Aim of the exam

- Verifying that the student is prepared to perform research at the doctoral level and complete a dissertation.

Specific aspects of the preparation to be checked

- Ability to formulate and motivate a scientific or engineering problem.
- Demonstration of mastery of the fundamentals of the supporting areas of science and engineering.

Composition of the committee

- Four members including the advisor. The exam will be chaired by the Dean's nominee, not the advisor.

Prior to the exam

- At the discretion of the advisor, students may be required to prepare a written description of their proposed research that includes an appropriate literature review.

Format of the exam

- The student gives a presentation (rehearsed length maximum 40 minutes, 25 slides) of the proposed thesis topic, the scientific background, the experimental/theoretical state of the art, and a research plan toward answering the thesis question.
- If the student already has some results, they should obviously be presented, but such results are not a requirement.
- The committee asks questions of clarification and elaboration throughout the presentation.
- The committee then probes the student's knowledge of the supporting fundamentals.
- The advisor's participation should be limited to questions and, only if needed to let the exam proceed, small clarifications.
- The exam should not take more than two hours.

Possible outcomes and recommendations

1a. The student passes, with possible suggestions for sharpening the topic and the plan, for improving his or her presentation technique, and/or for firming up his or her knowledge in certain areas.

1b. The student passes, subject to the student satisfying specific conditions set by the committee, e.g., taking a certain course, or improving part of the presentation and re-presenting it at a later date, etc.

2. The exam is inconclusive. In a second exam, the student may need to present a new or sharper research topic and plan, or need to demonstrate firmer knowledge of the supporting fundamentals. More course work may also be required.

3. The committee decides that the student is has not demonstrated ability to complete the Ph.D. program successfully and will be required to withdraw.

Note: the general requirements of timing and possible outcomes of the qualifying exam are provided by the SEAS Policies of the Committee on Higher Degrees (CHD) document.