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

**General Syllabus**

**GEOL 11103 Physical Geology**

**Credit Hours**: 3 **Lecture Hours**: 3 **Lab Hours**: 0

**Prerequisite or Co-requisite**: GEOL 11101 Physical Geology Laboratory

**Effective Catalogue**: 2020-2021

## I. Course Information:

### A. Catalog Description

Introduction to geology, including minerals, rocks, geologic time, plate tectonics, volcanoes, earthquakes, geologic structures, and groundwater. (ACTS: GEOL 1114; must have GEOL1253/1251)

## II. Student Learning Outcomes

### A. Subject Matter:

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

1. Identify common minerals, igneous rocks, sedimentary rocks, and metamorphic rocks.
2. Identify the fundamental tenets of plate tectonic theory and the evidence that supports the theory.
3. Determine the Richter magnitude of an earthquake and locate earthquake epicenters using seismogram data.
4. Explain how porosity and permeability of rocks affect groundwater movement and how groundwater movement is determined using well data and topographic maps.
5. Apply the principles of relative dating and radioactive dating to determine relative and absolute ages of rocks and other geologic features.
6. Identify geologic structures and know the type of stress inferred by them.
7. Explain the origin and diversity of magma generated in different tectonic settings.
8. Explain how chemical composition and gas content determine the physical properties and explosivity of lava, which in turn leads to a variety of volcano types.

9. Describe the process of mountain building in different tectonic settings.
10. Describe the nature and age of major events in geologic time: earth's formation and differentiation, formation of continental crust, first appearance of life and order of appearance of major life forms, oxygenation of earth's atmosphere, formation and break up of Pangaea and other supercontinents.

**B. University Learning Outcomes (ULO)**

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.

**Global & Cultural Perspectives**

Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. The students will demonstrate understanding or application of their discipline in a global environment and will demonstrate how their discipline impacts or is impacted by different cultures.

## 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
H. Geologic structures
I. Plate tectonic theory
J. Relative dating
K. Absolute dating
L. Geologic Time