Course Title:	**Comparative Anatomy and Physiology**
Department:	**Science**
Grade Level:	**10, 11, 12**
Time Per Day/Week:	**42 minutes per day**
Length of Course:	**Full year**

Course Overview:
This course is designed for college-bound students who are interested in learning about the anatomy and physiology of various animals and of humans. The first semester is spent learning about the major phyla of the Animal Kingdom. The second semester focuses on the various organs and systems of the human body and examines how these organs and systems interact with one another. Lab investigations and dissections emphasize and reinforce key concepts.

Primary Resources:
Textbook: Hole's Essentials of Human Anatomy and Physiology, McGraw Hill, 2018
Secondary Resources (District Approved):

Unit 1 Name:	Introduction to the Animal Kingdom
Days in Unit:	12

Representative Learning Goals
• Describe the defining characteristics of animals. • Identify the major stages of animal development. • Compare and contrast the major animal body plans. • Interpret and construct a cladogram to show evolutionary relationships among species.

Unit 2 Name:	Sponges, Cnidarians and Unsegmented Worms
Days in Unit:	15

Representative Learning Goals

- Observe the structural and behavioral adaptations of sponges.
- Observe the structural and behavioral adaptations of a Planarian.
- Explain how the body of a roundworm is more advanced than the body of a flatworm.
- Analyze the life cycles of typical flatworm and roundworm parasites.
- Describe how to avoid being infected with flatworm and roundworm parasites.

Unit 3 Name:	Mollusks and Segmented Worms
Days in Unit:	15

Representative Learning Goals

- Compare and contrast the various classes of mollusks.
- Identify the structures and defining features of annelids.
- Explain the agricultural benefits of earthworms.

Unit 4 Name:	Arthropods and Echinoderms
Days in Unit:	15

Representative Learning Goals

- Describe the adapted features of arthropods and how they have evolved over millions of years.
- Explain the ecological significance of arthropods.
- Summarize the shared resources and interactions of arthropods and humans.
- Compare and contrast echinoderm and vertebrate development.
- Compare and contrast the five classes of echinoderms.

Unit 5 Name:	Fish and Amphibians
Days in Unit:	14

Representative Learning Goals

- Compare and contrast the three classes of fish.
- Describe the diversity of body plans of bony fish.
- Summarize the reproduction and development of amphibians.
- Distinguish among the three groups of modern amphibians.

Unit 6 Name:	Amniotes
Days in Unit:	13

Representative Learning Goals

- Summarize key anatomical and circulatory differences among amniotes.
- Differentiate among the four groups of living reptiles.
- Explain anatomical and physiological adaptations for flight.
- Identify the characteristics of mammals.
- Identify the structures of the fetal pig.

Unit 7 Name:	Introduction to the Human Body
Days in Unit:	13

Representative Learning Goals

- Explain how anatomy and physiology are related to one another.
- Explain the process of homeostasis and give examples of how the body uses feedback loops to maintain homeostasis.
- Compare and contrast imaging techniques used to view the body.
- Properly use terms that describe relative positions, body sections and body regions.

Unit 8 Name:	The Integumentary System
Days in Unit:	16

Representative Learning Goals

- Describe the structure of the layers of the skin.
- Describe the structure and function of the various accessory structures of the skin such as hair, nails, and sweat glands.
- Describe how burns are classified and treated.
- Describe the dangers of UV radiation to the skin and describe the different types of skin cancer.

Unit 9 Name:	The Skeletal System
Days in Unit:	20

Representative Learning Goals

- Describe the general structure of a bone, and list the functions of its parts.
- Explain how bones grow and repair themselves.
- Locate and identify the bones and the major bone features that comprise the skull, vertebral column, thoracic cage, pectoral girdle, upper limb, pelvic girdle, and lower limb.
- Describe the 6 types of synovial joints and identify examples of each.
- Explain how the skeletal system and muscular system interact to produce various types of movement at the joints.

Unit 10 Name:	The Muscular System
Days in Unit:	11

Representative Learning Goals

- Compare and contrast the three types of muscle tissue.
- Identify the structures found in skeletal muscle and explain how skeletal muscle contracts.
- Identify the location and actions of the major skeletal muscles.
- Explain the physiology of muscle fatigue.

Unit 11 Name:	Blood and the Cardiovascular System
Days in Unit:	14

Representative Learning Goals

- Describe the general characteristics and the many functions of the blood.
- Explain how blood typing is done and why it is important when doing a blood transfusion.
- Identify and describe the major structures of the heart and the path of blood flow through the heart.
- Describe the structures and functions of the parts of the cardiac conduction system.

Unit 12 Name:	The Nervous System and the Senses
Days in Unit:	12

Representative Learning Goals

- Distinguish the types of cells found in the nervous system and the structure of the neuron.
- Identify the major structures of the brain and meninges and describe their functions.
- Identify the parts of a reflex arc and demonstrate how to test reflexes.
- Describe the receptors associated with the somatic senses of touch, pressure, temperature, and pain.
- Identify the parts of the eye, and explain how images are produced.

Assessments - Classroom-Based

Curriculum-Based Assessments (unit, midterm exam, final exam)
Lab Reports
Individual & Collaborative Projects

Assessments - Standardized

None

Standards

PA K-12 STEELS Standards