

MATERIALS SCIENCE AND ENGINEERING, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Description

The Minor in Materials Science and Engineering prepares students to understand the materials properties, materials processing techniques, characterization methods, and selection criteria in implementing engineering solutions. The materials selection for cutting edge mechanical design requires precise and definite knowledge of choice of materials, processing route, and mechanical response in service conditions. The materials engineer must have a sound expertise on modeling and experimental tools validating microstructural, mechanical, and electrical properties requirements for a specific design application. Hence, a wide variety of industries such as aerospace, automotive, energy, biomedical, and electronics to name a few, have a demand for engineers with a strong background in materials engineering. The MMSE covers introductory courses and laboratories on materials science in general, properties and processing of materials, materials thermodynamics and kinetics, and characterization of mechanical, microstructural and electrical properties of materials. The introductory courses and labs provide the basic foundation on materials science and engineering; the rest of the courses provide advanced knowledge on properties and selection, processing techniques, and characterization methods. Moreover, thermodynamics and kinetics of materials systems and process are also introduced. The above mentioned topics are covered by offering courses from sophomore through senior level.

What is Materials Science and Engineering?

Materials are ubiquitous. Materials play a role in every industry and facet of life. Materials science and engineering is an interdisciplinary study of the properties of matter and the exploration for new and creative uses of ceramics, metals, polymers and composites. Materials scientists and engineers study the entire life cycle of materials (production, synthesis and processing, manufacturing, use, recycling and reclamation) by employing science to solve engineering problems. This engineering discipline is unique in that our studies begin with understanding materials at the atomic scale, allowing for prediction and measurement of material properties, and creation of materials by design. What do you want to do with your career? Make alternative energy more economical? Improve human health, cure cancer? Provide clean drinking water to the world? Make transportation more efficient and environmentally friendly? Make everyday materials more sustainable? All these outcomes and more are possible by studying materials.

You Might Like This Program If...

- You enjoy problem-solving, math, and the physical sciences.
- You like understanding why materials react the way they do to various stimuli.
- You are interested in creating tools and materials for the aerospace, automotive, energy, biomedical, or electronics industries.