Masters of Science in Materials Engineering

To meet the technological needs of industry, the Master of Science in Materials Engineering program creatively combines opportunities for intellectual and experiential growth in engineering materials and processes. Access to exceptional state-of-the-art laboratories enable the development of advanced expertise in materials characterization, with projects addressing nanotechnology, MEMS, sensors, smart materials, microelectronics, optoelectronics, biomaterials, and environmentally-assisted cracking of advanced materials.

PROGRAM GOALS: The goals of the Master of Science in Materials Engineering program are to:

- Enhance student knowledge of fundamental materials engineering principles;
- Expand student knowledge of nontraditional materials, such as composites and electronic materials;
- Increase student knowledge of materials failure mechanisms;
- Develop student expertise in laboratory research methods in materials engineering;
- Enable student intellectual growth in discipline-related areas; and
- Meet the needs of the regional industrial community for qualified materials engineering expertise.

REQUIREMENTS FOR ADMISSION TO THE PROGRAM

1. Satisfaction of all requirements for Graduate Admission to the University.
2. Approval by the Department Graduate Coordinator.

REQUIREMENTS FOR ADVANCEMENT TO CLASSIFIED STATUS

1. Satisfaction of University requirements for Classified status.
2. Approval of program of study plan by assigned faculty advisor.
3. Approval by the Department Graduate Coordinator.

SPECIAL REQUIREMENTS

1. This program is intended primarily for students holding a B.S. degree in a closely related field of science or engineering. Prospective students whose undergraduate degree is not in a closely related field should discuss additional prerequisite courses with the Graduate Coordinator.
2. No more than 6 units of advisor-approved 400-level courses may be included in any graduate program of study.

REQUIRED COURSES

1. Required Core Courses (12 units):
   - MSE 527/L Mechanical Behavior of Materials .......................................................... 2/1
   - MSE 528/L Principles of Materials Engineering ......................................................... 2/1
   - MSE 624 Failure Analysis .......................................................................................... 3
   - MSE 629 Phase Transformations ................................................................................ 3

2. Culminating Requirements (6 units):
   - MSE 690 Materials Engineering Research Practicum .............................................. 3
   - MSE 697 MTL Materials Engineering Directed Comprehensive Studies .................. 3

3. Advisor-Approved Electives (15 units):

   Recommended electives, selected with faculty advisor guidance and approval, include MEMS Fabrication (MSE 512), NDE Methods and Analyses (MSE 513), Corrosion (MSE 531), Biomaterials (MSE 536), Thin Film Technology (MSE 550), Nanomaterials and Nanotechnology (MSE 556), Composite Materials (MSE 623), and Electronic Materials (MSE 630). Other electives may be suitable for meeting individual student program goals.