

ECE Qualifying Exam Procedures

24 August 2020

Overview

The goal of the Qualifying Exam (QE) is to provide a robust framework for both the student and advisor in mentoring and assessing students toward PhD candidacy and to assess the readiness of the student for research at the graduate level. It is important to remember that the QE is **not** an assessment of the student's research topic; it is an assessment of the student's readiness to conduct research at the graduate level.

It is expected that students will take the QE within one year of defending their MSEE or entering the PhD program. Students will be allowed two attempts for the QE. If the student fails to demonstrate sufficient research readiness after two attempts, it will be recommended that the student limit their graduate studies to the MSEE. Exceptions will be considered by written request to the graduate studies committee (GSC) who will render a decision in consultation with the departmental QE committee (QEC).

Process

The student will be assessed on critical thinking, inquiry & analysis, integrative learning, and written and oral communication. This assessment will be facilitated by the student's performance in conducting, synthesizing, and presenting a report on the assigned technical topic/area.

- 1) **Complete core coursework:** The student will complete the graduate core with all grades at a grade of B or better.
- 2) **Register (by the first Friday of September/February):**
 - a) The student will work with his/her chosen PhD advisor to select a topic for the examination and identify 2-3 fundamental papers/references in the area(s) for consideration. The chosen topic is anticipated to be in line with the student's expected research direction, but may push the student to slightly different areas.
 - b) The student and advisor should also identify a minimum of two (2) additional committee members that agree to participate in the examination. It is recommended, but not required, that the identified faculty member(s) be those faculty who are expected to serve on the student's PhD committee for the duration of the student's degree. The proposed topic and papers will be shared and discussed with the committee before registration. Any committee member is welcome to suggest topics/papers beyond those proposed by the student and/or advisor.
 - c) The student will submit the registration form, signed by their advisor and committee members, to the department QEC chair. By signing the form, the student and QE committee members are agreeing to the identified topic and papers for the exam. The form should be received by the QEC chair no later than COB on the first Friday of September/February (Fall/Spring).

- 3) **Prepare written report (by the first Friday of October/March):** The student will prepare a written report on the assigned topic, analyzing the assigned key paper(s) with reference to the broader area (5-10 papers). The focus of this document is to provide a detailed summary, comparing and contrasting the ideas from the key papers. The report should go beyond a review of the literature. For example, the student should identify possible weaknesses in the papers and suggest areas where the work can be improved or extended; the student could reproduce numerical results; the student could also do some original research on the selected topic (note that original research is not required). The length and detail of this document should be commensurate with the necessary technical detail to summarize the areas. It is expected that this document will be 4-10 pages; quality will be expected rather than quantity. It is expected that the student may spend at least 20 hours per week for three weeks toward this effort. The student will provide this document to their QE committee no later than the first Friday of October/March (Fall/Spring).

- 4) **Exam (~1hr, second Friday of October/March):**
 - a) The student will deliver a ~30-40 minute oral presentation (hard upper limit) including slides summarizing their findings and stand for questions. At the discretion of the student's QE committee, questions may cover any of the written report, presentation, and coursework. The student will be excused.
 - b) The committee will discuss the student's performance. Each committee member will individually assess and score the student using the established rubric. It is expected that the student will perform at or above Milestone 3 for most of the criteria. Each member will also have the opportunity to provide feedback on areas of strength and recommendations for areas of improvement. This feedback will be provided to the student and retained on the student file.

- 5) **Results**
 - a) The faculty will meet as soon as possible after the exam to discuss the student's performance and vote on whether the student passes or fails the QE. Following the vote, the student's advisor will fill out and sign the official paperwork summarizing the results of the exam and return it to the QE chair to be forwarded to the graduate school and to be included in the student's file.
 - b) The QE chair will communicate with the student regarding the result of the exam and provide feedback on areas of strength and recommendations for areas of improvement.

Responsibilities

The following outlines the specific responsibilities of the parties involved in the QE process.

Student

- Perform a self assessment regarding their own research capabilities according to the QE rubric in order to determine their readiness to stand for the QE.

- Work with their advisor to seek resources to help address any weaknesses in their research readiness.
- Work with their advisor to identify an appropriate exam committee.
- Prepare the documents as outlined above and provide those documents on a timely basis to their committee.
- Be prepared to present their work and answer questions.
- Carefully select appropriate papers that are relevant to the stated research interests and which can demonstrate their research readiness.

Advisor

- Provide honest advice to the student regarding his/her readiness for the QE.
- Mentor the student in addressing any weaknesses in their research readiness.
- Help in the determination of research topic that is relevant to the stated research interests and/or to the anticipated area(s) of PhD research.
- Provide an honest and constructive feedback through the rubric and communication with the student.
- Serve as chair of the committee and ensure exam procedures are followed.

Committee Members

- Represent potentially non-expert but technically competent perspectives.
- Suggest research topics/papers related to the stated research interests with the potential of reaching to additional applications or related research.
- Provide honest and constructive feedback through the rubric and communication with the student.

Grievance Process

In the event that the advisor or student disagrees with the final decision of the committee and/or the QEC representatives, the GSC will review an appeal of the decision. In such a circumstance, the advisor and the QEC representatives will meet with the GSC for discussion of the situation.