

Geotechnical Engineering PhD Qualifying Exam Format

This document provides guidelines for administering and taking the pre-doctoral Qualifying Exam for the Geotechnical Engineering sub-specialty in the Department of Civil and Environmental Engineering at the University of Washington.

1. Qualifying Exam Purpose

The purpose of the Qualifying Exam is to demonstrate to the program faculty that the student: (1) possesses sufficient breadth of knowledge of core subject matter; (2) the ability to apply basic principles to engineering problems; and (3) can proceed successfully with the in-depth research and learning needed to complete a Ph.D. degree. The Ph.D. Qualifying Exam is a Department requirement for all Ph.D. students in order to continue on to the Ph.D. The exam is not a Graduate School requirement.

2. When Taken

The qualifying exam should be taken within one year (but no later than two years) of starting the PhD track following completion of a master's degree. In consultation with the PhD advisor and exam committee, exceptions to this timeline may be granted, but it is in the candidate's best interest to stay on this timeline as much as possible.

3. Eligibility

A cumulative UW GPA of 3.0 is required to take the exam. This is a department requirement for all research areas. A 3.0 GPA is also required by the UW Graduate School for completed PhDs.

4. Examination Committee

The qualifying exam committee consists of the geotechnical engineering faculty. The chair of the qualifying exam committee is the student's assigned advisor. The duties of the qualifying exam committee are to: (1) administer the written and oral exams; and (2) determine the outcome of the exam. The chair of the committee shall report the exam outcome to the Department Graduate Student Advisor.

5. Exam Format

The geotechnical qualifying exam consists of two parts: (i) an open book written qualifying exam that must be completed within three days; and (ii) a verbal discussion of the results, conducted with the exam committee, which may follow up on exam questions.

The written exam must be completed over three days. The exam questions are typically distributed on a Monday morning and due Wednesday at 5 pm. Some latitude in the choice of problems will be given – typically, eight problems will be provided with the student selecting seven to complete (specifics to be clarified upon receipt of the exam). The questions will generally be aimed at determining the student's knowledge of fundamental principles of behavior, analysis, and design. Therefore, many of the questions can typically be solved without any supporting materials (e.g., textbooks, notes, or software). That said, students may use supporting materials, so long as the exam is not discussed with anyone else. Communications regarding the

exam's contents must be directed solely to the exam committee. Any other communications, during or after the exam, will result in a disqualifying score.

6. Exam Grading

Upon completion of the oral exam, the exam committee members shall immediately meet, discuss the student's exam performance, and render a grade for the qualifying exam. The candidate's solution to each question will be graded on a scale of 0 - 10. An average of 7.0 or higher constitutes a passing score. The verbal discussion will be graded on a similar scale. A student who fails one or both parts of the exam the first time may, at the discretion of the faculty, take the failed part(s) again. Only one retake is allowed.

7. Outcomes

The chair of the qualifying exam committee will provide a written report of the examination including a summary of the recommendation and supporting arguments. There are three potential outcomes of the qualifying exam:

Pass. The qualifying board determines the student has demonstrated satisfactory core competency and research skills. This result shall be reported to the Department Graduate Student Advisor and no further action is required of the board.

Retake. If the qualifying committee has determined the student has not demonstrated satisfactory core competency and research skills and this is student's first attempt of the qualifying exam (i.e., not a retake), the qualifying exam committee will recommend a retake to be taken within two months of the completed oral portion of the exam. Only one retake grade is allowed. The results of a retake may only be pass or fail.

Fail. The qualifying exam committee has determined the student has demonstrated unsatisfactory core competency and research skill on the retake exam. This result shall be reported to the Department Graduate Student Advisor and no further action is required of the exam committee. A decision of fail on a retake will prevent the student from continuing toward a Ph.D. degree.

8. Reexamination procedures

The retake exam will have the same format as the initial exam but will include new questions.

9. Notification and record keeping

After the examination, the qualifying exam committee shall notify the student of the exam decision. A record of the decision shall be signed by the committee and forwarded to the Graduate Student Advisor for retention in the student's permanent file.

10. Appeals and Grievances

Any challenge to the decision of the Qualifying Exam Committee should be taken directly to the Graduate Program Coordinator for Geotechnical Engineering. If a formal appeal is made, the Geotechnical Engineering faculty, including the student's assigned advisor, shall review the

student's permanent file, qualifying exam, record of decision and interview the student and make a recommendation to either (1) let the decision stand, or (2) retake the qualifying exam.

11. Preparation

The best preparation is to: (i) take graduate geotechnical engineering courses covering a wide range of topics; and (ii) to refamiliarize oneself with the content of these courses prior to the exam. Though not an exhaustive list, topics on which exam questions could be focused might include: shear strength of soils, slope stability, consolidation, seepage, lateral earth pressures, foundations, physio-chemical aspects of soil behavior, engineering geology, soil dynamics, geotechnical earthquake engineering, material testing (lab and field), and geomechanics.