, determines if any anomalies have arisen that must be corrected, and generally verifies that all requirements and procedures have been properly implemented.

4. Upon receiving confirmation of the QE results from the QE Committee, the ECE Graduate Office shreds the examination booklets and notifies each student by e-mail of his/her exam results; namely, whether the exam was passed, conditionally passed, or must be retaken. The student’s advisory committee is likewise informed of the overall exam results plus any individual question scores of less than 50 and Primary area test scores less than 70.

5. If the exam was conditionally passed or must be retaken, the student’s advisory committee is to meet before the end of the first week of classes in the Spring semester to determine the required or recommended remediation. Possible options are: (i) passing a specified course(s) with a grade of B or better; (ii) auditing a previously taken course(s) for a set period of time (say 5-7 weeks) while assembling a set of relevant course notes and completed homework problems; and (iii) other options as approved by the ECE Graduate Committee.

6. Proposed required remediation is submitted to the ECE Graduate Coordinator who checks the proposed remediation for compliance with accepted remediation activities, settles any disagreement as to compliance with the advisory committee, and approves the proposed remediation. The ECE Graduate Office then records the approved remediation and informs the student as to what is required. Remedial work must be completed before a student is permitted to take the PhD Preliminary Examination. Although considered an unlikely occurrence, students have the option of retaking the QE instead of performing required remediation.

7. Recommended remediation for a student who must retake the QE is to be conveyed directly to the student by the Chair of the advisory committee. A retake of the QE must be at the next offering of the exam. To foster taking of the QE as early as possible in a student’s PhD
program, there is no set limit on the number of attempts to pass the exam. In general, however, multiple (>1) retakes of the QE are likely to be discouraged by the student’s advisory committee.

V. Miscellaneous Procedural Policies

1. The names of faculty authors and graders are not disclosed to the students. If the name of an faculty author or grader is learned indirectly, students are not to contact the faculty member seeking to obtain information about the exam. Students are not to query faculty, ECE Graduate Office staff, or QE Committee members about the names of authors and graders or exam results. Any violation of this policy may result in a required retake of the QE and other disciplinary action.

2. As previously noted, students and advisory committee members are not given access to the graded examination booklets. Consequently, students cannot challenge the grading of examination questions. The independent grading of exams by two faculty members and the conditional pass option is considered to eliminate the need for a regrade policy.