

University of Arkansas – Fort Smith
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General Syllabus:

BIOL 4253 Zoogeography

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: BIOL 3403/3401 Ecology/Laboratory

Effective Catalog: 2018~2019

I. Course Information

A. Catalog Description

An examination of the spatial patterns of biodiversity based on the effects of historical geology, climate, topography, evolution, and biological interactions.

II. Student Learning Outcomes

A. Subject Matter

Upon completion of this course, students will be able to:

1. Describe why a species or higher taxonomic group is confined to its present range.
2. Explain what enables a species to live where it does, and what prevents it from colonizing other areas.
3. Explain what roles climate, topography, and interactions with other organisms play in limiting the distribution of a species.
4. Evaluate how different kinds of organisms replace each other in time and space.
5. Analyze historical events, and describe how these events, such as continental drift, Pleistocene glaciations, and recent climatic change, have shaped species distributions.
6. Explain why there are so many more species in the tropics than in temperate or arctic latitudes.
7. Describe how isolated oceanic islands are colonized and why are there nearly always fewer species on islands than in the same types of habitats on continents.
8. Evaluate the study of zoogeography in relation to conservation of species or habitats.

B. University Learning Outcomes:

Zoogeography could enhance student abilities in the following areas:

Communication Skills (written and oral)

Students will appropriately communicate factual information and reasoning in a written form via essay exam questions and in a term paper on a topic of their choice within the study subject. Students will communicate factual information and reasoning verbally in a socially appropriate manner by interacting with classmates in small group settings when discussing literature related to their term paper subject.

Analytical Skills

Critical Thinking Skills: Students will critically evaluate scientific papers obtained from primary sources. Students will judge whether methodology was appropriate to test a given hypothesis and if conclusions made follow logically from results.

Quantitative Reasoning: Students will apply quantitative measurement and statistical analysis from primary literature. Students will use apply these models to make predictions and be able to verbally explain the reasoning behind mathematical models.

III Major Course Topics

- A. History of zoogeography
 - 1. Alfred Russel Wallace and other contributors
 - 2. Contributions from unsung geologists, biologists, geographers
- B. Abiotic influences on animal distributions
 - 1. The geographic template
 - 2. Climate
 - 3. Soils
 - 4. Aquatic environments
 - 5. microenviroments
- C. Overview of species distributions
 - 1. Method of study
 - 2. Distribution of individuals
 - 3. Distribution of populations
- D. Overview of community distributions and ecosystems
 - 1. Communities
 - 2. Ecosystems
- E. Evolutionary influences
 - 1. Diversification and geography
 - 2. Reconstructing lineages
- F. Dispersal and island biogeography
 - 1. Island patterns
 - 2. Equilibrium theory
 - 3. Evolutionary trends