Materials Science and Engineering

18 Credit Hour Minor

**Core Requirements (9 Credit Hours)**

EGN 3365 or EMA 3706 Structure and Properties of Materials

EMA 3124 Design and Selection of Materials

EMA 3012C Experimental Techniques in Materials I

**Restricted Electives (9 Credit Hours)**

1. Select one of the following courses on the properties of materials (3 Credit Hours)

EMA 4223 Fundamentals of Mechanical Behavior of Materials

EMA 4413 Fundamentals of Electronic Materials

EMA 5104 Intermediate Structures and Properties of Materials

EMA 5415 Electronic Principles of Materials Properties

BME 3211 Engineering Biomechanics

EGN 3331C Mechanics of Materials

OSE 3052 Fundamentals of Photonics

OSE 4520 Laser Engineering

PHY 4445 Lasers

PHZ 3422 Nanophysics

PHZ 4404 Solid State Physics

2. Select one of the following courses on the processing and characterization of materials

(3 Credit Hours)

EMA 3691 Nanomaterials Processing Engineering

EMA 4503 Materials Characterization Techniques

EMA 4513 Structures of Materials

EMA 5585 Materials Science of Thin Films

EMA 5610 Laser Materials Processing

BSC 4434 Biomedical Informatics: Sequence Analysis

BSC 4439 Biomedical Informatics: Structure Analysis

CHM 4230 Applied Molecular Spectroscopy

CHM 4427 Electrochemistry

CHM 5451 Techniques in Polymer Science

CHM 5715C Optical Materials Processing and Characterization Techniques

MCB 4721C Methods in Biotechnology

PCB 4174 Foundation of Bio-Imaging Science

3. Select one of the following courses on the applications of materials (3 Credit Hours)

EMA 4506 Emerging Materials

EMA 5060 Polymer Science and Engineering

EMA 5140 Introduction to Ceramic Materials

EMA 5584 Biomaterials

EMA 5586 Photovoltaic Solar Energy Materials

EMA 5705 High Temperature Materials

BCH 4024 Medical Biochemistry

BSC 3424 Nanobiotechnology

CGN 3501 Civil Engineering Materials

EEE 3350 Semiconductor Devices I

EEE 4463 MEMS Devices and Applications

ENV 4120 Air Pollution and Hazardous Waste Control

MCB 3316H Honors Biotechnology and Genetic Engineering Seminar

MCB 4312 Molecular Biotechnology

OSE 4410 Optoelectronics

OSE 4721 Biophotonics

OSE 5313 Materials Optical Systems

OSE 5414 Fundamentals of Optoelectronic Devices

PCB 4521 Tissue Engineering

PUP 3204 Sustainability