Miami Dade College

Course Description

ZOO3021 | Survey of Animal Diversity | 3.00 credits

This course presents zoology as a scientific discipline. Students will learn the basic principles of zoological nomenclature, taxonomy, systematics, and the basic understanding of the relationships of animals to one another, to humans, their environment and to society. Prerequisites: BSC2010, 2010L, 2011, 2011L.

Course Competencies:

Competency 1: The student will discuss the nature of zoology and understand the fundamental components of the scientific process by:

1. Explaining the scientific process as a method of inquiry in zoology
2. Describing the function of each step of the scientific process
3. Determining how the scientific process is used to solve problems and answer questions in zoology
4. Identifying key individuals and events in the study of zoology over history and across cultures

Competency 2: The student will demonstrate knowledge of the principles of animal nomenclature and terminology by:

1. Discussing the development and nature of the current system of zoological nomenclature
2. Explaining the process, procedures, and purpose of the scientific classification of animals
3. Describing the principal theories of taxonomy
4. Differentiating the various concepts of the species

Competency 3: The student will demonstrate knowledge of structural, physiological, and molecular similarities of organisms used to classify them into taxa by:

1. Discussing the modern view of the evolutionary relationships of the major divisions of life
2. Differentiating between the many prevailing hypotheses of the origin of animal life on earth
3. Defining and differentiating between homology, analogy, cladistics, phylogeny, and ontogeny

Competency 4: The student will demonstrate knowledge of representative organisms in each major phylum in the currently accepted kingdom system by:

1. Explaining the makeup of the major divisions of life
2. Differentiating the major subdivisions of the animal kingdom
3. Describing the features used to define the various animal body plans

Competency 5: The student will demonstrate knowledge of the relationship of structure and function in living things by:

1. Discussing the makeup and significance of the significant animal kingdoms
2. Defining the steps involved in the evolution of multicellularity
3. Explaining the significant features and categories used to differentiate the members of each group
4. Discussing the nature and significance of the transition to various types of body forms and shapes

Competency 6: The student will demonstrate knowledge of the characteristics and functions of animal cells and their structures by:

1. Explaining the roles and functions of each component of the animal cell
2. Differentiating between animal and plant cells

Competency 7: The student will demonstrate knowledge of the unique features and characteristics of the major invertebrate groups by:

1. Differentiating the types of body symmetry seen among invertebrates
2. Explaining the principal similarities and distinctions between the radiata and bilaterian, protostomes and deuterostomes, acoelomates, pseudocoelomates, and eucoelomates
3. Discussing the major biological features and characteristics of the various members of the

invertebrates
4. Explain the evolutionary and ecological relationships between the various vertebrate groups

Competency 8: The student will demonstrate knowledge of the many characteristics of major vertebrate animal groups by:
1. Describing the similarities and differences between the members of the chordate subphyla Urochordata, Cephalochordata, and Vertebrata
2. Discussing the unique features and evolutionary relationships between each chordate group

Competency 9: The student will demonstrate knowledge of the biological basis of behavior and the role of stimulus by:
1. Explaining the various mechanisms influencing animal behavior
2. Differentiating between internal and external cues
3. Discussing the many ways in which animals receive and respond to stimuli

Competency 10: The student will demonstrate knowledge of the processes of animal growth and development by:
1. Defining and differentiating between asexual and sexual modes of reproduction
2. Explaining the advantages and disadvantages of sexual and asexual reproduction
3. Defining and differentiating between vertebrate and invertebrate reproduction
4. Explaining the role of the endocrine system in gametogenesis, fertilization, and embryonic development

Competency 11: The student will be able to discuss the roles and relationships between animals and their environment by:
1. Defining and differentiating between animal populations and communities
2. Comparing and contrasting biotic and abiotic components that influence animal interactions
3. Explaining the roles of animals in food webs, food pyramids, energy cycles, niches, and biogeochemical cycling of nutrients

Competency 12: The student will be able to discuss and demonstrate an understanding of the interconnections between animals, humans, society, and technology by:
1. Determining the relevance of animals, their ecology, and habitats to human activities
2. Explaining the importance of interactions and interconnections between animals, humans, and society
3. Summarizing the impacts of human population, technology, and related activities on the biology and ecology of the various animal groups

Learning Outcomes:
- Communicate effectively using listening, speaking, reading, and writing skills
- Solve problems using critical and creative thinking and scientific reasoning
- Describe how natural systems function and recognize the impact of humans on the environment