

**University of Arkansas - Fort Smith
5210 Grand Avenue
P. O. Box 3649
Fort Smith, AR 72913-3649
479-788-7000**

General Syllabus

GEOS 33203 Optical Mineralogy

Credit Hours: 3

Lecture Hours: 2

Lab Hours: 2

Prerequisite: GEOS 32013 Mineralogy and Crystallography

Effective Catalog: 2026-2027

I. Course Information

A. Catalog Description

Studies the optical properties of minerals and relationships between crystallography and mineral optics. Identification of minerals in thin section using a polarizing microscope is also studied.

B. Additional Information

This course is required for the B.S. degree in Geoscience, Professional Concentration

II. Student Learning Outcomes

A. Subject Matter

Upon completion of this course, the student will be able to:

1. Explain the difference between isotropic and anisotropic minerals.
2. Identify common minerals based on optical properties.
3. Identify and describe mineral in thin section using a polarizing microscope.
4. Distinguish between igneous, metamorphic, and sedimentary rocks in thin section under a polarizing microscope.

B. University Learning Outcomes:

Optical Mineralogy will enhance student abilities in the following areas:

Analytical Skills

Critical Thinking Skills

Students will identify a problem or issue and will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues. The student will generate solutions/analysis of problems/issues evaluated and will assess and justify the solutions and/or analysis.

Communication Skills (written and oral)

Students will communicate proficiently. The student will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

III. Major Course Topics

- A. Optical properties of minerals.
- B. Polarized light microscopy.
- C. Identification of minerals in thin section.
- D. Estimating mineral composition based on optical properties.