Anatomy and Physiology Curriculum Guide

Pacing Guide **Anatomy and Physiology is a full year course that meets on a rotating basis for three (3) 55-minute blocks and one (1) 40-minute block for every five (5) day cycle.**	**Chapter 1:** Introduction to Structure and Function	**2 weeks**
	Chapter 2: Chemistry of Living Things	**2 weeks**
	Chapter 3: Cells	**3 weeks**
	Chapter 4: Tissues and Membranes	**2 weeks**
	Chapter 5: Integumentary System	**3 weeks**
	Chapter 6: Skeletal System	**4 weeks**
	Chapter 7: Muscular System	**3 weeks**
	Chapter 8 & 9: Central , Peripheral and Autonomic Nervous Systems	**4 weeks**
	Chapter 10: Special Senses	**2 weeks**
	Chapter 11: Endocrine System	**2 weeks**
	Chapters 12, 13 &14: Blood, Heart and Circulatory system	**5 weeks**
	Chapters 15 and 16: Lymphatic and Immune system	**3 weeks**
	Chapter 17: Respiratory System	**2 weeks**
	Chapter 18: Digestive system	**2 weeks**
	Chapter 20: Urinary System	**2 weeks**
	Chapter 21: Reproductive system	**2 weeks**

21st Century Skills Standards:	
9.1 Personal Finance Literacy	**9.1.12.A.3:** Analyze the relationship between various careers and personal earning goals. **9.1.12.A.4:** Identify a career goal and develop a plan and timetable for achieving it, including educational/training requirements, costs, and possible debt **9.1.12.E.5:** Evaluate business practices and their impact on individuals, families, and societies. **9.1.12. F.1** Relate a country's economic system of production and consumption to building personal wealth and achieving societal responsibilities. **9.1.12. F.3** Analyze how citizen decisions and actions can influence the use of economic resources to achieve societal goals and provide individual services.
9.2 Career Awareness	**9.2.12.C.1:** Review career goals and determine steps necessary for attainment. **9.2.12.C.6** Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
Technology Standards	**8.1.12.A.2:** Produce and edit a multi-page digital document for a commercial or professional audience and present it to peers and/or professionals in that related area for review. **8.1.12.F.1** Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Interdisciplinary Connections	**Mathematics –** **MP.2** Reason abstractly and quantitatively. (HS-LS2-4) **MP.4** Model with mathematics. (HS-LS2-4) **HSN-Q.A.1** Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. **HSN-Q.A.2** Define appropriate quantities for the purpose of descriptive modeling. (HS-LS2-4) **HSN-Q.A.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. (HS-LS2-4) **ELA/Literacy –** **RST.11-12.1** Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. (HS-LS1-1) **WHST.9-12.2** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. (HS-LS1-1) **WHST.9-12.7** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. (HS-LS1-3) **WHST.11-12.8** Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. (HS-LS1-3) **SL.11-12.5** Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. (HS-LS1-2)
NJSLS Career Ready Practices – These practices are demonstrated throughout the curriculum	CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP7. Employ valid and reliable research strategies. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP10. Plan education and career paths aligned to personal goals. CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.

Differentiation/Accommodations/Modifications

Gifted and Talented	English Language Learners	Students with Disabilities	Students at Risk of School Failure
(content, process, product and learning environment) **Extension Activities:** • Conduct research and provide presentation of mathematical topics. • Design surveys to generate and analyze data to be used in discussion. • Use of higher level questioning techniques. • Provide assessments at a higher level of thinking.	**Modifications for Classroom:** **Modifications for Homework/Assignments** • Modified assignments. • Extended time for assignment completion as needed. • Use graphing calculator. • Highlight formulas.	*(appropriate accommodations, instructional adaptations, and/or modifications as determined by the IEP or 504 team)* **Modifications for Classroom:** • Ask students to restate information, directions, and assignments. • Repetition and practice. • Model skills / techniques to be mastered. • Extended time to complete class work. • Provide copy of class notes. • Preferential seating to be mutually determined by the student and teacher. • Students may request books online, on tape/CD, as available and appropriate. • Assign peer helper in the class setting. • Provide regular parent / school communication • Provide oral reminders and check student work during independent work time. • Assist student with long and short term planning of assignments	**Modifications for Classroom:** • Ask students to restate information, directions, and assignments. • Repetition and practice. • Model skills / techniques to be mastered. • Extended time to complete class work. • Provide copy of class notes. • Preferential seating to be mutually determined by the student and teacher. • Students may request books online, on tape/CD, as available and appropriate. • Assign peer helper in the class setting. • Provide oral reminders and check student work during independent work time. • Assist student with long and short term planning of assignments • Provide regular parent / school communication. • Assign peer helper in the class setting. • Provide oral reminders and check student work during independent work time.

		Modifications for Homework • Extended time to complete assignments. • Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases. • Provide the student with clearly stated (written) expectations and grading criteria for assignments. **Modification for Assessments** • Extended time on classroom tests and quizzes. • Student may take / complete tests in an alternate setting as needed. • Restate, reread, and clarify directions/questions. • Distribute study guide for classroom tests. • Establish procedures for accommodations / modifications for assessments.	• Assist student with long and short term planning of assignments **Modifications for Homework** • Extended time to complete assignments. • Student requires more complex assignments to be broken up and explained in smaller units, with work to be submitted in phases. • Provide the student with clearly stated (written) expectations and grading criteria for assignments. **Modification for Assessments** • Extended time on classroom tests and quizzes. • Student may take / complete tests in an alternate setting as needed. • Restate, reread, and clarify directions/questions. • Distribute study guide for classroom tests.

CONTENT: Chapter 1 Introduction to Structure and Function

Theme: Unity of form and function

Essential Questions:
What are functions of living organisms?
What is the relationship between anatomy and physiology?
What are the major body cavities and their subdivisions?
What is Homeostasis and why is it important for survival?
Why is it important to have standard units of measurement

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS2-3 CRP 1,2,3,4,7,8,10,11,12
• Branches of Anatomy • Terms referring to location or position and direction • body planes and sections • Cavities of the body • Life functions • Body systems • Homeostasis and metabolism • Metric system	• Identify and discuss the different branches of anatomy • Identify terms referring to location, direction, planes and sections of the body • Identify and discuss body processes • Identify the units of measure used in health care	***CW***: Vocabulary, Matching , crossword and scramble ***CW:,*** body plane and cavity diagrams and ***Quiz:*** Vocabulary **Lab:** Anatomical Direction and Planes **Chapter test**	**Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Establish procedures for accommodations / modifications for assessments

CONTENT: Chapter 2: Chemistry of Living Things

Theme: Structure and Properties of Matter

Essential Questions:
How are organic compounds used by the body?
How are inorganic compounds used by the body?
How does the structure of a molecule relate to its function
How does pH help maintain Homeostasis?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-3, HSLS1-6 CRP 1,2,3,4,7,8,10,11,12
• Structure of an atom • Elements , compounds and molecules • Inorganic and organic compounds • Electrolytes • water • carbohydrates • Lipids • Proteins • Nucleic acids • Acids, Bases, Salts • Radiologic Technologies	• Relate the importance of Chemistry and Biochemistry to healthcare • Define matter and energy • Explain the structure of an atom an element and a compound • Explain the importance of water to the body • Describe the 4 main groups of organic compounds • Describe the difference between DNA and RNA • Explain the difference between an acid, base and a salt	**CW:** Vocabulary; fill ins, matching, word search **CW:** diagram atom **CW** : Career profile; Radiologist **Lab:** Red cabbage pH **Lab:** effects of antacid on an acidic stomach **Quiz:** organic molecules **Chapter Test**	**Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector

CONTENT: Chapter 3: Cells

Theme: Cellular Basis of Life

Essential Questions:
Are all cells designed with a specific function?
How does the structure of an organelle affect its function?
What types of transport occurs in the cell and how do they effect its function?
How does cellular differentiation occur?
What are stem cells and how are they recruited
Is a tumor cancer?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-1, HSLS1-2, HSLS1-4, HSLS1-7, HSLS3-1 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 3 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: prepared slides, Microscopes, wet mount slides and consumables.
• Protoplasm, plasma membrane and nucleus • Nuclear membrane, nucleoplasm, nucleolus and ribosomes • Centrosome and centrioles, Endoplasmic Reticulum, Mitochondria, Golgi Apparatus, Lysosomes, peroxisomes, cytoskeleton, pinosytic vesicles, Cilia and flagella • Cellular metabolism • Meiosis and mitosis • Cell Death • Protein synthesis • Diffusion, Osmosis, active transport, Phagocytosis, Pinocytosis • Cellular differentiation • Tumors and cancer	• Identify the structure of a typical cell • Define the function of each component of a typical cell • Relate the function of the cell to the function of the body • Describe the process that transport materials in and out of the cell • Describe a tumor and define cancer	**CW:** Vocabulary; fill ins, matching **CW:** Label Diagrams of a typical cell, Plasma membrane, Mitosis **CW:** Stem Cells article **Lab:** Onion Mitosis **Lab:** Potato Osmosis **Quiz:** Cell Structure **Quiz:** Mitosis **Chapter Test**	

CONTENT: Chapter 4: Tissues and Membranes

Theme: Cellular Organization and Differentiation

Essential Questions:
How are body tissues similar and different from each other?
How are different types of tissues integrated to communicate with each other?
How have different tissues evolved to repair themselves?
What happens when tissues cannot repair themselves?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS1-6 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: prepared slides, Microscopes, wet mount slides and consumables.
• Tissues: Epithelial, Connective, Muscle, Nerve • Membranes: Epithelial, Serous, Cutaneous, Connective • Organs and Systems • Disease and injury to tissue • Primary and secondary repair	• List the four main types of tissue • Define the function and location of tissues • Define the location and function of membranes • Define an organ and an organ system • Relate various organs to their respective systems • Describe the process involved in the two types of tissue repair	**CW:** Vocabulary; fill ins, matching **CW:** Label and color membrane Diagrams **CW:** Body system table **CW:** Tissue and organ transplant **Lab:** prepared tissue slides **Quiz:** Tissues **Chapter Test**	

CONTENT: Chapter 5: Integumentary System

Theme: Structure and function

Essential Questions:
How does the skin serve as our first line of defense?
What contributes to skin color?
How does the skin regulate body temperature?
How and why do scars form?
What is inflammation and why is it important
What is the difference between 1st and 2nd degree burns

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 3 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: prepared slides, Microscopes, wet mount slides and consumables.
• Function and structure of the skin • Epidermis • Dermis • Skin color • Subcutaneous layer • Appendages of the Skin; Hair, Nails, Sweat glands, Sebaceous glands • Skin disorders; Athletes foot, Dermatitis, Eczema, Impetigo, Psoriasis, Ringworm, Urticaria, Boils, Rosacea, Herpes • Hair and nail disorders; Ingrown nails, Fungal infections and warts • Skin cancer • Burns • Skin Lesions	• Describe the Function of the skin • Describe the structures found in the two skin layers • Explain how the skin serves as a channel of excretion • Describe the function of the appendages of the skin • Describe some common skin, hair, and nail disorders	**CW:** Vocabulary; fill ins, matching, word scramble **CW:** Label Diagram of the skin **CW:** Hazards of the Sun **LAB:** Sweat glands **Lab:** gross examination of the skin **Quiz:** skin structure and function **Chapter Test**	

CONTENT: Chapter 6:Skeletal System

Theme: Structure and function

Essential Questions:
How is bone Formed?
Do all bones have the same function?
What is the importance of remodeling?
How are joints classified?
What is the difference between voluntary and involuntary muscles?
Explain muscle contraction in terms of physiology and chemistry?
What injuries occur to the skeletal system?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS1-6 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 4 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: Skeleton model
• Function of the skeletal system • Structure and formation of bone • Structure of long bone • Growth • Bone types • Parts of the skeletal system • Axial skeleton and Appendicular skeleton • Joints and related structure • Types of motion • Injuries, diseases and Disorders of the Bones and Joints	• List the main function of the skeletal system • Explain the process of bone formation • Name and locate the bones of the skeleton • Name and define the main types of joint movement • Identify common bone and joint disorders • Explain muscle contraction in terms of physiology and chemistry	**CW:** Vocabulary; fill ins, matching, word scramble **CW:** Label Diagrams of Long bones, skeletal system, skull, spine, rib cage, hand, pelvic girdle and foot **CW:** types of movements **Quiz:** Skeleton practical **Chapter Test**	

CONTENT: Chapter 7:Muscular System

Theme: Structure and Function

Essential Questions:
What is the difference between voluntary and involuntary muscles?
Explain muscle contraction in terms of physiology and chemistry?
Where do muscles get the energy that allows them to move?
How can you build muscle strength and endurance?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS1-7, HSLS2-3 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 3 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: prepared slides, Microscopes, wet mount slides and consumables , blood pressure cuff and stethoscope
• Types of Muscles • Characteristics of muscle • Muscle attachment and functions • Sources of energy and heat • Contraction of skeletal muscle • Muscle fatigue • Muscle tone • Principal skeletal muscles • Muscles of the head and neck, extremities and trunk • Effects of exercise and training • Physical therapy • Musculoskeletal disorders and injuries	• Describe the function of muscle • Describe each of the muscle groups • Describe how pairs of muscles work together • Explain origin and insertion of muscle • Locate the important skeletal body muscles and describe their function • Describe how sports training affects muscles • Identify some common muscle disorders	**CW:** Vocabulary; fill ins, matching **CW:** Label Diagrams of principal skeletal muscles, head and neck, extremities and trunk **Lab:** prepared muscle tissue slides **Lab:** Muscle fatigue **Quiz:** principal skeletal muscles **Chapter Test**	

CONTENT: Chapter 8 & 9 Central , Peripheral and Autonomic Nervous Systems

Theme: Biological systems

Essential Questions:
Does our external environment influence how our nervous system works?
How are the electrical and chemical actions related to our nerves and brain?
Why are neurotransmitter important for good health?
What role to hormones have in the brain?
How does the brain communicate with the body effectively while being very compartmentalized?
How is technology improving treatment of brain damage?
Why and how does society treat mental disorders differently than physiological disorders?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS1-3 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 4 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: hammer stop watch
• Nervous system: Central, Peripheral and autonomic • Nervous tissue • Excitation of the nerve cell • Synapse • Structure of the Brain • Memory • Coverings and ventricles of the brain • Structure and function of the Cerebrum, Diencephalon and Cerebellum • Brain stem and spinal chord • Disorders of the central nervous system • Brain and spinal cord injuries • Peripheral nervous system • Cranial and spinal nerves • Autonomic Nervous system • Reflex arc and Biofeedback • Disorders of the peripheral nervous system	• Describe the function of the central Nervous system • List the main divisions of the central nervous system • Describe the structure of the brain and the spinal chord • Describe the functions of the parts of the brain • Describe the functions of the spinal cord • Describe disorders of the brain, spinal cord and peripheral nervous system • Describe a mixed nerve • Describe the functions of the carinal and spinal nerves • Relate the functions of the parasympathetic and sympathetic nervous system • Explain the simple reflex arc pattern	**CW:** Vocabulary; fill ins, matching, word search and cross word puzzle **CW:** Label Diagrams of a nerve, brain and spinal cord **Lab:** Simple Reflex **Quiz:** Central nervous system **Chapter Test**	

CONTENT: Chapter 10: Special Senses

Theme: Interaction with the Environment

Essential Questions:
How does the eye process light to create the image we see?
Were the development of our sense organs inevitable?
How do the equilibrium organs in the ear play an essential role in balance?
How does age effect special sense organs

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards**
• Sensory receptors • The eye; Sclera, Cornea, Choroid Coat and the Iris, lens, retina, optic disc and Fovea. • Pathway of Vision • Eye Disorders and injuries • Vision defects • Eye surgery • The Ear; outer, Middle and inner ear • Hearing and equilibrium • Noise and hearing loss • Ear Disorders • Sense of smell • Disorders of the nose • Sense of taste • Tongue disorders	• Describe the function of the sensory receptors in the body • Identify the parts of the eye and describe their functions • Trace the pathway of light from outside to the occipital lobe • Identify the parts of the eye and describe tier functions • Trace the pathway of sound from the pinna to temporal lobe • Describe the process involved with the sense of smell • Describe common disorders of the eye, ear, nose and tongue	**CW:** Vocabulary; fill ins, matching **CW:** Label Diagrams of eye and ear **Quiz:** eye structure and function **Chapter Test**	HSLS1-2 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector

CONTENT: Chapter 11: Endocrine System

Theme: Regulation

Essential Questions:
How do hormones regulate Homeostasis in the body?
How do hormones effect growth and differentiation?
What are the roles of hormones in pregnancy?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2 , HSLS1-3 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector
• Hormones; prostaglandins, Neurohormones, Leptin, Ghrelin • Function of the endocrine system • Hormonal control; Negative feedback and Nervous control • Pituitary gland and its hormones • Thyroid and Parathyroid gland • Thymus gland • Adrenal Gland • Gonads; Male and female hormones • Pancreas and pineal gland • Disorders of the endocrine system, Pituitary, Thyroid, Para thyroid, adrenal, gonad and Pancreas • Steroid abuse in sports • diabetes	• List the glands that make up the endocrine system • Describe hormone's and their classification • Describe negative feedback and hormonal control • Name the hormones of the endocrine system and their function • Describe the role of prostaglandins • Describe common disorders of the endocrine system	**CW:** Vocabulary; fill ins, matching, word search **CW:** Label Diagrams of endocrine system glands and pituitary gland **CW** Flow diagram for calcium regulation in blood. **Lab:** Simple Reflex **Quiz:** endocrine system glands **Chapter Test**	

CONTENT: Chapters 12, 13 &14; Blood, Heart and Circulatory system

Theme: Regulation

Essential Questions:
Why is it important to know your blood type?
What is a universal donor and a universal acceptor?
What is an EKG and what role does it play in good Health?
How do nutrients get to the cells from the environment?
How is waste removed from the cells?

Content *(As a result of this learning segment, students will know…)*

- Function of blood
- Composition of blood and plasma
- Formation of blood cells
- Red, White blood cells
- Blood clotting and platelets
- Blood types and Rh factor
- Blood disorders
- Organs and function of the circulatory system
- Structure, circulation, blood supply and heart rate
- Conduction system and Electrocardiogram
- Prevention of disease and heart surgery
- Cardiopulmonary circulation
- Coronary, portal, and fetal circulation
- Arteries, capillaries and veins
- Venous return
- Blood pressure and pulse
- Disorders of circulatory system

Skills *(As a result of this learning segment, students will be able to do…)*

- List the important components of blood and their function
- Describe the process of inflammation
- Describe the process of blood clotting
- Recognize the significance of different blood type
- Describe the functions of the circulatory system
- Describe the structure and function of the heart
- Describe the conduction system of the heart
- Trace the path of cardiopulmonary circulation in individuals and mother/fetus
- List the types of blood vessels and identify the principal veins and arteries
- Describe some disorders of circulation and blood vessels

Assessments (The above Essential Questions will be assessed with the following formative and summative measures:)
CW: Vocabulary; fill ins, matching, word puzzle
CW: Concept map; Characteristics and function of Leukocytes
CW Bone marrow transplant
CW label heart diagram, veins and arteries diagram and fetal/mother circulatory system
CW: How the brain heals after a stroke
Lab: Blood typing
Lab: Vital Signs
Lab: Prepared slides of arteries and veins
Quiz: Blood
Quiz: Heart
Chapter Test Circulatory system

Standards
HSLS1-2, HSLS1-3, HSLS1-4, HSLS1-7

CRP 1,2,3,4,7,8,10,11,12

Time Frame
5 weeks

Materials:
Text Book : Body structure and Function, Scott, A.S., and Fong, E
Workbook accompany text
AV: Computers, Internet, Library, Overhead Projector
Labs: prepared slides, Microscopes, Blood type kit

<table>
<tr><td colspan="4">CONTENT: chapters 15 and 16: Lymphatic and Immune system</td></tr>
<tr><td colspan="4">Theme:</td></tr>
<tr><td colspan="2">Essential Questions:
Why do we feel sick?
How does are body fight infections</td><td colspan="2">What causes allergies?
Why is finding a cure for AIDS very difficult?
How can we prevent infections?</td></tr>
<tr><td>Content (As a result of this learning segment, students will know…)
Interstitial fluid and lymph
Lymph vessels and nodes
Tonsils, spleen, thymus, Peyer’s Patches and Lacteals
Immunity; normal defense, antigen/antibody, nonspecific and specific defense
Chemicals and the immune response
Natural and acquired immunities
Autoimmunity; lupus ,scleroderma, Sjogren’s syndrome
Hypersensitivity; allergen, anaphylaxis
AIDS; transmission, screening treatment, prevention
Natural Flora, Pathogenicity and Virulence
Bacteria, Virus, Fungi, Rickettsia, Helminth and Protozoa
Chain of infection: agent, reservoir and portal of exit.
Mode of transmission
Portal of entry
Breaking the chain of infection
Stages of infection
Hospital Acquired Infections (HAIs)
Bioterrorism</td><td>Skills (As a result of this learning segment, students will be able to do…)
Describe the lymphatic system and its functions
Describe the function of interstitial fluid and lymph
Describe the organs of the lymphatic system and their function
Describe immunity and the defense mechanisms of the body
Describe the cause, symptoms and treatment of AIDS
Describe types of Pathogenic microorganisms
Explain the infection process
Describe stages of infection</td><td>Assessments (The above Essential Questions will be assessed with the following formative and summative measures:)
CW: Vocabulary; fill ins, matching, crossword puzzle and word search
CW label diagram of lymphatic system and chain of infection
Lab: Prepared slides of lymph nodes
Quiz: lymphatic system
Chapter Test</td><td>Standards
HSLS1-2, HSLS1-3 HSLS1-4

CRP 1,2,3,4,7,8,10,11,12

Time Frame
2 weeks

Materials:
Text Book : Body structure and Function, Scott, A.S., and Fong, E
Workbook accompany text
AV: Computers, Internet, Library, Overhead Projector
Labs: prepared slides, Microscopes</td></tr>
</table>

CONTENT: Chapter 17: Respiratory System

Theme: regulation

Essential Questions:
How are the respiratory and circulatory systems linked?
How does the role of breathing relate to cellular respiration?
What is bronchitis and what causes it?
How does smoking negatively affect the structure and function of the respiratory system?

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards** HSLS1-2, HSLS1-3, HSLS1-7 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector Labs: prepared slides, Microscopes stethoscope
• Internal and external respiration • Respiratory organs and structures • Nasal cavity, pharynx, larynx, trachea, Bronchi and Bronchioles, alveoli, lungs, pleura, diaphragm and mediastinum • Breathing process • Control of breathing; neural and chemical factors • Lung capacity • Infectious disorders; Laryngitis, influenza, Bronchitis, Pneumonia • noninfectious disorders; Asthma, asbestosis, Emphysema, Cancer	• Describe the functions of the respiratory system • Describe the structures and functions of the organs of respiration • Explain the breathing and respiratory process • Discuss how breathing is controlled by neural and chemical factors • Discuss respiratory disorders	**CW:** Vocabulary; fill ins, matching **CW** Label diagram of Respiratory system and bronchial tree **CW:** Calculating lung capacity **Lab:** breathing sounds **Lab:** Prepared slides of healthy and diseased lungs **Quiz:** breathing **Chapter Test**	

CONTENT: Chapter 18: Digestive system

Theme: Energy and Life

Essential Questions:
Is digestion of food the opposite of building organic molecules?
Why can't we utilize 100% of the energy stored in food?
What role do enzymes play in the digestive system?
How come dangerous acids in our stomach do not hurt us?

Content *(As a result of this learning segment, students will know…)*

- Layers of the digestive tract
- mucosa, submucosa, muscularis
- organs and function
- Mouth, accessory organs, esophagus, stomach, small intestine, pancreas, liver, gallbladder, large intestine, cecum, anal canal
- Enzymes
- Disorders; stomatitis, gingivitis, Periodontal disease, heartburn, gastroenteritis, ulcer, appendicitis, hepatitis, cirrhosis, gall stones, pancreatitis, diverticulosis, hemorrhoids, Diarrhea, constipation and cancer.

Skills *(As a result of this learning segment, students will be able to do…)*

- Describe the general function of the digestive system
- List the structure and functions of the digestive system
- Describe the action of the enzymes on carbohydrates, fats and proteins
- Trace food from the beginning of the digestive process to the end.
- Describe common disorders of the digestive system.

Assessments (The above Essential Questions will be assessed with the following formative and summative measures:)
CW: Vocabulary; fill ins, matching and word search
CW Label diagram of mouth teeth and stomach
Project: Related careers
Chapter Test

Standards
HSLS1-2, HSLS1-3, HSLS1-6

CRP 1,2,3,4,7,8,10,11,12

Time Frame
2 weeks

Materials:
Text Book : Body structure and Function, Scott, A.S., and Fong, E
Workbook accompany text
AV: Computers, Internet, Library, Overhead Projector

CONTENT: Chapter 20: Urinary System

Theme: Regulation

Essential Questions:
How do we remove cellular waste from our body
How are the circulatory and urinary systems related
How can we live without kidneys?
How does alcohol affect kidney function

Content *(As a result of this learning segment, students will know…)*	**Skills** *(As a result of this learning segment, students will be able to do…)*	**Assessments** (The above Essential Questions will be assessed with the following formative and summative measures:)	**Standards**
• Organs and function of the urinary system • Kidney structure and function; medulla, Cortex Nephron • Urine formation ; filtration, reabsorption and secretion • Chemical control; osmoreceptors and aldosterone • Nervous control • Urinary output • Ureters, Urinary bladder, urethra • Urination • Disorders; kidney failure, Kidney stones, cystitis • Dialysis and kidney transplants	• Explain the function of the urinary system • Describe the structure and function of the organs of the urinary system • Explain how the kidneys regulate water balance • List and explain some common disorders	**CW:** Vocabulary; fill ins, matching **CW** Label diagram of urinary system, kidney and nephron **CW** Kidney stone removal **Quiz:** nephron **Chapter Test**	HSLS1-2, HSLS1-3 CRP 1,2,3,4,7,8,10,11,12 **Time Frame** 2 weeks **Materials**: *Text Book* : Body structure and Function, Scott, A.S., and Fong, E *Workbook accompany text* *AV:* Computers, Internet, Library, Overhead Projector

CONTENT: Chapter 21 reproductive system

Theme: Reproduction and Inheritance

Essential Questions:
Is the reproductive system of humans the most efficient of all humans?
What is the difference between Mitosis and meiosis?
What occurs during menopause that inhibits fertilization
What is in-vitro fertilization?

Content *(As a result of this learning segment, students will know…)*

- Function of the reproductive system
- Fertilization and fetal development
- Differentiation of reproductive organs
- Female reproductive system; ovaries, fallopian tubes, uterus, Vagina and breast
- Stages of the menstrual cycle; follicle, ovulation, luteal and menstruation
- Menopause
- Male reproductive system; testes , epididymis, scrotum, penis, prostate gland, bulbourethral gland, semen
- Erection and ejaculation
- Erectile dysfunction
- Contraception
- Infertility and treatment
- Female disorders and infections; PMS, Endometriosis, cancer, yeast infection
- Male disorders; Prostatitis, BPH, prostate cancer
- Sexually transmitted disease; genital warts, Gonorrhea, herpes ,and syphilis

Skills *(As a result of this learning segment, students will be able to do…)*

- Compare Mitosis and Meiosis
- Explain the process of fertilization
- Identify the organs of the female reproductive system and explain their function
- Describe the stages and changes that occur during the menstrual cycle and menopause
- Identify the organs of the male reproductive system and explain their function
- List common disorders of the reproductive system

Assessments (The above Essential Questions will be assessed with the following formative and summative measures:)

CW: Vocabulary; fill ins, matching cross word puzzle
CW Label diagram of sperm and egg, female and male organ system
Lab: prepared slides of ovarian tissue and testes
Quiz: female organ system
Chapter Test

Standards
HSLS1-2, HSLS1-4

CRP 1,2,3,4,7,8,10,11,12

Time Frame
3 weeks

Materials:
Text Book : Body structure and Function, Scott, A.S., and Fong, E
Workbook accompany text
AV: Computers, Internet, Library, Overhead Projector
Labs: prepared slides, Microscopes, wet mount slides and consumables