

MSE Ph.D. Qualifying Exam (QE)

Purpose: The QE is used as an assessment tool to determine students' ability to conduct cutting-edge materials science and engineering research. It assesses their mastery and ability to understand various concepts in materials science, their ability to develop critical thinking based on understanding, analysis and synthesis, and their ability to communicate clearly and effectively.

Format: The QE has 2 parts: General Knowledge (GK) and Research Readiness (RR). It is evaluated by the QE committee, research advisor(s), and reviewers with knowledge in the RR subject area.

Part One: General Knowledge of Materials Science and Engineering

- GK is an oral knowledge exam based on introductory materials science;
- Students with no MSE background are encouraged to enroll in MSE 500 prior to taking the exam;
- All graduate students receive a comprehensive list of questions in their first month of enrollment. In addition to answering the questions, the students are expected to understand the science behind them and answer any follow-up questions;
- GK exam takes about 30 min and is evaluated by three (3) independent MSE faculty;
- Pass/fail is based on the average score of all three examiners and all questions asked;
- Each student gets two (2) attempts. If unsuccessful, the student will not be able to proceed in the Ph.D. program, but may transfer into the Master's program;
- Timing: GK exam must be passed by the beginning of the 4th semester of the Ph.D. program; The exam will be offered twice a year at the beginning of each academic semester:
 - January,
 - August;
- Only when students pass the GK part of the QE, they can move to the RR portion. Students passing the GK in Jan. will begin the RR process in July, while those passing in Aug. will begin RR in Feb., as detailed below.

Part Two: Research Readiness

- Students write a comprehensive, critical, open literature-based review paper (up to 25 pgs) on a topic chosen in agreement with their advisor. The topic should be closely related to their intended dissertation research;
- The RR evaluation committee consists of the dissertation advisor and two (2) other faculty members, chosen by the student, who are familiar with the review topic. Ideally, these two faculty members will serve also on the student's dissertation committee.
- Timing of the RR exam (all dates are understood "on or before"):
 - Jul 15 / Feb 15: Form review committee and submit their names to the graduate administrator;
 - Aug 15 / Mar 15: Complete and submit the review paper for review;
 - Sep 15 / Apr 15: Receive actionable feedback from the review committee;
 - December 1/ July 1: Submit the revised review paper;
 - Dec 15/ Jul 15: Final evaluation and committee recommendation received by DGP.
- Outcomes of RR evaluation:
 - Pass: no changes required (expected to be extremely rare);
 - Conditional pass: minor revisions required;
 - Conditional pass: major revision required;
 - Fail: paper does not meet the criteria.