

University of Arkansas - Fort Smith
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General Syllabus

GEOL 11031 Earth Science Laboratory

Credit Hours: 1 Lecture Hours: 0 Laboratory or other types of Hours:2

Prerequisite(s) or Corequisite(s): PHSC 11043 Earth Science

Effective Catalog: 2021-2022

I. Course Information

A. Catalog Description

A study in minerals, rocks, fossils, topographic map and geologic maps, and oceanographic and meteorological phenomena.

II. Student Learning Outcomes

A. Subject Matter

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

1. Identify and differentiate minerals, igneous rocks, sedimentary rocks, and metamorphic rocks.
2. Identify glacial features on topographic maps and use these features to give a historical interpretation of the area.
3. Use seismogram data and a travel/time graph to determine the epicenter of an earthquake.
4. Explain how porosity and permeability of rocks affect groundwater movement and how groundwater movement is determined using well data and topographic maps.
5. Identify and describe symbols and features found on topographic maps.
6. Explain the process of plate tectonics and identify the major plate boundaries found on the Earth using illustrations and geologic models.
7. Explain the concept of relative dating and apply relative dating techniques out in the field, and in the laboratory using rock compositions and fossils.
8. Explain absolute dating through the understanding of half-life and radioactive decay.
9. Identify oceanographic features on maps.
10. Explain weather patterns and describe how weather currents, ocean

currents, and the Earth's rotation and revolution interact with one another.

B. University Learning Outcomes

Earth Science enhances 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. Minerals
- B. Igneous rocks
- C. Sedimentary rocks
- D. Metamorphic rocks
- E. Groundwater and surface water flow
- F. Glaciers
- G. Earthquakes and Earth's interior
- H. Plate Tectonics
- I. Volcanoes
- J. Mountain building
- K. Geologic Time
- L. Earth's history
- M. Oceanography