



SCHOOL DISTRICT OF MONROE

Preparing for the Future, One Child at a Time

Introduction to Anatomy & Physiology

Course Description:

This 2 trimester elective course examines basic concepts of human anatomy and physiology as they relate to health sciences. We will be using a body systems approach. The major organ systems will each be discussed at the biochemical, tissue, organ, system, and organismal levels. Learners will be expected to describe structures and their functions in detail, and to discuss the clinical applications of their knowledge. This course includes dissections and the use of Anatomy in Clay models.

The prerequisites for this course include the successful completion of Biology and being enrolled or having successfully completed Chemistry. This course has advanced standing through Blackhawk Technical College. It is intended to prepare health care professionals who need to apply basic concepts of whole body anatomy and physiology to informed decision-making and professional communication with colleagues and patients.

The curriculum for this course is developed from the [Next Generation Science Standards](#) and [Common Core Standards](#) and [Wisconsin Standards for Health Sciences](#)

Mastery Standards:

Classify the basic structural and functional organization of the human body (i.e., cell, tissues, organ, and system). (HSF1.a.7.h)

Use the body plane, directional terms, quadrants, and cavities to communicate body locations. (HFS1.a.8.h)

Explain the interrelationships between body structures and body functions. (HSF1.a.9.h)

Use roots, prefixes, and suffixes to communicate healthcare information using appropriate medical terminology. (HSF2.b.7.h)

Use appropriate medical terminology to communicate.(HSF2.b.9.h)

The meaning of symbols, key terms, and other domain-specific words and phrases is determined as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. (CCSS.ELA-LITERACY.RST.11-12.4)

Information from a range of sources (e.g., texts, experiments, simulations) is synthesized into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible. (CCSS.ELA-LITERACY.RST.11-12.9)

A model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms is developed and used. (HS-LS1-2)

Unit	Description of Unit and Learning Targets
<p>Unit Title: Terminology</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> What are the descriptive, anatomical, physiological, and directional terms 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Define the terms <i>anatomy</i> and <i>physiology</i>. Describe Scientific Method Describe the anatomical position and dissection planes.

<p>for the human body and its organization?</p>	<ul style="list-style-type: none"> ● Identify the cavities of the body ● Discuss directional terms and other terminology
<p>Unit Title: Living Organisms</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the major components of living things according to structure and function? 	<p>Students will ...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Describe characteristics of life ● Define and discuss Homeostasis
<p>Unit Title: Living Organisms- Molecules</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the major chemical components of how cells store and use energy? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Discuss the organization of life from simple to complex ● Identify important molecules in the human body ● Define metabolism ● Compare anabolic and catabolic reactions
<p>Unit Title: Living Organisms- Organelles</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the essential structures and functions of the cell to maintain life? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Discuss various unique cells throughout the body ● Discuss the structure and function of each organelle ● Describe different types of cell connections
<p>Unit Title: Living Organisms- Cells</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What is the role of DNA in controlling cell functions? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Describe how organelles provide “life” for cell ● Discuss the Cell Life Cycle ● Define the types of cell replication ● Discuss the 4 phases of mitosis ● Discuss changes in cell growth, reproduction and survival
<p>Unit Title: Tissues</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the structure of tissues and their functions? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Define the Extracellular Matrix ● Discuss the importance of collagen and elastin ● Describe and Identify the 4 major categories of Tissue ● Define subcategories of each Tissue Class
<p>Unit Title: Integumentary System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the structures and functions of the integumentary system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Discuss the difference between thick and thin skin ● Identify the layers of skin ● Describe the functions of the Integumentary System ● Discuss how dermal blood supply helps to regulate body temperature ● Describe the appendages of the integumentary system ● Identify various degrees of burns
<p>Unit Title: Lymphatic System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> ● What are the structures and functions of the lymphatic system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> ● Describe the functions of the Lymphatic System ● Identify the location and function of the organs of the

	<p>Lymphatic System</p> <ul style="list-style-type: none"> • Discuss the effects of aging on lymphatic function
<p>Unit Title: Blood Typing</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the components of blood and their function in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Describe immune function: Antigens and Antibodies • Discuss how blood type is determined • Define Rh Factor • Discuss how blood typing is important in transfusions
<p>Unit Title: Hormones</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the hormones in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Discuss the general function and structure of hormones • Define a "hormone target" • Explain antagonistic relationships between hormones • Identify the various glands of the endocrine system • Discuss the hormones that each gland secretes and the functions of those hormones • Discuss Endocrine Dysfunction
<p>Unit Title: Skeletal System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the skeletal system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Discuss the functions of the skeletal system • Explain the structural difference between compact and cancellous bone • Define the different shapes of bone • Explain the generic parts of a long bone and a flat bone • Describe how bone is involved in blood calcium regulation • Identify the bones and structures of the skeletal system
<p>Unit Title: Nervous System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the nervous system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Discuss the general organization of the nervous system • Define the cells of the nervous system by structure and function • Explain the nerve impulse and synaptic transmission • Describe the reflex arc • Identify the anatomy of nerves/tracts • Define the components of the Central Nervous System • Identify the structures and functions of the CNS • Identify the cranial nerves and their functions • Describe the functions of the tracts within the spinal cord • Define the term plexus and discuss the major plexuses of spinal nerves • Discuss Dermatomes and explain how they are used as a diagnostic tool
<p>Unit Title: Senses</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the somatic and special senses in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Define the various sensory receptors found throughout the body • Explain the difference between General Senses and Special Senses • Discuss the anatomy of General Senses

	<ul style="list-style-type: none"> • Discuss the anatomy of Special Senses
<p>Unit Title: Digestive System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the digestive system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Define Alimentary Canal vs. Gastrointestinal tract • Identify the structure of the wall of the GI tract • Examine the anatomical structures of the digestive system • Describe the processes of chemical and mechanical digestion • Describe the accessory structures of the digestive system
<p>Unit Title: Urinary System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the urinary system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Describe the anatomy of the Urinary System • Identify the anatomy of the kidney • Examine the structure and function of the nephron • Discuss the terms secretion, reabsorption, and filtration
<p>Unit Title: Cardiovascular System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the cardiovascular system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Describe the location and structure of the heart • Explain how the heart functions as a pump • Discuss vascular and nervous supply to the heart • Define the types of vessels • Describe the anatomy of vessels • Explain circulatory routes within the body • Define the formed elements of the blood
<p>Unit Title: Respiratory System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the respiratory system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Describe the structures of the upper and lower respiratory tract • Describe the respiratory membrane • Discuss the difference between ventilation and respiration • Identify the muscles that allow for ventilation
<p>Unit Title: Reproductive System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the reproductive system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Define the term gonad • Define the term gamete • Discuss the anatomical components of the male reproductive system and the functions of those components • Discuss the anatomical components of the female reproductive system and the functions of those components
<p>Unit Title: Muscular System</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What are the structures and functions of the muscular system in the body? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Define the term myocyte • Discuss the structural components of the myocyte and the function of those components • Explain the anatomical structure of a muscle organ • Define the term tendon • Discuss the origin and insertion of a muscle • Examine the various roles a muscle can play in an action • Discuss the terminology associated with various muscle

movements.