University of Arkansas – Fort Smith
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General Syllabus

GEOL 11343 Historical Geology

Credit Hours: 3 **Lecture Hours:** 3 **Laboratory Hours:** 0

Prerequisite: GEOL 11103/11101 Physical Geology/Lab or PHSC 11043/11031 Earth Science/Lab

Prerequisite or Co-requisite: GEOL 11331 Historical Geology Laboratory

Effective Catalog: 2020-2021

I. Course Information

A. Catalog Description

Origin and evolution of the earth and life through geologic time, with emphases on mineral and rock formation, stratigraphic principles, sedimentary depositional environments, paleogeography, relative and absolute dating, and fossil identification.

B. Additional Information

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

II. Student Learning Outcomes

A. Subject Matter

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

1. Explain how the hydrologic and rock cycles work and how they interact with one another.
2. Describe plate tectonic theory and list the major tectonic boundaries and plates found on the Earth.
3. Describe paleomagnetism and “polar wandering” and explain how these help in understanding plate tectonics.
4. Explain how plate tectonics affects the distribution of life and natural resources on the Earth.
5. Describe stratigraphy and explain the causes of marine transgressions and regressions.
6. Compare and contrast continental, transitional, and marine environments for sedimentary rocks.
7. List the major Era’s and Periods on the geologic time scale along with the dates they occurred in the geologic past.

8. List major geologic, climatic, and biologic events that occurred during the Paleozoic Era.
9. Describe the evolution of the Grand Canyon, Appalachian Mountains and Rocky Mountains throughout geologic time.
10. Explain the evolution of Cambrian fossils and organisms to invertebrates, fishes, and reptiles, during the Paleozoic Era.
11. List the effects of the breakup of Pangaea on global climates and ocean circulation patterns during the Mesozoic Era.
12. List the importance of accreted terranes during the Mesozoic Era.
13. List the major orogenic belts and events that occurred in North America during the Cenozoic Era.
14. Describe the Pleistocene and Holocene Epochs of the Cenozoic Era including descriptions of stratigraphy and climatic changes.
15. Explain the Ice Age and list the effects glaciers had on sea level adjustment and isostasy on the Earth.

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.

III. Major Course Topics

A. Minerals
B. Igneous rocks
C. Sedimentary rocks
D. Metamorphic rocks
E. Plate Tectonics
F. Geologic Time- relative and absolute dating
G. Evolution: Genetics, Microevolution, Macroevolution, Biological evidence
H. Precambrian Earth and Life History
I. Early and Late Paleozoic Earth History
J. Fossils and their mass extinctions during the Paleozoic Era
K. Invertebrate, vertebrate, and plant evolution during the Paleozoic Era
L. Mesozoic History of the Earth

M. Dinosaurs and other life during the Mesozoic Era
N. Cenozoic Geologic History - Climatic change, Mammals, Migrations, Primate and Human Evolution.