

# Materials Science Minor Requirements

## PREREQUISITES:

- MATH 115 Precalculus II (5) or MATH 118 Accelerated Precalculus (5)**
- MATH 125 Calculus and Analytical Geometry (5) or MATH 135 Honors Calculus II (5)**
- PHYS 161 Physics with Calculus I with Lab (5)**
- PHYS 162 Physics with Calculus II with Lab (5)**
- PHYS 163 Electricity and Magnetism with Lab (5)**
- CHEM 121 or 125 General Chemistry I (5)**
- CHEM 122 or 126 General Chemistry II (5)**
- CHEM 123 (4) or CHEM 225 (5) General Chemistry III**

## REQUIRED COURSES:

- MSCI 201: Introduction to Engineering Materials (4)**

PREREQUISITE: CHEM 121 or CHEM 125, MATH 115 or MATH 118, pre or co-requisite PHYS 121

DESCRIPTON: The relationship between the properties, structure and processes of engineering materials is discussed. Emphasis on the fundamentals of selecting materials based on engineering design criteria. Also offered as ETEC 220.

- MSCI 320: Introduction to Materials Science 1 (4) (Previously called MSCI 202)**

PREREQUISITE: CHEM 123 or 225

\* ETEC Majors may substitute ETEC 333 + 334 + CHEM 251 for MSCI 320

DESCRIPTON: The first course in a three course interdisciplinary sequence designed to cover the fundamental concepts of materials science. Basic atomic structures, basic organic and polymer chemistry, synthesis of organic materials, polymers, composites, and basic characterization methods are covered in this first overview course.

- MSCI 330: Introduction to Materials Science 2 (4) (Previously called MSCI 203)**

PREREQUISITE: MATH 125 or 135, PHYS 163, MSCI 320

\* ETEC Majors may substitute ETEC 333 + 334 + CHEM 251 for MSCI 320

DESCRIPTON: The second course in a three course interdisciplinary sequence designed to cover the fundamental concepts of materials science. Electrical, magnetic and optical properties and structures of materials are emphasized in this second overview course.

- MSCI 410: Characterization of Materials (4) (Previously called MSCI 301)**

PREREQUISITE: MSCI 330 or CHEM 461 or GEOL 306

DESCRIPTON: The third course in a three course interdisciplinary sequence designed to cover the fundamental concepts of materials science. Theory and operating principals of external and internal characterization of materials such as: electron microscopy, x-ray chemical microanalysis, optical microscopy, thermal, magnetic and structural analysis, polymer processing and analysis, thin film preparation and characterization, and x-ray diffraction. Laboratory experience and projects are emphasized.

- MSCI 491: Independent Research or Internship in Materials Science 1 (3) (Previously called MSCI 401)**

PREREQUISITE: MSCI 330

\*400 Level research in your major may substitute for MSCI 491

DESCRIPTON: Undergraduate research in materials science or an undergraduate internship in materials science in industry under supervision.

- MSCI 492: Independent Research or Internship in Materials Science 2 (3) (Previously called MSCI 402)**

PREREQUISITE: MSCI 330

\*400 Level research in your major may substitute for MSCI 492

DESCRIPTON: Continued undergraduate research in materials science or an undergraduate internship in materials science in industry under supervision.

**Total Core Requirement Credits = 22**

**(Total credits including required prerequisites = 61)**

**\*An elective course from our list of approved courses is also required.**