

# Materials Science and Engineering, Minor

The interdisciplinary field of materials science and engineering has become critical to many emerging areas of advanced technology and their applications. As a result, there are needs and opportunities for engineers and scientists with education and training in materials science and engineering. The goal of the minor in Materials Science and Engineering (MSE) is to provide students at UCI with such education and training that will enable them, upon graduation, to not only participate in projects or programs of an interdisciplinary nature but also address challenging societal needs and complex technological advances.

Students are required to complete all prerequisites for required courses and selected electives. In particular, students need to complete the following courses before applying:

CHEM 1A	General Chemistry
CHEM 1LE	Accelerated General Chemistry Lab
MATH 2D	Multivariable Calculus I
MATH 2E	Multivariable Calculus II
MATH 3A	Introduction to Linear Algebra
MATH 3D	Elementary Differential Equations
PHYSICS 7C	Classical Physics
PHYSICS 7LC	Classical Physics Laboratory
PHYSICS 7D	Classical Physics
PHYSICS 7LD	Classical Physics Laboratory

The Materials Science and Engineering minor requires a total of seven courses—five required courses and two electives:

## Required courses:

ENGR 54	Principles of Materials Science and Engineering
MSE 165C	Materials Kinetics and Phase Transformations

Select three of the following:

MSE 69	Electronic and Optical Properties in Materials
MSE 151	Polymeric Materials
MSE 155	Mechanical Behavior and Design Principles
MSE 158	Ceramic Materials for Sustainable Energy
MSE 164	X-ray Diffraction, Electron Microscopy, and Microanalysis
MSE 165A	Thermodynamics of Materials
MSE 165B	Diffusion and Heat Transport in Materials
MSE 175	Design Failure Investigation
MSE 190	Materials Selection and Design

## Electives:

Select two of the following:

BME 110B	Biomechanics II
BME 111	Design of Biomaterials
BME 120	Sensory Motor Systems
CBE 187	Semiconductor Device Packaging
EECS 170A	Electronics I
EECS 174	Semiconductor Devices
EECS 176	Fundamentals of Solid-State Electronics and Materials
ENGR 165	Advanced Manufacturing
ENGRMAE 114	Fuel Cell Fundamentals and Technology
ENGRMAE 117	Solar and Renewable Energy Systems
ENGRMAE 118	Sustainable Energy Systems
ENGRMAE 145	Theory of Machines and Mechanisms
ENGRMAE 147	Vibrations
ENGRMAE 151	Mechanical Engineering Design
ENGRMAE 153	Advanced BIOMEMS Manufacturing Techniques

ENGRMAE 155	Composite Materials and Structures
ENGRMAE 157	Lightweight Structures
MSE 141	Nano-Scale Materials and Applications
MSE 171	Green Engineering: Theory and Practice
MSE 173	Fundamentals of Materials Processing: How are Materials Processed to Make Things?
MSE 174	Composite Materials Design