University of Arkansas – Fort Smith
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General Syllabus

GEOL 4204 Sedimentology and Stratigraphy

Credit Hours: 4 Lecture Hours: 3 Laboratory Hours: 2

Prerequisite: GEOL 3014 Geological Field Methods.

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

The fundamental principles of sedimentology and stratigraphy highlights the important physical, chemical, biological, and stratigraphic characteristics of sedimentary rocks. Emphasizes the ways in which the study of sedimentary rocks is used to interpret depositional environments, changes in ancient sea level, and other aspects of Earth's history.

B. Additional Information

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

II. Student Learning Outcomes

A. Subject Matter

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

1. Identify the formation and weathering of soils and the transport and deposition of siliciclastic sediment.
2. Identify and asses sedimentary rock textures and structures.
3. Evaluate the composition, classification, and diagenesis of siliciclastic, carbonate, chemical/biochemical, and carbonaceous.
4. Identify and analyze continental, marginal-marine, siliciclastic marine, carbonate, and evaporate environments.
5. Apply seismic, sequence, and magnetic stratigraphies, lithostratigraphy, biostratigraphy, and chronostratigraphy.
6. Determine basin formation and analyze basins in relation to plate tectonics.

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. Students 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. Students will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

Ethical Decision Making
Students will model ethical decision-making processes. Students will identify ethical dilemmas and affected parties and will apply ethical frameworks to resolve a variety of ethical dilemmas.

Global & Cultural Perspectives
Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. 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. Origin and transport of sedimentary materials
B. Physical properties of sedimentary rocks
C. Composition, classification, and diagenesis of sedimentary rocks
D. Depositional environments
E. Stratigraphy and basin analysis