

# Ganado Unified School District

## Human Anatomy and Physiology (11<sup>th</sup>-12<sup>th</sup> GRADE)

PACING Guide SY 2016-2017

| Timeline & Resources   | Human Anatomy and Physiology Content Standards (aligned with National Science Education Standards)  | Essential Question (HESS Matrix)  | Learning Goal  | Vocabulary (Content/Academic)   |
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| <p><b>QUARTER 1</b></p> <p><b>Week 1</b></p> <p>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</p> | <p>➤ Lab Safety &amp; Class Procedures SCSH2. Students will use standard safety practices for all classroom laboratory and field investigations.</p> <p>SAP1. Students will analyze anatomical structures in relationship to their physiological functions.</p> | <ul style="list-style-type: none"> <li>Why do we have safety procedures in place in a lab?</li> <li>What is anatomy and physiology?</li> <li>How will you describe the subdivisions of Anatomy and Physiology?</li> <li>How is the body organized?</li> <li>What are the functional characteristics necessary to maintain life in humans?</li> <li>What is homeostasis and its significance?</li> <li>What are the correct anatomical terms to describe body</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Follow correct procedures for use of scientific apparatus.</li> <li>Demonstrate appropriate technique in all laboratory situations.</li> <li>Follow correct protocol for identifying and reporting safety problems and violations.</li> <li>Apply correct terminology when explaining the orientation of body parts and regions.</li> <li>Investigate the interdependence of the various body systems to each other and to the body as a whole.</li> <li>Explain the role of homeostasis and its mechanisms as these relate to the body as a whole and predict the consequences of failure to maintain homeostasis.</li> </ul> | <p>➤ Names of different laboratory apparatuses</p> <ul style="list-style-type: none"> <li>Anatomy</li> <li>Physiology</li> <li>Gross anatomy</li> <li>Regional anatomy</li> <li>Systemic anatomy</li> <li>Surface anatomy</li> <li>Microscopic anatomy               <ul style="list-style-type: none"> <li>Cytology</li> <li>Histology</li> </ul> </li> <li>Developmental anatomy               <ul style="list-style-type: none"> <li>Embryology</li> </ul> </li> <li>Renal physiology</li> <li>Neurophysiology</li> <li>Cardiovascular physiology</li> <li>Organ system</li> <li>Movement</li> <li>Responsiveness</li> <li>Digestion</li> <li>Metabolism</li> <li>Excretion</li> <li>Reproduction</li> <li>Growth</li> <li>Survival</li> <li>Nutrients</li> <li>Homeostasis</li> </ul> |

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|  |  | directions, regions, and body planes or sections?   |   | ➤ Anatomical position and directional terms, regional terms, body planes and sections  |
| <b>Week 2</b><br><b>Textbook</b><br><b>Study Partner Disc</b><br><b>Worksheet</b><br><b>Internet</b><br><b>Laboratory Manual</b> | <b>SC.912.L.18.1: Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules.</b> | <ul style="list-style-type: none"> <li>• What are the differences between matter and energy? Potential energy and Kinetic energy?</li> <li>• How will you describe the major energy forms?</li> <li>• What is atom?</li> <li>• What are the different subatomic particles?</li> <li>• What is the difference between a compound and a mixture?</li> <li>• What is molecule?</li> <li>• How are chemical reactions controlled in the human body?</li> <li>• What are the basic molecules that make up the human body? How do they work?</li> <li>• What are the importance of water and salts to body homeostasis?</li> <li>• How will you describe and compare the building blocks, general structures, and biological functions of CHO, lipids, proteins, and nucleic acids?</li> <li>• What is enzyme?</li> <li>• What is the general mechanism of enzyme?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Differentiate clearly between matter and energy and between potential energy and kinetic energy.</li> <li>• Describe the major energy forms.</li> <li>• Define atoms.</li> <li>• List the subatomic particles and describe each.</li> <li>• Distinguish between compound and a mixture.</li> <li>• Define molecule</li> <li>• Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions.</li> <li>• Explain the importance of water and salts to body homeostasis.</li> <li>• Describe and compare the building blocks, general structures, and biological functions of carbohydrates, lipids, proteins, and nucleic acids.</li> <li>• Describe the general mechanism of enzyme activity.</li> </ul> | <ul style="list-style-type: none"> <li>• Energy</li> <li>• Matter</li> <li>• Potential energy</li> <li>• Kinetic energy</li> <li>• Chemical energy</li> <li>• ATP</li> <li>➤ Atomic structure <ul style="list-style-type: none"> <li>- Nucleus</li> <li>- Protons</li> <li>- Neutrons</li> <li>- Electrons</li> </ul> </li> <li>• Organic compound</li> <li>• Inorganic compound</li> <li>• Salts</li> <li>• Acids</li> <li>• Bases</li> <li>• Buffers</li> <li>• Carbohydrates</li> <li>• Lipids</li> <li>• Proteins</li> <li>• Nucleic acids</li> <li>• Enzyme</li> <li>• Catalysts</li> <li>• Atom</li> <li>• Molecule</li> </ul> |



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| <p><b>Week 3</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP1. Students will analyze anatomical structures in relationship to their physiological functions.</b></p> <ul style="list-style-type: none"> <li>• <b>Relate cellular metabolism and transport to homeostasis and cellular reproduction.</b></li> </ul> | <ul style="list-style-type: none"> <li>• What is cell?</li> <li>• What are the three major regions of a generalized cell?</li> <li>• What are the general functions of each region?</li> <li>• How will you describe the chemical composition of the plasma membrane and relate it to membrane functions?</li> <li>• How will you relate the plasma membrane structure to active and passive transport mechanisms?</li> <li>• What are the different parts of the cell?</li> <li>• What are the different functions of cell organelles?</li> <li>• What are the phases of the cell life cycle?</li> <li>• How will you describe the key events of each phase?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Define cell.</li> <li>• List the three major regions of a generalized cell and indicate the general function of each region.</li> <li>• Describe the chemical composition of the plasma membrane and relate it to membrane functions.</li> <li>• Relate the plasma membrane structure to active and passive transport mechanisms.</li> <li>• Name and give the function of the different cell organelles.</li> <li>• List the phases of the cell life cycle and describe the key events of each phase.</li> </ul> | <ul style="list-style-type: none"> <li>• Cell</li> <li>• Cell theory</li> <li>• Plasma membrane</li> <li>• Nucleus <ul style="list-style-type: none"> <li>- Nucleolus</li> <li>- Nuclear membrane</li> <li>- Chromosome</li> </ul> </li> <li>• Cytoplasm <ul style="list-style-type: none"> <li>- Mitochondria</li> <li>- Ribosome</li> <li>- Rough endoplasmic reticulum</li> <li>- Smooth endoplasmic reticulum</li> <li>- Golgi apparatus</li> <li>- Lysosomes</li> <li>- Microtubules</li> <li>- Microfilaments</li> <li>- Intermediate filaments</li> <li>- Centrioles</li> <li>- Cilia</li> <li>- Flagella</li> </ul> </li> <li>• Active transport</li> <li>• Passive transport</li> <li>• Osmosis <ul style="list-style-type: none"> <li>- Hypotonic</li> <li>- Isotonic</li> <li>- Hypertonic</li> </ul> </li> <li>• Exocytosis</li> <li>• Phagocytosis</li> <li>• Endocytosis</li> <li>➤ Cell life cycle <ul style="list-style-type: none"> <li>• Interphase</li> <li>• Prophase</li> <li>• Metaphase</li> <li>• Anaphase</li> <li>• Telophase</li> </ul> </li> </ul> |
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| <p><b>Week 4</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP1. Students will analyze anatomical structures in relationship to their physiological functions.</b></p> <ul style="list-style-type: none"> <li>Describe how structure and function are related in terms of cell and tissue types.</li> </ul> | <ul style="list-style-type: none"> <li>What are the several structural and functional characteristics of epithelial tissue?</li> <li>What are the different types of epithelial tissue?</li> <li>What are the chief function(s) and location(s) of various types of epithelia?</li> <li>What is gland?</li> <li>What are the common characteristics of connective tissue?</li> <li>How will you describe the types and functions of connective tissue found in the body?</li> <li>How will you describe the structure and function of cutaneous, mucous, and serous membranes?</li> <li>What are the general characteristics of nervous tissue?</li> <li>What are the different structure and function of muscle tissue?</li> <li>How will you outline the process of tissue repair involved in normal healing of a superficial wound?</li> <li>What are the changes happen to tissues that occur with age?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>List several structural and functional characteristics of epithelial tissue.</li> <li>Name, classify and describe the various types of epithelia.</li> <li>Define gland.</li> <li>Indicate common characteristics of connective tissue.</li> <li>Describe the types of connective tissue found in the body, and indicate their characteristic functions.</li> <li>Describe the structure and functions of cutaneous, mucous, and serous membranes.</li> <li>Indicate the general characteristics of nervous tissue.</li> <li>Compare and contrast the structures and body locations of the three types of muscle tissue.</li> <li>Outline the process of tissue repair involved in normal healing of a superficial wound.</li> <li>Briefly describe tissue changes that occur with age.</li> </ul> | <ul style="list-style-type: none"> <li>Epithelial tissue</li> <li>Cellularity</li> <li>Polarity</li> <li>Regeneration</li> <li>Simple epithelia</li> <li>Stratified epithelia</li> <li>Squamous epithelium</li> <li>Endothelium</li> <li>Mesothelium</li> <li>Cuboidal epithelium</li> <li>Columnar epithelium</li> <li>Ductless gland</li> <li>Hormones</li> <li>Connective tissue</li> <li>Fibers</li> <li>Macrophages</li> <li>Mesenchyme</li> <li>Areolar connective tissue</li> <li>Fibroblasts</li> <li>Adipose tissue</li> <li>Skeletal muscle</li> <li>Cardiac muscle</li> <li>Smooth muscle</li> <li>Inflammation</li> <li>Granulation tissue</li> <li>Ectoderm</li> <li>Mesoderm</li> <li>Endoderm</li> </ul> |
| <p><b>Week 5</b></p> <p><b>Textbook</b></p>   | <p><b>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these</b></p>  | <ul style="list-style-type: none"> <li>What is the tissue types composing the epidermis and dermis?</li> </ul>   | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Name the tissue types composing the epidermis and</li> </ul>   | <ul style="list-style-type: none"> <li>Integumentary</li> <li>Skin</li> </ul>   |

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| <p><b>Study Partner Disc Worksheet</b><br/><b>Internet Laboratory Manual</b></p> | <p>relate to the protection, support and movement of the human body.</p> <ul style="list-style-type: none"> <li>• <b>Relate the structure of the integumentary system to its functional role in protecting the body and maintaining homeostasis.</b></li> </ul> | <ul style="list-style-type: none"> <li>• How will you describe the factors that normally contribute to skin color?</li> <li>• How will you compare the structure and locations of sweat and oil glands?</li> <li>• What are the regions of hair?</li> <li>• What are the factors affecting the hair color?</li> <li>• How will you describe the structure of nails?</li> <li>• What are the five different functions of the skin?</li> <li>• How will you summarize the characteristics of the three major types of skin cancers?</li> <li>• Why serious burns are life threatening?</li> <li>• How will you explain the changes that occur in the skin from birth to old age?</li> </ul> | <p>dermis. Lists the major layers of each and describe the functions of each layer.</p> <ul style="list-style-type: none"> <li>• Describe the factors that normally contribute to skin color.</li> <li>• Compare the structure and locations of sweat and oil glands.</li> <li>• Name the regions of a hair and explain the basis of hair color.</li> <li>• Describe the structure of nails</li> <li>• Describe how the skin accomplishes atleast five different functions.</li> <li>• Summarize the characteristics of the three major types of skin cancers.</li> <li>• Explain why serious burns are life threatening.</li> <li>• Briefly describe the changes that occur in the skin from birth to old age.</li> </ul> | <ul style="list-style-type: none"> <li>• Hypodermis</li> <li>• Epidermis</li> <li>• Keratinocytes</li> <li>• Keratin</li> <li>• Melanocytes</li> <li>• Melanin</li> <li>• Langerhans' cells</li> <li>• Epidermal dendritic cells</li> <li>• Basal layer</li> <li>• Prickly layer</li> <li>• Granular layer</li> <li>• Clear layer</li> <li>• Horny layer</li> <li>• Dermis</li> <li>• Papillary layer</li> <li>• Dermal papillae</li> <li>• Fingerprints</li> <li>• Reticular layer</li> <li>• Carotene</li> <li>• Hemoglobin</li> <li>• Cyanosis</li> <li>• Skin appendages</li> <li>• Sweat gland</li> <li>• Sebaceous gland</li> <li>• Hair</li> <li>• Hair follicle</li> <li>• Hair bulb</li> <li>• Nail</li> <li>• Basal cell carcinoma</li> <li>• Squamous cell carcinoma</li> <li>• Melanoma</li> <li>• Burns</li> </ul> |
| <p><b>Week 6, 7</b><br/><b>Textbook Study Partner Disc Worksheet</b></p>         | <p><b>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.</b></p>   | <ul style="list-style-type: none"> <li>• How will you describe the functional properties of each of the three types of cartilage tissue?</li> </ul>   | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the functional properties of each of the three types of cartilage tissue.</li> </ul>  | <ul style="list-style-type: none"> <li>• Skeletal cartilage</li> <li>• Hyaline cartilage</li> <li>• Elastic cartilage</li> <li>• Fibro cartilage</li> <li>• Appositional growth</li> </ul>  |

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| <p><b>Internet Laboratory Manual</b></p>   | <ul style="list-style-type: none"> <li>• <b>Explain how the skeletal structures provide support and protection for tissues, and function together with the muscular system to make movements possible.</b></li> </ul>  | <ul style="list-style-type: none"> <li>• Where are the locations of major cartilages of adult skeleton?</li> <li>• What are the five important functions of bones?</li> <li>• How will you describe the gross anatomy of a typical long bone and flat bone?</li> <li>• How will describe the histology of compact and spongy bone?</li> <li>• What are the chemical compositions of bone?</li> <li>• What are the differences between intramembraneous and endochondral ossification?</li> <li>• What are the locations and functions of osteoblasts, osteocytes, and osteoclasts in bone remodeling?</li> <li>• How hormones and physical stress regulate bone remodeling?</li> <li>• What are the steps of fracture repair?</li> <li>• What are the different bone disorders?</li> </ul> | <ul style="list-style-type: none"> <li>• Locate the major cartilages of the adult skeleton.</li> <li>• Name the major regions of the skeleton and describe their relative functions.</li> <li>• List and describe five important functions of bones.</li> <li>• Describe the gross anatomy of a typical long and flat bone.</li> <li>• Indicate the locations and functions of red and yellow marrow, articular cartilage, periosteum, and endosteum.</li> <li>• Describe the histology of compact and spongy bone.</li> <li>• Discuss the chemical composition of bone and the relative advantages conferred by its organic and its organic components.</li> <li>• Compare and contrast the two types of bone formation.</li> <li>• Compare the locations and functions of osteoblasts, osteocytes and osteoclasts in bone remodeling.</li> <li>• Explain how hormones and physical stress regulate bone remodeling.</li> <li>• Describe the steps of fracture repair.</li> <li>• Contrast the disorders of bone remodeling seen in osteoporosis, osteomalacia, and Paget's disease.</li> </ul> | <ul style="list-style-type: none"> <li>• Interstitial growth</li> <li>• Axial skeleton</li> <li>• Appendicular skeleton</li> <li>• Compact bone</li> <li>• Spongy bone</li> <li>• Diaphysis</li> <li>• Epiphyses</li> <li>• Periosteum</li> <li>• Osteoclasts</li> <li>• Nutrient foramen</li> <li>• Sharpey's fibers</li> <li>• Endosteum</li> <li>• Red marrow</li> <li>• Haversian system</li> <li>• Lamella</li> <li>• Osteocytes</li> <li>• Lacunae</li> <li>• Canaliculi</li> <li>• Osteoid</li> <li>• Hydroxyapatites</li> <li>• Osteogenesis</li> <li>• Ossification <ul style="list-style-type: none"> <li>- Intramembraneous ossification</li> <li>- Endochondral ossification</li> </ul> </li> <li>• Fracture</li> <li>• Hematoma</li> <li>• Callus</li> <li>• Osteomalacia</li> <li>• Rickets</li> <li>• Osteoporosis</li> <li>• Paget's disease</li> </ul> |
| <p><b>Week 8, 9</b></p> <p><b>Textbook Study Partner Disc Worksheet</b></p> <p><b>Internet Laboratory Manual</b></p> | <p><b>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.</b></p> <ul style="list-style-type: none"> <li>• <b>Relate the structure of the</b></li> </ul> | <ul style="list-style-type: none"> <li>• What are the different bones of the skull? Give their importance.</li> <li>• How will you compare the functions of the</li> </ul>   | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Name, describe, and identify the bones of the skull. Identify their importance.</li> </ul>   | <ul style="list-style-type: none"> <li>• Skeleton</li> <li>• Skull</li> <li>• Cranium</li> <li>• Sutures</li> <li>• Supraorbital margins</li> <li>• Supraorbital foramen</li> </ul>   |

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|  | <p><b>integumentary system to its functional role in protecting the body and maintaining homeostasis.</b></p> | <p>cranium and facial skeleton?</p> <ul style="list-style-type: none"> <li>• What are the general structures of the vertebral column and lists its components and describe its curvatures?</li> <li>• What is the structure of a typical vertebra and then describe the special features of cervical, thoracic, and lumbar vertebrae?</li> <li>• What is bony thorax?</li> <li>• What are the bones forming the pectoral girdle and relate their structure and arrangement to the function of this girdle?</li> <li>• What are the bones of the upper limb and their important markings?</li> <li>• How will you describe the differences in the anatomy of the male and female pelvis and relate these to functional differences?</li> <li>• How will you identify the bones of the lower limb and their important markings?</li> <li>• What are the three supporting arches of the foot and explain their importance?</li> <li>• How skeletal proportions change</li> </ul> | <ul style="list-style-type: none"> <li>• Compare and contrast the major functions of the cranium and facial skeleton.</li> <li>• Describe the general structure of the vertebral column and lists its components, and describe its curvature.</li> <li>• Discuss the structure of a typical vertebra and then describe the special features of cervical, thoracic, and lumbar vertebrae.</li> <li>• Name and describe the bones of the bony thorax</li> <li>• Identify the bones forming the pectoral girdle and relate their structure and arrangement to the function of this girdle.</li> <li>• Identify or name the bones of the upper limb and their important markings.</li> <li>• Describe differences in the anatomy of the male and female pelvis and relate these to functional differences.</li> <li>• Identify the bones of the lower limb and their important markings.</li> <li>• Name the three supporting arches of the foot and explain their importance.</li> <li>• Describe how skeletal proportions change during childhood and adolescence.</li> <li>• Compare and contrast the skeleton of an age person with that of a young adult.</li> </ul> | <ul style="list-style-type: none"> <li>• Glabella</li> <li>• Frontal sinuses</li> <li>• Parietal bones <ul style="list-style-type: none"> <li>- Coronal suture</li> <li>- Sagittal suture</li> <li>- Lambdoid suture</li> <li>- Squamous suture</li> </ul> </li> <li>• Occipital bones</li> <li>• Temporal bones</li> <li>• Sphenoid bone</li> <li>• Ethmoid bone</li> <li>• Facial bone <ul style="list-style-type: none"> <li>- Mandible</li> </ul> </li> <li>• Maxillary bones</li> <li>• Zygomatic bones</li> <li>• Nasal bones</li> <li>• Lacrimal bones</li> <li>• Palatine bones</li> <li>• Vomer</li> <li>• Inferior nasal conchae</li> <li>• Paranasal sinuses</li> <li>• Hyoid bone</li> <li>• Vertebral column</li> <li>• Spine</li> <li>• Cervical vertebrae</li> <li>• Thoracic vertebrae</li> <li>• Lumbar vertebrae</li> <li>• Sacrum</li> <li>• Coccyx</li> <li>• Ligaments</li> <li>• Sternum</li> <li>• Ribs</li> <li>• Clavicle</li> <li>• Scapulae</li> <li>• Arm</li> <li>• Forearm</li> <li>• Ulna</li> <li>• Radius</li> <li>• Carpus</li> <li>• Metacarpus</li> </ul> |
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|   |  | <p>during childhood and adolescence?</p> <ul style="list-style-type: none"> <li>How will you compare and contrast the skeleton of an aged person with that of a young adult?</li> </ul>    |   | <ul style="list-style-type: none"> <li>Phalanges</li> <li>Pelvic girdle</li> <li>Ilium</li> <li>Ischium</li> <li>Pubis</li> <li>Thigh</li> <li>Leg</li> <li>Tibia</li> <li>Fibula</li> <li>Foot</li> <li>Tarsus</li> <li>Metatarsus</li> <li>Fontanels</li> </ul>  |
| <p><b>Week 10</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b><br/><b>Article</b></p> | <p><b>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body. Relate the structure of the integumentary system to its functional role in protecting the body and maintaining homeostasis.</b></p> <p>COMMON CORE- CLOSE READING<br/>Planning and implementation for standards and close reading.</p> | <ul style="list-style-type: none"> <li>What is joint or articulation?</li> <li>What are the different classification of joints structurally and function?</li> </ul>  <ul style="list-style-type: none"> <li>What are the unfamiliar words from the article?</li> <li>What are the evidences from the text?</li> <li>What are the main ideas and supporting details?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Define joint or articulation.</li> <li>Classify joints structurally and functionally</li> </ul> <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Learn meaning of words and phrases from context clues.</li> <li>Annotate text using standard rules for annotating text.</li> <li>Cite evidence from text</li> <li>Determine main ideas and supporting details</li> <li>Write a summary of the article.</li> </ul> | <ul style="list-style-type: none"> <li>Joints</li> <li>Articulation</li> <li>Synarthroses</li> <li>Amphiarthroses</li> <li>Diarthroses</li> <li>Fibrous joints</li> <li>Suture</li> <li>Synostoses</li> <li>Syndesmoses</li> <li>Gomphoses</li> <li>Cartilaginous joints</li> <li>Synchondroses</li> <li>Symphyses</li> <li>Synovial joints</li> </ul> <p>* varies depend on the given article</p> |



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| <p><b>QUARTER 2</b></p> <p><b>Week 1</b></p> <p>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</p> | <p>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.</p> <p>SC.912.L.14.16. Describe the anatomy and histology, including ultrastructure of muscle tissue</p> | <ul style="list-style-type: none"> <li>• How will you compare the basic types of muscle tissue?</li> <li>• What are the four important functions of muscle tissue?</li> <li>• How will you describe the gross structure of skeletal muscle with respect to location and names of its connective tissue coverings and attachments?</li> <li>• What are the three types of skeletal muscle fibers?</li> <li>• How will you compare the gross and microscopic anatomy of smooth muscle cells to that of skeletal muscle cells?</li> <li>• How will you describe briefly the embryonic development of muscle tissues and the changes that occur in skeletal muscles with age?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Compare and contrast the basic types of muscle tissue.</li> <li>• List four important functions of muscle tissue.</li> <li>• Describe the gross structure of a skeletal muscle with respect to location and names of its connective tissue coverings and attachments.</li> <li>• Name and describe three types of skeletal muscle fibers.</li> <li>• Compare the gross and microscopic anatomy of smooth muscle cells to that of skeletal muscle cells.</li> <li>• Describe briefly the embryonic development of muscle tissues and the changes that occur in skeletal muscles with age.</li> </ul> | <ul style="list-style-type: none"> <li>• Muscle</li> <li>• Muscle fibers</li> <li>• Myofilaments</li> <li>• Skeletal muscle</li> <li>• Striation</li> <li>• Voluntary muscle</li> <li>• Cardiac muscle</li> <li>• Smooth muscle</li> <li>• Excitability</li> <li>• Contractility</li> <li>• Extensibility</li> <li>• Elasticity</li> </ul> |
| <p><b>Week 2</b></p> <p>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</p>                         | <p>SAP2. Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.</p> <p>SC.912.L.14.16. Describe the anatomy and histology, including ultrastructure of muscle tissue</p> | <ul style="list-style-type: none"> <li>• What is prime mover?</li> <li>• What is antagonist? Synergist? Fixators?</li> <li>• How will you describe the function of prime movers, antagonists, synergists?</li> <li>• How each movement promotes normal muscular function?</li> </ul>   | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the function of prime movers, antagonists, synergists, and fixators, and describe how each promotes normal muscular function.</li> <li>• List the criteria used in naming muscles. Provide example to illustrate the use of each criterion.</li> </ul>   | <ul style="list-style-type: none"> <li>• Prime mover</li> <li>• Agonist</li> <li>• Antagonist</li> <li>• Synergist</li> <li>• Fixators</li> <li>• Temporalis muscle</li> <li>• Deltoid muscle</li> <li>• Trapezius muscle</li> <li>• Maximus</li> <li>• Minimus</li> <li>• Longus</li> </ul>   |

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|   |   | <ul style="list-style-type: none"> <li>• What are the different criteria used in naming muscles?</li> </ul>  |  | <ul style="list-style-type: none"> <li>• Brevis</li> <li>• Transversus</li> <li>• Oblique</li> <li>• Biceps</li> <li>• Triceps</li> </ul>  |
| <p><b>Week 3</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to regulate physiological activities.</b></p> <ul style="list-style-type: none"> <li>• <b>Investigate the physiology of electrochemical impulses and neural integration and trace the pathway of an impulse, relating biochemical changes involved in the conduction of the impulse.</b></li> </ul> | <ul style="list-style-type: none"> <li>• What are the basic functions of the nervous system?</li> <li>• How will you explain the structural and functional divisions of the nervous system?</li> <li>• What is neuron?</li> <li>• How will you describe the important structural components of neuron and relate each to a functional role?</li> <li>• What are the differences between a nerve and a tract, and between a nucleus and a ganglion?</li> <li>• What are the classifications of neurons structurally and functionally?</li> <li>• What is synapse?</li> <li>• How will you distinguish electrical and chemical synapses structurally and their mechanisms of information transmission?</li> <li>• How synaptic events are integrated and modified?</li> <li>• What is neurotransmitter?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• List the basic functions of nervous system.</li> <li>• Explain the structural and functional divisions of the nervous system.</li> <li>• Define neuron, describes its important structural components, and relate each other to a functional role.</li> <li>• Differentiate between a nerve and a tract, and between a nucleus and ganglion.</li> <li>• Classify neurons structurally and functionally.</li> <li>• Define synapse. Distinguish between electrical and chemical synapses structurally and their mechanisms of information transmission.</li> <li>• Describe how synaptic events are integrated and modified.</li> <li>• Define neurotransmitter.</li> </ul> | <ul style="list-style-type: none"> <li>• Nervous system</li> <li>• Stimuli</li> <li>• Sensory input</li> <li>• Integration</li> <li>• Motor output</li> <li>• Central nervous system</li> <li>• Peripheral nervous system</li> <li>• Sensory</li> <li>• Afferent division</li> <li>• Efferent division</li> <li>• Somatic nervous system</li> <li>• Autonomic nervous system</li> <li>• Sympathetic</li> <li>• Parasympathetic</li> <li>• Neuroglia</li> <li>• Neuron</li> <li>• Ganglia</li> <li>• Tracts</li> <li>• Dendrites</li> <li>• Axon</li> <li>• Myelin sheath</li> <li>• Neurilemma</li> <li>• Synapse</li> <li>• Axodendritic synapses</li> <li>• Presynaptic neuron</li> <li>• Postsynaptic neuron</li> <li>• Electrical synapses</li> <li>• Chemical synapses</li> <li>• Neurotransmitter</li> </ul> |

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| <p><b>Week 4</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to regulate physiological activities.</b></p> <ul style="list-style-type: none"> <li>Investigate the physiology of electrochemical impulses and neural integration and trace the pathway of an impulse, relating biochemical changes involved in the conduction of the impulse.</li> </ul> | <ul style="list-style-type: none"> <li>What is the process of brain development?</li> <li>What are the major regions of the adult brain?</li> <li>What are the three major regions of the brain stem, and note the function of each area?</li> <li>How will you describe the structure and function of the cerebellum?</li> <li>How will you describe the cause (if known) and major signs and symptoms of cerebrovascular accidents, Alzheimer’s disease, Huntington’s disease, and Parkinson’s disease?</li> <li>What is embryonic development of the spinal cord?</li> <li>How will you describe the gross and microscopic structure of the spinal cord?</li> <li>What are the major spinal cord tracts, and classify each as motor or sensory tract?</li> <li>What are the different techniques used to diagnose brain disorders?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Describe the process of brain development.</li> <li>Name the major regions of the adult brain.</li> <li>Identify the three major regions of the brain stem, and note the functions of each area.</li> <li>Describe the structure and function of the cerebellum.</li> <li>Describe the cause and major signs and symptoms of cerebrovascular accidents, Alzheimer’s disease, Huntington’s disease, and Parkinson’s disease.</li> <li>Describe the embryonic development of spinal cord.</li> <li>Describe the gross and microscopic structure of the spinal cord.</li> <li>List the major spinal cord tracts, and classify each as a motor or sensory tract.</li> <li>List and explain several techniques used to diagnose brain disorders.</li> </ul> | <ul style="list-style-type: none"> <li>Brain</li> <li>Neural plate</li> <li>Neural folds</li> <li>Neural groove</li> <li>Neural tube</li> <li>Primary brain vesicle</li> <li>Prosencephalon</li> <li>Mesencephalon</li> <li>Rhombencephalon</li> <li>Telencephalon</li> <li>Diencephalon</li> <li>Metencephalon</li> <li>Myelencephalon</li> <li>Cerebrum</li> <li>Brain stem</li> <li>Cerebral cortex</li> <li>Thalamus</li> <li>Hypothalamus</li> <li>Pons</li> <li>Medulla oblongata</li> <li>Cerebellum</li> <li>Meninges</li> <li>Dura mater</li> <li>Arachnoid mater</li> <li>Pia mater</li> <li>Blood brain barrier</li> <li>Cerebrovascular accident</li> <li>Alzheimer’s disease</li> <li>Huntington’s disease</li> <li>Parkinson’s disease</li> <li>Alar plate</li> <li>Basal plate</li> </ul> |
| <p><b>Week 5</b></p> <p><b>Textbook<br/>Study Partner Disc</b></p>  | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to</b></p>   | <ul style="list-style-type: none"> <li>What is peripheral nervous system?</li> <li>What are the different components of PNS?</li> </ul>  | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Define peripheral nervous system.</li> </ul>   | <ul style="list-style-type: none"> <li>Peripheral nervous system</li> <li>Sensory receptors</li> <li>Motor endings</li> </ul>  |

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| <p><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p>   | <p><b>regulate physiological activities.</b></p> <ul style="list-style-type: none"> <li>• <b>Investigate the physiology of electrochemical impulses and neural integration and trace the pathway of an impulse, relating biochemical changes involved in the conduction of the impulse.</b></li> </ul>  | <ul style="list-style-type: none"> <li>• What are the classifications of sensory receptors according to structure; stimulus detected, and body location?</li> <li>• How will you distinguish sensory motor from mixed nerves?</li> <li>• How will you describe the process of nerve fiber regeneration?</li> <li>• What are the motor endings of somatic and autonomic nerve fibers?</li> <li>• What is plexus?</li> <li>• How will you distinguish autonomic reflex from somatic reflex?</li> <li>• How will you compare stretch, flexor, and crossed extensor reflexes?</li> </ul> | <ul style="list-style-type: none"> <li>• Classify sensory receptors according to structure, stimulus detected, and body location.</li> <li>• Distinguish between sensory, motor, and mixed nerves.</li> <li>• Describe the process of nerve fiber regeneration.</li> <li>• Compare and contrast the motor endings of somatic and autonomic nerve fibers.</li> <li>• Define plexus.</li> <li>• Distinguish between autonomic and somatic reflexes.</li> <li>• Compare and contrast stretch, flexor, and crossed extensors reflexes.</li> </ul> | <ul style="list-style-type: none"> <li>• Neuromuscular junctions</li> <li>• Varicosities</li> <li>• Cranial nerves</li> <li>• Reflex arc</li> <li>• Spinal reflexes</li> <li>• Stretch reflex</li> <li>• Flexor reflex</li> <li>• Crossed extensor reflex</li> <li>• Superficial reflex</li> </ul>                                     |
| <p><b>Week 6</b><br/><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to regulate physiological activities.</b></p> <ul style="list-style-type: none"> <li>• <b>Investigate the physiology of electrochemical impulses and neural integration and trace the pathway of an impulse, relating biochemical changes involved in the conduction of the impulse.</b></li> </ul> | <ul style="list-style-type: none"> <li>• What is autonomic nervous system?</li> <li>• What is the relation of autonomic nervous system to peripheral nervous system as a whole?</li> <li>• How will you compare the general functions of parasympathetic and sympathetic divisions?</li> <li>• What are the effects of parasympathetic and sympathetic divisions on the following</li> </ul>   | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Define autonomic nervous system and explain its relationship to the peripheral nervous system as a whole.</li> <li>• Compare and contrast the general functions of the parasympathetic and sympathetic divisions.</li> <li>• State the effects of the parasympathetic and sympathetic divisions on the following organs;</li> <li>• Heart, blood vessels, gastrointestinal tract, lungs,</li> </ul>   | <ul style="list-style-type: none"> <li>• Norepinephrine</li> <li>• Acetylcholine</li> <li>• Dual innervations</li> <li>• Craniosacral division</li> <li>• Terminal ganglia</li> <li>• Cranial outflow</li> <li>• Sacral outflow</li> <li>• Visceral reflex</li> <li>• Cholinergic receptors</li> <li>• Adrenergic receptors</li> </ul> |

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|   |  | <p>organs; heart, blood vessels, gastrointestinal tract, lungs, adrenal medulla, and external genitalia?</p> <ul style="list-style-type: none"> <li>• How will you explain the relationship of some types of hypertension, Raynaud’s disease, and the mass reflex reaction to disorders of autonomic functioning?</li> </ul>  | <p>adrenal medulla, and external genitalia.</p> <ul style="list-style-type: none"> <li>• Explain the relationship of some types of hypertension, Raynaud’s disease, and the mass reflex reaction to disorders of autonomic functioning.</li> </ul>  |  |
| <p><b>Week 7</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to regulate physiological activities.</b></p> <p>SC.912.L.14.50. Describe the structure of vertebrate sensory organs. Relate structure to functions in vertebrate sensory systems.</p> | <ul style="list-style-type: none"> <li>• What are the location, structure, and afferent pathways of taste and smell receptors?</li> <li>• How the taste and smell receptors can be activated?</li> <li>• What are the structure and function of accessory eye structures, eye tunics, lens, and humors of the eyes?</li> <li>• How will you trace the pathway of light through the eye to the retina?</li> <li>• How light is focused for distant and close vision?</li> <li>• What are the cause and consequences of astigmatism, cataract, glaucoma, hyperopia, myopia, and color blindness?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the location, structure, and afferent pathways of taste and smell receptors, and explain how these receptors are activated.</li> <li>• Describe the structure and function of accessory eye structures, eye tunics, lens, and humors of the eye.</li> <li>• Trace the pathway of light through the eye of retina, and explain how light is focused for distant and close vision.</li> <li>• Note the cause and consequences of astigmatism, cataract, glaucoma, hyperopia, myopia, and color blindness.</li> <li>• Describe the structure and general function of the outer, middle, and inner ears.</li> <li>• Explain how one is able to differentiate pitch and loudness of sounds and to localize the source of sounds.</li> <li>• List possible causes and symptoms of otitis media,</li> </ul> | <ul style="list-style-type: none"> <li>• Special senses</li> <li>• Chemoreceptors</li> <li>• Taste buds</li> <li>• Papillae</li> <li>• Fungiform papillae</li> <li>• Circumvallates papillae</li> <li>• Gustatory</li> <li>• Gustatory hair</li> <li>• Taste pore</li> <li>• Basal cells</li> <li>• Olfactory epithelium</li> <li>• Eyebrows</li> <li>• Eyelids</li> <li>• Eyeball</li> <li>• Fibrous tunic</li> <li>• Lens</li> <li>• Humors</li> <li>• Choroid</li> <li>• Photoreceptors</li> <li>• Color blindness</li> <li>• Astigmatism</li> <li>• Cataract</li> <li>• Glaucoma</li> <li>• Hyperopia</li> <li>• Myopia</li> </ul> |

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|   |  | <ul style="list-style-type: none"> <li>• What are the structure and general functions of outer, middle and inner ears?</li> <li>• How one is able to differentiate pitch and loudness of sounds and to localize the source of sounds?</li> <li>• What are possible causes and symptoms of otitis media, deafness, Meniere's syndrome, and motion sickness?</li> </ul>  | deafness, Meniere's syndrome, and motion sickness.  | <ul style="list-style-type: none"> <li>• Deafness</li> <li>• Tinnitus</li> <li>• Meniere's syndrome</li> <li>• Vestibular apparatus</li> </ul>  |
| <p><b>Week 8</b></p> <p><b>Textbook</b></p> <p><b>Study Partner Disc</b></p> <p><b>Worksheet</b></p> <p><b>Internet</b></p> <p><b>Laboratory Manual</b></p> | <p><b>SAP3. Students will assess the integration and coordination of body functions and their dependence on the nervous systems and endocrine to regulate physiological activities.</b></p> <ul style="list-style-type: none"> <li>• Interpret interactions among hormones, senses, and nerves which make possible the coordination of functions of the body.</li> </ul> | <ul style="list-style-type: none"> <li>• What are the difference between hormonal and neural controls of body functioning.</li> <li>• What are the major endocrine organs?</li> <li>• How will you describe the locations of major endocrine organs in the body?</li> <li>• How will you distinguish circulating hormones from local hormones?</li> <li>• How hormones are classified chemically?</li> <li>• What are the two major mechanisms by which hormones bring about their effects on their target tissues?</li> <li>• How hormones release is regulated?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Indicate important differences between hormonal and neural controls of body functioning.</li> <li>• List the major endocrine organs and describe their locations in the body.</li> <li>• Distinguish between circulating hormones and local hormones.</li> <li>• Describe how hormones are classified chemically.</li> <li>• Describe the two major mechanisms by which hormones bring about their effect on their target tissues, and explain how hormone release is regulated.</li> </ul> | <ul style="list-style-type: none"> <li>• Endocrine system</li> <li>• Hormones</li> <li>• Endocrine glands</li> <li>• Neuroendocrine organ</li> <li>• Steroids</li> <li>• Eicosanoids</li> <li>• Target cells</li> <li>• Receptors</li> <li>• Humoral stimuli</li> <li>• Neural stimuli</li> <li>• Hormonal stimuli</li> <li>• Pituitary gland</li> <li>• Growth hormone</li> <li>• Thyroid stimulating hormone</li> <li>• Adrenocorticotropic hormone</li> <li>• Follicle-stimulating hormone</li> <li>• Prolactin</li> <li>• Luteinizing hormone</li> <li>• Oxytocin</li> <li>• Antidiuretic hormone</li> <li>• Thyroid hormone</li> <li>• Parathyroid glands</li> </ul> |

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| <p><b>Week 9</b></p> <ul style="list-style-type: none"> <li>• Online resources</li> <li>• Science project website</li> </ul>         | <p>SCIENCE RESEARCH PROJECT</p>   | <ul style="list-style-type: none"> <li>• What is research?</li> <li>• What are the different parts of scientific research?</li> </ul>   | <p>I will be able to:</p> <ul style="list-style-type: none"> <li>• Conduct research about science project.</li> <li>• Formulate my own experiment.</li> </ul>  | <ul style="list-style-type: none"> <li>• It varies depend on the given research</li> </ul>  |
| <p><b>QUARTER 3</b></p> <p><b>Week 1</b></p> <p>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b><br/> <b>SC.912.L.14.34. Describe the composition and physiology of blood, including that of the plasma and the formed elements.</b><br/> <b>SC.912.L.14.35. Describe the steps in hemostasis, including the mechanism of coagulation, include the basis for blood typing and transfusion reactions.</b></p> | <ul style="list-style-type: none"> <li>• What are the composition and physical characteristics of whole blood?</li> <li>• What are the six functions of blood?</li> <li>• What are the composition and functions of plasma?</li> <li>• How will you describe the structural characteristics, function, and production of erythrocytes?</li> <li>• What are the classes, structural characteristics, and functions of leukocytes?</li> <li>• What is the structure and function of platelets?</li> <li>• What is the process of hemostasis?</li> <li>• What are the different factors that limit clot</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the composition and physical characteristics of whole blood.</li> <li>• List six functions of blood.</li> <li>• Discuss the composition and functions of plasma.</li> <li>• Describe the structural characteristics, function, and production of erythrocytes.</li> <li>• List the classes, structural characteristics, and functions of leukocytes.</li> <li>• Describe the structure and function of platelets.</li> <li>• Describe the process of hemostasis. List the factors that limit clot formation and prevent undesirable clotting.</li> <li>• Give examples of hemostatic disorders.</li> <li>• Describe ABO and Rh blood group. Explain the basis of transfusion reactions.</li> <li>• Explain the importance of blood testing as a diagnostic tool.</li> </ul> | <ul style="list-style-type: none"> <li>• Blood</li> <li>• Plasma</li> <li>• Hematocrit</li> <li>• Albumin</li> <li>• Erythrocytes</li> <li>• Hemoglobin</li> <li>• Oxyhemoglobin</li> <li>• Deoxyhemoglobin</li> <li>• Carbaminohemoglobin</li> <li>• Hemopoiesis</li> <li>• Hemocytoblast</li> <li>• Erythropoiesis</li> <li>• Anemia</li> <li>• Thalassemias</li> <li>• Sickle-cell anemia</li> <li>• Polycythemia</li> <li>• Blood doping</li> <li>• Leukocytes</li> <li>• Granulocytes</li> <li>• Neutrophils</li> <li>• Eosinophils</li> <li>• Basophils</li> <li>• Agranulocytes</li> <li>• Lymphocytes</li> <li>• Monocytes</li> <li>• Hemostasis</li> <li>• Coagulation</li> <li>• Agglutinogens</li> </ul> |

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|  |   | <p>formation and prevent undesirable clotting?</p> <ul style="list-style-type: none"> <li>• What are the different hemostatic disorders?</li> <li>• How will you describe the ABO and Rh blood groups?</li> <li>• What is the importance of blood testing as a diagnostic tool?</li> </ul>   |  | <ul style="list-style-type: none"> <li>• Blood transfusion</li> <li>• ABO blood</li> <li>• Rh blood</li> </ul>  |
| <p><b>Week 2, 3</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b></p> <p><b>SC.912.L.14.36. Describe the factors affecting blood flow through the cardiovascular system.</b></p> <p><b>SC.912.L.14.38. Describe the normal heart sounds and what they mean.</b></p> <p><b>SC.912.L.14.41. Describe fetal circulation and changes that occur to the circulatory system at birth.</b></p> | <ul style="list-style-type: none"> <li>• What is the size and shape of the heart?</li> <li>• What is the location and orientation of the heart in the thorax?</li> <li>• What covers the heart?</li> <li>• How will you describe the structure and function of each of the three layers of the heart wall?</li> <li>• What are the functions of the four chambers of the heart?</li> <li>• What is the pathway of blood through the heart?</li> <li>• What are the major branches of the coronary arteries and describe their distribution?</li> <li>• What are the heart valves and describe their location, function, and mechanism of operation?</li> <li>• What is the normal heart sounds?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the size and shape of the heart, and indicate its location and orientation in the thorax.</li> <li>• Name the coverings of the heart.</li> <li>• Describe the structure and function of each of the three layers of the heart wall.</li> <li>• Describe the structure and functions of the four heart chambers.</li> <li>• Trace the pathway of blood through the heart.</li> <li>• Name the major branches of the coronary arteries and describe their distribution.</li> <li>• Name the heart valves and describe their location, function, and mechanism of operation.</li> <li>• Name the components of the conduction system of the heart, and conduction pathway.</li> <li>• Describe normal heart sounds.</li> <li>• Describe fetal heart formation, and indicate how fetal heart differ from an adult heart.</li> </ul> | <ul style="list-style-type: none"> <li>• Heart</li> <li>• Pericardium</li> <li>• Parietal layer</li> <li>• Visceral layer</li> <li>• Pericardial layer</li> <li>• Epicardium</li> <li>• Myocardium</li> <li>• Endocardium</li> <li>• Ventricles</li> <li>• Auricles</li> <li>• Papillary muscles</li> <li>• Pulmonary circuit</li> <li>• Systematic circuit</li> <li>• Coronary circulation</li> <li>• Atrioventricular valves</li> <li>• Semilunar valves</li> <li>• Systole</li> <li>• Diastole</li> <li>• Cardiac cycle</li> <li>• Heart sounds</li> <li>• Tachycardia</li> <li>•</li> </ul> |



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|  |  | <ul style="list-style-type: none"> <li>How will you describe fetal heart formation, and indicate how the fetal heart differs from the adult heart?</li> </ul>  |  |  |
| <p><b>Week 4, 5</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b></p> <p><b>SC.912.L.14.36. Describe the factors affecting blood flow through the cardiovascular system.</b></p> <p><b>SC.912.L.14.39. Describe hypertension and some factors that produce it.</b></p> | <ul style="list-style-type: none"> <li>What are the three layers that typically form the wall of a blood vessel, and state the function of each?</li> <li>How will you compare the structure and function of the three types of arteries?</li> <li>What is the structure and function of veins?</li> <li>How veins differ from arteries?</li> <li>What is the structure and function of a capillary bed?</li> <li>What is blood flow, blood pressure, and resistance?</li> <li>What are the factors that influence blood pressure?</li> <li>How blood pressure is being regulated?</li> <li>What is hypertension?</li> <li>How blood flow is regulated in the body in general and in its specific organs?</li> <li>What is circulatory shock?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>Describe the three layers that typically form the wall of a blood vessel, and state the function of each.</li> <li>Compare and contrast the structure and function of the three types of arteries.</li> <li>Describe the structure and function of veins, and explain how veins differ from arteries.</li> <li>Describe the structure and function of a capillary bed.</li> <li>Define blood flow, blood pressure, and resistance, and explain the relationships between these factors.</li> <li>List and explain the factors that influence blood pressure, and describe how blood pressure is regulated.</li> <li>Define hypertension</li> <li>Define circulatory shock.</li> <li>Trace the pathway of blood through the pulmonary circuit and state the importance of this special circulation.</li> <li>Describe the general functions of the systematic circuit.</li> </ul> | <ul style="list-style-type: none"> <li>Blood vessels</li> <li>Arterial system</li> <li>Elastic arteries</li> <li>Muscular arteries</li> <li>Arterioles</li> <li>Capillaries</li> <li>Capillary bed</li> <li>Venous system</li> <li>Venules</li> <li>Blood flow</li> <li>Blood pressure</li> <li>Resistance</li> <li>Diastolic pressure</li> <li>Neural controls</li> <li>Baroreceptor-initiated reflexes</li> <li>Chemoreceptor-initiated reflexes</li> <li>Pulse</li> <li>Auscultatory method</li> <li>Hypertension</li> <li>Circulatory shock</li> </ul> |

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|   |  | <ul style="list-style-type: none"> <li>• What is the pathway of blood through the pulmonary circuit, and state the importance of special circulation?</li> <li>• What are the general functions of the systematic circuit?</li> </ul>  |  |   |
| <b>Week 6</b><br><b>Textbook</b><br><b>Study Partner Disc</b><br><b>Worksheet</b><br><b>Internet</b><br><b>Laboratory Manual</b>    | <b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b><br><b>SC.912.L.14.42. Describe the anatomy and physiology of the lymph system.</b>  | <ul style="list-style-type: none"> <li>• What is the structure and distribution of lymphatic vessels, and note their important functions?</li> <li>• What is the source of lymph and mechanism(s) of lymph transport?</li> <li>• What is the composition of lymphoid tissue?</li> <li>• What are the major lymphoid organs?</li> <li>• How will you describe the general location, histological structure, and functions of lymph nodes?</li> <li>• What is the outline for lymphatic system development?</li> </ul> | The students will be able to: <ul style="list-style-type: none"> <li>• Describe the structure and distribution of lymphatic vessels, and note their important functions.</li> <li>• Describe the source of lymph and the mechanism(s) of lymph transport.</li> <li>• Describe the composition of lymphoid tissue (basic structure and cell population), and name the major lymphoid organs.</li> <li>• Describe the general location, histological structure, and functions of lymph nodes.</li> <li>• Outline the development of the lymphatic system.</li> </ul> | <ul style="list-style-type: none"> <li>• Lymphatic system</li> <li>• Lymphatic vessels</li> <li>• Lymph capillaries</li> <li>• Lacteals</li> <li>• Chyle</li> <li>• Lymphoid cells</li> <li>• Lymphoid tissue</li> <li>• Lymphoid organs</li> <li>• Lymph nodes</li> <li>• Spleen</li> <li>• Thymus</li> <li>• Tonsils</li> </ul> |
| <b>Week 7, 8</b><br><b>Textbook</b><br><b>Study Partner Disc</b><br><b>Worksheet</b><br><b>Internet</b><br><b>Laboratory Manual</b> | <b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b><br><b>SC.912.L.14.52. Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and</b> | <ul style="list-style-type: none"> <li>• How will you describe the surface membrane barriers and their protective functions?</li> <li>• What is the importance of Phagocytosis and natural killer cells in nonspecific body defense?</li> </ul>  | The students will be able to: <ul style="list-style-type: none"> <li>• Describe the surface membrane barriers and their protective functions.</li> <li>• Explain the importance of Phagocytosis and natural killer cells in nonspecific body defense.</li> <li>• Describe the inflammatory process.</li> </ul>   | <ul style="list-style-type: none"> <li>• Immunity</li> <li>• Innate system</li> <li>• Defense system</li> <li>• Immune system</li> <li>• Pathogens</li> <li>• Phagocyte</li> <li>• Phagocytosis</li> <li>• Natural killer</li> <li>• Histamine</li> <li>• Leukocytosis</li> </ul>   |

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|  | <p><b>antibiotics.</b></p> | <ul style="list-style-type: none"> <li>• What is inflammatory process?</li> <li>• What are the body's antimicrobial substances and describe their function?</li> <li>• What is antigen?</li> <li>• How antigens affect the immune system?</li> <li>• What is complete antigen, hapten, and antigenic determinant?</li> <li>• How antigen processed in the body?</li> <li>• How will you compare the origin, maturation process, and general function of B and T lymphocytes?</li> <li>• What are the roles of macrophages and other phagocytes?</li> <li>• What is immunocompetence and self-tolerance?</li> <li>• What are the examples of immune deficiency diseases and of hypersensitivity states?</li> <li>• What is the role of nervous system in regulating the immune response?</li> </ul> | <ul style="list-style-type: none"> <li>• Name the body's antimicrobial substances and describe their function.</li> <li>• Define antigen and describe how antigens affect the immune system.</li> <li>• Define complete antigen, hapten, and antigenic determinant.</li> <li>• Follow antigen processing in the body.</li> <li>• Compare and contrast the origin, maturation process, and general function of B and T lymphocytes.</li> <li>• Describe the role of macrophages and other phagocytes.</li> <li>• Define immunocompetence and self-tolerance.</li> <li>• Give examples of immune deficiency diseases and of hypersensitivity states.</li> <li>• Briefly describe the role of the nervous system in regulating the immune response.</li> </ul> | <ul style="list-style-type: none"> <li>• Margination</li> <li>• Diapedesis</li> <li>• Chemotaxis</li> <li>• Antimicrobial</li> <li>• Interferons</li> <li>• Fever</li> <li>• Humoral immunity</li> <li>• Cell-mediated immunity</li> <li>• Antigen</li> <li>• Complete antigens</li> <li>• Immunogenicity</li> <li>• Reactivity</li> <li>• T cell</li> <li>• B cell</li> <li>• Cytokines</li> <li>• Immunodeficiencies</li> <li>• Autoimmune diseases</li> <li>• Hypersensitivity</li> </ul> |
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| <p><b>Week 9,10</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b></p> <p><b>SC.912.L.14.44. Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation.</b></p> | <ul style="list-style-type: none"> <li>• What are the organs forming the respiratory passageways in descending order until the alveoli are reached?</li> <li>• What is the gross structure of lungs and pleural coverings?</li> <li>• What are the several factors that influence pulmonary ventilation?</li> <li>• What dead space?</li> <li>• How atmospheric and alveolar air differ in composition, and explain these differences?</li> <li>• How oxygen is transported in the blood, and explain how oxygen loading and unloading is affected by temperature, pH, BPG, and <math>P_{CO_2}</math>?</li> <li>• What are neural controls of respiration?</li> <li>• How will you compare the hyperpnea of exercise with involuntary hyperventilation?</li> <li>• How will you describe the process and effects of acclimatization to high altitude?</li> <li>• What are the causes and consequences of</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Identify the organs forming the respiratory passageways in descending order until the alveoli are reached.</li> <li>• Describe the gross structure of the lungs and pleural coverings.</li> <li>• List several physical factors that influence pulmonary ventilation.</li> <li>• Define dead space.</li> <li>• Describe how atmospheric and alveolar air differ in composition, and explain these differences.</li> <li>• Describe how oxygen is transported in the blood, and explain how oxygen loading and unloading is affected by temperature, pH, BPG, and <math>P_{CO_2}</math>.</li> <li>• Describe the neural controls of respiration.</li> <li>• Compare and contrast the hyperpnea of exercise with involuntary hyperventilation.</li> <li>• Describe the process and effects of acclimatization to high altitude.</li> <li>• Compare the causes and consequences of chronic bronchitis, emphysema, asthma, and lung cancer.</li> <li>• Trace the development of the respiratory system in an embryo.</li> </ul> | <ul style="list-style-type: none"> <li>• Respiratory system</li> <li>• Respiration</li> <li>• Pulmonary ventilation</li> <li>• External respiration</li> <li>• Internal respiration</li> <li>• Nasal cavity</li> <li>• Hard palate</li> <li>• Soft palate</li> <li>• Vestibule</li> <li>• Paranasal sinus</li> <li>• Pharynx</li> <li>• Nasopharynx</li> <li>• Oropharynx</li> <li>• Laryngopharynx</li> <li>• Larynx</li> <li>• Trachea</li> <li>• Bronchi</li> <li>• Alveoli</li> <li>• Lungs</li> <li>• Pleural coverings</li> <li>• Pleurae</li> <li>• Intrapulmonary pressure</li> <li>• Inspiration</li> <li>• Expiration</li> <li>• Dead space</li> <li>• Alveolar ventilation</li> <li>• Acclimatization</li> <li>• Chronic obstructive pulmonary disease</li> <li>• Asthma</li> <li>• Tuberculosis</li> <li>• Lung cancer</li> </ul> |
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|  |   | <p>chronic bronchitis, emphysema, asthma, and lung cancer?</p> <ul style="list-style-type: none"> <li>• How will you trace the development of the respiratory system in an embryo?</li> </ul>   |   |  |
| <p><b>QUARTER 4</b></p> <p><b>Week 1, 2</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b></p> <p><b>SC.912.L.14.46. Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption, and neural and hormonal.</b></p> | <ul style="list-style-type: none"> <li>• What are the overall function of the digestive system, and differentiate between organs of the alimentary canal and accessory digestive organs?</li> <li>• What are the major processes occurring during digestive system activity?</li> <li>• How will you describe the anatomy and basic function of each organ and accessory organ of the alimentary canal?</li> <li>• What are the enzymes involved in chemical digestion?</li> <li>• What is the process of absorption of digested foodstuffs that occurs in small intestine?</li> <li>• What are the important abnormalities of the gastrointestinal tract at different stages of life?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the overall function of the digestive system, and differentiate between organs of the alimentary canal and accessory digestive organs.</li> <li>• List and define briefly the major processes occurring during digestive system activity.</li> <li>• Describe the anatomy and basic function of each organ and accessory organ of the alimentary canal.</li> <li>• List the enzymes involved in chemical digestion.</li> <li>• Describe the process of absorption of digested foodstuffs that occurs in the small intestine.</li> <li>• Describe important abnormalities of the gastrointestinal tract at different stages of life.</li> </ul> | <ul style="list-style-type: none"> <li>• Alimentary canal</li> <li>• Absorbs</li> <li>• Accessory digestive organs</li> <li>• Ingestion</li> <li>• Propulsion</li> <li>• Mechanical digestion</li> <li>• Chemical digestion</li> <li>• Absorption</li> <li>• Defecation</li> <li>• Peristalsis</li> <li>• Mesentery</li> <li>• Enteric neurons</li> <li>• Myenteric nerve plexus</li> <li>• Oral cavity</li> <li>• Palate</li> <li>• Tongue</li> <li>• Salivary glands</li> <li>• Teeth</li> <li>• Pharynx</li> <li>• Esophagus</li> <li>• Mastication</li> <li>• Deglutition</li> <li>• Stomach</li> <li>• Large intestine</li> <li>• Small intestine</li> <li>• Liver</li> <li>• Gall bladder</li> <li>• Pancreas</li> <li>• Diarrhea</li> <li>• Food poisoning</li> </ul> |

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| <p><b>Week 3, 4</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b></p>  | <ul style="list-style-type: none"> <li>• What is nutrient?<br/>Essential nutrient?<br/>Calorie?</li> <li>• What are the six major nutrient categories?</li> <li>• What are the sources of the six major nutrient categories and their main cellular uses?</li> <li>• What is metabolism?</li> <li>• How catabolism and anabolism differ?</li> <li>• What is oxidation and reduction?</li> <li>• What is the importance of oxidation and reduction reactions in metabolism?</li> <li>• What is meant by body energy balance?</li> <li>• How body temperature is regulated?</li> <li>• What are the different ways that medications commonly used by age people may influence their nutrition and health?</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Define nutrient, essential nutrient, and calorie.</li> <li>• List the six major nutrient categories. Note important sources and their main cellular uses.</li> <li>• Define metabolism. Explain how catabolism and anabolism differ.</li> <li>• Define oxidation and reduction and note the importance of these reactions in metabolism.</li> <li>• Explain what is meant by body energy balance.</li> <li>• Describe how body temperature is regulated.</li> <li>• List ways that medications commonly used by aged people may influence their nutrition and health.</li> </ul> | <ul style="list-style-type: none"> <li>• Calorie</li> <li>• Nutrient</li> <li>• Nutrition</li> <li>• Essential nutrient</li> <li>• Carbohydrates</li> <li>• Lipids</li> <li>• Proteins</li> <li>• Vitamins</li> <li>• Minerals</li> <li>• Metabolism</li> <li>• Anabolism</li> <li>• Catabolism</li> <li>• Oxidation-reduction reaction</li> <li>• Glucose</li> <li>• Glycolysis</li> <li>• Krebs cycle</li> <li>• Electron transport chain</li> </ul> |
| <p><b>Week 5, 6</b></p> <p><b>Textbook<br/>Study Partner Disc<br/>Worksheet<br/>Internet<br/>Laboratory Manual</b></p> | <p><b>SAP4. Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.</b><br/><b>SC.912.L.14.47. Describe the physiology of urine formation by the kidney.</b></p> | <ul style="list-style-type: none"> <li>• What is the gross anatomy of the kidney and its covering?</li> <li>• What is the anatomy of nephron?</li> <li>• What are the several kidney functions that help maintain body homeostasis?</li> <li>• What are the parts of the nephron responsible for</li> </ul>  | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the gross anatomy of the kidney and its covering.</li> <li>• Describe the anatomy of a nephron.</li> <li>• List several kidney functions that help maintain body homeostasis.</li> <li>• Identify the parts of the nephron responsible for filtration, reabsorption, and secretion, and describe the</li> </ul>   | <ul style="list-style-type: none"> <li>• Urinary system</li> <li>• Kidney</li> <li>• Nephron</li> <li>• Glomerulus</li> <li>• Renal tubule</li> <li>• Bowman’s capsule</li> <li>• Urine</li> <li>• Net filtration pressure</li> <li>• Rennin-angiotensin mechanism</li> <li>• Tubular reabsorption</li> </ul>  |

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|  |  | <p>filtration, reabsorption, and secretion?</p> <ul style="list-style-type: none"> <li>• How will you describe the normal physical and chemical properties of urine?</li> <li>• Lists several abnormal urine components?</li> <li>• How will you describe the general location, structure, and function of the ureters?</li> <li>• What is the general location, structure, and function of the urinary bladder?</li> <li>• What is the general location, structure, and function of the urethra?</li> </ul> | <p>mechanisms underlying each of these functional processes.</p> <ul style="list-style-type: none"> <li>• Describe the normal physical and chemical properties of urine.</li> <li>• List several abnormal urine components, and name the condition when each is present in detectable amounts.</li> <li>• Describe the general location, structure, and function of ureters.</li> <li>• Describe the general location, structure, and function of the urinary bladder.</li> <li>• Describe the general location, structure and function of urethra.</li> </ul>   | <ul style="list-style-type: none"> <li>• Diuretics</li> <li>• Renal clearance</li> <li>• Ureters</li> <li>• Urinary bladder</li> <li>• Urethra</li> <li>• Micturation</li> </ul>   |
| <p><b>Week 7, 8</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP5. Students will analyze the role of the reproductive system as it pertains to the growth and development of humans. SC.912.L.16.13. Describe the basic anatomy and physiology of the human reproductive system. SC.912.L.14.6. Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.</b></p> | <ul style="list-style-type: none"> <li>• What are the common functions of the male and female reproductive systems?</li> <li>• What is the structure and function of the testes?</li> <li>• What is the importance of the location of testes in the scrotum?</li> <li>• How will you describe the location, structure, and function of the accessory organs of the male reproductive system?</li> <li>• What are the sources and functions of semen?</li> <li>• What meiosis?</li> </ul>                     | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the common function of the male and female reproductive systems.</li> <li>• Describe the structure and function of the testes, and explain the importance of their location in the scrotum.</li> <li>• Describe the location, structure, and function of the accessory organs of the male reproductive system.</li> <li>• Discuss the sources and functions of semen.</li> <li>• Define meiosis. Compare and contrast it to mitosis.</li> <li>• Outline the events of spermatogenesis.</li> <li>• Describe the location, structure, and function of the ovaries.</li> </ul> | <ul style="list-style-type: none"> <li>• Reproductive system</li> <li>• Gonads</li> <li>• Gametes</li> <li>• Sex hormones</li> <li>• Testes</li> <li>• Scrotum</li> <li>• Penis</li> <li>• Epididymis</li> <li>• Ductus deferens</li> <li>• Seminal vesicles</li> <li>• Prostate gland</li> <li>• Bulbourethral glands</li> <li>• Semen</li> <li>• Erection</li> <li>• Ejaculation</li> <li>• Spermatogenesis</li> <li>• Meiosis</li> <li>• Mitosis</li> <li>• Testosterone</li> <li>• Ovaries</li> <li>• Estrogens</li> </ul> |

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|  |  | <ul style="list-style-type: none"> <li>• How will you differentiate meiosis from mitosis?</li> <li>• What are the different events of spermatogenesis? Make an outline.</li> <li>• How will you describe the location, function, and structure of the ovaries?</li> <li>• What are the location, structure, and function of each of the organs of the female reproductive system?</li> <li>• How will you describe the anatomy of female external genitalia?</li> <li>• What is the structure and function of mammary glands?</li> <li>• How will you describe the process of oogenesis?</li> <li>• How will you compare oogenesis from spermatogenesis?</li> <li>• How will you describe the regulation of the ovarian and menstrual cycles?</li> <li>• What are physiological effects of estrogens and progesterone?</li> <li>• What are the infectious agents and modes of transmission of gonorrhea, syphilis, Chlamydia, and genital herpes?</li> </ul> | <ul style="list-style-type: none"> <li>• Describe the location, structure, and function of each of the organs of female reproductive duct system.</li> <li>• Describe the anatomy of the female external genitalia.</li> <li>• Discuss the structure and function of the mammary glands.</li> <li>• Describe the process of oogenesis and compare it to spermatogenesis.</li> <li>• Describe the regulation of the ovarian and menstrual cycles.</li> <li>• Discuss the physiological effects of estrogens and progesterone.</li> <li>• Indicate the infectious agents and modes of transmission of gonorrhea, syphilis, Chlamydia, and genital herpes.</li> <li>• Describe the significant events of puberty and menopause.</li> </ul> | <ul style="list-style-type: none"> <li>• Progesterone</li> <li>• Uterine tubes</li> <li>• Uterus</li> <li>• Vagina</li> <li>• Mammary glands</li> <li>• Breast cancer</li> <li>• Ovarian cycle</li> <li>• Ovulation</li> <li>• Luteal phase</li> <li>• Sexual transmitted diseases</li> <li>• Gonorrhea</li> <li>• Syphilis</li> <li>• Chlamydia</li> <li>• Genital warts</li> <li>• Genital herpes</li> <li>• Puberty</li> <li>• Menopause</li> </ul> |
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|   |   | <ul style="list-style-type: none"> <li>• What are the significant events of puberty and menopause?</li> </ul>   |  |   |
| <p><b>Week 9</b></p> <p><b>Textbook</b><br/><b>Study Partner Disc</b><br/><b>Worksheet</b><br/><b>Internet</b><br/><b>Laboratory Manual</b></p> | <p><b>SAP5. Students will analyze the role of the reproductive system as it pertains to the growth and development of humans. SC.912.L.16.13. Describe the basic anatomy and physiology of the human reproductive system.</b></p> <ul style="list-style-type: none"> <li>• Describe the stages of human embryology and gestation.</li> <li>• Describe the stages of development from birth to adulthood.</li> </ul> | <ul style="list-style-type: none"> <li>• What is the importance of capacitation to the ability of sperm to penetrate an oocyte?</li> <li>• What is fertilization?</li> <li>• What are the different processes of implantation and placenta formation, and list placental functions?</li> <li>• What is the process of gastrulation and its consequences?</li> <li>• What are the unique features of the fetal circulation?</li> <li>• What is the duration of the fetal period, and note the major events of fetal development?</li> <li>• How will you describe the changes in maternal reproductive organs, and in cardiovascular, respiratory, and urinary system functioning during pregnancy?</li> <li>• What are the effects of pregnancy maternal</li> </ul> | <p>The students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe the importance of capacitation to the ability of sperm to penetrate on oocyte.</li> <li>• Define fertilization.</li> <li>• Describe the processes of implantation and placenta formation, and list placental functions.</li> <li>• Describe the process of gastrulation and its consequences.</li> <li>• Describe the unique features of the fetal circulation.</li> <li>• Indicate the duration of fetal period, and note the major events of fetal development.</li> <li>• Describe changes in maternal reproductive organs, and in cardiovascular, respiratory, and urinary system functioning during pregnancy.</li> <li>• Indicate the effect of pregnancy on maternal metabolism and posture.</li> <li>• Explain how labor is initiated, and describe the three stages of labor.</li> </ul> | <ul style="list-style-type: none"> <li>• Pregnancy</li> <li>• Conceptus</li> <li>• Gestation period</li> <li>• Preembryo</li> <li>• Embryo</li> <li>• Fetus</li> <li>• Fertilization</li> <li>• Capacitated</li> <li>• Polyspermy</li> <li>• Monospermy</li> <li>• Cortical reaction</li> <li>• Blastocyst</li> <li>• Implantation</li> <li>• Placentation</li> <li>• Gastrula</li> <li>• Gastrulation</li> <li>• Fetal circulation</li> <li>• Teratogens</li> <li>• Thalidomide</li> <li>• Parturition</li> <li>• Lactation</li> </ul> |

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|  |  | <p>metabolism and posture?</p> <ul style="list-style-type: none"> <li>• How labor was initiated, and describes the three stages of labor?</li> </ul> |  |  |
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