

**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. Special fee.

**Course Competencies:**

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

- Analyzing and demonstrating knowledge of zoology as a science by analyzing the key principles, concepts, and theories that form the foundation of zoological studies.
- 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.
- 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:

- Exploring the historical context, key contributors, and significant milestones in the development of evolutionary thought.
- Analyzing the fundamental principles, concepts, and mechanisms that underlie the theory of evolution.
- 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:

- Identifying and categorizing different animal taxa based on their shared characteristics and evolutionary relationships.
- 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.
- 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:

- Identifying and classifying different animal species based on their distinctive characteristics, such as morphology, behavior, and habitat.
- Describing various animal species' adaptations, life cycles, and ecological roles, highlighting their unique attributes and contributions to ecosystems.
- 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:

- Predicting and explaining the inheritance patterns of specific traits using Punnett squares and genetic diagrams.
- Analyzing and interpreting pedigrees, identifying patterns of inheritance, and determining the probability of inheriting specific traits within a family.
- 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:

- Investigating the various reproductive strategies, mechanisms, and developmental processes of different animal species.
- Comparing and contrasting the reproductive strategies and developmental patterns of different animal groups, highlighting the variations in reproductive modes, reproductive organs, and embryonic development.
- 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:

- Observing and documenting the behaviors of different animal species in their natural habitats or controlled environments, noting patterns, interactions, and responses to stimuli.
- Analyzing and interpreting specific behaviors' underlying causes and functions, considering factors such as social dynamics, ecological pressures, and evolutionary adaptations.
- 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:

- 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.
- Analyzing ecological data and patterns to identify and explain the relationships between biotic and abiotic factors, population dynamics, community structure, and ecosystem functioning.
- 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