

## **Ph.D. Qualifying Examinations**

### **Purpose**

The Ph.D. qualifying examination fulfills the requirement for General Examinations as explained in the Graduate Catalog. The examination has two objectives: (1) to make sure the candidate has sufficient mechanical engineering background for doctoral studies, and (2) to maintain quality, uniformity and consistency in the department's doctoral program. The qualifying examination is an oral exam intended to provide the examination committee, i.e. the Ph.D. thesis committee, with evidence of the candidate's research preparedness and capabilities, and allow the Ph.D. thesis committee to give the candidate useful feedback on their research direction.

### **Timing**

The candidate must take this examination for the first time during or immediately after his/her second semester of working with their major research advisor within the Ph.D. program at the University of Connecticut. In the event of an unsuccessful first attempt, the student must re-take the examination during or immediately after the following semester.

### **Procedures**

The qualifying examination consists of an oral presentation and examination to the student's Ph.D. thesis committee. The candidate must secure a major advisor (barring other arrangements with the Director of Graduate Studies) and establish the Ph.D. thesis committee consisting of at least two additional committee members from the Faculty in Mechanical Engineering, with potentially one more external member. The candidate should schedule a one hour exam with their Ph.D. thesis committee no later than two weeks into the second semester of enrollment. For the second try, the candidate should schedule a one hour exam no later than two weeks into their third semester of enrollment.

A candidate's knowledge of undergraduate courses relevant to the proposed topic, as detailed below, must include as a minimum:

- an ability to list and explain the physical meaning of the basic principles of relevant engineering topics, and to explain the physical meaning of solutions;
- an ability to solve problems typically assigned in such engineering courses, explain the basic principles supporting each step, and to identify the assumptions and limitations of the underlying theory used;
  - an ability to identify the correct physical principles relevant to topics not typically covered in such courses, and apply these to solve engineering problems using the basic principles of the subject area.

The outcome of the oral examination will be one of the following: (1) pass, (2) fail with the option to re-take the examination, and (3) fail with dismissal from the program. Students will be given the option to re-take a failed exam no more than once. The results of the oral examination will be announced in writing to the candidate by their major advisor and additionally communicated to the Director of Graduate Studies.

Following this successful presentation to the Ph.D. thesis committee, the student will have passed the General Exam. The Report on the General Exam should be submitted to the Graduate School and Department to indicate the completion of the Qualifying Examination process.

### **Details of the Presentation**

The presentation should focus on a particular research topic and should discuss relevant literature including no fewer than ten (10) journal articles. The student should demonstrate a good

understanding of (1) what is currently known about a particular topic; (2) of the current approaches; and (3) of the relevant research questions that are unanswered in the literature. This presentation is not intended to focus on the candidate's own research results or progress but instead to demonstrate that the student can formulate a research question and an approach to answer it that considers the relevant published knowledge. The student should discuss the topic and the presentation with their major advisor to attain additional guidance. The Ph.D. thesis committee makes a final pass/fail decision based on this presentation, which can be repeated once if necessary and at the discretion of the Ph.D. thesis committee.

### **Room Scheduling**

You are responsible for reserving a room for your exam. The room should be reserved for at least one and a half hours. After you have located a room, check with the ME Staff in order to reserve it.

### **Examination Format**

- Student must send slides to the Ph.D. thesis committee no less than 48 hours in advance of the exam
- 30 minutes for the candidate to present
  - motivation,
  - research question,
  - background,
  - preliminary research (if any), and
  - proposed approach.
- At least 15 minutes for the Ph.D. thesis committee to ask questions. Question topics can include the presented research or related general topics.
- (Optional) 15 minutes for members of the Ph.D. thesis committee to make suggestions.

The Ph.D. thesis committee will then deliberate.

### **Final Reporting Procedures**

If there is a split vote (2-1 for or against), the Director of Graduate Studies will interview the stake-holders and establish the final decision. Exam results will be sent to you via email within one week.

### **QUESTIONS?**

Feel free to contact the Director of Graduate Studies, David M. Pierce, UTEB 376 or call/email 860-486-4109, [dmpierce@engr.uconn.edu](mailto:dmpierce@engr.uconn.edu).