Common Course Number: ZOO 1010-L

Course Title: Zoology Lab

Catalog Course Description: Laboratory for ZOO-1010 lecture. A survey of the animal kingdom based on a detailed study of the morphology, anatomy, and physiology of selected representative specimens.

Credit Hours: 1 hour

Prerequisites: none

Co requisite: ZOO 1010

Course competencies:

Competency 1: Use of the Microscope and the Scientific Method

Upon successful completion of this course, the student will show knowledge of use of the microscope and the scientific method by:

   A. Identifying the components of compound and dissecting microscopes and describing their functions.
   B. Comprehending the procedures for the care of compound and dissecting microscopes.
   C. Demonstrating ability to focus on objects under various powers of magnification of the compound microscope.
   D. Demonstrating the ability to make a wet mount.
   E. Demonstrating the ability to estimate the size of objects seen under the compound microscope.
   F. Describing the steps of the scientific method.
   G. Identifying the three types of variables encountered in scientific experimentation.

Upon successful completion of this course, the student will show knowledge of population genetics and the Hardy-Weinberg theorem by:

A. Defining the biological concept of population.
B. Comprehending the Hardy-Weinberg theorem.
C. Describing the relationship between allelic and genotypic frequencies.
D. Demonstrating the conditions necessary to maintain Hardy-Weinberg equilibrium using the bead model.
E. Testing hypothesis concerning the effects of microevolutionary agents using the bead model.

Competency 3: Use of Cladistics Systematics in the Classification of Organisms

Upon successful completion of this course, the student will show knowledge of use of cladistic systematics in the classification of organisms by:

A. Describing the purposes of classification of organisms.
B. Describing the makeup of the taxonomic hierarchy.
C. Defining the concepts of systematics, taxonomy, and nomenclature.
D. Comprehending the construction and purpose of evolutionary tree diagrams.
E. Demonstrating the techniques of cladogram construction, using imaginary organisms.
F. Assigning names to the imaginary organisms, using the principles of zoological nomenclature.

Competency 4: Animal Diversity: Porifera and Cnidaria.

Upon successful completion of this course, the student will show knowledge of animal diversity: porifera and cnidaria by:

A. Describing the evolutionary relationships of sponges with protists and members of the Eumetazoa.
B. Describing the cellular level of organization, as exemplified by sponges.
C. Describing the poriferan body plan.
D. Describing the structure and function of the cell types seen in sponges.
E. Defining the three types of body forms seen in sponges and describing their evolutionary significance.
F. Describing the evolutionary relationships of cnidarians with other members of the Eumetazoa.
G. Describing the tissue level, diploblastic level of organization, as exemplified by cnidarians.
H. Describing radial symmetry and describe its selective advantages for sedentary and sessile organisms.
I. Describing the cnidarian body plan.
J. Defining the cnidarian classes and recognizing representative members of each.

Competency 5: Animal Diversity: Platyhelminthes and the Pseudocoelomates

Upon successful completion of this course, the student will show knowledge of animal diversity: Platyhelminthes and the Pseudocoelomates by:

A. Describing the evolutionary relationships of flatworms with the other members of the Bilateria.
B. Describing the organ level of organization, as exemplified by flatworms.
C. Describing the triploblastic aeoelomate body plan of flatworms.
D. Defining bilateral symmetry and its selective advantages for active animals.
E. Defining the flatworm classes and recognizing representative members of each.
F. Describing the life cycles of representative free-living and parasitic flatworms.
G. Describing the evolutionary relationships of roundworms with other members of the Bilateria.
H. Describing the organ-system level of organization as exemplified by roundworms.
I. Describing the pseudocoelomate type of body cavity and the advantages accruing to animals possessing them.

Competency 6: Animal Diversity: Mollusca and Annelida

Upon successful completion of this course, the student will show knowledge of animal diversity: Mollusca and Annelida by:

A. Describing the evolutionary relationships of mollusks and other members of the Protostomia, as well as other members of the Bilateria.
B. Describing the protostome eucoelomate body plan.
C. Describing the typical molluscan body plan and how it is modified in the various molluscan classes.
D. Desfining the molluscan classes and recognizing representative members of each.
E. Describing the evolutionary relationships of annelids and other members of the Protostomia, as well as other members of the Bilateria.
F. Describing the metameric eucoelomate body plan.
G. Describing the typical annelid body plan and how it is modified in the various annedid classes.
H. Defining the annedid classes and recognizing representative members of each.

Upon successful completion of this course, the student will show knowledge of animal diversity: arthropoda by:

A. Describing the evolutionary relationships of arthropods with other members of the Protostomia, as well as other members of the Bilateria.
B. Describing the tagmatic eucoelomate body plan.
C. Describing the typical arthropod body plan and how it is modified in the various arthropod subphyla and classes.
D. Defining the arthropod classes and recognizing representative members of each.

Competency 8: Animal Diversity: Echinodermata

Upon successful completion of this course, the student will show knowledge of animal diversity: echinodermata by:

A. Describing the evolutionary relationships of echinoderms with other members of the Deuterostomia, as well as other members of the Bilateria.
B. Describing the pentaradial deuterostome eucoelomate body plan.
C. Describing the typical echinoderm body plan and how it is modified in the various echinoderm classes.
D. Defining the echinoderm classes and recognizing representative members of each.

Competency 9: Animal Diversity: Chordata

Upon successful completion of this course, the student will show knowledge of animal diversity: chordata by:

A. Describing the evolutionary relationships of chordates with other members of the Deuterostomia, as well as other members of the Bilateria.
B. Describing the metameric deuterostome eucoelomate body plan.
C. Describing the typical chordate body plan and how it is modified in the various chordate subphyla and classes.
D. Defining the chordate subphyla and classes, and recognizing representative members of each.

Competency 10: Anatomy of Vertebrates: Musculoskeletal Systems

Upon successful completion of this course, the student will show knowledge of anatomy of vertebrates: musculoskeletal systems by:

A. Describing the structural and functional importance and interdependence of musculoskeletal systems in vertebrate animalsDescribing the structural makeup of the vertebrate endoskeleton and how it is modified in the various vertebrate classes.

B. Describing the evolutionary changes in skeletal systems in vertebrate animals and their adaptive significance.
C. Describing the microscopic structure of bone tissue.
D. Describing the structural makeup of the vertebrate muscular system and how it is modified in the various vertebrate classes.
E. Describing the microscopic structure of muscular tissue.
F. Differentiating among the three types of vertebrate muscular tissue at the microscopic level.

Competency 11: Anatomy of Vertebrates: Reproductive System

Upon successful completion of this course, the student will show knowledge of anatomy of vertebrates: reproductive system by:

A. Describing the structure and function of the components of the reproductive system of a shark.
B. Describing the structure and function of the components of the reproductive system of a mammal.
C. Describing the structure and function of the mammalian testis at the microscopic level.
D. Describing the structure and function of the mammalian ovary at the microscopic level.

Competency 12: Animal Behavior

Upon successful completion of this course, the student will show knowledge of animal behavior by:

A. Providing a workable definition of the term ethology.
B. Defining and providing examples of taxes, kineses, and agonistic behaviors.
C. Analyzing these behaviors as seen in representative animals, by proposing hypotheses, making predictions, designing experiments to test the hypotheses, collecting and processing data, discussing results, and making conclusions.