

# Anatomy & Physiology

<p style="text-align: center;"><b><u>Quarter 1</u></b></p> <ul style="list-style-type: none"><li>• Anatomy &amp; Physiology Introduction</li><li>• Histology</li><li>• Integumentary</li><li>• Skeletal</li></ul>	<p style="text-align: center;"><b><u>Quarter 2</u></b></p> <ul style="list-style-type: none"><li>• Skeletal</li><li>• Muscular</li><li>• Circulatory</li></ul>
<p style="text-align: center;"><b><u>Quarter 3</u></b></p> <ul style="list-style-type: none"><li>• Respiratory</li><li>• Blood</li><li>• Lymphatic &amp; Immunity</li><li>• Nervous</li></ul>	<p style="text-align: center;"><b><u>Quarter 3</u></b></p> <ul style="list-style-type: none"><li>• Digestive</li><li>• Excretory</li><li>• Reproductive</li><li>• Endocrine</li></ul>

## Unit 1 – Anatomy & Physiology Introduction

I can statements – The student can . . .

- Explain how anatomy and physiology are related.
- List the levels of organization in the human body and the characteristics of each.
- List and describe the major characteristics of life.
- List and describe the major requirements of organisms.
- Define and explain the importance of homeostasis.
- Identify the major body systems and describe their overall function
- List the major organs of each body system.
- Identify the major body cavities and identify the organs located in each cavity.
- Identify the names of the regions on the human body.
- Name the major organ systems, list the organs associated with each, and describe the general function of each system.
- Properly use the terms that describe relative positions, body sections, and body regions.

Activities:

- Body System Poster Project

## Unit 2 – Histology

I can statements – The student can . . .

- Describe how cells are organized into tissues.
- Describe the structure, function and characteristics of epithelial tissue.
- Identify, compare and contrast the six different kinds of connective tissue.
- Describe and identify the four different kinds of membranes.
- Distinguish among the three different kinds of muscle tissue.
- Describe the general characteristics and functions of nervous tissue.

Activities:

- Histology Microscope Slide Examination

## Unit 3 – Integumentary System

I can statements – The student can . . .

- Define the term organ.
- Describe the structure and function of the skin.
- Identify the layers and features of human skin.
- Determine what factors determine skin coloration.
- Describe how the skin helps regulate body temperature.
- Distinguish between the types of burns, and illustrate the healing process.

Activities:

- Integument Sensory Activities
- Integument Homeostasis Lab
- Dermal Layers Foldable

## Unit 4 – Skeletal System

I can statements – The student can . . .

- Discuss the living tissues found in bone even though bone appears to be inert.
- Classify bones according to their shapes, and name an example from each group.
- Describe the effects of sunlight, nutrition, hormonal secretions, and exercise on bone development and growth.
- Discuss the major functions of bones and identify the bone's features.
- Distinguish between the axial and appendicular skeletons, and name the major parts of each.
- Name the bones of the appendicular and axial skeleton and their features.
- Describe the differences between male and female skeletons.
- List the functions of joints.
- Describe how bones of cartilaginous joints are held together. Describe the general structure of a synovial joint.
- Explain how skeletal muscles produce movements at joints, and identify several types of joint movements.

Activities:

- Human Skeleton Examination/Study
- Chicken Bone Composition Lab

## Unit 5 – Muscular System

I can statements – The student can . . .

- List various outcomes of muscle actions.
- Describe and name the major parts of a skeletal muscle fiber and describe the functions of each.
- Describe and identify the major events of skeletal fiber contraction.
- Explain how various types of muscular contractions produce body movement and help maintain posture.
- Distinguish between fast and slow twitch muscle fibers
- Compare the contraction mechanism of skeletal and smooth muscle fibers.
- Compare the contraction mechanism of skeletal and cardiac muscle fibers.
- Explain how the attachments, locations, and interactions of skeletal muscle make possible certain movements.
- Identify and locate the skeletal muscles of each body region, identify the origin and insertion of each, and describe the action(s) of each muscle.
- Describe the muscular changes associated with life span changes.

Activities:

- Muscle Fiber Model
- Muscle Identification & Movements

## Unit 6 – Cardiovascular System

I can statements – The student can . . .

- Discuss the functions of the organs of the cardiovascular system.
- Identify and locate the major parts of the heart and discuss the function of each.
- Trace the pathway of blood through the heart and the vessels of the pulmonary circuit.
- Describe the cardiac cycle and explain how the heart sounds are produced.
- Compare the structure and functions of the major types of blood vessels.
- Explain how blood pressure is produced and controlled.
- Discuss the major cardiovascular diseases and their symptoms.

Activities:

- Heart Dissection
- Blood Vessel Model Creation
- Cat Dissection (Heart and Blood Vessels)

## Unit 7 – Respiratory System

I can statements – The student can . . .

- Identify the general functions of the respiratory system.
- Explain why respiration is necessary for cellular survival.
- Name and describe the locations of the organs of the respiratory system.
- Describe the functions of each organ of the respiratory system.
- Explain how inspiration and expiration are accomplished.
- List several non-respiratory air movements, and explain how each occurs.
- Locate the respiratory areas, and explain control of normal breathing
- Discuss how various factors affect breathing.
- Explain how the blood transports oxygen and carbon dioxide.
- Describe gas exchange in the pulmonary and systemic circuits

Activities:

- Spirometer
- Lung Model Activity

## Unit 8 – Blood

I can statements – The student can . . .

- Describe the general characteristics of blood, blood elements, and the major functions.
- Distinguish between the formed elements of the blood and the liquid portion of blood.
- Describe the origin of blood cells.
- Explain the significance: rbc counts and how they are used to diagnose disease.
- Discuss the life cycle of the rbc.
- Summarize the control of red blood cell production.
- Distinguish among the five types of white blood cell, stating the functions of each.
- Describe the blood platelet and explain its function.
- Describe the function of each major components of plasma.
- Define homeostasis and explain the mechanisms that help to achieve it.
- Review the major steps in coagulations.
- Explain how to prevent coagulation.
- Explain blood typing and how it is used to avoid adverse reactions following blood transfusions.
- Describe how blood reactions may occur between fetal and material tissue.

Activities:

- Blood Typing Simulation
- Blood Cell Concept Map



## Unit 9 – Lymphatic and Immunity

I can statements – The student can . . .

- Describe general function lymphatic system.
- Identify and describe major parts of lymphatic pathways.
- Describe how tissue, fluid and lymph form, and explain lymph function.
- Explain how lymphatic circulation is maintained, and describe the consequence of lymphatic obstruction.
- Describe a lymph node and its major functions.
- Distinguish between innate (nonspecific) and adaptive (specific) defenses.
- Discuss cellular and humoral immunity.
- Discuss the body's three lines of defense.
- Distinguish between primary and secondary immune responses.
- Distinguish between active and passive immunity.
- Explain how allergic reactions, tissue rejection reactions, and autoimmunity arise from immune mechanisms,

Activities:

- Third Line of Defense Model/Analogy
- Antibody Modeling

## Unit 10 - Nervous System

I can statements – The student can . . .

- State the general functions of the nervous system.
- Identify two major types of cells that comprise the nervous tissue.
- Identify two major groups of nervous system organs.
- Describe how the nervous system responds to stimuli.
- List the functions of the sensory receptors.
- Describe the parts of the neuron.
- Describe Schwann cells in the peripheral nervous system.
- Describe the events leading to the conduction of a nerve impulse.
- Compare nerve impulse conduction in a myelinated and unmyelinated neuron.
- Describe the basic ways in which the nervous system processes information
- Describe the relationship among the brain, brain stem, and spinal cord.
- Describe the covering of the brain and spinal cord.
- Describe the formation and function of cerebrospinal fluid.
- Describe the major functions of the spinal cord.
- Describe the development of the major parts of the brain and explain the function of each part.
- Discuss hemisphere dominance.
- Explain the stages of memory storage.
- Distinguish between the major parts of the pns.
- Describe the structure of the pn and how its fibers are classified.
- Identify cranial nerves and list their major functions
- Differentiate between general senses and special senses.
- Name the five types of receptors, state the function of each, and explain how they stimulate sensory impulses.
- Explain the importance of stretch receptors in muscles and tendons.
- Describe how the sensation of pain is produced.
- Describe the differences among receptors associated with touch, pressure, temperature and pain.
- Distinguish between static and dynamic equilibrium.

Activities:

- Brain Cap
- Reflex Arc Activity
- Brain Dissection
- Neuron Model
- Sensory activities

## Unit 11 – Digestive System

I can statements – The student can . . .

- Describe general functions of digestive system.
- Name major organs of digestive system.
- Explain how the contents of the alimentary canal are mixed and moved.
- Describe the function and structures associated with the mouth.
- Explain how the products of digestion are absorbed.
- Explain control and movement of material through the alimentary canal.
- Describe how digestive secretions are regulated.
- Describe the mechanisms of swallowing, vomiting and defecating

Activities:

- Cat Dissection
- Digestive System Apron Color & Labeling

## Unit 12 – Urinary/Excretory System

I can statements – The student can . . .

- Name the organs and general functions of the urinary system.
- Describe the location, structure, blood flow and functions of the kidneys.
- Describe the parts and function of a nephron.
- Explain urine concentration/composition.
- Describe the structures, of the ureters, urinary bladder and urethra.
- Explain how the micturition occurs and how it's controlled.
- List routes by which water enters and leaves the body.
- Explain the regulation of water input and water output.
- List the routes by which electrolytes enter and leave the body.
- Explain the regulation of the input and output of electrolytes.

Activities:

- Nephron Model Making
- Cat Dissection

## Unit 13 – Reproductive System

I can statements – The student can . . .

- Describe function(s) of each part of the male reproductive system.
- Outline the process of spermatogenesis.
- Describe semen production; exit from body
- Explain how hormones control the activities of the male reproductive organs and the development of secondary sex characteristics
- Describe function(s) of each part of the female reproductive system.
- Outline process of oogenesis
- Explain how hormones control the activities of the female reproductive organs and the development of secondary sex characteristics
- Describe major events of female reproductive cycle.
- Describe fertilization.
- List and provide major events of cleavage.
- Describe implantation.
- Discuss hormonal changes in body during pregnancy
- Explain primary germ layers' origin, list structures each layer produces.
- Describe major events of embryonic development.
- Describe formation and function of placenta.
- Define fetus, describe major events of fetal development.
- Trace path of blood through the fetal cardiovascular system.
- Explain role of hormones in milk production

Activities:

- Cat Dissection

## Unit 14 – Endocrine System

I can statements – The student can . . .

- Distinguish between endocrine exocrine glands.
- Explain what makes a cell a target for a hormone.
- List the important functions of a hormone.
- Describe how hormones can be classified according to their chemical composition.
- Discuss the negative feedback mechanism regulate hormone secretion.
- Explain how the nervous system controls hormone secretion.
- Name and describe the locations of the major endocrine glands and list the hormone that they secrete.
- Describe the actions of the various hormones and their contributions to homeostasis

Activities:

- Blood Sugar Homeostasis Simulation