



### **Course Description**

#### **ZOO1010 | Zoology | 3.00 credit**

A survey of the animal kingdom based on a detailed study of the morphology, anatomy, and physiology of selected representative specimens. Corequisite ZOO1010L.

### **Course Competencies:**

**Competency 1:** The student will show knowledge of Zoology as a Science by:

1. Analyzing and demonstrating knowledge of zoology as a science by analyzing the key principles, concepts, and theories that form the foundation of zoological studies
2. Applying and showing knowledge of zoology as a science by applying scientific methods and techniques to conduct research, collect data, and draw conclusions about various zoological phenomena
3. Evaluating and demonstrating knowledge of zoology as a science by evaluating and critiquing scientific literature, research findings, and experimental methodologies to assess the validity and reliability of zoological studies

**Competency 2:** The student will show knowledge of the nature and development of evolutionary theory by:

1. Exploring the historical context, key contributors, and significant milestones in the development of evolutionary thought
2. Analyzing the fundamental principles, concepts, and mechanisms that underlie the theory of evolution
3. Evaluating evolutionary theory by critically evaluating the evidence and scientific reasoning supporting it while considering alternative viewpoints and criticisms

**Competency 3:** The student will show knowledge of the process of animal classification and phylogenetic reconstruction by:

1. Identifying and categorizing different animal taxa based on their shared characteristics and evolutionary relationships
2. Comparing and contrasting different classification systems and phylogenetic trees to understand the principles and methodologies used in organizing and reconstructing the evolutionary history of animals
3. Constructing phylogenetic trees based on morphological, genetic, and molecular data, using these trees to infer evolutionary relationships, and understanding the patterns of animal diversification

**Competency 4:** The student will show knowledge of the diversity of animal life by:

1. Identifying and classifying different animal species based on their distinctive characteristics, such as morphology, behavior, and habitat
2. Describing various animal species' adaptations, life cycles, and ecological roles, highlighting their unique attributes and contributions to ecosystems
3. Comparing and contrasting the anatomical, physiological, and behavioral characteristics of different animal groups, elucidating the similarities and differences that contribute to their diversity and evolutionary success

**Competency 5:** The student will show knowledge of Mendelian patterns of inheritance by:

1. Predicting and explaining the inheritance patterns of specific traits using Punnett squares and genetic diagrams
2. Analyzing and interpreting pedigrees, identifying patterns of inheritance, and determining the probability of inheriting specific traits within a family
3. Applying the principles of Mendelian genetics to solve problems related to inheritance, such as calculating the probability of offspring inheriting specific traits or determining individuals' genotypes based on observed phenotypes

**Competency 6:** The student will show knowledge of reproduction and development in animals by:

1. Investigating the various reproductive strategies, mechanisms, and developmental processes of different animal species
2. Comparing and contrasting the reproductive strategies and developmental patterns of different animal groups, highlighting the variations in reproductive modes, reproductive organs, and embryonic development
3. Analyzing the factors that influence reproductive success, such as mating behaviors, reproductive cycles, and environmental adaptations, and how these factors contribute to the survival and continuation of different animal species

**Competency 7:** The student will show knowledge of animal behavior by:

1. Observing and documenting the behaviors of different animal species in their natural habitats or controlled environments, noting patterns, interactions, and responses to stimuli
2. Analyzing and interpreting specific behaviors' underlying causes and functions, considering factors such as social dynamics, ecological pressures, and evolutionary adaptations
3. Experimenting involves designing and conducting experiments to investigate specific behavioral phenomena, manipulating variables, and collecting data to test hypotheses and gain insights into the mechanisms and drivers of animal behavior

**Competency 8:** The student will show knowledge of ecology by:

1. Describing the fundamental principles and concepts of ecology, including the levels of organization, energy flow, nutrient cycling, and the interactions between organisms and their environment
2. Analyzing ecological data and patterns to identify and explain the relationships between biotic and abiotic factors, population dynamics, community structure, and ecosystem functioning
3. Evaluating the impact of human activities on ecosystems, assessing the consequences of habitat destruction, pollution, climate change, and invasive species on biodiversity and ecosystem stability

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Describe how natural systems function and recognize the impact of humans on the environment