

ECE Doctoral Qualifying Exam

The PhD Qualifying Exam consists of two portions: a written report and an oral presentation with Q&A. Both portions are centered around a chosen topic and three related papers in the field. Each portion will be evaluated separately, and both portions must be passed.

A successful pass on the Qualifying Exam will demonstrate ability in the following areas:

- reading and deeply understanding papers in your field of interest
- understanding the strengths and shortcomings of existing work in the problem space of interest
- understanding why a problem space is important/how it fits into the field more broadly
- writing and presenting information supporting the points above

Qualifying Exam Deadlines

All exam deadlines MUST be observed and followed for students to remain in good academic standing with the ECE Department

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Qualifying Exam	<p>Completed within two semesters after matriculation (summer terms not included)</p> <p>To request an extension, email the ECE Graduate Office prior to the deadline. Include</p> <ul style="list-style-type: none">• advisor approval (or cc advisor)• a reason for the extension request• a specific date through which the extension is requested
Qualifying Exam Paper Approval	<p>Submitted at least 6 weeks prior to the anticipated oral examination date</p> <ul style="list-style-type: none">• Complete the Qualifying Exam Details Form found at https://ece.duke.edu/grad/phd#qual• Papers must be <u>approved</u> at least one month prior to exam date; paper approval request may be submitted prior to exam details
Qualifying Exam Details	<p>Submitted at least 3 weeks prior to the anticipated oral examination date</p> <ul style="list-style-type: none">• Complete the Qualifying Exam Details Form found at https://ece.duke.edu/grad/phd#qual• May be submitted along with or after paper approval request; completion of this form requires advisor consent
Qualifying Exam Written Report	<p>Submitted at least 2 weeks prior to the oral examination date</p> <p>Submit the written report directly to exam committee members</p>

The first step in the Qualifying Exam process is to complete the Exam Details Form. Preparation for completing the form includes consulting with your advisor about an appropriate committee, determining which topic and papers you will propose to use for the exam content, and determining an exam date that works for you and your committee. All of these items should be approved by your advisor prior to completing the form, and you will be asked to indicate advisor consent on the form.

✓ Submit Qualifying Exam Details Form This form is required at least SIX WEEKS prior to the scheduled exam date	
Access the Exam Details Form	Find the electronic form at https://ece.duke.edu/grad/phd#qual
Choose Your Topic and Papers	<p>Your written report and oral presentation should be centered on a topic that you choose with your advisor and a review of three papers in your research problem space that will allow you to demonstrate your ability to do the following:</p> <ul style="list-style-type: none">• read and deeply understand papers in your field of interest• understand the strengths and shortcomings of existing work in the problem space of interest• understand why a problem space is important/how it fits into the field more broadly <p>While you and your advisor will choose the three papers to be analyzed, the papers must be unanimously approved by your committee using the following process:</p> <ul style="list-style-type: none">• Submit the Exam Details Form including the source information and PDF files for the three papers you propose• The ECE Graduate Office will forward the proposed papers to your committee for approval, who have one week to review and approve the papers• The ECE Graduate Office will inform you of the approval status within two weeks of your submission• The exam date should fall at least thirty days after this approval (hence the need to submit the form 6 weeks in advance)• If you would like to seek approval for your papers more than 3 months ahead of your planned exam date, you may submit just the committee and papers, and complete the remaining exam details later, closer to the time of the exam <p><i>Note: Excessive repetition of papers in your group is not allowed and the ECE Graduate Office will maintain a database of papers used. Of the three papers submitted for approval, no more than one may have been used in a qualifying exam affiliated with that research group in the previous three years.</i></p>

Determine Your Committee	<p>Your committee will assess your written report and oral presentation and will determine if you pass the exam. You should discuss the Qualifying Exam committee with your advisor before approaching any faculty members about the exam.</p> <p>Your committee should be composed of three ECE faculty members who are generally in your area of research</p> <ul style="list-style-type: none"> • The majority of faculty on the committee should be primary faculty members in the ECE Department • Your faculty advisor may not serve on the committee
Set Up Your Oral Exam	<p>Here are some tips for setting up the oral portion of your exam:</p> <ul style="list-style-type: none"> • Date <ul style="list-style-type: none"> ○ Be aware that faculty travel schedules can limit the availability of exam dates and times; we recommend starting to form your committee and exploring possible dates about three months ahead of the intended exam date ○ Use a doodle poll or other scheduling tool to identify a mutually convenient date and time for you and all of your committee members; start with a small target window (typically no more than 2 weeks), then alter the window if necessary • Time <ul style="list-style-type: none"> ○ Schedule the committee for 1 hour (the expected length of the exam) ○ Schedule the room for 1 ½ hours to allow time for set-up prior to the exam • Location <ul style="list-style-type: none"> ○ Use 25 Live to schedule, or indicate in your Exam Details Form that you will need help reserving a room ○ Prior to the exam, make sure that your room arrangement includes necessary technology for your planned presentation, and contact Pratt IT (help@pratt.duke.edu) if you need assistance
Submit the Exam Details Form	<p>The exam should take place at least 30 days after approval of the proposed papers; at a minimum, you must submit the paper approval portion of the form SIX WEEKS prior to your oral exam and the exam details portion of the form THREE WEEKS prior to your exam</p> <p>If you are submitting the form for paper approval only (more than 3 months prior to the exam, or before you have an exam date set with your committee), don't forget to complete the exam details portion of the form later</p> <p>Once you have obtained your advisor's approval and completed the form, the ECE Graduate Office will review the form, contact you if any changes are required, obtain committee approval of your papers, and inform you of the approval</p> <p>After you receive this approval, you may begin preparing for the exam</p>

✓ Prepare the Written Report and Oral Presentation

The exam consists of two parts: a written report and an oral presentation with Q&A; the exam portions are evaluated separately, and both must be passed

Prepare Your Written Report

The written report should be a review of the three approved papers in the problem space plus a brief synopsis of suggested future research/directions/projects based on what you learned. It should be constructed to clearly indicate the demonstration of the points listed at the beginning of this document.

Written report format:

- no more than 10 pages in length
- formatted and written in a style consistent with engineering and/or scientific literature or practice in your field of interest
- limit additional references (beyond the three approved papers) to no more than 3
 - the majority of your exam should consist of your original ideas derived from your analysis of the 3 chosen papers
 - if your ideas are based upon concepts unique to other papers in the approved literature, you must reference these other papers, but you should limit the references to 3 additional papers

Tips for writing the report:

- While it is expected that a summary of your three chosen papers will be a part of the written report, the summary should be minimal
- Most of the written report should center on demonstrating points listed at the beginning of this document
- Ensure that you have a clear understanding of plagiarism* (see: <https://plagiarism.duke.edu/>).

**Students found guilty of plagiarism will fail the exam at minimum; further disciplinary action may be taken at the discretion of the DGS and/or the ECE Department Chair.*

Submit the written report to your committee **AT LEAST 2 WEEKS** before your scheduled exam date

- If you email the report to your committee, it is recommended that you request an acknowledgement of receipt
- Your committee will submit a score for the written report to the ECE Graduate Office prior to the oral exam

Prepare Your Oral Presentation

The oral presentation should focus on the material in your written report and should take the following format:

- An approximately 30-minute presentation
- 30 slides maximum
- An approximately 30 minute Q & A following the presentation, focused on the content of the oral presentation

If desired by the student, the oral exam (presentation + Q&A) can be video recorded and made available for review by the student and their advisor. A request for video recording is made by the student through the QE Exam Details Form.

The ECE Graduate Office will send reminders to the committee members and student prior to the oral exam.

Exam Evaluation	<p>Each portion of the exam (written and oral) is scored as +1 satisfactory, 0 marginal, or -1 unsatisfactory by each committee member. The sum of committee members' scores must be positive (i.e., > 0) in order for the student to pass. Each portion (written and oral) is scored, summed, and passed or failed independently.</p> <table border="1" data-bbox="566 274 1926 584"> <thead> <tr> <th data-bbox="566 274 777 323">Score:</th><th data-bbox="777 274 1926 323">Implication:</th></tr> </thead> <tbody> <tr> <td data-bbox="566 323 777 409">+1 Satisfactory</td><td data-bbox="777 323 1926 409">You have successfully shown readiness for the PhD by demonstrating all elements of the qualifying exam assessment criteria.</td></tr> <tr> <td data-bbox="566 409 777 496">0 Marginal</td><td data-bbox="777 409 1926 496">You have met some of the criteria for success but require improvement in some areas.</td></tr> <tr> <td data-bbox="566 496 777 584">-1 Unsatisfactory</td><td data-bbox="777 496 1926 584">You have not met the requirements indicating readiness for the PhD.</td></tr> </tbody> </table> <ul style="list-style-type: none"> • Committee members must submit scores for the written report to the ECE Graduate Office prior the oral exam, and must submit scores for the oral exam within 24 hours of the presentation • The sum of the committee members' scores for each part of the exam will be sent to the student and faculty advisor within three business days after the exam. No scores will be released to the student or advisor until the entire exam is complete. When applicable, the video recording of the oral presentation and Q&A is also made available. • The advisor can submit a written petition to the DGS requesting reconsideration of the exam outcome within two weeks of the exam date. Students who do not pass one or both portions of the exam are encouraged to discuss the result with their advisor and/or the DGS. • If the student fails either portion, they may re-take the exam once during the semester following the exam. 	Score:	Implication:	+1 Satisfactory	You have successfully shown readiness for the PhD by demonstrating all elements of the qualifying exam assessment criteria.	0 Marginal	You have met some of the criteria for success but require improvement in some areas.	-1 Unsatisfactory	You have not met the requirements indicating readiness for the PhD.
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Exam Preparation Assistance	<p>The following types of assistance are allowable during preparation for the Qualifying Exam:</p> <ul style="list-style-type: none"> • You may send any questions about the QE to your committee • You may seek help on the organization/outline of your written report from your advisor • You may seek help from Pratt Graduate Communications Center on editing/organization/outline or oral presentation skills • You may give practice talks to anyone you want (including your advisor) • In response to all feedback received during preparations, you must incorporate revisions on your own (e.g., people can suggest changes to your slides, etc. but you must execute these changes yourself) 								