MSEN - Materials Science & Engr

Courses

MSEN 201 Introduction to Materials Science
Credits 3. 3 Lecture Hours.
Processing, structure, properties and performance in materials; materials structure and defects over many orders of scale; mechanical, thermal, electrical, magnetic and optical properties.
Prerequisites: CHEM 102 or CHEM 104 or CHEM 107; PHYS 218.

MSEN 285 Directed Studies
Credits 1 to 4. 1 to 4 Other Hours.
Directed study of selected problems in the area of materials science and engineering. May be taken for credit 4 times.
Prerequisite: Approval of instructor.

MSEN 289 Special Topics In...
Credits 1 to 3. 1 to 3 Lecture Hours. 0 to 3 Lab Hours.
Selected topics in an identified area of materials science and engineering. May be repeated for credit.
Prerequisite: Approval of instructor.

MSEN 310 Structure of Materials
Credits 3. 3 Lecture Hours.
Symmetry, unit cell and the atomic structure of crystalline and non-crystalline materials; the bonding forces and energy for van der Waals, metallic, ionic and covalent crystals.
Prerequisites: MSEN 201 or approval of instructor; junior or senior classification.

MSEN 410 Materials Processing
Credits 3. 3 Lecture Hours.
Synthesis, properties and processing of technologically important inorganic materials (metals and ceramics); includes thermodynamics and kinetics of different materials processing methods, casting, deformation processing, heat treatments, powder processing and sintering, coating and thin films processing, etc.
Prerequisites: MSEN 201 or approval of instructor; junior or senior classification.

MSEN 420 Polymer Science
Credits 3. 3 Lecture Hours.
Polymer structure, processing, property characterization at the molecular, microscopic and macroscopic dimensional levels for thermosets, thermoplastics, elastomers, fibers and advanced non-particle filled composites and smart multi-performance structures.
Prerequisites: MSEN 201 or MEEN 222 or AERO 213 or CHEN 313; junior or senior classification.

MSEN 460 Electronic, Optical and Magnetic Properties of Materials
Credits 3. 3 Lecture Hours.
Prerequisites: MSEN 201 or approval of instructor; junior or senior classification.

MSEN 485 Directed Studies
Credits 1 to 4. 1 to 4 Other Hours.
Directed study of selected problems in the area of materials science and engineering. May be taken four times for credit.
Prerequisite: Approval of instructor.

MSEN 489 Special Topics In...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of materials science and engineering. May be repeated for credit.
Prerequisite: Approval of instructor.

MSEN 491 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of a faculty member in materials science and engineering. May be taken four times for credit.
Prerequisites: Junior or Senior classification or approval of instructor.