



Reavis High School

Anatomy and Physiology Curriculum Snapshot



Unit 1: Introduction to the Human Body

10
days

As part of this unit, students will define anatomy, physiology, and pathology. They will identify in order of increasing complexity the different levels of structural organization that make up the human body as well as list the major organ systems of the body, briefly explain the major functions and organs of each system, and use a fetal pig to locate the organs. Next, students will demonstrate the anatomical position, explain the importance in the study of anatomy, and use correct terminology to describe body directions, regions, and body planes. Finally, students will locate the major body cavities, name their subdivisions, and list the major organs in each cavity while explaining how the body maintains homeostasis.



Unit 2: The Integumentary System

10
Days

In this unit, students will describe the functions of the skin and identify the specific tissues that compose the epidermis, dermis, and hypodermis. They will also identify the structures within the layers of the skin and compare the structure and distribution of sweat and oil glands. Next, students will list and describe the factors that normally contribute to skin color and how skin color can be used as a clinical diagnostic tool. They will also differentiate between the three types of burns while applying the Rule of Nines to estimate the percentage of body surface damaged. Finally, students will identify the causes and treatments of common skin disorders.



Unit 3: Histology

18
Days

In the histology unit, students will list the characteristics of epithelial tissue, describe the various types of epithelia, and identify their functions and locations in the body. They will also compare and contrast the structure and location of the three types of muscle tissue and identify the characteristics and functions of nervous tissue. Finally, students will list the characteristics of connective tissue, describe the various types of connective tissues, and identify their functions and distribution in the body while demonstrating that they can locate these major tissues and associated cell types and structures using a light microscope.



Unit 4: Osteology

23
Days

Students will list and describe the functions of the skeletal system, compare and contrast the structure of the four classes of bone, and identify the structures of a long bone. Students will also describe the microscopic structure of compact bone and relate it to its function. Next, students will explain how bones form, grow, and change in response to hormones and physical stresses. Students will also compare and contrast the different types of fractures and describe how bones are repaired on the gross and microscopic levels. After students focus on the bones of the skull, the major structures associated with it, and locate them on models and diagrams, students will identify the bones and structures of the thorax, pectoral girdle, upper limb, pelvic girdle, and lower limb and be able to identify them on models and diagrams. Bone disorders will also be addressed.



Unit 5: Arthrology

5
Days

Students will describe the anatomical characteristics common to all joints. They will identify the movements that occur at each joint and perform common body movements, list and compare the major types of joints, and identify locations of these joints in the body. They will also explain how ligaments, tendons, and muscles reinforce a joint. Finally, students will identify common joint injuries and disorders and describe the major symptoms and treatments of each.



Unit 6: Muscular System

9
Days

In this unit, students will list the functions of the muscular system, explain how the microscopic structure of skeletal muscle relates to its function, and describe the mechanisms involved in muscle contraction. Students will also define the criteria used in naming the muscles and give an example to illustrate each criterion. Finally, students will locate on models and describe the major muscles of the body and identify the symptoms, causes, and treatments of common muscle disorders.



Unit 7: Blood

8
Days

In this unit, students will list the functions of blood and describe how blood helps to maintain homeostasis. They will also describe the composition and physical characteristics of whole blood, distinguish between the five types of leukocytes and erythrocytes using a light microscope, and compare and contrast the five types of leukocytes. They will then describe the functions of erythrocytes and compare and contrast the causes and effects of the major types of anemia. In the next section, students will describe the process of hemostasis and give examples, causes, and treatments of hemostatic disorders. Finally, after describing the ABO and Rh blood groups, students will type blood samples and describe the importance of blood typing as a diagnostic tool.



Unit 8: Heart

12
Days

In the heart unit, students will describe the structures and functions of the four chambers and the great vessels of the heart and trace the path of blood through the heart and lungs. They will then distinguish between pulmonary and systemic circulation, name the heart valves, and locate and describe their mechanism of action. Next, students will name the components of the conduction system of the heart. They will draw a normal electrocardiogram, naming the waves and intervals, and be able to identify deviations from a normal ECG. Finally, students will describe normal heart sounds, describe how heart murmurs differ from normal heart sounds, and use a stethoscope to listen to heart sounds. Dissection of a sheep heart will also be a component of this unit.



Unit 9: Blood Vessels

5
Days

As part of the blood vessel unit, students will define pulse, locate the major pulse points, and explain the importance of normal and abnormal pulse values. They will also compare and contrast the structure and functions of arteries, veins, and capillaries. Next, students will define blood flow, blood pressure and resistance, and explain the relationship between them. They will then explain the factors involved in the generation of blood pressure, the significance of normal and abnormal blood pressure, and use a sphygmomanometer to measure blood pressure. Students will finally identify the major blood vessels of the body.



Unit 10: Nervous Sytem - Histology

5
Days

In this unit, students will list the functions and explain the structural and functional divisions of the nervous system. They will also identify the supporting cells of the nervous system, explain their roles, describe the anatomical structures of neurons, relate each structure to its physiological role, and classify neurons based on structure and function. They will then explain how action potentials are propagated along an axon, describe the structure of a synapse, and identify the role of neurotransmitters. Finally, students will list the components of a reflex arc and explain how reflexes are important in maintaining homeostasis.



Unit 11 : Brain and Spinal Cord

10
Days

As part of this unit, students will identify the major lobes, fissures, regions, and functional areas of the brain. They will also locate the ventricles of the brain; describe how the meninges, cerebrospinal fluid, and the blood brain barrier protect the central nervous system; and, identify common brain disorders and list their causes, symptoms, treatments and explain the imaging techniques used to help in diagnosis. They will also dissect the sheep brain to locate the major brain areas and structures. After describing the spinal cord and the major nerves that originate from it, students will compare and contrast sensory, motor, and mixed nerves and distinguish between the parasympathetic and sympathetic divisions of the nervous system.



Unit 12: The Eye

7
Days

In the eye unit, students will describe the structure and functions of the accessory eye structures, eye tunics, and eye humors. They will describe the path of light through the eye to the retina, explain how light is focused for distant and close vision, and identify the current treatments for vision correction. Students will then explain the causes, treatments, and diagnosis of common eye disorders. Finally, they will measure visual acuity, test for astigmatism, and locate the blind spot. As a culminating activity, students will dissect and identify the major structures of the cow eye.



Unit 13: Lymphatic System

3
Days

In this unit, students will list the functions of the lymphatic system, describe the structure and function of each of the lymphatic organs, and explain the source of lymph and how it is transported through the body. Students will finally identify common lymphatic disorders, their causes, symptoms, and treatments.



Unit 14: Endocrine System

6
Days

As part of the endocrine system unit, students will describe the functional and structural relationship between the hypothalamus and the pituitary gland, list and describe the major effects of hormones released from the pituitary gland, and describe the effects of thyroid hormones while identifying the importance of the thyroid and parathyroid glands with respect to calcium regulation. Students will then list and explain the physiological effects of the adrenal, pancreatic, gonadal, and thymic hormones. Finally, they will identify common hormonal disorders associated with each endocrine organ, list their symptoms, causes, and treatments.



Unit 15: Male Reproductive System

4
Days

In this unit, students will describe the location, structure, and functions of the testes, ducts, and glands of the male reproductive system. They will also outline the events of spermatogenesis, explain the roles of male hormones in the development of sperm, and identify the causes of infertility in males. Finally, students will identify male reproductive disorders, symptoms, causes, and treatments.



Unit 16: Female Reproductive System

6
Days

As part of this unit, students will describe the major organs of the female reproductive system and identify their functions. They will also outline the events of oogenesis, describe the phases of the ovarian cycle, and relate them to the events of oogenesis. Students will then compare and contrast oogenesis and spermatogenesis. Finally, they will identify female reproductive disorders (including infertility), symptoms, causes, and treatments. Students will also describe the infectious agents and mode of transmission of sexually transmitted diseases.



Unit 17: Human Development

6
Days

In this unit, students will describe the processes of fertilization, cleavage, implantation, and placenta formation. They will also describe the major events of fetal development and the effects of pregnancy on maternal metabolism, organs, and systems. Students will also be exposed to the roles of hormones in the initiation of labor, describe the stages of labor, and understand the techniques used to monitor fetal development. Finally, students will list and describe the major forms of contraceptives and how they function to prevent pregnancy.