

University of Arkansas – Fort Smith
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General Syllabus

GEOL 4203 Paleobotany

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisites: BIOL 2303/2301 General Botany/Laboratory or GEOL 2263/2261 Historical Geology/Laboratory

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

Evolutionary history of major vascular plant groups is studied. Included are taphonomy and fossilization of plants, diversity of plants through time, plant evolution, plant paleoecology, and paleoclimatic considerations. Concepts of geological time, stratigraphy and sedimentation are included.

B. Additional Information

This course is an elective 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 plants based on their natural relationship to each other.
2. Analyze the different processes leading to fossilization of plant parts, including the influence of sedimentologic and depositional environments.
3. Identify the major plant groups and the significant evolutionary changes that lead to diversification.
4. Evaluate the differences in structural makeup between the different plant groups.
5. Identify changes in plant form and function and increases in biodiversity through time.
6. Evaluate and characterize the change in plant communities and plant associations through time.
7. Evaluate global and temporal distribution of plant, plant groups, and plant communities.
8. Evaluate the influence by climate, tectonic, and other geological constraints on the distribution of plants through time.
9. Assess the use of fossil plants for determining paleoclimates.

10. Evaluate the relationship between phytostratigraphy, climate and evolution.

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. Historical geology and sedimentary depositional environment review
- B. Plant taxonomy
- C. Preservation of plant parts
- D. Plant taphonomy
- E. Plant ecology
- F. Paleoecology
- G. Biogeography
- H. Paleoclimate and change
- I. The use of plant fossils as biostratigraphic indicators