

Exam Format Description, revision date – February 12, 2016

Ph.D. Qualifying Examination (QE) Policy

Structure

The QE is a written exam and, in some cases, may include an oral exam. The student has 2 attempts to pass the QE.

Mandatory written portion. The written exam is a **4-hour closed book exam** wherein the student is required to answer **8 questions** consisting of:

Core nuclear engineering set. The student is to select and answer 4 questions from the provided core nuclear engineering set of 8 questions.

Research set. The student is to select and answer 4 questions from the 15 questions focusing on the topics of research tracks in the department. Three questions for each of the 5 research tracks will be offered.

While both core and research track sets are provided by the NUEN faculty to form the required set of 8 QE questions, it is left up to the student taking the exam to select specific questions to answer from the given sets of 8 and 15 questions.

The student's answers to 8 questions will be evaluated by the NUEN faculty. Any questions in excess of the required 8 will not be graded.

The above-described exam structure and question selection policies are summarized below.

NUEN PhD QE Structure	Required number of questions to answer	Number of questions on the exam to select from
Core content	4	8
Research tracks	4	15 (Three questions from each research track)
Total number of QE questions	8	23

The core nuclear engineering set is based on the nuclear engineering body of knowledge represented, in principle, by NUEN604 (radiation interactions and shielding), 605 (radiation detection and measurements), 601 (Nuclear Engineering Theory), and 606 (Nuclear Engineering Analysis and Experimentation);

The research set (flexible content set) is based on the research tracks in the Department of Nuclear Engineering:

1. Computational Nuclear Engineering
2. Health Physics
3. Nuclear Materials Engineering
4. Nuclear Security and Safeguards
5. Power Engineering

The questions may contain multiple parts, open design issues, and detailed calculations associated with each question.

Oral exam. Those students who clearly pass the written exam are judged as qualified **academically** to enter the Ph.D. program. The faculty may convene an **oral exam** for any student whose written exam result is marginal. (See oral exam policy.)

Procedure

Announcement of Intent. Examinees must announce their intentions to take the written examination no later than the end of the semester preceding the semester when the examination is planned to occur.

Examination period – one 4-hour closed book exam, early in the fall and spring semesters.

Permitted number of attempts – 2 times:

- 2 times in 3 semesters (excluding summers) for students with M.S. degrees in nuclear engineering,
- 2 times in 5 semesters (excluding summers) for students without M.S. degrees in nuclear engineering

Results. Written-exam results will be delivered within one month. Oral-exam results will be given within one month of the written-exam results.

Exam format. The exams are graded following the double blind anonymous grading procedure – students will not be identifiable by name in the grading process until the final stage of the exam results review process. Arbitrary alphabetic identifiers will be used during grading and evaluation. The connection between identifiers and students will be **unknown to both students and faculty**.

Oral Examination Policy (Guidelines for the Faculty)

The written exam taken by a student may have one of the following outcomes: 1) pass, 2) fail, or 3) needs assessment. In the event of outcome 3), an oral exam committee will be formed to assess the student's knowledge based on the written exam results. The student will be informed of their need for an oral assessment. The examination shall focus on the deficient written responses as well as the student's understanding of the underlying principles behind the original question(s). Upon exam completion, the committee will then make a pass or fail recommendation.

The purpose of the oral exam is to examine those students whose performance on the written exam is such that a clear "pass" or "fail" outcome is difficult to declare. Students who clearly pass or clearly fail the written portion will not be examined orally.

The student will have the option to decline the oral assessment, thus opting to retake the written exam at the next available opportunity (if eligible). Failure of an oral exam does not preclude the student from taking the written exam again if the student remains eligible under the current eligibility policy.

Transition Process to the New QE Policy

Fall 2016 QE and subsequent exams will follow the new QE policy.

Students taking the exam for the first time in Fall 2016 will follow this exam policy.

For students who already took the QE and will be either retaking all three sections or one section in the historical QE format, they will be presented with the choice to either proceed with the exam following the old policy or to opt for the exam in the new format.