

University of Arkansas - Fort Smith
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General Syllabus
GEOS 32013 Mineralogy and Crystallography

Credit Hours: 3

Lecture Hours: 2

Laboratory Hours: 2

Prerequisite: CHEM 14103/14101 College Chemistry I/Lab or consent of the instructor

Effective Catalogue: 2026-2027

I. Course Information

A. Catalog Description

Identification of minerals in a hand sample, classification of minerals, mineral structures and compositions, crystal systems and crystal classes, and Miller Indices.

B. Additional Information

This course is a core requirement of the B.S. degree in Geoscience.

II. Student Learning Outcomes

A. Subject Matter

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

1. Explain how minerals are classified.
2. Identify common minerals based on observed physical properties.
3. Distinguish between the six different crystal systems.
4. Describe the structural sites and coordination numbers of common ions.
5. Calculate a mineral formula given a raw chemical composition.

B. University Learning Outcomes:

This course 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.** Mineral physical properties
- B.** Identification of mineral in hand sample
- C.** Mineral compositions
- D.** Classification of minerals
- E.** Crystallography