

MATERIALS SCIENCE AND ENGINEERING (MS, PHD)

The goal of the graduate program in Materials Science and Engineering (MSE), through its coursework and research programs, is to provide students with a comprehensive understanding of modern materials and to prepare them for positions of leadership in engineering, research and development. Graduate instruction is offered which leads to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.). Emphasis is placed on the relationships between structure, properties, processing, and performance of materials. In addition, several departments in the University offer relevant courses in related disciplines; students are encouraged to include one or more of these courses in their plan of study. Any courses at the 3000 or 4000 level must be approved in advance by the Major Advisor; not more than six such credits may be accepted towards a Masters or Ph.D. degree.

M.S. Requirements

Students may pursue either a Plan A (thesis-based) or a Plan B (coursework-based) M.S. degree. For both Plan A and Plan B, students are required to complete all of the MSE graduate core courses (MSE 5301 Thermodynamics of Materials, MSE 5309 Transport Phenomena in Materials Science and Engineering, and MSE 5334 Structure of Materials).

For Plan A, the student must successfully complete at least 21 credits of coursework (including the core courses), maintaining a cumulative GPA of 3.0 or above. At least 12 of these credits must be MSE courses, with the remainder approved by the Major Advisor. The student must also complete at least nine credits of GRAD 5950 Master's Thesis Research, ultimately preparing and publicly defending the M.S. thesis.

For Plan B, the student must successfully complete at least 30 credits of coursework (including the core courses), maintaining a cumulative GPA of 3.0 or above. At least 18 of these credits must be MSE courses, with the remainder approved by the Major Advisor. The 30 credits must also include three credits of independent study in MSE culminating in a final project, and the student must pass a comprehensive oral examination conducted by the advisory committee based on this project.

Ph.D. Requirements

Students are required to complete all of the MSE graduate core courses (MSE 5301 Thermodynamics of Materials, MSE 5309 Transport Phenomena in Materials Science and Engineering, and MSE 5334 Structure of Materials), and maintain a cumulative GPA of at least 3.0 in these courses. Suitable courses may be substituted for core courses if equivalent topical competency can be demonstrated. The Ph.D. in Materials Science and Engineering does not have a related area or foreign language requirement.

Ph.D. students must also maintain a cumulative GPA of at least 3.0 for a minimum of 30 overall course credits, including the core courses. A maximum of 12 credits may be taken in fields of study other than MSE with Major Advisor approval. For those already entering with a master's degree in the same or a closely related field of study, a minimum of 15-credits of content coursework are required with a maximum of six credits in a related field.

All Ph.D. students must also complete at least 15 credits of GRAD 6950 Doctoral Dissertation Research, for a total number of credits not less than

45, 30 if matriculating with a related master's degree. All resident full-time MSE Ph.D. students must enroll in the one credit seminar course, MSE 6401 Graduate Seminars in Materials Science and Engineering, every term, and all Ph.D. students must pass a Qualifying Examination administered by the MSE graduate faculty.

Ph.D. candidates must prepare and orally defend a dissertation proposal. At this oral defense, the students must also complete the General Examination covering broader aspects of materials science and engineering. Ultimately, the candidate must prepare and publicly defend the Ph.D. dissertation. The dissertation research must be deemed by the Examination Committee as publishable in a refereed journal in the field.