MATERIALS SCIENCE

Programs

• Materials Science Minor

Courses

Materials Science (MS)

MS 401 - Science of Stuff
Credits: 4
Materials Science is a relatively new and fast growing field that
studies all types of materials, including metals, ceramics, polymers,
semiconductors, and composites. Material Science explores how stuff
is put together, how to change stuff and make it better, the properties
and applications of stuff, and even how to make totally brand new stuff.
This course explores materials from various topic areas, including sports,
forensics, medicine and health, fashion, architecture and construction,
music and art, food and transportation from the perspective of materials
science. Students explore additional materials independently as well as
practice the process of science through simple experimentation and data
analysis.
Attributes: Physical Science(Discovery)
Grade Mode: Letter Grading
Special Fee: Yes

MS 402 - Nanoscience in Energy
Credits: 4
An introduction to nanomaterials, or matter with important structural
features that are nanometers in size. A nanometer is very small—a billionth
of a meter; a sugar molecule is only about 1 nm wide. Scientists and
engineers are now building materials by manipulating atoms or groups
of atoms. The course explores how materials with nanoscale features
demonstrate novel and beneficial properties for energy applications.
The growing energy demands of the planet require timely, if not urgent,
innovative multidisciplinary solutions. These solutions require an
informed citizenry knowledgeable about the various perspectives
related to powering our planet. This course is a means to inform the
non-scientist student about the physical science aspects of energy,
nanomaterial solutions for our energy needs, along with some historical,
economic, and environmental perspectives. The energy discussion
provides a backdrop for our exploration of the structure and properties of
nanomaterials.
Attributes: Physical Science(Discovery)
Grade Mode: Letter Grading
Special Fee: Yes

MS 762 - Electronic Materials Science
Credits: 4
This course provides engineering and science students with a foundation
in the materials science of modern electronic devices. Topics include
bonding and structure of solids, electrical and thermal conduction,
elements of quantum mechanics, band theory of electrons in solids,
semiconductors, magnetism, dielectrics and superconductors. Examples
of applications are taken primarily from the fields of semiconductor
electronics and nanotechnology, and illustrate how the electrical and
optical properties of devices are obtained from their compositions,
crystal structures and microstructures. Permission of instructor required.
Grade Mode: Letter Grading