

## EXAM INSTRUCTIONS

### I. Qualifying Exam Overview

To advance towards a degree in the University of Utah's Department of Mechanical Engineering Ph.D. program, students must pass the department's Qualifying Exam. The Qualifying Exam consists of two mandatory written examinations and oral follow-ups if required (see Section III).

- Students must take their Qualifying Exam no later than their third semester in the Ph.D. Program. Summer does not count as a semester. During the first week of the semester students will submit a [Notification of Intent to Take the Qualifying Exam](#).
- Exams will be administered during the 13<sup>th</sup> week of the Fall and Spring semesters. Exams are not offered during Summer. Each Subject Area (see Table I) will be scheduled on a specific date and time. No exceptions to the date, time, and location of the exams will be made unless the student has a Center for Disability and Access (CDA) approved accommodation that specifically addresses the department's Qualifying Exam.
- Each Subject Area will have at least two proficient examiners (exam writers and evaluators) selected from the department's faculty. The examiners will be selected by the Organizing Group that administers the exam for the corresponding Subject Area.
- Students are allowed two attempts to pass the Qualifying Exam. Students that do not pass the exam on their first attempt, must retake the exam in the subsequent semester. Students that do not pass the exam on their second attempt will be dismissed from the Mechanical Engineering Ph.D. program.
- Students may petition the department's Graduate Committee for an extension prior to taking the exam, if extenuating circumstances have left the student at an unfair disadvantage. Students may [petition for a one semester extension](#) during the first week of the semester.

The exam is designed to:

- Evaluate the student's mastery of selected core areas of Mechanical Engineering.
- Evaluate the student's ability to work through complex engineering problems.
- Identify areas that need strengthening as the student works towards their Ph.D.

### II. Written Examination Format

Students will select two Subject Areas from Table I that support their Ph.D. research. Students (except for those enrolled in the Robotics Track) can pick topics within a single Organizing Group or across Groups. Each exam will cover material related to the Subject Area. The exams are closed book format. The time limit to complete each Subject Area exam is two hours. Students may refer to a corresponding Study Guide for each Subject Area to prepare for the written exams.

**Table I: Written Exam Subject Areas**

<b>Organizing Group</b>	<b>Subject Area</b>
Design, Ergonomics, Manufacturing, and Systems	<b>Design</b> <b>Micromachining</b> <b>Statistics/Design of Experiments</b>
Robotics and Controls	<b>Robotics*</b> <b>Classical Control Systems</b> <b>System Dynamics</b> <i>* Students enrolled in the Robotics Track must take the Robotics exam. The other exam must be Classical Control Systems or System Dynamics.</i>
Solid Mechanics	<b>Mechanics of Materials</b> <b>Biomechanics</b> <b>Continuum Mechanics</b> <b>Theory of Linear FEM</b>
Thermal, Fluids, and Energy Systems	<b>Fluid Mechanics</b> <b>Heat Transfer</b> <b>Thermodynamics</b>

### III. Optional Oral Follow-up Format

An oral follow-up may be required for any Subject Area under certain circumstances.

- Some Subject Area examiners may opt to require an oral follow-up for all students taking that Subject Area's exam.
- The examiner may opt to hold an oral follow-up for a student if they are uncertain whether the student should receive a pass or fail.
- An oral follow-up is mandatory for students that have failed the written portion of a Subject Area on their second attempt.
- Oral follow-up sessions must occur no later than one week following the written exam and may be up to 45 minutes per Subject Area.

### IV. Qualifying Exam Results

Each Subject Area examiner has a distinct pass or fail vote. Students must receive all pass votes from the examiners to pass each Subject Area. Exam results will be provided to students no later two weeks after the exams.

- If a student fails one or both Subject Areas on their first attempt, they must retake the Qualifying Exam in the subsequent semester. Students failing one Subject Area may retake that subject or may choose to attempt a different subject. Students failing both subjects may retake the same subjects or may choose to attempt different subject(s).
- If a student fails the exam on their second attempt, they will be dismissed from the department's Ph.D. program. Regardless of whether a student chooses to retake the same area(s) or attempt different area(s), any Subject Area failure on the second exam attempt will cause dismissal from the program.
- Students that fail the Qualifying Exam on their second attempt may opt to start an MS-Thesis program in Mechanical Engineering. After successfully defending their MS thesis

and with the recommendation of the student's supervisory committee, a student may opt to reenroll in the Ph.D. program and attempt the Qualifying Exam for a third time. If a student fails their third attempt, they will be dismissed from the Ph.D. program with no options to return.

- Students wishing to appeal their exam result should first meet with the department's Director of Graduate Studies. If unable to resolve the exam outcome, the student may appeal to the Department Chair. If the student or the examiners disagree with the Department Chair's decision, either party may make an appeal to the College of Engineering's Academic Appeals and Misconduct Committee. Please refer to [Policy 6-400: Code of Student Rights and Responsibilities](#) for more details and the timeline of the appeals process.