



GREAT NECK PUBLIC SCHOOLS

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Curriculum Profile: Anatomy and Physiology

<u>Department</u>	Science		
<u>Course Name</u>	Anatomy & Physiology		
<u>Course Length</u>	1 Year		
<u>High School Credits</u>	1		
<u>Description</u>	Anatomy Physiology provides a detailed study of the anatomy and physiology of the human organ systems. It is intended primarily for students interested in medicine, dentistry, physical therapy, sports medicine, chiropractic, and osteopathic medicine, but is also appropriate for students who wish to gain a better understanding of their own physical body. Material concerning the clinical aspects of body structure and function will be included. Dissections, both real and virtual highlight the various aspects of anatomy. Comparisons are frequently made between homeostasis and pathophysiology.		
<u>Target/eligible students</u>	11 th and 12 th grade students		
<u>State Learning Standards Link(s)</u>	New York State High School Science Learning Standards - Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. - Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. - Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis		p. 11
<u>Primary texts and materials</u>	Explore Learning (Gizmos), YouTube, EdPuzzle, The Apprentice Doctor		
<u>Scope/Sequence</u>	*Standards/ Themes	Key Ideas, Terms, and Concepts are examined within the Structure/Function framework. Structure and Function of the human body systems includes but are not limited to: - Human Anatomy and Physiology - Identify basic levels of organization of the human body - Identify body planes, directional terms, cavities, and quadrants - Analyze basic structures and functions of human body systems using dissections to supplement learning - Utilize medical equipment associated with body systems - Describe the human life cycle and explain the changes that occur - Diseases and Disorders	
<u>Unit 1: An Introduction to Anatomy and Physiology</u>	HS-LS1-2	Define the sciences of anatomy and physiology - List and describe biological levels of organization - cells, tissues, organs, systems - Properly use the terms that describe relative body positions (planes) and regions - Name and describe the general organs, locations and functions of the organ systems of the human body	

<u>Unit 2: The Skeletal System</u>	HS-LS1-2 HS-LS1-3	Skeletons function in support, movement, and protection • Describe the general structure of a bone • Discuss the major functions of bones • Distinguish between axial & appendicular skeletons • Locate and identify the bones (name of skull, face, ribs, vertebrae, arms, and legs) • Male and female differences as well as age changes • List and describe the 3 classes of joints and give examples of each • Discuss causes and symptoms of common skeletal system disorders	
<u>Unit 3: The Muscular System</u>	HS-LS1-2 HS-LS1-3	• Distinguish between the structures and functions of smooth, skeletal, and cardiac muscle • Describe the structure of a skeletal muscle fiber • Explain how a muscle fiber contraction occurs • The Sliding Filament Theory • Discuss anatomical movements • Describe the locations and actions of the major skeletal muscles (face, neck, arms, thorax, abdomen, legs) • Discuss causes and symptoms of common muscular system disorders • Study anatomy of connective tissue joining the skeletal and muscular system	
<u>Unit 4: The Nervous System and Special Senses</u>		The nervous system receives sensory input, interprets it, and sends out commands • Nerve Cells ◦ structure, type, and function • Nerve function depends on charge differences across neuron membranes • Explain how information passes from one neuron to another (during action potential) and the motor unit • Study the anatomy of: ◦ Spinal Cord - Location and Cross Section; Brain - Six Major Parts - Structure and Functions; Brain and Cord Coverings and Meninges; Fluid Spaces and Cerebrospinal Fluid; General Description of the 31 Pairs of Spinal Nerves; The Two Main Divisions of the Autonomic Nervous System; Morphology of the Sheep Brain • Discuss common disorders of the nervous system • Senses: ◦ Vision and the eye anatomy ◦ Study anatomy of Cow Eye ◦ Humans have a single lens eyes that focus by changing shape ◦ The human retina contains two types of photoreceptors - rods and cones ◦ Artificial lenses or surgeries can correct focusing problems	
<u>Unit 5: The Cardiovascular System and Immunity</u>	HS-LS1-2 HS-LS1-3	Circulatory systems facilitate exchange with all body tissues • Compare and contrast three major types of blood vessels	

		- Describe the general composition of blood and discuss its major functions - Distinguish among the types of blood cells and their functions - Explain blood typing and how it's used to avoid adverse reactions following transfusions - Describe the structure and function of the heart and blood flow through the heart and body - Study anatomy of a sheep heart - Discuss the cardiac cycle - including an ECG pattern, and explain how it is controlled - Use of medical equipment such as a stethoscope and sphygmomanometer	
<u>Unit 6: The Respiratory System</u>	HS-LS1-2 HS-LS1-3	Gas exchange in humans involves breathing, transport of gases, and exchange with body cells - The structure and function of the branching system in the chest cavity leading to the lungs - Negative pressure breathing - Blood transports respiratory gases with the help of hemoglobin - Discuss common disorders of the respiratory system - Analyze spirometer data	
<u>Unit 7: The Digestive System</u>	HS-LS1-2 HS-LS1-3	The Human Digestive System consists of an alimentary canal and accessory glands - Describe the general functions of the digestive system - Name and describe the locations and major parts of the digestive organs and accessory glands – starting with the oral cavity and the anatomy of the mouth - List the major nutrients – including carbohydrates, lipids, proteins, and vitamins and minerals and describe how enzymes catalyze the breakdown of the materials and how cells use these nutrients - Diet can influence risk of cardiovascular disease and cancer	
<u>Unit 8: The Reproductive Systems and Embryonic Development</u>	HS-LS1-2 HS-LS1-3	- The human female reproductive system includes the ovaries and structures that deliver gametes - The human male reproductive system includes the testes and structures that deliver gametes - Fertilization results in a zygote and triggers embryonic development - Hormones synchronize cyclic changes in the ovaries and uterus as well as childbirth	

		• Reproductive technologies increase reproductive options • Study the anatomy and morphology of a pig uterus	
<u>Additional Notes</u>	The sequence of units may vary.		