



K I R K W O O D
S C H O O L D I S T R I C T

ZOOLOGY

Course Description:

Zoology seminar will explore the amazing world of animals. This semester-long class will focus on the following items: animal taxonomy and classification, characteristics and structure of animals, animal behavior and adaptations, animal habitats, invasive species, and student topics of interest.

Grade Level: 7th and 8th Grade

Unit Scope and Sequence

Unit 1: Characteristics and Classifications of Living Things

Unit 2: Invertebrates

Unit 3: Vertebrates

Unit 4: Reptiles, Amphibians, Birds, and Mammals

Course Enduring Understandings:

- Animal behaviors and adaptations are crucial for survival and reproduction, influencing their ability to thrive in specific habitats.
- Ecosystem dynamics, including resource availability and environmental changes, play a significant role in shaping animal populations and interactions.

Course Essential Questions:

- How do animal behaviors and adaptations impact their survival and reproduction?
- How do changes in ecosystems affect animal populations and their interactions?

ZOOLOGY 7-8

UNIT 1: CHARACTERISTICS AND CLASSIFICATIONS OF LIVING THINGS

In this unit, students will explore the foundational concepts of what defines living organisms and how scientists categorize the diversity of life. Students will examine the characteristics that distinguish living things from nonliving things and learn about the basics of animal taxonomy, including the use of dichotomous keys for species identification. This unit sets the stage for understanding the complexity and variety of life forms on Earth, providing a systematic approach to studying animals.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
<ul style="list-style-type: none"> ● Living things share common characteristics that distinguish them from nonliving things. ● Classification systems, such as taxonomy and dichotomous keys, help scientists organize and understand the diversity of animal life. 	<ul style="list-style-type: none"> ● What are the key characteristics that define living things? ● How do scientists classify animals into different groups?
<i>Students must know:</i>	<i>Students must be able to:</i>
<ul style="list-style-type: none"> ● Characteristics of living things ● Basics of animal taxonomy ● Use of dichotomous keys 	<ul style="list-style-type: none"> ● Identify and describe the characteristics of living organisms. ● Classify animals using taxonomy. ● Use dichotomous keys to identify different species.

Missouri Learning Standards
<p>Analyze and interpret evidence from the fossil record to infer patterns of environmental change resulting in extinction and changes to life forms throughout the history of the Earth. (6-8.LS4.A.1)</p>

ZOOLOGY 7-8 UNIT 2: INVERTEBRATES

This unit delves into the world of invertebrates, the most diverse and numerous group of animals. Students will study simple animals such as sponges (Phylum Porifera) and jellyfish (Phylum Cnidaria), before progressing to more complex invertebrates like arthropods (insects, crustaceans, arachnids) and cephalopods (squid, cuttlefish, octopus). Emphasis will be placed on the unique structures and functions that enable these animals to thrive in a wide range of environments, as well as their critical roles in ecosystems.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
<ul style="list-style-type: none"> ● Invertebrates have diverse structures and functions that enable them to occupy a wide range of habitats. ● Adaptations in invertebrates are key to their survival and ecological roles. 	<ul style="list-style-type: none"> ● What are the distinguishing features of invertebrates? ● How do invertebrates adapt to their environments?
<i>Students must know:</i>	<i>Students must be able to:</i>
<ul style="list-style-type: none"> ● Characteristics of simple animals: sponges (Phylum Porifera) and jellyfish (Phylum Cnidaria) ● Characteristics of arthropods (insects, crustaceans, arachnids) and cephalopods (squid, cuttlefish, octopus) 	<ul style="list-style-type: none"> ● Describe the physical and biological characteristics of invertebrates. ● Explain the adaptations of invertebrates to their environments.

Missouri Learning Standards

Analyze and interpret data to provide evidence for the effects of resource availability on individual organisms and populations of organisms in an ecosystem (6-8.LS2.A.1).

ZOOLOGY 7-8 UNIT 3: VERTEBRATES

In this unit, students will explore vertebrates, focusing on the major classes of fish, including jawless fish, bony fish, and cartilaginous fish. This unit will highlight the differences between vertebrates and invertebrates, emphasizing the anatomical and physiological adaptations that vertebrates possess. Through comparative studies, students will gain an understanding of how these adaptations have allowed vertebrates to occupy diverse habitats and ecological niches.

Unit Essential Learning Targets

<i>Enduring Understandings</i>	<i>Essential Questions</i>
<ul style="list-style-type: none"> ● Vertebrates possess a backbone and a more complex structure compared to invertebrates. ● Each class of vertebrates has unique adaptations that enable them to thrive in various environments. ● 	<ul style="list-style-type: none"> ● How do vertebrates differ from invertebrates? ● What are the major classes of vertebrates and their key characteristics?
<i>Students must know:</i>	<i>Students must be able to:</i>
<ul style="list-style-type: none"> ● Characteristics of fish (jawless, bony, cartilaginous) ● Differences between vertebrates and invertebrates 	<ul style="list-style-type: none"> ● Identify and describe the characteristics of different classes of fish. ● Compare and contrast vertebrates and invertebrates.

Missouri Learning Standards

Construct an explanation for how characteristic animal behaviors as well as specialized plant structures affect the probability of successful reproduction of animals and plants respectively (6-8.LS1.B.1).

ZOOLOGY 7-8

UNIT 4: REPTILES, AMPHIBIANS, BIRDS, AND MAMMALS

This comprehensive unit covers four major classes of vertebrates: reptiles, amphibians, birds, and mammals. Students will investigate the unique characteristics and adaptations of each group, including the life cycles and ecological roles of amphibians (frogs, newts, salamanders), reptiles (lizards, snakes), birds, and mammals. The unit will also explore the diversity within mammals, including monotremes, marsupials, and placental mammals. This unit aims to provide students with a deep understanding of these vertebrates and their significance in the natural world.

Unit Essential Learning Targets	
<i>Enduring Understandings</i>	<i>Essential Questions</i>
<ul style="list-style-type: none"> ● Reptiles, amphibians, birds, and mammals each have distinct features that aid in their survival and reproduction. ● Adaptations in these animal groups allow them to occupy specific ecological niches and contribute to the biodiversity of ecosystems. 	<ul style="list-style-type: none"> ● What are the unique characteristics of reptiles, amphibians, birds, and mammals? ● How do these animals adapt to their environments and ecological niches?
<i>Students must know:</i>	<i>Students must be able to:</i>
<ul style="list-style-type: none"> ● Characteristics of amphibians (frogs, newts, salamanders) ● Characteristics of reptiles (lizards, snakes) ● Characteristics of birds and raptors ● Characteristics of mammals, including monotremes, marsupials, and placental mammals 	<ul style="list-style-type: none"> ● Describe the physical and biological characteristics of reptiles, amphibians, birds, and mammals. ● Explain how these animals adapt to their environments.

Missouri Learning Standards
<p>Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem (6-8.LS2.B.1).</p>