



Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

SPARTAN MISSION:

Meeting the needs of all students with a proud tradition of academic excellence.

Curriculum Development Timeline

School: Ocean Township High School

Course: Anatomy and Physiology

Department: Science

Board Approval	Supervisor	Notes
July 2011	Patrick Sullivan	Born Date
December 2017	Patrick Sullivan	Update Standards
August 2018	Patrick Sullivan	Revisions

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Week	Marking Period 1	Week	Marking Period 3
1	Introduction & anatomical terms	9	Nervous system
2		10	
3	Cell structure & homeostasis	11	Cardiovascular
4	Homeostasis & chemotherapy	12	Respiratory sys.
Week	Marking Period 2	Week	Marking Period 4
5	Integumentary system	13	Digestive sys.
6	Skeletal system	14	Reproductive system & fertility
7		15	Global health
8	Muscular sys. & biomechanics	16	Pathology & Autopsy

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Time Frame	2 weeks
Topic	
Introduction to anatomy and physiology and terms	
Essential Questions	
<ol style="list-style-type: none">1. How do medical professionals define positions, sections, and divisions of the body?2. What words do medical professionals use to communicate about the body?3. What are the common word stems used to create medical terms, and how are they combined?4. What are anatomy and physiology?5. What are the eleven major body systems?6. How do the body systems function and interact?	
Enduring Understandings	
<ul style="list-style-type: none">• Systems of specialized cells within organisms help them perform the essential functions of life.• Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.	
Alignment to Standards	
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	
Key Concepts and Skills	
<ol style="list-style-type: none">1. Locate on a diagram or model the relative positions, body sections, and divisions of the Abdomino-pelvic cavity.2. Locate on a diagram or model regional body part terms used in medicine.3. Understand how to combine medical prefixes, root words, and suffixes to create medical terms.4. Use medical terminology techniques to translate unknown medical terms.5. Summarize the eleven major body systems, functions, organs, and organ functions.	

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Learning Activities							
Using anatomical language, Anatomical language review, Medical term basics, Body systems							
Assessments							
<ul style="list-style-type: none"> Benchmark #1 Lab analysis and review questions Quiz 							
21st Century Skills							
Creativity	X	Critical Thinking		Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		
Interdisciplinary Connections							
<ul style="list-style-type: none"> Math: Measuring and scale skills English/Language arts: Word structure, formation, and definition; communicating written information 							
Technology Integration							
<ul style="list-style-type: none"> Using Chromebooks for research Using Chromebooks to access interactive tutorial <p>8.1 Educational Technology- All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.</p>							

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Time Frame	1 week
Topic	
Cell structure & homeostasis	
Essential Questions	
<ol style="list-style-type: none">1. What is the difference between diffusion and osmosis?2. What is the effect of hypotonic, isotonic, and hypertonic solutions on cells?3. What characteristics make a substance able to cross the cell membrane?4. How are rate of osmosis and time to hemolysis related?5. Why is maintaining homeostasis important?	
Enduring Understandings	
Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.	
Alignment to Standards	
HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	
Key Concepts and Skills	
<ol style="list-style-type: none">1. Differentiate between diffusion and osmosis in relation to intracellular and extracellular solutes.2. Describe the effects of hypotonic, isotonic, and hypertonic solutions on red blood cells.3. Recognize the characteristics of solutes that are able to diffuse across a semi-permeable membrane vs. those that are not able to diffuse across a semi-permeable membrane.4. Explain the relationship between the rate of osmosis and the time for hemolysis.5. Describe the importance of maintaining a homeostatic body pH.	

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Learning Activities							
Lab Work: Cell tonicity, Red blood cell tonicity, Hemolysis							
Assessments							
<ul style="list-style-type: none"> • Lab analysis & review questions • Formative Assessments • Quiz • Summative Assessment 							
21st Century Skills							
Creativity		Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology		Media Literacy			
Interdisciplinary Connections							
<ul style="list-style-type: none"> • Math: Calculating percentages • English/Language arts: Communicating medical information in writing 							
Technology Integration							
Lab equipment (microscope) skills							

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Time Frame	1 week
Topic	
Drug dosage & chemotherapy	
Essential Questions	
<ol style="list-style-type: none">1. How are drugs absorbed into and removed from the bloodstream?2. What is the difference between a normal and extended-release pill?3. What is a target organ?4. How is an optimal dosage schedule determined?	
Enduring Understandings	
As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.	
Alignment to Standards	
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.	
Key Concepts and Skills	
<ol style="list-style-type: none">1. Describe the rate at which drugs are absorbed into and exit from the bloodstream.2. Compare the release of a drug from a normal pill and a controlled-release pill.3. Monitor the absorption of a drug by a target organ.4. Determine an optimal dosage schedule for a drug that maximizes the period of adequate medication and avoids overdose	
Learning Activities	

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<ul style="list-style-type: none"> • Drug dosage Gizmo (ExploreLearning.com) • Lab Work 							
Assessments							
<ul style="list-style-type: none"> • Lab analysis & review questions • Formative Assements • Quiz • Summative Assessment 							
21st Century Skills							
Creativity		Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		
Interdisciplinary Connections							
<ul style="list-style-type: none"> • Math: Calculating dosages, time • English/Language arts: Communicating medical information in writing 							
Technology Integration							
Use Chromebooks to run a computer simulation							

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Time Frame	1 week
Topic	
Integumentary system	
Essential Questions	
<ol style="list-style-type: none">1. What are the different layers of the skin?2. How are the different parts of the integumentary system different on a histological level?3. What are the different types of skin cancer?4. How do sunscreens with different SPF ratings compare?5. What is the skin's role in homeostasis (thermoregulation)?6. What are the functions of the various glands and nerves of the skin?	
Enduring Understandings	
<ul style="list-style-type: none">● Developing Possible Solutions: When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.● All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells. Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.● Growth and Development of Organisms: In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organisms begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism	
Alignment to Standards	
HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.	

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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.
 HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
 HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Key Concepts and Skills

1. Identify and describe the different layers of the skin.
2. Recognize histological differences between the epidermis, dermis, hair follicles, and nail beds.
3. Compare and contrast the three main types of skin cancer.
4. Explain the difference between different SPF sunscreens and assess which sunscreen would be the best option to block UV-A and UV-B radiation.
5. Describe how the skin assists in thermoregulation of the human body.
6. Identify and explain the function of sudoriferous glands, sebaceous glands, and dermal nerves.

Learning Activities

Lab Work: Epithelial tissue histology, Integumentary system, Sunscreen and skin cancer, Investigating the skin

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

21st Century Skills

Creativity		Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology		Media Literacy	X		

Interdisciplinary Connections

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- Math: Calculating differences & percentages
- Social studies: Discussing intersection of culture and medicine
- English/Language arts: Communicating medical information in writing

Technology Integration

Researching on Chromebooks

Time Frame	2 weeks
Topic	
Skeletal system	
Essential Questions	
<ol style="list-style-type: none">1. What are the major parts and functions of the skeletal system?2. What are the common causes, symptoms, and treatments for common skeletal disorders?3. What is calcium's role in the body, and how can an imbalance cause problems?4. What is the difference between the different types of bone?5. How are fractures identified on an x-ray?6. How should a long bone injury be immobilized for transportation?	
Enduring Understandings	
<ul style="list-style-type: none">● Systems of specialized cells within organisms help them perform the essential functions of life.● Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.● Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.● As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.	

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Alignment to Standards							
<p>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.</p> <p>HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p> <p>HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.</p>							
Key Concepts and Skills							
<ol style="list-style-type: none"> 1. Identify the major bones and function of the skeletal system. 2. Recognize the causes, symptoms, and treatment options for common skeletal disorders. 3. Explain why calcium is necessary to body function, and how imbalance in calcium homeostasis can cause osteoporosis. 4. Compare and contrast compact bone and spongy bone. 5. Identify bones and fractures on an x-ray image. 6. Demonstrate the proper procedure for long bone immobilization. 							
Learning Activities							
Lab Work: Connective tissue histology, Skeletal system, Calcium and osteoporosis, Identifying X-rays, Long bone immobilization							
Assessments							
<ul style="list-style-type: none"> • Lab analysis & review questions • Formative Assessments • Quiz • Summative Assessment 							
21st Century Skills							
Creativity		Critical Thinking	X	Collaboration	X	Communication	X

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Life & Career Skills	X	Information Technology	X	Media Literacy	X	
Interdisciplinary Connections						
<ul style="list-style-type: none"> ● Math: Calculating differences ● Social studies: Relating human culture to medicine ● English/Language arts: Explaining medical information in writing 						
Technology Integration						
<ul style="list-style-type: none"> ● Using Chromebooks to view medical images ● Using lab equipment (graduated cylinders, electronic balances) 						

Time Frame	1 week
Topic	
Muscular system & biomechanics	
Essential Questions	
<ol style="list-style-type: none"> 1. What are the major parts and functions of the muscular system? 2. What is the difference between the three types of muscles? 3. How are muscle problems diagnosed in a clinical setting? 4. How do bones, muscles, and joints work together? 5. What are the differences between the different types of joints? 6. What examples of simple levers can be found in the human body? 7. How can an individual's gait be analyzed? 8. How much force is created by muscles? 	
Enduring Understandings	
<ul style="list-style-type: none"> ● Systems of specialized cells within organisms help them perform the essential functions of life. ● Multicellular organisms have a hierarchical structural organization, in which any one system is 	

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- made up of numerous parts and is itself a component of the next level.
- Forces and Motion: If a system interacts with objects outside itself, the total momentum of the system can change; however, any such change is balanced by changes in the momentum of objects outside the system.

Alignment to Standards

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-PS2-2. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.

Key Concepts and Skills

1. Describe the structures and function of the muscular system.
2. Compare and contrast skeletal, cardiac, and smooth muscle tissues.
3. Perform a manual muscle test to diagnose muscle atrophy and/or paralysis.
4. Explain how bones, muscles, and joints interact to form a lever.
5. Identify the structural difference between cartilaginous, fibrous, and synovial joints.
6. Provide an example of the different classes of levers in the human body.
7. Determine the speed, acceleration, cadence, and stride length of an individual's gait.
8. Measure the amount of force created by a muscle.

Learning Activities

Lab Work: Muscle and nervous tissue histology, Muscular system, Biomechanics

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

21st Century Skills

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Creativity		Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology		Media Literacy			
Interdisciplinary Connections							
<ul style="list-style-type: none"> • Math: calculating biometric data • Social studies: Discussing the intersection of human needs and medicine • English/Language arts: Communicating medical information in writing 							
Technology Integration							
Using Chromebooks to view medical images							

Time Frame	2 weeks
Topic	
Nervous system	
Essential Questions	
<ol style="list-style-type: none"> 1. What are the major structures and functions of the nervous system? 2. What are the functions of the cranial nerves? 3. What are the functions of neurotransmitters, such as dopamine, serotonin, and glutamate? 4. What are special sensory organs, and how do they function? 5. How do smell and taste work together? 6. How do different categories of drugs affect the brain? 	
Enduring Understandings	
Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level	

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Alignment to Standards							
HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.							
Key Concepts and Skills							
<ol style="list-style-type: none"> 1. Identify major structures of the nervous system, peripheral nerves, and the synapse. 2. Describe the function of each of the cranial nerves. 3. Explain the function of neurotransmitters, particularly dopamine, serotonin, and glutamate. 4. Explain the structure and function of special sensory organs. 5. Describe the relationship between olfaction and gustation to create the sensation of flavor. 6. Describe how different categories of drugs affect neurotransmitters and receptors in the brain. 							
Learning Activities							
Lab Work: Nervous system; Cranial nerves; Smell & taste; Drugs, addiction, & the brain							
Assessments							
<ul style="list-style-type: none"> ● Lab analysis & review questions ● Formative Assessments ● Quiz ● Summative Assessment 							
21st Century Skills							
Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		
Interdisciplinary Connections							

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- Math: Calculating differences
- Social studies: Discussing the intersection of society and medicine
- English/Language arts: Researching and writing about medical information

Technology Integration

- Using Chromebooks to do research
- Using Chromebooks to run computer simulations

Time Frame

1 week

Topic

Cardiovascular system

Essential Questions

1. What are the major parts and functions of the cardiovascular system?
2. How can health professionals assess cardiovascular parameters like heart rate and blood pressure?
3. What information can we gather from blood measurements such as hematocrit and complete blood cell count?
4. What are normal values for measurements like heart rate, blood pressure, hematocrit, and complete blood cell count?
5. How can electrocardiograms be used to determine heart rate, rhythm, and intervals?

Enduring Understandings

- Systems of specialized cells within organisms help them perform the essential functions of life.
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.

Alignment to Standards

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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.

Key Concepts and Skills

1. Identify the anatomical features and functions of organs within the cardiovascular system.
2. Perform physical assessments of the heart rate and blood pressure.
3. Determine whether hematocrit values are normal or abnormal.
4. Evaluate results from a complete blood cell count to determine whether values are normal or abnormal.
5. Interpret electrocardiograms to determine heart rate, rhythm, and intervals.

Learning Activities

Lab Work: Cardiovascular system, Complete blood cell count, ECGs

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

21st Century Skills

Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology		Media Literacy			

Interdisciplinary Connections

- Math: Calculating percentages
- Social studies: Discussing how lifestyle impacts medicine
- English/Language arts: Communicating medical information in writing

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Technology Integration

Using Chromebooks to access interactive tutorial

Time Frame

1 week

Topic

Respiratory system

Essential Questions

1. What are the major parts and functions of the respiratory system?
2. What are the common symptoms and causes of respiratory disorders?
3. How can spirometry determine lung capacity and volume?
4. How does respiratory distress impact the body?
5. What common air pollutants can negatively affect health?
6. How does air pollution negatively affect health?

Enduring Understandings

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.
- Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.
- As a result of chemical reactions, energy is transferred from one system of interacting molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment.
- Photosynthesis and cellular respiration (including anaerobic processes) provide most of the energy for life processes.

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Alignment to Standards							
<p>HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.</p> <p>HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.</p> <p>HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.</p> <p>HS-LS2-3. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.</p>							
Key Concepts and Skills							
<ol style="list-style-type: none"> 1. Outline the steps of inhalation and exhalation using all of the organs involved in the process. 2. Identify the causes and symptoms of common respiratory disorders. 3. Conduct a spirometry exam using a spirometer to determine lung capacity and volume. 4. Assess the impact of respiratory distress and exercise on respiratory rate and pulse. 5. Determine sources and dangerous concentrations of common air pollutants using an air quality index. 							
Learning Activities							
Lab Work: Respiratory system, Respiratory distress, Air quality & health							
Assessments							
<ul style="list-style-type: none"> • Lab analysis & review questions • Formative Assessments • Quiz • Summative Assessment 							
21st Century Skills							
Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		

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Interdisciplinary Connections

- Math: Calculating change over time
- Social studies: Discussing how lifestyle affects human health
- English/Language arts: Communicating medical information in writing

Technology Integration

Chromebooks for research

Time Frame	1 week
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Topic

Digestive system

Essential Questions

1. What are the major parts and functions of the digestive system?
2. What are the major causes, symptoms, tests, and treatments for digestive disorders?
3. How is the function of the GI tract related to its structure?
4. How can risk of foodborne illness be reduced?
5. What are the common causes and symptoms of foodborne illness?
6. How do healthy and unhealthy meals compare?

Enduring Understandings

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.
- Sugar molecules contain carbon, hydrogen, and oxygen: their hydrocarbon backbones are used to make amino acids and other carbon-based molecules that can be assembled into larger molecules (such as proteins or DNA), used for example to form new cells.
- As matter and energy flow through different organizational levels of living systems, chemical elements are recombined in different ways to form different products.
- As a result of these chemical reactions, energy is transferred from one system of interacting

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molecules to another. Cellular respiration is a chemical process in which the bonds of food molecules and oxygen molecules are broken and new compounds are formed that can transport energy to muscles. Cellular respiration also releases the energy needed to maintain body temperature despite ongoing energy transfer to the surrounding environment.

Alignment to Standards

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-6. Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.

HS-LS1-7. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Key Concepts and Skills

1. Describe the structure and function of the organs in the digestive system.
2. Explain the common causes, symptoms, and diagnostic tests for digestive disorders.
3. Recognize the functional histology of different parts of the GI tract.
4. Explain the importance of refrigeration and heating for certain food sources.
5. Describe the common symptoms and causes of foodborne illness.
6. Compare and contrast the nutritional value of a healthy versus unhealthy meals.

Learning Activities

Lab Work: Digestive system, Bacteria in food, What's in your food?

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

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21st Century Skills							
Creativity		Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		
Interdisciplinary Connections							
<ul style="list-style-type: none"> • Math: Calculating values within given parameters • Social studies: Discussing the intersection of lifestyle and health • English/Language arts: Communicating medical information in writing 							
Technology Integration							
Chromebooks for research							

Time Frame	1 week
Topic	
Reproductive system & fertility	
Essential Questions	
<ol style="list-style-type: none"> 1. What are the main cause of male and female infertility? 2. How are test results used to diagnose infertility? 3. What treatments are available for infertility? 4. How is fetal development monitored? 5. What is the impact on both mother and baby of a fetus developing too quickly or too slowly? 	
Enduring Understandings	

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- When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts.
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.
- In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organisms begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism.

Alignment to Standards

HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

HS-LS1-4. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Key Concepts and Skills

1. Summarize common male and/or female causes of infertility.
2. Compare medical records with normal and abnormal test results to develop a diagnosis and treatment plan for infertility.
3. Compare normal values for fetal development with developing fetuses to determine whether they are growing at a healthy rate.
4. Understand the impact of a fetus being small for gestational age (SGA) and large for gestational age (LGA) on mother and fetus.

Learning Activities

Lab Work: Fertility, Fetal development

Assessments

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- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

21st Century Skills

Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		

Interdisciplinary Connections

- Math: Calculating differences
- Social studies: Discussing the interaction of society and medicine
- English/Language arts: Communicating medical information in writing

Technology Integration

Chromebooks for research

Time Frame	1 week
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Topic

Global health

Essential Questions

1. Which major infectious diseases are a global threat today?
2. What are the relationships between life expectancy, disease mortality, annual income, literacy, and geography?
3. How are patient interviews conducted?

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4. What is the relationship between symptoms and background information when determining diagnoses?
5. What is the role of healthcare professionals in identifying possible epidemics?

Enduring Understandings

Social Interactions and Group Behavior Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives.

Alignment to Standards

HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

Key Concepts and Skills

1. Identify at least three major infectious diseases that are a global health threat.
2. Interpret relationships between world maps and life expectancy, disease mortality, annual income, and literacy data.
3. Perform a patient exam and background interview.
4. Form a relationship between symptoms and patient background information to create a diagnosis.
5. Explain the importance of healthcare professionals in identifying a possible epidemic.

Learning Activities

Lab Work: Global health investigation, Epidemiology

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Summative Assessment

21st Century Skills

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Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology	X	Media Literacy	X		
Interdisciplinary Connections							
<ul style="list-style-type: none"> • Math: Graphing percentages • Social studies: Discussing the intersection of society, lifestyle, and human health • English/Language arts: Communicating medical information in writing 							
Technology Integration							
Chromebooks for research							

Time Frame	1 week
Topic	
Pathology & autopsy	
Essential Questions	
<ol style="list-style-type: none"> 1. What is the role of surgery in medicine? 2. How are sutures used in surgery? 3. What is the role of medical examiner in autopsy and forensic pathology? 4. How are autopsies performed? 5. What information is contained in an autopsy report? 	
Enduring Understandings	
<ul style="list-style-type: none"> • Systems of specialized cells within organisms help them perform the essential functions of life. • All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most 	

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of the work of cells.

- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.

Alignment to Standards

HS-LS1-2. Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Key Concepts and Skills

1. Identify the role of surgery in medicine and demonstrate effective suturing techniques.
2. Explain the role of the medical examiner and autopsy in forensic pathology.
3. Demonstrate autopsy procedure and complete an autopsy report.

Learning Activities

Lab Work: Surgery & suturing, Pathology and autopsy, Fetal pig autopsy

Assessments

- Lab analysis & review questions
- Formative Assessments
- Quiz
- Final Benchmark

21st Century Skills

Creativity	X	Critical Thinking	X	Collaboration	X	Communication	X
Life & Career Skills	X	Information Technology		Media Literacy	X		

Interdisciplinary Connections

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- Social studies: Discussing the interaction of society and medicine
- English/Language arts: Communicating medical information in writing

Technology Integration

DVD documentary with analysis

Modifications (ELL, Special Education, Gifted and Talented, and 504 Plans)

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

Supports for Students With IEPs:

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts

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- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

Supports for Students With 504 Plans:

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists
- Provide anchor charts with high frequency words and phonemic patterns

Integrated 21st-Century Skills and Career Ready Practices (NJSL 9):

All students will demonstrate how to:

- 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.

Standard 9.1 21st-Century Life and Career Skills: All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

Standard 9.2 Personal Financial Literacy: All students will develop skills and strategies that promote personal and financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.

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Standard 9.3 Career Awareness, Exploration, and Preparation: All students will apply knowledge about and engage in the process of career awareness, exploration, and preparation in order to navigate the globally competitive work environment of the information age.

Standard 9.4 Career and Technical Education: All students who complete a career and technical education program will acquire academic and technical skills for careers in emerging and established professions that lead to technical skill proficiency, credentials, certificates, licenses, and/or degrees.

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