

G690 EVOLUTIONARY PALEOECOLOGY

INSTRUCTOR: Dr. Claudia C. Johnson, Geology 501, 855-0646; claudia@indiana.edu

COURSE MATERIALS:

Assigned readings from textbooks and journals

OBJECTIVES OF THE COURSE:

We will analyze and synthesize the ecologic and environmental context for long-term biotic associations in the fossil record. Although course readings will be divided among topics pertaining to evolution, ecology and paleoecology, the bulk of the semester's readings will be oriented toward evolutionary paleoecology. By the semester's end you will have knowledge of evolutionary paleoecology principles and research methodologies. The semester's focus will be on developing critical thinking skills to augment your research objectives.

Lecture, discussion and in-class small group exercises will comprise our course meetings. As will become clear during the course, both writing and speaking skills will be sharpened.

STUDENTS' OBLIGATIONS AND GRADE ASSIGNMENTS

- 60%: written assignments:
 - 10%: report on evolution
 - 10%: report on ecology and paleoecology
 - 10%: report #1 on evolutionary paleoecology
 - 10%: report on research methodology in evolutionary paleoecology
 - 20%: comprehensive report on evolutionary paleoecology
- 20%: quality of contributions expressed during class discussions
- 20%: final exam

SEMESTER TOPICS

Introduction and overview

Evolutionary theory and methods of data collection and analysis

Ecologic and paleoecologic approaches to analyzing life and environment

Modern information synthesis and evaluation, Guest Lecturer: School of Informatics

Onshore-offshore patterns of diversification

Coordinated stasis

Ecological evolutionary units

Phanerozoic faunal replacements

Marine revolution – predator/prey “arms race”

Ecospace utilization through time

Research methods in evolutionary paleoecology

Kinetics of mass extinction and origination

Student presentations of comprehensive reports on evolutionary paleoecology