

University of Arkansas – Fort Smith
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General Syllabus:

BIOL 10503 General Zoology

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: BIOL 10043 Biological Science OR BIOL 20283 Introduction to Organismal Biology.

Effective Catalog: 2018- 2019

I. Course Information

A. Catalog Description

Comparative study of the classification, phylogeny, natural history, and ecology of animals. Includes a survey of the major animal phyla, their evolutionary relationships, main biological features, and strategies for survival.

B. Additional Information

This course is designed for students who have had at least one UA Fort Smith level biology course. Classroom use is made of the University's extensive collections of mounted and preserved specimens.

II. Student Learning Outcomes

A. Subject Matter

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

1. Recognize the major groups of animals.
2. Identify many of the local forms of animals.
3. Describe the general characteristics of the major animal phyla and name representatives of each.
4. Discuss some of the major traits of animals used to construct a phylogenetic tree.
5. Discuss some of the ecological factors influencing distribution patterns of animals within and between phyla.
6. Describe strategies for survival including physical and behavioral adaptations.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will identify a problem or issue, and research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues.

Ethical Decision Making

Students will identify ethical dilemmas and affected parties, and apply ethical frameworks to resolve a variety of ethical dilemmas.

Global & Cultural Perspectives

Students will demonstrate understanding or application of their discipline in a global environment.

III. Major Course Topics

- A. Architectural patterns of animals
 - 1. Hierarchical organization of animal complexity
 - 2. Types of tissues
 - 3. Animal body symmetry
 - 4. Body cavities
- B. Taxonomy and systematics
 - 1. Development of the Linnaean system of classification
 - 2. What is a species? – Different species concepts
 - 3. Taxonomic characters and phylogenetic reconstruction
 - 4. Theories of taxonomy
 - 5. Major divisions of life
 - 6. Major subdivisions of the animal kingdom
- C. Reproduction and development
 - 1. Early embryonic development through germ layer formation
 - 2. Reproductive biology of animal groups
- D. Animal-like protozoan groups
 - 1. Form and function
 - 2. Major protozoan phyla
- E. Sponges and Placozoans
 - 1. Origin of animals (Metazoa)
 - 2. Phylum Porifera
 - 3. Phylum Placozoa
- F. Radiate animals
 - 1. Phylum Cnidaria
 - 2. Phylum Ctenophora
 - 3. Phylogeny and adaptive diversification
- G. Platyzoa and Mesozoa
 - 1. Clades within superphylum Protostomia
 - 2. Clade Platyzoa
 - 3. Phylum Platyhelminthes
 - 4. Phylum Rotifera
 - 5. Phylum Acanthocephala

- 6. Phylum Gastrotricha
- 7. Phylum Mesozoa
- H. Polyzoa and Kryptozoa
 - 1. General features
 - 2. Phylum Entoprocta
 - 3. Lophophorate phyla
 - 4. Phylum Nemertea
- I. Phylum Mollusca
 - 1. Form and function
 - 2. Chitons
 - 3. Tusk shells
 - 4. Snails
 - 5. Bivalve mollusks
 - 6. Cephalopods
- J. Annelids and allied taxa
 - 1. Major annelid clades
 - 2. Phylum Sipuncula
 - 3. Annelid phylogeny
- K. Smaller Ecdysozoans
 - 1. Phylum Nematoda
 - 2. Phylum Nematomorpha
 - 3. Phylum Onychophora
 - 4. Phylum Tardigrada
- L. Trilobites, Chelicerates, and Myriapods
 - 1. Phylum Arthropoda
 - 2. Subphylum Trilobita
 - 3. Subphylum Chelicerata
 - 4. Subphylum Myriapoda
- M. Crustaceans
 - 1. General features of crustaceans
 - 2. Brief survey of crustaceans
 - 3. Phylogeny
- N. Hexapods
 - 1. Class Insecta: biological features
 - 2. Insects and human welfare
 - 3. Phylogeny
- O. Chaetognaths, Echinoderms and Hemichordates
 - 1. Phylum Chaetognatha (Arrowworms)
 - 2. Phylum Echinodermata
 - 3. Phylum Hemichordata
- P. Phylum Chordata
 - 1. Traditional and cladistic classification of the chordates
 - 2. Chordate characteristics
 - 3. Ancestry
 - 4. Chordate subphyla
- Q. Fishes

1. Ancestry and relationships of major groups of fishes
 2. Living jawless fishes
 3. Class Chondrichthyes: cartilaginous fishes
 4. Clade Osteichthyes: bony fishes
 5. Structural and functional adaptations of fishes
- R. Early tetrapods and modern amphibians (class Amphibia)
1. Movement onto land
 2. Early evolution of terrestrial vertebrates
 3. Modern amphibians
- S. Amniote origins and nonavian reptiles
1. Origin and adaptive radiation of reptilian groups
 2. Characteristics of reptiles that distinguish them from amphibians
 3. Characteristics and natural history of reptilian orders
- T. Birds
1. Origin and relationships
 2. Structural and functional adaptations for flight
 3. Migration and navigation
 4. Social behavior and reproduction
- U. Mammals
1. Origin and evolution of mammals
 2. Characteristics of mammals
 3. Structural and functional adaptations