

Materials Science Minor

Approved Elective Courses

One elective course from the list below is required to complete the minor:

- **CHEM 308 Introduction to Polymer Chemistry (3)**
Prereq: CHEM 121 or 125, 251, PCE 371. Types of polymers, methods of polymerization, and preparation of important commercial thermoplastic and thermosetting plastics. Addition and condensation polymers are prepared in the laboratory.
- **CHEM 425K Bioanalytical Instrumentation (3)**
Prereq: CHEM 333 or instructor permission
- **CHEM 425R Surface Chemistry (3)**
Prereq: CHEM 461 and permission of instructor and any additional prerequisites as listed. The analysis of biomolecules, substances of significant biological interest, and substances in biological matrices using advanced instrumental methods.
- **CHEM 497B Chemistry of Macromolecules (3)**
- **CHEM 497R Chemistry of Renewable Energy (3)**
- **GEOL 306 Mineralogy (4)**
Prereq: GEOL 211 or GEOL 211A; CHEM 121; CHEM 122 or higher or concurrent. Introduction to crystal chemistry and crystallography. Origin, occurrence and classification of common minerals; physical and chemical properties of minerals used in identification. Basic petrographic microscopy techniques and identification of common rock-forming minerals in thin-section. *(Note: GEOL 211 prereq is waived for MSCI minors)*
- **GEOL 352 Introduction to Geophysics (4)**
Prereq: GEOL 211 or 211A; PHYS 121 and PHYS 122, or PHYS 161 and PHYS 162. Basic elements of geomagnetism, seismology, gravity and heat flow with reference to the internal structure of the earth. *(Note: GEOL 211 prereq is NOT waived for MSCI minors)*
- **GEOL 454 Magnetic Fabrics and Geological Processes (4)**
Prereq: GEOL 352. Theory and laboratory measurement of magnetic anisotropy in rocks, sediments, and minerals. Emphasis on the use of magnetic anisotropy techniques to understand various geological processes including deformation, sediment transport, and magma flow and emplacement. Laboratory project and writing project included.
- **GEOL 461 Analytical Geochemistry (2)**
Prereq: GEOL 306, CHEM 123 or higher. Introduction to analysis of rocks, soil and water. Methods include atomic absorption spectrophotometry, ion chromatography, gas chromatography and quadrupole mass spectrometry as well as gravimetric, volumetric and colorimetric analysis.
- **PCE 371 Introduction to Plastics Materials and Processes (5)**
Prereq: ENGR 104; ENGR 170 recommended. Polymer science and analysis of basic plastics materials; experience in product design, tooling, and processing of thermoplastic.
- **PCE 372 Reinforced Plastics/Composites (5)**
Prereq: PCE 371. Polymer and reinforcement systems; material testing; mold design and development; laboratory involvement in reinforced plastics production processes.
- **PHYS 475 Physics of Solids and Materials 1 (3)**
Prereq: PHYS 255 or permission of instructor. Structure and properties of materials including crystallography, symmetry, bonding-related properties, electronic structure, phase diagrams, surfaces, semiconductors, metals.
- **PHYS 476 Physics of Solids and Materials 2 (3)**
Prereq: PHYS 475. Application and investigation of materials including amorphous, liquid crystal, magnetic, porous and novel materials, lasers, photo detectors, optical fibers, microscopy, spectroscopy.
- **Other courses may be approved as electives. Contact the program office for more information, 360-650-6522 or AMSEC@wwu.edu.**