Miami Dade College

Course Description

ZOO3021L | Survey of Animal Diversity Laboratory | 1.00 Credit

This laboratory course provides hands-on experience with the concepts covered in the lecture ZOO3021. Students will learn the basic principles of zoological nomenclature, taxonomy, and systematic; and the basic understanding of the relationships of animals to other organisms and to one another. Prerequisites: BSC2010, 2010L, 2011, 2011L. Corequisite: ZOO3021.

Course Competencies

Competency 1: The student will demonstrate knowledge of the proper use of the microscope and other zoological sampling equipment by:

1. Explaining the various practical field sampling techniques and laboratory examination methods.
2. Demonstrating precision in using physical and/or chemical data collection equipment, including, but not limited to, salinity photometer, Secchi disk, digital meters, thermometer, and Niskin bottle.
3. Demonstrating precision in the usage of the compound and dissection microscope and specimen sampling equipment, including, but not limited to, dip nets, seine nets, plankton nets, bottom dredge, and sieves.

Competency 2: The student will demonstrate knowledge of structures found in animal cells by:

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

Competency 3: The student will demonstrate knowledge of the procedures for animal classification and nomenclature 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 among the various concepts of what a species represents.

Competency 4: The student will identify various common animals based on their taxonomic groupings and relate structure to function in a variety of organisms 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 5: The student will demonstrate knowledge of the significant characteristics of Invertebrates by:

1. Differentiating the types of body symmetry seen among invertebrates.
2. Explaining the principal similarities and distinctions between the Radiata and Bilateria, protostomes and deuterostomes, acoelomates, pseudocoelomates, and coelomates.
3. Discussing the major biological features and characteristics of the various members of the invertebrates.
4. Identifying and categorizing the organisms observed based on their physical and anatomical features.
5. Explaining the physiological and behavioral characteristics of the collected marine organisms and their environment.

Competency 6: The student will demonstrate knowledge of the salient features of the chordates 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.
3. Identifying and categorizing, by sight, the various organisms observed based on their respective physical and anatomical features.

4. Explaining the physiological and behavioral characteristics of the collected organisms in relation to their environment.

Competency 7: The student will recognize animal behaviors and how these receive and react to various stimuli 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 8: The student will be able to discuss the roles and relationships between animals and their environment by:

1. Defining and differentiating between community, ecosystems, populations, and trophic levels.
2. Comparing and contrasting between biotic and abiotic components.
3. Understanding food webs, food pyramids, energy cycles, niches, and biogeochemical cycling of nutrients.
4. Identifying and describing the surveyed communities and ecosystems, including, but not limited to, beaches, seagrass beds, mangrove swamps, and coral reefs.
5. Discussing factors attributing to the distribution of organisms within the communities and ecosystems surveyed.

Competency 9: The student will be able to discuss and demonstrate an understanding of the interconnections between animals, man, society, and technology by:

6. Determining the animals' relevance, ecology, and habitats to human affairs.
7. Explaining the importance of interactions and interconnections between animals, man, and society.
8. Explaining the natural processes and effects of human impacts upon communities and ecosystems surveyed during the field trips.
9. Summarizing the impacts of human population, technology, and 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.