

# Bemidji State University

## GEOL 2110: Mineralogy and Petrology

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites: None

Corequisites: None

MnTC Goals: None

Identification and occurrence of minerals and igneous, metamorphic and sedimentary rocks. Introduction to diagnostic tests including spectrometer and polarizing microscope. Lecture and laboratory.

Prerequisites: GEOL 1110 and GEOL 1120 or consent of instructor.

### B. COURSE EFFECTIVE DATES: 08/26/1997 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Introduction and basics of chemistry
2. Mineral properties and diagnostic tests  
Crystals and mineral classification
3. Introduction to basic crystallography, crystal systems, crystal forms
4. Introduction to optical properties of minerals
5. Optical properties, anisotropic minerals  
Optical spectroscopic analysis
6. Introduction to analysis of mineral unknown  
Native Elements, sulfides, halides
7. Oxides, hydroxides, carbonates, sulfate, borates, phosphates
8. Silicates
9. Igneous rock classification and hand specimen identification.
10. Igneous rock petrogenesis  
Introduction to thin section observation
11. Identification of minerals and texture in thin section.
12. Classification of clastic sedimentary rocks and hand specimen identification.  
Observation of clastic sedimentary rocks in thin section.
13. Classification and hand specimen identification of chemical sedimentary rocks. Observation of chemical sediments in thin section.
14. Classification of metamorphic rocks. Observation of metamorphic rocks in thin section

**D. LEARNING OUTCOMES (General)**

1. apply scientific, quantitative, and critical thinking skills to identify and solve geologic problems
2. demonstrate understanding of the application of technology in mineralogy and petrology
3. organize and prepare a strategy for completing a specific experiment in mineral identification
4. attain a depth of understanding in mineralogy and petrology
5. demonstrate that they can locate and apply information regarding mineralogy and petrology
6. utilize data to formulate and test hypotheses pertaining to mineralogy and petrology
7. communicate laboratory results in a scholarly manner utilizing technical writing skills

**E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

**F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

**G. SPECIAL INFORMATION**

None noted