



Science Department Human Physiology Curriculum

Scope and Sequence

Month	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
	Levels of Organization (6-7 weeks)	Support and Movement (6-7 weeks)	Integration and Coordination (5-6 weeks)	Transport (7-8 weeks)	Absorption and Excretion (7-8 weeks)	Human Life Cycle (2 weeks)
September	Introduction to Human Anatomy and Physiology Characteristics of life Levels of Organization Chemistry and Biochemistry Metabolism					
October	Cells Tissues					
November		Integumentary system Skeletal system - (including joints) Muscular system				
December			Nervous system Special senses			
January			Finish special senses Endocrine system			
February				Blood Cardiovascular system		

March				Lymphatic system and immunity		
April					Digestive system Respiratory system	
May					Urinary System/Water and electrolyte balance	
June						Finish Urinary/ Water and electrolyte balance Reproductive Systems

Unit 1	
Levels of Organization	
Summary and Rationale	
<p>Human Anatomy and physiology are the studies of the human body and how it works. Our bodies are communities of cells, which are microscopic units of living organisms. Cells are specialized to take on specific and necessary responsibilities and together they maintain an environment within the body in which they all can live.</p> <p>Learning anatomy and physiology requires familiarity with the language used to describe structures and functions. Cells aggregate and interact to form tissues, which in turn layer and fold and intertwine to form organs, which in turn connect into organ systems.</p> <p>Mastering the principles of anatomy and physiology gives a new appreciation for day to day activities and provide a foundation for those going into health care</p>	
Recommended Pacing	
6-7 weeks	
Standards	
HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and

	maintaining complex organisms.
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring
Interdisciplinary Connections	
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.
RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
RST-11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
RST-11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
RST-11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i> .
RST-11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved
RST-11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
RST-11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
Integration of Technology	
Khan Academy BrainPOP Google Docs Microsoft Powerpoint	

Instructional Focus

Enduring Understandings:	Essential Questions:
<p>The human body is composed of parts that can be considered at different levels of organization</p> <p>The structure and functions of the body parts maintain the life of the organism</p> <p>The human organism consists of several organ systems. Each system includes interrelated organs</p> <p>Investigators use terms with specific meanings to effectively communicate with each other</p> <p>Movement of substances into and out of cells may use physical or physiological processes.</p> <p>Cells are organized in layers or groups to form tissues</p>	<p>What does the study of anatomy and physiology entail</p> <p>How is the body organized</p> <p>What are the characteristics of life and how is life maintained</p> <p>What are the cells that constitute the human body and how do they function</p> <p>How are cells organized into tissues</p> <p>What is the structure and function of the tissues of the human body</p> <p>What is the structure of the layers of the skin?</p> <p>What are the accessory structures of the skin and what are their anatomy and functions?</p> <p>How does skin undergo repair?</p> <p>What are the types of burns of the skin and how do they heal?</p> <p>How is bone classified and how does bone grow?</p> <p>What are the major functions of bones?</p> <p>What makes up the axial and appendicular skeletons?</p> <p>How are joints classified?</p> <p>What are the types of movements produced by joints?</p> <p>What are examples of synovial joints?</p> <p>What is skeletal muscle composed of and how does skeletal muscle contract?</p> <p>How does the different types of contraction differ?</p> <p>What are the major groups of skeletal muscles and where are the major groups of skeletal muscle found in the body?</p> <p>What is the difference between skeletal muscle, cardiac muscle and smooth muscle?</p>
Evidence of Learning (Assessments)	
<p>Formative assessments and summative assessments focusing on:</p> <ol style="list-style-type: none"> 1. An Introduction to Human Anatomy and Physiology including levels of organization, characteristics and maintenance of life, organization of the human body and anatomical terminology. 2. Cells, including movements into and out of the cell, the cell cycle, control of cell division and cell death 3. Tissues, including organization, epithelial, connective, muscle and nervous tissue as well as types of membranes 	
Objectives (SLO)	
<p>Students will know:</p> <p>How anatomy and physiology are related</p> <p>Levels of organization of the body</p> <p>Characteristics and maintenance of life</p> <p>How the body is organized</p>	<p>Students will be able to:</p> <p>Define the terms anatomy and physiology, and give three examples for each.</p> <p>List the major characteristics of life and give examples of each.</p> <p>List and describe the survival needs of a human organism.</p>

<p>Chemical constituents of cells</p> <p>The general characteristics of a composite cell</p> <p>How substances move into and out of cells</p> <p>The cell cycle</p> <p>Control of cell division and cell death</p> <p>Describe metabolic processes in the body and how they are controlled</p> <p>The steps of protein synthesis</p> <p>How cells are organized into tissues</p> <p>The four major tissue types in the body</p> <p>General characteristics and functions of epithelial, connective, muscle and nerve tissue</p> <p>Description and location of the four types of membranes</p>	<p>Define homeostasis and discuss its importance.</p> <p>Give examples of negative and positive feedback</p> <p>List and describe in order of increasing complexity the levels of organization of the human body.</p> <p>Demonstrate the term Anatomical position.</p> <p>List the major body cavities and their subdivisions.</p> <p>List and describe the main directional terms and planes used in describing the body.</p> <p>Use appropriate terms to describe relative positions, body sections, and body regions.</p> <p>List the eleven major organ systems of the body.</p> <p>Briefly describe the functions of the major organ systems.</p> <p>Explain the importance of chemistry in the study of anatomy and physiology</p> <p>Distinguish between matter and energy and classify each.</p> <p>Describe three energy forms</p> <p>List the four most common elements in the human body</p> <p>Differentiate between elements and atoms.</p> <p>Describe and diagram the structure of an atom.</p> <p>Distinguish between an isotope and a radioisotope.</p> <p>Describe radioisotopes and their role in the diagnosis and treatment of disease</p> <p>Explain the importance of chemical reactions and the role of electrons in chemical bonding</p> <p>Explain the importance of water for maintaining homeostasis in the body.</p> <p>Compare and contrast carbohydrates, lipids, proteins, nucleic acids and amino acids in terms of their functions in the body.</p> <p>State the differences between DNA and RNA in terms of their structure and function.</p> <p>Define ATP and explain its importance in the body.</p> <p>Define important terminology related to chemistry and biochemistry.</p> <p>Identify the general characteristics of a typical animal cell.</p> <p>Explain how the structure of the cell membrane is related to its function.</p> <p>Identify each cytoplasmic organelle on a diagram or slide and discuss the functions of each.</p> <p>Describe the structures of a cell nucleus and its parts.</p> <p>Describe the processes that transport materials in and out of a cell.</p> <p>Predict whether cells will swell or shrink under various osmotic conditions.</p> <p>Explain the process of DNA replication and mitosis.</p> <p>Describe and explain the importance of cell division.</p>
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	<p>Describe the stages of a cells life, and summarize the significance of mitosis with respect to maintaining a constant chromosome number.</p> <p>Describe the roles of DNA and RNA in relation to protein synthesis.</p> <p>List and describe the three types of RNA.</p> <p>List and identify on a diagram or slide, the four major body tissues and explain their structural differences.</p> <p>Identify the functions of the four major body tissues and identify their locations.</p> <p>Compare epithelial with connective tissue.</p> <p>Compare the three types of muscle tissue.</p> <p>Compare connective tissues with epithelial membranes and contrast the types of epithelial membranes.</p> <p>Describe tissue repair.</p> <p>Describe abnormal cell division as it relates to genetic diseases and cancer.</p> <p>Define important terminology related to the cell.</p>
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Suggested Resources/Technology Tools

Hole's Human Anatomy and Physiology
 David Shier
 Jackie Butler
 Ricki Lewis
 Wm. C. Brown/McGraw Hill Publishers
 Teacher lecture, followed by discussion.
 Powerpoint presentations
 Online Khan Academy

Modifications

Teachers can choose from any of the suggested modifications that follow based upon teaching style, instructional method and needs of individual students.

General Modifications for students struggling to learn:

- Focus on building relationships in the classroom.
- Control the stressors for the student and manage alternate pathways for completion of assignments.
- Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.
- Boost engagement with material by providing opportunities of differentiation, group work and alternative assignments/assessments where appropriate.

ELL

- Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.
- Simplification of sentence structure and repetition of questions/sentences exactly as stated before trying to rephrase to allow ELL students to hear the sentence and try to comprehend it.

- Rephrase idioms and teach their meanings as when learning a new language, translations are often very literal. IE “Take a stab at it.” Ensure students understand what is meant.
- Use directed reading activities. Ensure preview of text before assigned/read, provide pre-reading questions about the main idea and offer help utilizing key words.
- Allow the use of Google Translate where appropriate.
- Utilize bilingual reading texts provided by the STC program.

G/T

Utilize differentiation in the areas of acceleration, enrichment, and grouping. Examples include, but are not limited to:

- interdisciplinary and problem-based assignments with planned scope and sequence
- advance, accelerated, or compacted content
- abstract and advanced higher-level thinking
- allowance for individual student interests
- assignments geared to development in areas of affect, creativity, cognition, and research skills
- complex, in-depth assignments
- diverse enrichment that broadens learning
- variety in types of resources
- internships, mentorships and independent study where applicable

504/IEP

Modifications and accommodations must be aligned to stated plan and uphold expectations of the plan lawfully. Every student requires a different set of accommodations based upon need. Examples specific to science practice include, but are not limited to:

- Note taker or lab assistant
- Group lab assignments
- Use of scribe
- Adjustable tables and lab equipment within reach
- Classrooms, labs and field trips in accessible locations
- Additional time and separate room for test taking
- Additional time for in-class assignments
- Additional time in lab
- Visual and tactile instructional demonstrations
- Computer with voice output, spelling and grammar checker
- Seating in the front of the class
- Tactile drawings and graphs, and three-dimensional models
- Assignments in electronic format
- Large-print handouts, lab signs and equipment labels
- TV monitor connected to microscope to enlarge images
- Computer equipped to enlarge screen characters and images
- Auditory lab warning signals
- Adaptive lab equipment (talking calculators, talking thermometers, light probes, tactile timers)
- Staples on sticks to indicate units of measurement
- Visual warning system for lab emergencies

21ST CENTURY LIFE AND CAREER STANDARDS

Please select all standards that apply to this unit of study:

- Act as a responsible and contributing citizen and employee.
- Apply appropriate academic and technical skills.
- Attend to personal health and financial well being.
- Communicate clearly and effectively and with reason.
- Consider the environmental social and economic impacts of decisions.
- Demonstrate creativity and innovation.

- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: <http://www.state.nj.us/education/cccs/2014/career/9.pdf>

LINKS TO CAREERS:

- https://study.com/articles/careers_in_anatomy_human_biology.html
- <https://work.chron.com/professions-involve-anatomy-physiology-20898.html>
- <https://www.myplan.com/majors/anatomy/related-careers-26.0403.html>

Unit 2

Support and Movement

Summary and Rationale

Two or more types of tissues structurally connected and performing shared specialized functions constitute an organ. The skin, the largest organ by weight, and its various accessory structures make up the integumentary system.

A bone may appear to be inert because of nonliving material in the extracellular matrix of bone tissue. However bone also includes active, living tissues. Bones, the organs of the skeletal system, support and protect softer tissues, provide points of attachment for muscles, house blood-producing cells, and store inorganic salts.

Joints, or articulations, are functional junctions between bones. They bond parts of the skeletal system, make possible bone growth, permit parts of the skeleton to change shape during childbirth, and enable the body to move in response to skeletal muscle contractions.

Everything we do to express ourselves uses muscles. All the force that muscles provide comes from one set of muscle proteins pulling on another set of muscle proteins

Recommended Pacing

6-7 weeks

Standards

HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
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HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms
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Instructional Focus

Enduring Understandings:	Essential Questions:
<p>Skin is composed of an epidermis and a dermis by a basement membrane. A subcutaneous layer, not part of the skin, lies beneath the dermis. The subcutaneous layer is composed of areolar tissue and adipose tissue that helps conserve body heat. This layer contains blood vessels that supply the skin.</p> <p>The accessory organs are originate from the epidermis</p> <p>Skin is vital in maintaining homeostasis</p> <p>Skin injuries trigger inflammation</p> <p>Bones are grouped according to their shape</p> <p>Bone develops and grows in different ways</p> <p>Bones shape, support and protect body structures as well as aid body movements. They house tissue that produces blood cells and store various inorganic salts. The skeleton is divided into the axial and appendicular portions.</p> <p>Joints, which are structures that connect bones, vary considerably in structure and function.</p> <p>Skeletal muscle action produces movements at synovial joints.</p> <p>Skeletal muscle is an organ of the muscular system and is under conscious control</p> <p>A skeletal muscle contraction is a complex interaction of several cellular and chemical constituents.</p> <p>The contractile mechanisms of smooth and cardiac muscle are similar to skeletal muscle but the cells of these tissues have important structural and functional distinctions.</p>	<p>What is the structure of the layers of the skin?</p> <p>What are the accessory structures of the skin and what are their anatomy and functions?</p> <p>How does skin undergo repair?</p> <p>What are the types of burns of the skin and how do they heal?</p> <p>How is bone classified and how does bone grow?</p> <p>What are the major functions of bones?</p> <p>What makes up the axial and the appendicular skeletons?</p> <p>How are joints classified?</p> <p>What are the types of movements produced by joints?</p> <p>What are examples of synovial joints?</p> <p>What is skeletal muscle composed of and how does skeletal muscle contract?</p> <p>How does the different types of contraction differ?</p> <p>What are and where are the major groups of skeletal muscle found in the body?</p> <p>What is the difference between skeletal muscle, cardiac muscle and smooth muscle?</p>
Evidence of Learning (Assessments)	
<p>Formative assessments and summative assessments focusing on:</p> <p>Integumentary system, including skin and its tissues, accessory organs of the skin, skin functions and healing of wounds and burns.</p> <p>Skeletal system, including bone shape and structure, bone development and growth, bone function, skeletal organization</p> <p>Joints, including the types of joints and joint movements, examples of synovial joints</p> <p>Muscular system, including structure of a skeletal muscle, skeletal muscle contraction, muscular responses, skeletal muscle actions, major skeletal muscles, smooth muscle and cardiac muscle.</p>	
Objectives (SLO)	

Students will know:

The structure and function of the organs of the integumentary system

Bone shape and structure, bone development and growth, bone function, and skeletal organization

The types of joints and joint movements, and examples of synovial joints

The structure of a skeletal muscle, skeletal muscle contraction, muscular responses, skeletal muscle actions, major skeletal muscles, smooth muscle and cardiac muscle.

Students will be able to:

List and describe the functions of the Integumentary system
Describe the structure and function of the epidermis, dermis, and hypodermis.

Describe the function and importance of melanin

Describe the structure of hair and nails and their growth processes.

Name three glands of the skin and describe their function.

List and describe the three classifications of burns.

Explain the importance of the rule of nines.

List and compare the structure of the major membrane types and locate each in the body.

Name three types of skin cancer and their causes.

Identify how aging affects the Integumentary system

List and describe diseases/disorders associated with the Integumentary system.

Define important terminology of the Integumentary system.

Identify the subdivisions of the skeletal system.

Differentiate between the axial and appendicular skeletal systems.

List five functions of the skeletal system.

Describe the structure of long bones and explain the functions of its parts.

List and give an example of the five classifications of bones

Explain the role of bone salts and the organic matrix in making bone both hard and flexible.

Describe the process of bone formation.

Identify and name the bones of the skull.

Explain the function of the fontanel on a newborn skull.

Describe the differences between a newborn and an adult skull.

Name the parts of the vertebral column and describe their differences.

Identify and explain the three abnormal spinal curvatures.

On a skeleton, identify the parts of the axial and the appendicular system

Differentiate between a male and a female pelvis and identify the reason for the differences.

Identify the three major classifications of joints and give examples of each.

Compare the main types of joints, and describe the structure and function of diarthrosis.

List and describe the disease/disorders associated with the skeletal system.

Define important terminology of the skeletal system

Define the function of muscle.

Compare each of the three muscle tissue types.

	<p>Explain what is meant by the phrase muscles work in antagonistic pairs.</p> <p>Identify the major parts of a skeletal muscle fiber and describe the functions of each.</p> <p>Describe the major events that occur during muscle fiber contraction.</p> <p>Identify ATP as the source of energy for muscle contraction and identify the source of energy for making ATP.</p> <p>Differentiate between fast and slow muscles.</p> <p>List the three different types of exercise and give examples of each.</p> <p>Describe how stretch receptors in muscles and tendons are important in the body.</p> <p>Describe how posture is maintained.</p> <p>Explain how the location of muscles is adapted to their function</p> <p>Describe how the actions of muscles are coordinated to produce body movement</p> <p>Describe the location and action of major skeletal muscles throughout the body.</p> <p>List and describe the characteristics of diseases/disorders associated with the muscular system.</p> <p>Define important terminology of the muscular system.</p>
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- Employ valid and reliable research strategies.
- Utilize critical thinking to make sense of problems and persevere in solving them.
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- Use technology to enhance productivity.
- Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: <http://www.state.nj.us/education/cccs/2014/career/9.pdf>

LINKS TO CAREERS:

https://study.com/articles/careers_in_anatomy_human_biology.html
<https://work.chron.com/professions-involve-anatomy-physiology-20898.html>
<https://www.myplan.com/majors/anatomy/related-careers-26.0403.html>

Unit 3

Integration and Coordination

Summary and Rationale

Nervous system exerts precise control of many of the body's functions and it responsible for your awareness of some of what is happening

All neurons conduct action potentials, and all of these action potentials are the same. Yet the nervous system can process a wide variety of information from the external environment.

The nervous system can interpret information from receptors and sense changes in the internal environment and can activate effectors to correct these changes

Neurons serve different functions within the brain, spinal cord and peripheral nerves.

The senses provide information about what is happening in the world outside and inside the body.

A wide variety of stimuli can be distinguished. What we see, hear, smell and taste, and how those senses combine, reflect both the parts of the brain that process the incoming information and the collection of receptors tuned in to the world

The hormones that the endocrine system produces have many diverse effects on the body

The endocrine system, like the nervous system, is all about communication as cells secrete chemicals that act on other

cells.

Recommended Pacing

6-7 weeks

Standards

HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms
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HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring

Interdisciplinary Connections

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.
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RST-11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved

RST-11-1 2.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
RST-11-1 2.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

Integration of Technology

Khan Academy
BrainPOP
Google Docs
Microsoft Powerpoint

Instructional Focus

Enduring Understandings:	Essential Questions:
<p>The nervous system oversees all that we do and determine who we are</p> <p>The three general functions of the nervous system are sensory, integrative and motor</p> <p>Neurons vary in shape and size</p> <p>The cells of nervous tissue are intimately related. They descend from the same neural stem cells and remain associated throughout their existence.</p> <p>Neurons communicate with each other or other cells at synapses.</p> <p>Cell membrane charge is important in the conduction of impulses in both muscle fibers and neurons.</p> <p>The way the nervous system collects, processes and responds to information reflects the organization of neurons and axons in the brain and spinal cord.</p> <p>The central nervous system consists of the brain and spinal cord</p> <p>The meninges of the nervous system have three layers.</p> <p>Cerebrospinal fluid is formed in four interconnected cavities called ventricles which lie in the cerebral hemispheres and brainstem.</p> <p>The brain is the largest and most complex part of the nervous system.</p> <p>The spinal cord is a nerve column that extends from the brain into the vertebral canal.</p> <p>The peripheral nervous system consists of cranial and spinal nerves that branch out from the brain and spinal cord to all body parts.</p>	<p>What are the general functions of the nervous system?</p> <p>What types of cells comprise nervous tissue?</p> <p>How do sensory receptors function?</p> <p>What are the structural and functional differences among neurons?</p> <p>How does information pass from a presynaptic neuron to a postsynaptic neuron?</p> <p>How does a neuron's cell membrane generate and transmit an action potential?</p> <p>What is the relationship between the brain, brainstem and spinal cord?</p> <p>What are the coverings of the brain and spinal cord?</p> <p>What is the anatomy and function of the brain and spinal cord?</p> <p>How are the peripheral nerves structured and what are their functions?</p> <p>What are the cranial nerves and what is their function?</p> <p>How are the sympathetic and parasympathetic divisions of the autonomic nervous systems different?</p> <p>What are the general characteristics of the endocrine system?</p> <p>How are hormones classified and what is their function?</p> <p>How does negative feedback mechanisms regulate hormone secretion?</p> <p>What are the locations of the major endocrine glands and the names of the hormones they secrete?</p>

<p>The autonomic nervous system functions without conscious effort. It regulates visceral activities that maintain homeostasis.</p> <p>Sensory receptors are sensitive to internal and external environmental changes and initiate impulses to the brain and spinal cord.</p> <p>General senses receive information from receptors in skin, muscles, joints and viscera.</p> <p>Special senses have receptors in complex sensory organs of the head.</p> <p>The endocrine system is about communication as cells secrete chemicals that act on other cells.</p>	
<p>Evidence of Learning (Assessments)</p>	
<p>Formative assessments and summative assessments focusing on:</p> <p>Nervous system I- Basic structure and function: general functions of nervous system, cells of nervous system, the synapse, cell membrane potential and synaptic transmission</p> <p>Nervous system II- Divisions of the nervous system, including meninges, ventricles and CSF, the brain and spinal cord, peripheral nervous system and autonomic nervous system</p> <p>Nervous system III- Senses- including general sense organs, the eye, ear, smell and taste</p> <p>Endocrine system- including general characteristics, hormone action, control of hormone secretions, and the endocrine glands.</p>	
<p>Objectives (SLO)</p>	
<p>Students will know:</p> <p>The structure and function of the organs of the nervous system</p>	<p>Students will be able to:</p> <p>Explain the anatomical and functional classification of the nervous system.</p> <p>Identify the functions of neurons and neuroglia.</p> <p>Draw a neuron, label its parts, and give the functions of each.</p> <p>Classify three types of neurons in terms of their function.</p> <p>List the events that lead to the generation of a nerve impulse.</p> <p>Describe the four basic processes on which all neural responses depend.</p> <p>Describe a reflex arc and explain how it is carried out by the nervous system.</p> <p>List at least four types of sensory receptors and describe the functions of each.</p> <p>Name the major parts of the brain and describe the functions of each.</p> <p>Describe the coverings of the brain and spinal cord and describe how it is protected.</p> <p>Discuss the formation and function of cerebrospinal fluid.</p> <p>Describe the structure of the spinal cord and list two important functions.</p>

List the major parts of the peripheral nervous system.
Name and describe the major plexuses.
Name the cranial nerves and list their major functions.
Explain how spinal nerves are named and describe their function.
Describe the structure of a typical spinal nerve.
List and describe the subdivisions of the autonomic and limbic nervous systems.
Compare and contrast the sympathetic with the parasympathetic.
Contrast the somatic and autonomic divisions of the peripheral nervous system.
Describe the sensory receptors associated with pressure, temperature, and pain.
Explain how the sensation of pain is produced.
List and describe disease/disorders associated with the nervous system.
Define important terminology of the nervous system.
Describe how sensors receptors stimulate sensory impulses.
Describe how a sensation is produced.
Differentiate between somatic and special senses.
Describe the interrelationship between the sense of taste and the sense of smell.
Identify the parts of the ear and state their function.
Trace the transmission of sound through the ear.
Identify the parts of the eye and state the function of each part.
Describe how the body perceives depth and distance.
Outline the visual pathway.
List and describe diseases/disorders associated with special senses.
Define important terminology of the special senses.
On a diagram, identify all the glands and tissues that make up the endocrine system.
Differentiate between endocrine and exocrine glands.
Describe the major endocrine glands of the body and list the hormones they secrete.
Differentiate between the anterior and posterior pituitary gland.
Define the term hormone and describe the functions of hormones.
Describe the functions of the hormones secreted by the endocrine glands.
Describe the transportation process of hormones and their interaction with target cell receptors.
Discuss how hormones promote homeostasis of the body and give three examples of hormonal actions.

	<p>Describe negative feedback, how it regulates hormonal secretions and give two examples.</p> <p>Describe the functional relationship between the hypothalamus and the pituitary gland.</p> <p>Differentiate between physical and psychological stress.</p> <p>Describe the effects of aging on the endocrine system.</p> <p>List and describe disease/disorders associated with the endocrine system.</p> <p>Contrast the actions of insulin and glucagon.</p> <p>Define important terminology of the endocrine system.</p>
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Suggested Resources/Technology Tools

Hole's Human Anatomy and Physiology
 David Shier
 Jackie Butler
 Ricki Lewis
 Wm. C. Brown/McGraw Hill Publishers
 Teacher lecture, followed by discussion.
 Powerpoint presentations
 Online Khan Academy

Modifications

Teachers can choose from any of the suggested modifications that follow based upon teaching style, instructional method and needs of individual students.

General Modifications for students struggling to learn:

- Focus on building relationships in the classroom.
- Control the stressors for the student and manage alternate pathways for completion of assignments.
- Provide feedback utilizing a growth mindset and praise what is done correctly based upon effort, attitude and strategy.
- Boost engagement with material by providing opportunities of differentiation, group work and alternative assignments/assessments where appropriate.

ELL

- Provide additional wait time for student responses to questions to allow students the ability to undergo the process of translation between languages, composition of response and attempted response.
- Simplification of sentence structure and repetition of questions/sentences exactly as stated before trying to rephrase to allow ELL students to hear the sentence and try to comprehend it.
- Rephrase idioms and teach their meanings as when learning a new language, translations are often very literal. IE "Take a stab at it." Ensure students understand what is meant.
- Use directed reading activities. Ensure preview of text before assigned/read, provide pre-reading questions about the main idea and offer help utilizing key words.
- Allow the use of Google Translate where appropriate.
- Utilize bilingual reading texts provided by the STC program.

G/T

Utilize differentiation in the areas of acceleration, enrichment, and grouping. Examples include, but are not limited to:

- interdisciplinary and problem-based assignments with planned scope and sequence

- advance, accelerated, or compacted content
- abstract and advanced higher-level thinking
- allowance for individual student interests
- assignments geared to development in areas of affect, creativity, cognition, and research skills
- complex, in-depth assignments
- diverse enrichment that broadens learning
- variety in types of resources
- internships, mentorships and independent study where applicable

504/IEP

Modifications and accommodations must be aligned to stated plan and uphold expectations of the plan lawfully. Every student requires a different set of accommodations based upon need. Examples specific to science practice include, but are not limited to:

- Note taker or lab assistant
- Group lab assignments
- Use of scribe
- Adjustable tables and lab equipment within reach
- Classrooms, labs and field trips in accessible locations
- Additional time and separate room for test taking
- Additional time for in-class assignments
- Additional time in lab
- Visual and tactile instructional demonstrations
- Computer with voice output, spelling and grammar checker
- Seating in the front of the class
- Tactile drawings and graphs, and three-dimensional models
- Assignments in electronic format
- Large-print handouts, lab signs and equipment labels
- TV monitor connected to microscope to enlarge images
- Computer equipped to enlarge screen characters and images
- Auditory lab warning signals
- Adaptive lab equipment (talking calculators, talking thermometers, light probes, tactile timers)
- Staples on sticks to indicate units of measurement
- Visual warning system for lab emergencies

21ST CENTURY LIFE AND CAREER STANDARDS

Please select all standards that apply to this unit of study:

- Act as a responsible and contributing citizen and employee.
- Apply appropriate academic and technical skills.
- Attend to personal health and financial well being.
- Communicate clearly and effectively and with reason.
- Consider the environmental social and economic impacts of decisions.
- Demonstrate creativity and innovation.
- Employ valid and reliable research strategies.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Model integrity, ethical leadership, and effective management.
- Plan education and career paths aligned to personal goals.
- Use technology to enhance productivity.
- Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: <http://www.state.nj.us/education/cccs/2014/career/9.pdf>

LINKS TO CAREERS:

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Unit 4

Transport

Summary and Rationale

Blood carries nutrients, oxygen, wastes and hormones, helps maintain the stability of the intestinal fluid and distributes heat.

The blood, heart and blood vessels form the cardiovascular system and link the body's internal and external environments.

The heart and blood vessels form the cardiovascular system

The lymphatic system is a vast collection of cells and biochemicals that travel in lymphatic vessels, and the organs and glands that produce them.

Standards

HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring

Interdisciplinary Connections

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.
RST.11-1	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent

2.9	understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
RST-11-1 2.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
RST-11-1 2.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
RST-11-1 2.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i> .
RST-11-1 2.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
RST-11-1 2.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
RST-11-1 2.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

Integration of Technology

Khan Academy
 BrainPOP
 Google Docs
 Microsoft Powerpoint

Instructional Focus

Enduring Understandings:	Essential Questions:
<p>Blood has many vital functions and is a complex mixture of cells, cell fragments and dissolved biochemicals</p> <p>Blood is a type of connective tissue in which cells are suspended in a liquid extracellular matrix.</p> <p>Blood can be separated into formed elements and a liquid, plasma, portion.</p> <p>Formed elements of blood include red blood cells, white blood cells and platelets</p> <p>Plasma carries nutrients and gases.</p> <p>Hemostasis is the stoppage of bleeding.</p> <p>Blood can be typed on the basis of the surface structures of its cells.</p>	<p>What are the characteristics of blood and the red blood cells?</p> <p>What are the dietary factors affecting red blood cells production?</p> <p>How are red blood cells destroyed?</p> <p>What are the types and functions of white blood cells?</p> <p>What is the composition and function of plasma?</p> <p>What is hemostasis and what are the steps involved?</p> <p>How are blood cells typed using the ABO and rH systems of blood typing.</p> <p>What are the roles of the heart and blood vessels in circulating the blood.</p>

<p>The heart pumps blood to the pulmonary and systemic circuits.</p> <p>The blood vessels form a closed circuit of tubes that transport blood between the heart and body cells.</p> <p>Blood pressure is the form blood exerts against the inner walls of blood vessels.</p> <p>Lymphatic tissue includes the mucosa-associated lymphoid tissue, which is associated with the digestive, respiratory, urinary and reproductive tracts.</p> <p>The presence and reproduction of pathogens may cause an infection. The body has innate and adaptive defenses against infection.</p>	<p>What is the gross microscopic anatomy of the heart. How does the heart function?</p> <p>What are the major blood vessels of the cardiovascular system and how do they function?</p> <p>What is blood pressure and how is it measured?</p> <p>What are the functions of the lymphatic vessels?</p> <p>How does lymph form and what is its function?</p> <p>How do lymphocytes function in immune mechanisms?</p>
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Evidence of Learning (Assessments)

Formative assessments and summative assessments focusing on:

Blood: characteristics of blood and types of blood cells, plasma, hemostasis and blood groups

Cardiovascular system- the heart, blood vessels, blood pressure and paths of circulation.

Lymphatic system- lymphatic pathways, tissue fluid and lymph, lymphatic tissue and organs, and body defenses against infection

Objectives (SLO)

<p>Students will know:</p> <p>The structure and function of the organs of the blood</p> <p>The structure and function of the organs of the cardiovascular system</p> <p>The structure and function of the organs of the lymphatic system</p>	<p>Students will be able to:</p> <p>Describe the functions of the blood</p> <p>Describe the composition of plasma and discuss its importance in the body.</p> <p>Distinguish between the formed elements found in the blood.</p> <p>Identify the stages involved in blood clotting and explain the various facets that promote and inhibit blood clotting.</p> <p>Explain the basis for blood typing.</p> <p>Describe how blood reactions may occur between the fetal and maternal tissues.</p> <p>Explain the basis of physiological jaundice seen in some newborn babies.</p> <p>List and describe disease/disorders associated with the blood.</p> <p>Define important terminology related to the blood.</p> <p>List the structures of the cardiovascular system and describe their functions.</p> <p>Identify the major parts of the heart and describe their functions.</p> <p>Describe the flow of blood through the heart.</p> <p>Describe the coronary circulation.</p> <p>Compare the structures and functions of arteries, capillaries, and veins.</p> <p>Explain the mechanism that helps in the return of venous blood to the heart.</p>
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	<p>Give the physiological basis for arterial pulse, and describe how pulse is measured.</p> <p>Describe the factors which create and control blood pressure.</p> <p>Define blood pressure and give its relationship to blood flow and resistance.</p> <p>Explain and demonstrate how blood pressure is measured.</p> <p>Contrast the pulmonary and systemic circuits of the cardiovascular system.</p> <p>Trace a drop of blood through the pulmonary and systemic circulations.</p> <p>List and describe diseases/disorders associated with the cardiovascular system.</p> <p>Define important terminology of the cardiovascular system.</p> <p>Describe the functions of the lymphatic system.</p> <p>Explain how the lymphatic system is functionally related to the cardiovascular and lymphatic systems.</p> <p>Describe the location of the major lymphatic pathways.</p> <p>Describe the formation and composition of lymph and explain how it is transported through the lymphatic system.</p> <p>Describe a lymph node and its major functions.</p> <p>Locate the major chains of lymph nodes.</p> <p>Describe the functions of the thymus and the spleen.</p> <p>Explain the differences between specific and nonspecific body defenses and provide examples of each defense.</p> <p>Define immunity and describe how T and B cells arise.</p> <p>Explain the relationship between an antigen and an antibody.</p> <p>Explain how allergic reactions and tissue rejection reactions are related to immune mechanisms.</p> <p>List and describe disease/disorders associated with the lymphatic system.</p> <p>Define important terminology of the lymphatic system.</p>
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Unit 5

Absorption and Excretion

Summary and Rationale

The main part of the digestive system is a long tube that extends through the body.

Material that enters the tube is broken down into its chemical building blocks.

The respiratory system uses skeletal muscles which are under voluntary control and parts of the brainstem control breathing automatically.

The composition of our body fluids remains steady largely due to the urinary system

Standards

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Instructional Focus

Enduring Understandings:

Digestion is the mechanical and chemical breakdown of foods into forms that cells can absorb.

The mouth receives food and begins digestion by mechanically breaking solid food particles into smaller pieces and mixing them with saliva.

The salivary glands secrete saliva.

The pharynx and esophagus do not assist in food digestion but are important passageways.

The stomach receives food from the esophagus, mixes it with gastric juice, initiates the digestion of proteins, and moves food to the small intestine.

The pancreas secretes digestive fluid called pancreatic juice.

The liver carries on many important metabolic functions.

The small intestine receives chyme from the stomach and secretions from the pancreas and liver. It completes digestion of the nutrients in chyme, absorbs the products of digestion and transports material to the large intestine

The large intestine absorbs ingested water and electrolytes remaining in the alimentary canal.

The respiratory system consists of passages that filter incoming air and transport it into the body, into the lungs and to the many microscopic air sacs where gases are exchanged. The process of exchanging gases between the atmosphere and body cells is called respiration.

The organs of the respiratory system can be divided into two groups or tracts.

The upper respiratory tract includes the nose, nasal cavity, sinuses and pharynx.

The lower respiratory tract includes the larynx, trachea, bronchial tree and lungs.

Breathing, also called ventilation, is the movement of air from the outside of the body into the bronchial tree and alveoli, followed by a reversal of this air movement.

Essential Questions:

What processes are carried out by the digestive system?

What are the organs of the digestive system; what is the anatomy and function of these organs?

What are the general functions of the respiratory system?

What are the names, location, anatomy and function of the organs of the respiratory system?

What is ventilation and how is it controlled?

How are the different volumes of air measured?

How is normal breathing controlled?

How does alveolar gas exchanges occur?

How are gases transported within the body?

What are the organs of the urinary system; what are their locations, structure and functions?

<p>Normal breathing is a rhythmic, involuntary acts that continues when a person is unconscious.</p> <p>The blood carries oxygen and carbon dioxide between the lungs and the body cells.</p> <p>The urinary system helps maintain homeostasis by maintaining the composition, pH and volume of body fluids within normal ranges.</p> <p>The urinary system consists of a pair of kidneys, which remove substances from the blood, form urine and help regulate certain metabolic processes by secreting hormones.</p>	
<p>Evidence of Learning (Assessments)</p>	
<p>Formative assessments and summative assessments focusing on:</p> <p>Digestive system: general characteristics of alimentary canal, structure and function of the organs of digestion</p> <p>Respiratory system- general function of the respiratory system, structure and function of the respiratory organs, breathing mechanism and control of breathing, and alveolar gas exchange and gas transport</p> <p>Urinary system/ Water and electrolyte balance- kidneys, urine formation, storage and elimination of urine, distribution of body fluids water and electrolyte balance</p>	
<p>Objectives (SLO)</p>	
<p>Students will know:</p> <p>The structure and function of the organs of the digestive system</p> <p>The structure and function of the organs of the respiratory system</p> <p>The structure and function of the organs of the urinary system and how do the fluids in the body remain balanced</p>	<p>Students will be able to:</p> <p>Name, describe and locate the structures and organs of the digestive system.</p> <p>Describe the functions of the digestive system and the liver.</p> <p>Describe the composition and functions of saliva.</p> <p>Describe the basic anatomy of the teeth and oral cavity and explain their functions in the digestive system.</p> <p>Describe the mechanism of swallowing, vomiting, and defecation.</p> <p>Describe the mechanism peristalsis and its role in the G.I. tract.</p> <p>List the enzymes secreted by the various digestive organs and describe the function of each.</p> <p>Explain how gastric secretions are regulated.</p> <p>List and describe the four layers of the wall of the G.I. tract.</p> <p>Describe the structure and function of the liver and gall bladder.</p> <p>Describe the pancreatic structure.</p> <p>List and explain the digestive function of the pancreatic secretions.</p> <p>Describe the structure and function of the small intestine.</p> <p>Describe the structure and function of the large intestine and the rectum.</p>

Explain how the processes in the stomach, liver, pancreas, gall bladder, and small intestines are coordinated.

Describe the absorption of nutrients in the small intestine.

Define enzyme, metabolism, anabolism, and catabolism.

List in sequence each structure through which a bite of food passes on its way through the digestive system.

List and describe diseases/disorders associated with the digestive system.

Define important terminology of the digestive system.

Describe the general functions of the respiratory system.

List and describe the structure and organs of the respiratory system.

Describe the functions of the structures and organs of the respiratory system.

Describe the protective mechanisms in the respiratory system.

Describe the events involved in inspiration and exhalation.

List and describe each of the respiratory air volumes.

Outline the types of non-respiratory air movements and describe how each occurs.

Explain how the respiratory muscles cause volume changes that lead to air flow into and out of the lungs.

Describe the process of gas exchanges in the lungs and tissues.

Explain how respiratory gasses are carried by the blood.

Name the main areas involved in the control of respiration.

List three factors that influence respiratory rate.

Explain the major events that occur during cellular respiration.

Explain how oxygen is used by cells.

Trace the breath of air through the respiratory system from nose to alveoli.

Describe the symptoms and probable causes of Chronic Obstructive Pulmonary Disease and lung cancer.

Describe diseases/disorders associated with the respiratory system.

Define important terminology related to the respiratory system.

List the structures and organs of the urinary system and describe their general functions.

Describe the location and the structure of the kidneys.

Describe the pathway of blood through the major vessels within a kidney.

Explain how a nephron works and describe how the major parts function.

Describe the production of glomerular filtrate and its composition.

Describe the factors which affect the rate of glomerular filtration and how it is regulated.

	<p>Describe the role that tubular reabsorption plays in urine formation.</p> <p>Describe the structure of the ureters, urinary bladder, and urethra.</p> <p>List and describe diseases/disorders associated with the urinary system.</p> <p>Define important terminology of the urinary system.</p> <p>Describe the various fluid compartments of the body</p> <p>Explain what is meant by water and electrolyte balance and discuss the importance of this balance.</p> <p>Explain how electrolytes enter and leave the body and how the input and output of electrolytes are regulated.</p> <p>Explain what is meant by acid/base balance.</p> <p>Explain the functions of sodium, chloride, potassium, calcium, phosphate, and magnesium and regulation of their concentrations.</p> <p>List the major sources of hydrogen used in the body.</p> <p>Compare the role of buffers, exhalation of carbon dioxide, and kidney excretion of H⁺ in maintaining pH of body fluids.</p> <p>List and describe disease/disorders associated with fluid, acid/base and electrolyte balance.</p> <p>Define important terminology related to fluid, electrolyte, and acid/base homeostasis.</p>
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Suggested Resources/Technology Tools

Hole's Human Anatomy and Physiology
 David Shier
 Jackie Butler
 Ricki Lewis
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G/T

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Please select all standards that apply to this unit of study:

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- ❑ Use technology to enhance productivity.
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LINKS TO CAREERS:

- https://study.com/articles/careers_in_anatomy_human_biology.html
- <https://work.chron.com/professions-involve-anatomy-physiology-20898.html>
- <https://www.myplan.com/majors/anatomy/related-careers-26.0403.html>

Unit 6

The Human Life Cycle

Summary and Rationale

The male and female reproductive systems are each connected sets of organs and glands.
 Some of the reproductive organs and glands secrete hormones vital to the development and maintenance of secondary sex characteristics and the regulation of reproductive functions
 Reproductive organs produce and nurture gametes and transport them to sites of fertilization

HS-LS1-1	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms
HS-LS1-3	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-LS1-4	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
HS-LS3-1	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring

Interdisciplinary Connections	
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.
RST.11-12.9	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
RST.11-12.2	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
RST.11-12.3	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text
RST.11-12.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to <i>grades 11-12 texts and topics</i> .
RST.11-12.6	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
RST.11-12.7	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
RST.11-12.8	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
Integration of Technology	
Khan Academy BrainPOP Google Docs Microsoft Powerpoint	
Instructional Focus	
Enduring Understandings:	Essential Questions:
<p>Organs of the male reproductive system are specialized to produce and maintain the male sex cells, transport these cells and support fluids to the outside and secrete male sex hormones</p> <p>The organs of the female reproductive system are specialized to produce and maintain the female sex cells, transport these cells to the site of fertilization,</p>	<p>What are the organs of the male reproductive system? How do they function and what is their structure? How is the male reproductive system under hormonal control? What are the organs of the female reproductive system? How do they function and what is their structure? How is the female reproductive system under hormonal control?</p>

<p>provide a favorable environment for a developing offspring, move the offspring to the outside and produce female sex hormones.</p>	
<p>Evidence of Learning (Assessments)</p>	
<p>Formative assessments and summative assessments focusing on: Reproductive system: organs of the male and female reproductive systems</p>	
<p>Objectives (SLO)</p>	
<p>Students will know: The structure and function of the organs of the male reproductive system The structure and function of the organs of the female reproductive system</p>	<p>Students will be able to: State the function of the male reproductive system List the parts of the male reproductive system and describe the function of each part. Name the endocrine and exocrine products of the testes. Discuss the importance of semen and name the glands that produce it. Describe the structure of sperm and relate the structure to its function. Trace the pathway followed by sperm from the testes to the exterior of the body. Explain the symptoms and causes of sexually transmitted diseases. List and describe diseases/disorders associated with the male reproductive system. Define important terminology related to the male reproductive system. State the functions of the female reproductive system. List the parts of the female reproductive system and describe the functions of each part. Describe the structure of the ovary and how egg cells and follicles are formed, Describe the role that hormones play in control of the female e reproductive system and in the development of secondary sexual characteristics. List the major events that occur during the menstrual cycle. Describe the process of fertilization and identify the time of the menstrual cycle at which sexual intercourse is most likely to result in pregnancy. Describe the major events of pregnancy. Describe the functions of the amnion and placenta. Describe the stages of birth and role that hormones play in this process. Describe the structure and function of mammary glands. Identify several methods of birth control and evaluate the effectiveness of each method.</p>

Explain the symptoms and causes of sexually transmitted diseases.
List and describe diseases/disorders associated with the female reproductive

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