**Nuclear and Radiation Engineering Ph.D. Qualifying Exam**

The Nuclear and Radiation Engineering Ph.D. Qualifying Exam format will consist of three separate areas: Reactor Theory, Health Physics and Instrumentation, and Interactions. There will be a written and oral component for each of the three area exams.

Students who are conducting inter-disciplinary research may choose to mix qualifying exams from other research areas with the Nuclear and Radiation Engineering Qualifying Exam. Prior approval by the student’s academic advisor and qualifying exam committees are necessary for such situations.

Qualifying Exams will be offered in January and August. The exams will take place between one week before or one week after the first day of class. Students intending to take the Qualifying Exam must notify their NRE advisor at least 30 days in advance of the test date.

Written exams will be conducted in one day with two-hour time blocks for each. The written area exam may have mandatory and/or optional sections (*e.g.*, student must answer 3 of the following 4 questions.) No notes or books are allowed to be utilized in the written exam. Written exams will be conducted prior to the oral exams.

Oral exams will be scheduled for one- to one and half hours. Three to five examiners will constitute each oral exam committee. Students are expected to demonstrate knowledge of subject area as well as oral communication competency. Subject matter will be determined by the committee and will generally correlate to student’s performance on written area exams. Oral exams are to be scheduled one to seven days after the written exam.

A general guide to the exam content is provided below.

Area I - Reactor Theory

* Neutron Spatial Distributions
* Neutron Energy Distributions
* Nuclear Kinetics
* Nuclear Reactor Design

Area II - Health Physics and Instrumentation

* Exposure
* Dose and Biological Effects
* Instrumentation

Area III – Interactions

* Radiation and Radioactive Decay
* Neutron Interactions
* Photon Interactions
* Charged Particle Interactions

Each written area exam will be graded on a scale of 0 to 100. The grade of the oral exam will range from 0-100. . The written part will constitute two-thirds of the grade and the oral part one-third of the grade. The written exam score will be added to the oral exam score for each area. The grade for each area will be as follows:

Fail: 0 to 59

Marginal Fail: 60 to 69

Marginal Pass: 70 to 79

Pass: 80 to 100

In order to pass the Qualifying Exam, a student must not fail any of the three exam areas. With this requirement in mind, the oral exam committee may not offer an oral exam to any student who scores below a 30% on any given written exam area or below 40% in all written exam areas.  A student is allowed one marginal fail as long as the average of all areas are greater than or equal to 70.  If a student fails the Qualifying Exam, it must be re-taken in its entirety. The Qualifying Exam can be taken a maximum of two times. After two Qualifying Exam failures, a student is expected to leave the program.

If the average of all exam areas constitutes a Marginal Pass, 70 to 79, the faculty reserve the right to award a Partial Pass or a Conditional Pass. If a Partial Pass is awarded, the student must retake one or more of the exam sections, as designated by the faculty, the next time the Qualifying Exam is offered. The student must score a full pass, 80 or better, on the area(s) to pass the Qualifying Exam. If a Conditional Pass is awarded, the student need not retake the Qualifying Exam but instead must complete other tasks designated by the faculty. The tasks are intended to remedy a perceived deficiency in one or more subject matter areas and may include course work, independent study, lectures or presentations, and/or teaching assistant duties. Faculty and student shall agree upon a schedule for their execution; a full Pass is awarded once the supervising faculty member judges that they are successfully completed.

If the conditions for converting a Conditional or Partial Pass to a full Pass are not met within the predetermined schedule, the faculty reserve the right to convert the Qualifying Exam grade to a Fail or to dismiss the student from the graduate program. The faculty may adjust the above as long as a consensus is reached and the student is notified with adequate preparation time.

Academic dishonesty is not tolerated on the Qualifying Exam. The likely outcome will be expulsion from The University of Texas at Austin.

Accommodations will be made for students with special needs. However, the student must document their needs with the Cockrell School of Engineering and notify the Qualifying Exam Committee in writing (no email) a minimum of 30 days prior to the scheduled oral exam date. Nominally this notification comes in the form of a written letter from the Cockrell School of Engineering Dean’s office.

Graduate students are expected to take the Qualifying Exam at the first time offered after the following conditions are met. If the student does not take the exam, the student is awarded a failure. The student must then take the Qualifying Exam the next time it is offered and pass or the student will be terminated from the program.