**University of Arkansas - Fort Smith**
**5210 Grand Avenue**
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**Fort Smith, AR 72913-3649**
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**General Syllabus**

# GEOL 2653 Earth Science

Credit Hours: 3 Lecture Hours: 3 Laboratory or other types of Hours:0

Prerequisite(s):
Prerequisite(s) or Corequisite(s): GEOL 2651 Earth Science Laboratory
Corequisite(s):

Effective Catalog: 2021-2022

## I. Course Information

### A. Catalog Description

Study of fundamental principles and procedures of physical geology, historical geology, geologic hazards, soil formation, oceanography, and meteorology (ACTS: PHSC 1104; must have GEOL 2653/2651).

## 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. Explain the processes in forming different minerals and rocks and how these processes relate to different environments.
3. Explain how the hydrologic and rock cycles work and how they interact with one another.
4. Explain how weathering and erosion physically and chemically break rocks into their mineral components.
5. Identify different types of mass wasting based on movement, velocity, and material.
6. Identify and differentiate the components of the scientific method.
7. Identify glacial features associated with glaciation and how glaciation works.
8. Identify glacial features on topographic maps.
9. Identify Earth’s internal structure and processes.

10. Determine the history of the Earth from geologic features formed.
11. Explain how and why earthquakes occur and how strength and damage.
12. Determine the magnitude and damage assessment on the Richter and Mercalli scales.
13. Use seismogram data and a travel/time graph do determine the epicenter of an earthquake.
14. Differentiate the different types of volcanoes and explain how a magma/lava's silica content determines the severity of the eruption and the effects of volcanism on the landscape.
15. Explain how plate tectonics works and identify tectonic boundaries based on movement of lithospheric crust.
16. Explain how mountain building occurs and identify specific folds and fault that are associated with this process.
17. Differentiate between relative and absolute dating of rocks and how this is done as a geologist.
18. Identify periods and eras from the geologic time scale and explain what events occurred in the geologic past.
19. Identify ocean processes and features associated with erosion and deposition.
20. Identify and differentiate the different layers of the atmosphere.
21. Differentiate the differences between climate and weather.
22. Identify periods of climate change through Earth's history.
23. Identify and explain weather patterns and features associated with weather.
24. Identify and explain the fossilization process.

**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. Weathering, soil, and mass wasting
F. Groundwater and surface water
G. Glaciers
H. Earthquakes and the Earth's interior
I. Plate Tectonics
J. Volcanoes
K. Mountain building
L. Geologic Time
M. Earth's history
N. Oceanography
O. Meteorology