

ABOUT MSE CAPSTONE DESIGN

The MSE Capstone Design Project is a two-semester course for seniors to exercise their creativity and to apply materials science and engineering principles to solve real-world engineering problems, mentored by MSE faculty members and industry engineers.

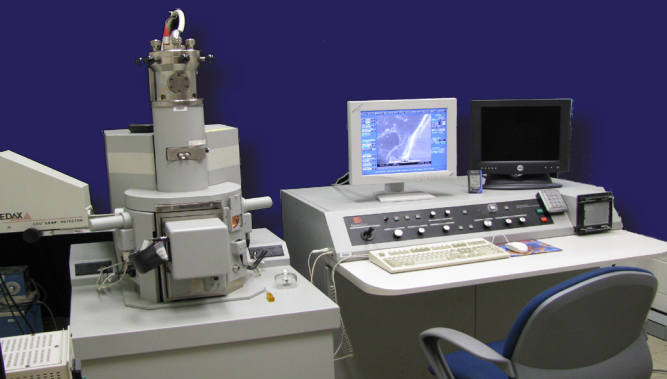
Students work individually and in small teams and begin by visiting the collaborating companies to meet their industry advisors and to learn about their projects and the challenges specific to the business and technical contexts.

The course develops the following professional skills:

- Project Management
- Principles and Practice of Design
- Data Collection, Analysis & Presentation
- Ethical and Economic Decision Making
- Time Management
- Oral and Written Communication

For more information, please contact

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EXAMPLES OF RECENT DESIGN TOPICS

- Control Grain Size and Anisotropy in Rolled and Annealed Austenitic Stainless Steel Foils, Ulbrich Specialty Steel
- Improve Manufacturing Process for Apatite/Fibrous Polymer Composites for Bone Repair, Teleflex Medical,
- Design Rules to Optimize Oxidation Induction Time in Cable Insulation, Rockbestos-Suprenant Cable Corporation
- Development of Magnetic Shape Memory Alloys for Actuator Applications, GE Consumer and Industrial
- Methods for Detecting Residual Stress in Single Crystal Bodies, Saint Gobain Crystals
- Selection and Evaluation of Ferritic Stainless Steel for Elevator Applications, Otis Elevator Company
- Control Morphology of Bubbles in Si (He/H implants), Varian Semiconductor Equipment Associates
- Design of a Process for Microstructure Control in PZT Piezoceramics, US Army and EBL Products

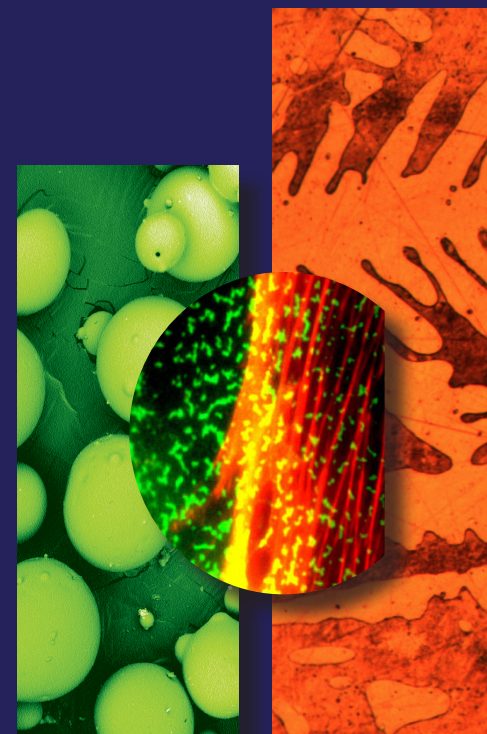
 University of Connecticut

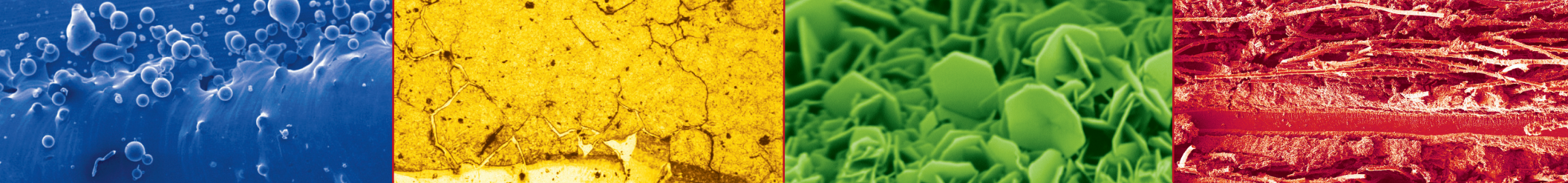
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University of
Connecticut

MATERIALS SCIENCE & ENGINEERING

CAPSTONE DESIGN





WHAT YOU CAN EXPECT AS AN INDUSTRY PARTNER

Tap Into an Effective Hiring Portal

Evaluate fully engaged materials science and engineering students over a period of several months as they work through the project. Students gain knowledge of your business and working climate as they interact with your engineers and processes. These impressions are shared with classmates, enabling you to build a reputation as an employer of choice.

Collaborative Impact

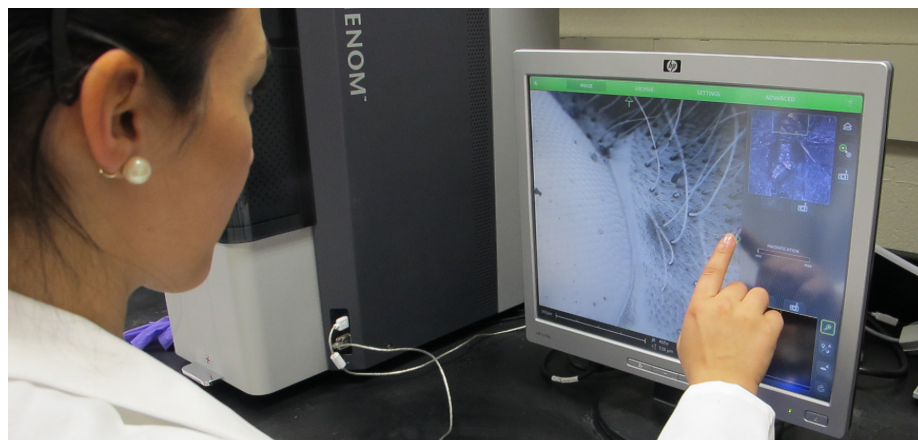
Your engineers will benefit from access to technical literature and extensive characterization equipment in the undergraduate labs and the Institute of Materials Science. Our experienced faculty will gain a working knowledge of how their expertise links to your products, processes, and industry. Our goal is that company-university collaboration will expand beyond the capstone project course.

Project Documentation & Updates

Students submit a total of six written assignments, including a proposal, two progress reports, and a final report. The teams also orally present their reports to an audience of students, industry advisors, MSE faculty members, and support staff. Final presentations and a poster session are scheduled for the School of Engineering's Senior Design Day.

Secure Proprietary Information

Written reports do not have to be submitted for public access. Proprietary information supplied for the sake of the project can be deleted from any public presentations and documentation.



MSE UNDERGRADUATE LABORATORIES

MSE majors have access to the extensive materials characterization and processing facilities of the MSE undergraduate teaching laboratories and selected access to the specialized facilities of the Institute of Materials Science. Recent MSE laboratory upgrades and new equipment purchases, including a universal hardness tester, fatigue tester, 1500°C furnace, and an atomic force microscope, have expanded our capabilities to evaluate alternative solutions for new and exciting projects!

WHAT WE REQUEST FROM OUR INDUSTRY PARTNERS

A Challenging Project

The company should propose a challenging project that presents a substantial challenge to a materials engineer. The project should be of sufficient importance such that the company is willing to provide intellectual and, if needed, material and in-kind support for the duration of the project.

An Industry Advisor

The company should commit an individual or individuals who are knowledgeable about the project to serve as an industrial mentor for the student(s). The industry advisor will consult with the faculty advisor and the team to determine the scope of the project and provide technical support and guidance, including on all reports and public presentations.

An Unrestricted Grant

The University requests an unrestricted grant of \$7,000 or more from industry collaborators. Donated funds provide a margin of excellence for the MSE undergraduate program to bridge the gap between the teaching budget and the resources required to provide a first-class MSE undergraduate education. Funds have been used to upgrade the MSE undergraduate laboratories and to provide MSE Excellence Scholarships for high-achieving MSE majors.

MSE collaborates with other undergraduate programs to form multidisciplinary student teams. An unrestricted grant of \$9,000 or more is requested for multidisciplinary projects.