

Portales Municipal Schools
CURRICULUM MAP

Subject:	ANATOMY & PHYSIOLOGY	2009	Grade Level: 10-12
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New Mexico Standards & Benchmarks are addressed throughout the year in this advanced science course. Concepts and skills will address essential questions.

THE HUMAN BODY: AN ORIENTATION

ESSENTIAL QUESTIONS: What are the systems of the human body? How does the human body achieve homeostasis? What are the general functions of each system of the human body? What are the directional/regional terms used to describe human anatomy? How is the body divided into planes and sections? Where are the different body cavities located in the human body?

STRAND I: Scientific Thinking and Practice	BENCHMARK II: Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.
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STANDARD I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
1 s t 9 w e e k s	1. Understand how scientific processes produce valid, reliable results, including: <ul style="list-style-type: none"> • consistency of explanations with data and observations • openness to peer review • full disclosure and examination of assumptions • testability of hypotheses • repeatability of experiments and reproducibility of results. 2. Use scientific reasoning and valid logic to recognize: <ul style="list-style-type: none"> • faulty logic • cause and effect • the difference between observation and unsubstantiated inferences and conclusions • potential bias. 3. Understand how new data and observations can result in new scientific knowledge.	1 List the systems of the human body. 2 Define how the human body achieves homeostasis. 3 Describe the general functions of each system of the human body. 4 Label the different body cavities located in the human body. 5 Use directional terms to describe positions of the human body.	1. Students work in cooperative groups to brainstorm the systems of the human body. 2. Students complete PPT notes outline and participate in class discussion giving examples of how the body achieves homeostasis. 3. Students complete guided practice worksheet that matches functions of body systems to their function. 4. Students participate in lab activity labeling body cavities on a torso model of the human body. 5. Students participate in lab activity labeling directional terms on a preserved rat.	1. Participation in discussion 2. Notes quiz 3. Completion of worksheet 4. Completion of lab activity 5. Completion of lab activity *Lab Practical Quiz *Test	<ul style="list-style-type: none"> • PPT notes, worksheets, quizzes, tests generated by teacher • References: www.worldofteaching.com/biology/powerpoints.html www.anatomyandphysiology.com • Human torso model • Preserved rat specimens

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CELLS & TISSUES

ESSENTIAL QUESTIONS: What is the anatomy of a generalized body cell? How do cells specialize in the human body? What functions do cells carry out in the human body? How do materials move in and out of cells? How are tissues classified? What are the functions of different types of tissue?

STRAND II: The Content of Science **BENCHMARK III: Understand the characteristics, structures, and functions of cells.**

STANDARD II: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
1 s t 9 w e e k s	<ol style="list-style-type: none"> 1. Know that cells are made of proteins composed of combinations of amino acids. 2. Know that specialized structures inside cells in most organisms carry out different functions, including: <ul style="list-style-type: none"> • parts of a cell and their functions (e.g., nucleus, chromosomes, plasma, and mitochondria) • storage of genetic material in DNA • similarities and differences between plant and animal cells • prokaryotic and eukaryotic cells. 3. Describe the mechanisms for cellular processes (e.g., energy production and storage, transport of molecules, waste disposal, synthesis of new molecules). 4. Know how the cell membrane controls which ions and molecules enter and leave the cell based on membrane permeability and transport (i.e., osmosis, diffusion, active transport, passive transport). 5. Explain how cells differentiate and specialize during the growth of an organism, including: <ul style="list-style-type: none"> • differentiation, regulated through the selected expression of different genes • specialized cells, response to stimuli (e.g., nerve cells, sense organs). 6. Know that DNA directs protein building (e.g., role of RNA). 7. Describe how most cell functions involve chemical reactions, including: <ul style="list-style-type: none"> • promotion or inhibition of biochemical reactions by enzymes • processes of respiration (e.g., energy production, ATP) • communication from cell to cell by secretion of a variety of chemicals (e.g., hormones). 	<ol style="list-style-type: none"> 1. Describe the anatomy of a generalized body cell. 2. Identify the functions that cells carry out in the human body. 3. Evaluate cell specialization in the human body. 4. Explain how tissues are classified. 5. Analyze the functions of different types of tissues. 6. Explain how materials move in and out of cells. 	<ol style="list-style-type: none"> 1-2. Students will construct a model of a generalized body cell and explain the function of each cell part. 3-5. Students will complete PPT notes outline and watch video so they can discuss how cell specialization occurs in the human body. Students will view a variety of prepared slides in order to compare similarities and differences among cell types and tissue samples 6. Students will visualize how materials move in and out of cells by watching a video and completing a video outline. 	<ol style="list-style-type: none"> 1-2. Graded on completion and accuracy of model as well as ability to explain the function of cell parts 3-5. Completion of notes outline and Notes quiz Students complete lab activity sheet and answer analysis questions 6. Completion of video outline <p>*Quiz *Test</p>	<ul style="list-style-type: none"> • Playdough for model construction • PPT notes outline http://www.worldofteaching.com/biology/powerpoints.html www.anatomyandphysiology.com • Teacher generated worksheets, lab activity sheets, quizzes, tests • Cell Structure/ Transport Video, VCR, in-focus • Microscopes, prepared slides of various cells and tissues

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INTEGUMENTARY SYSTEM

ESSENTIAL QUESTIONS: How are body membranes classified? What are the basic functions of the skin? How is the skin structured? What pigments give skin its color? What are the appendages of the skin? How does skin respond to infections and allergies? How can the severity of burns be measured?

STRAND I: Scientific Thinking and Practice	BENCHMARK I: Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.
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STANDARD I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
1 s t 9 w e e k s	<ol style="list-style-type: none"> 1. Describe the essential components of an investigation, including appropriate methodologies, proper equipment, and safety precautions. 2. Design and conduct scientific investigations that include: <ul style="list-style-type: none"> • testable hypotheses • controls and variables • methods to collect, analyze, and interpret data • results that address hypotheses being investigated • predictions based on results • re-evaluation of hypotheses and additional experimentation as necessary • error analysis. 3. Use appropriate technologies to collect, analyze, and communicate scientific data (e.g., computers, calculators, balances, microscopes). 4. Convey results of investigations using scientific concepts, methodologies, and expressions, including: <ul style="list-style-type: none"> • scientific language and symbols • diagrams, charts, and other data displays • mathematical expressions and processes (e.g., mean, median, slope, proportionality) • clear, logical, and concise communication • reasoned arguments. 	<ol style="list-style-type: none"> 1. Describe how body membranes are classified. 2. Explain the basic functions of the skin. 3. Describe how the skin is structured. 4. Identify the pigments that give skin its color. 5. Describe the appendages of the skin. 6. Explain how the skin responds to infections and allergies. 7. Describe how the severity of burns are measured. 	<ol style="list-style-type: none"> 1. Students will complete PPT notes outline and discuss how body membranes are classified. 2. Students will watch video on skin structure and function 3. Students will construct a model to demonstrate how the skin is structured. 4. Students will complete PPT notes outline. 5. Students will complete PPT notes outline. 6. Students will research on internet to get visual information on skin infections and allergies. 7. Students will research on internet to get visual information on the severity of burns. 	<ol style="list-style-type: none"> 1. Notes quiz 2. Complete video outline 3. Complete model/diagram 4. Notes quiz 5. Notes quiz 6-7. Complete web quest 	<p>Teacher generated PPT notes outline, tests, quizzes</p> <p>Resource:</p> <p>www.anatomvandphysiology.com</p> <p>http://www.worldofteaching.com/biologypowerpoints.html</p> <ul style="list-style-type: none"> • Laptops, internet connection • Body Models workbook

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MUSCULAR SYSTEM

ESSENTIAL QUESTIONS: What are the different types of muscles? What parts of skeletal muscle can be viewed at the microscopic level? How do muscles work? Why are skeletal muscles banded? What is the function of tendons? How do isotonic/isometric/isokinetic muscle contractions differ? How do muscles move? What are the names of the muscles found in the human body? How do muscles develop?

STRAND II: The Content of Science	BENCHMARK I: Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.
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STANDARD II: (Life Science) Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
2 N D 9 w e e k s	1. Know that an ecosystem is complex and may exhibit fluctuations around a steady state or may evolve over time. 3. Understand and describe how available resources limit the amount of life an ecosystem can support (e.g., energy, water, oxygen, nutrients).	1. Identify the different types of muscles. 2. Describe the parts of skeletal muscle that can be viewed at the microscopic level. 3. Explain how muscles work. Explain how muscles move. 4. Explain why skeletal muscles are banded. Describe the function of tendons. Contrast isotonic/isometric/isokinetic muscle contractions. Identify the names of the muscles found in the human body. Describe how muscles develop.	1. Students will complete guided practice worksheet to identify different types of muscles. 2. Students will view a sampling of muscle cells under the microscope and draw what they see 3. Students will complete a variety of Vernier lab activities that demonstrate how muscles work in different circumstances. Students will construct model to demonstrate how a skeletal muscle moves. 4. Students will complete PPT notes outline and guided practice worksheets. Students will view video on the muscular system and complete video outline.	1. Completion of worksheet 2. Completion of lab activity sheet 3. Completion of lab activity sheet and analysis questions. Completion of model. 4. Completion of notes and video outlines *Quiz *Test	<ul style="list-style-type: none"> • Teacher generated PPT notes outline, tests, quizzes • Resource: www.anatomyandphysiology.com http://www.worldofteaching.com/biologypowerpoints.html • Laptops, internet connection • Body Models workbook, tape, scissors, brads

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SKELETAL SYSTEM

ESSENTIAL QUESTIONS: What are the functions of bones? How are bones classified? How does bone grow and remodel? What are the bones of the axial skeleton? What are the bones of the appendicular skeleton? What is the function of a joint? How are joints categorized? What are some inflammatory disorders of the joints? How does the skeleton change from birth to death?

STRAND III: Science & Society **BENCHMARK I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.**

STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES & INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
2 n d 9 w e e k s	<p>Science & Technology</p> <p>4. Understand the scientific foundations of common technologies (e.g., kitchen appliances, radio, television, aircraft, rockets, computers, medical X-rays, selective breeding, fertilizers and pesticides, agricultural equipment).</p> <p>5. Understand that applications of genetics can meet human needs and can create new problems (e.g., agriculture, medicine, cloning).</p> <p>6. Analyze the impact of digital technologies on the availability, creation, and dissemination of information.</p>	<p>1. Describe the functions of bones.</p> <p>2. Explain how bones are classified.</p> <p>3. Describe how bones grow and remodel.</p> <p>4. Identify the bones of the axial skeleton. Identify the bones of the appendicular skeleton.</p> <p>5. Describe the function of a joint. Explain how joints are categorized. Identify some inflammatory disorders of the joints.</p> <p>6. Explain how the skeleton changes from birth to death.</p>	<p>1. Students will complete PPT notes outline.</p> <p>2. Students will obtain box of bones and sort into categories to demonstrate understanding of how bones are classified.</p> <p>3. Students will view sampling of x-rays and a video on broken bones in order to see how bones grow and remodel.</p> <p>4. Students will use an articulated skeleton to identify the bones of the axial and appendicular skeleton. Students will construct a study buddy model of the skeletal system.</p> <p>5-6. Students will complete PPT notes outline and guided practice worksheets.</p>	<p>1. Completion of PPT notes outline</p> <p>2. Completion of lab activity</p> <p>3. Participation in class discussion</p> <p>4. Completion of activity sheet and model.</p> <p>5-6. Completion of worksheets.</p> <p>*Quiz</p> <p>*Test</p>	<p>Teacher generated PPT notes outline, tests, quizzes</p> <p>Resource:</p> <p>www.anatomyandphysiology.com</p> <p>http://www.worldofteaching.com/biologypowerpoints.html</p> <ul style="list-style-type: none"> • Laptops, internet connection • Articulated skeleton • Disarticulated skeleton (if available) • Box of variety of bones • Body Models workbook, scissors, tape, brads

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ENDOCRINE & IMMUNE SYSTEMS

ESSENTIAL QUESTIONS: What is the function of hormones? What are the major organs of the endocrine system? What causes a simple goiter? What is the most important function of the lymph nodes? What is an immune response? How do antibodies defend the body? How does aging and menopause affect the endocrine system? What are the components of the lymphatic system? What kind of defenses does our body use to fight disease?

STRAND III: Science & Society	BENCHMARK I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
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STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
2 n d 9 w e e k s	<p>Science & Society</p> <p>10. Describe major historical changes in scientific perspectives (e.g., atomic theory, germs, cosmology, relativity, plate tectonics, evolution) and the experimental observations that triggered them.</p> <p>11. Know that societal factors can promote or constrain scientific discovery (e.g., government funding, laws and regulations about human cloning and genetically modified organisms, gender and ethnic bias, AIDS research, alternative-energy research).</p>	<ol style="list-style-type: none"> 1. Describe the function of hormones. 2. Identify the major organs of the endocrine system. 3. Explain what causes a simple goiter. 4. Describe the most important function of the lymph nodes. 5. Explain what an immune response is. 6. Describe how antibodies defend the body. 7. Describe how aging and menopause affect the endocrine system. 8. Describe the components of the lymphatic system. 9. Describe the defenses our body uses to fight disease. 	<p>1-8. Students will complete PPT notes outline and guided practice worksheets that cover essential questions about the immune and endocrine systems.</p> <p>9. Students will select a specific disease to research and gather information about. Resources may include but are not limited to textbooks, internet, interviews of people with disease. Students will address specifically what defenses our body goes through when it attacks a disease.</p> <p>1-9. Students will watch “Osmosis Jones” to visualize the process our body uses to fight diseases and how different systems work together.</p>	<p>1-8. Complete PPT notes outline and quiz.</p> <p>9. Presentation Rubric including written report and power point presentation to entire class</p> <p>1-9. Video outline</p>	<ul style="list-style-type: none"> • Teacher generated PPT notes outline, worksheets, tests, quizzes • Resource: www.anatomyandphysiology.com • http://www.worldofteaching.com/biologypowerpoints.html • Laptops, internet connection • Textbook • Osmosis Jones DVD, player, in-focus

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NERVOUS SYSTEM

ESSENTIAL QUESTIONS: What are the two great controlling systems of the body? What are the components of nervous tissue? What is a reflex arc? What is the function of the thalamus? How does the brain process information? What are the parts of the brain? What are the components and structures of the central nervous system? What are the components and structures of the peripheral nervous system? What are some important developmental aspects of the nervous system?

STRAND III: Science & Society	BENCHMARK I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
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STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3 r d 9 w e e k s	<p>Science & Individuals</p> <p>15. Identify how science has produced knowledge that is relevant to individual health and material prosperity.</p> <p>16. Understand that reasonable people may disagree about some issues that are of interest to both science and religion (e.g., the origin of life on Earth, the cause of the Big Bang, the future of Earth).</p> <p>17. Identify important questions that science cannot answer (e.g., questions that are beyond today's science, decisions that science can only help to make, questions that are inherently outside of the realm of science).</p>	<p>1. List and describe the structures and functions of the peripheral and central nervous systems; Identify the components of nervous tissue; Identify some important developmental aspects of the nervous system; Describe the function of the thalamus.</p> <p>2. Identify structures found in the brain.</p> <p>3. Describe what a reflex arc is.</p>	<p>1. Students will complete PPT notes outline and guided practice worksheet to answer essential questions about the nervous system.</p> <p>2. Students will dissect a sheep's brain and correlate structural differences between the sheep and human brain by recording differences on the table in their activity sheet.</p> <p>3. Students will participate in a Vernier lab activity that demonstrates how a reflex arc works.</p>	<p>1. Completion of PPT notes outline and guided practice worksheet.</p> <p>2. Completion of lab activity sheet and analysis questions; lab practical quiz.</p> <p>3. Completion of lab activity sheet and analysis questions.</p>	<ul style="list-style-type: none"> • Teacher generated PPT notes outline, tests, quizzes <p>Resource: www.anatomyandphysiology.com</p> <p>http://www.worldofteaching.com/biologypowerpoints.html</p> <ul style="list-style-type: none"> • Laptops, internet connection • Body Models workbook • Vernier interface, reflex

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DIGESTIVE SYSTEM

ESSENTIAL QUESTIONS: What are the organs of the alimentary canal? What 2 processes are involved in the breakdown of food? What nutrients are required by the human body? How does the body metabolize digested food? What is the difference between segmental and peristaltic movements? How do the organs of the digestive system protect themselves from being digested? What substances are absorbed in the large intestine?

STRAND I: Scientific Thinking and Practice	BENCHMARK II: Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.
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STANDARD I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3 r d 9 w e e k s	<p>4. Critically analyze an accepted explanation by reviewing current scientific knowledge.</p> <p>5. Examine investigations of current interest in science (e.g., superconductivity, molecular machines, age of the universe).</p> <p>6. Examine the scientific processes and logic used in investigations of past events (e.g., using data from crime scenes, fossils), investigations that can be planned in advance but are only done once (e.g., expensive or time-consuming experiments such as medical clinical trials), and investigations of phenomena that can be repeated easily and frequently.</p>	<p>1. Identify organs of the alimentary canal.</p> <p>2. Describe the 2 types of digestion involved in the breakdown of food.</p> <p>3. Identify nutrients that are required by the human body.</p> <p>4. Explain how the body metabolizes digested food.</p> <p>5. Describe the differences between segmental and peristaltic movements.</p> <p>6. Explain how the organs of the digestive system protects themselves from being digested.</p> <p>7. Identify where substances are absorbed by the body.</p>	<p>1. Students will dissect a rat and identify the organs of the digestive system verbally and on activity sheet.</p> <p>2. Students will eat a cracker and describe the physical and chemical changes that occur with the cracker and experience how the enzyme in saliva affects the taste of the cracker when compared to water.</p> <p>3-7. Students will complete PPT notes outline and guided practice worksheets.</p>	<p>1. Complete lab activity and analysis questions.</p> <p>2. Completion of Schaffer paragraph describing experience.</p> <p>3-7. Completion of PPT notes outline and guided practice worksheets.</p>	<ul style="list-style-type: none"> • Preserved rat specimens, dissecting kits, trays, aprons, gloves • Crackers, bottles of water • Teacher generated PPT notes outline, tests, quizzes • Resource: www.anatomyandphysiology.com http://www.worldofteaching.com/biologypowerpoints.html

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RESPIRATORY SYSTEM

ESSENTIAL QUESTIONS: What is the function of the respiratory system? What structures does air travel through during inhalation and exhalation? How do alveoli exchange CO₂ and O₂? What happens during inhalation/expiration? How is smoking linked to lung cancer, COPD, and emphysema? How does the presence of surfactant contribute to a healthy infant? What factors contribute to IRDS and SIDS? What are the effects of asthma?

STRAND III: Science & Society	BENCHMARK I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
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STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3 r d 9 w e e k s	<p>12. Explain how societies can change ecosystems and how these changes can be reversible or irreversible.</p> <p>13. Describe how environmental, economic, and political interests impact resource management and use in New Mexico.</p>	<p>1. Explain the function of the respiratory system.</p> <p>2. Describe the path air travels through during inhalation and exhalation.</p> <p>3. Explain how CO₂ and O₂ is exchanged with the alveoli.</p> <p>4. Describe the effects smoking and how it is linked to lung cancer, COPD, and emphysema.</p> <p>5. Understand how the presence of surfactant contributes to a healthy infant.</p> <p>6. List the factors that contribute to IRDS and SIDS.</p> <p>7. Describe the effects asthma has on the respiratory system.</p> <p>8. Identify the structures of the respiratory system.</p>	<p>1-7. Students will complete PPT notes outline and guided practice worksheets including diagrams.</p> <p>8. Students will dissect a sheep pluck and complete lab activity sheet and analysis questions in order to visualize how air travels through the respiratory system.</p>	<p>1-7. Completion of notes outline and worksheets.</p> <p>8. Completion of lab activity sheet and analysis questions.</p> <p>*Quiz</p> <p>*Test</p>	<ul style="list-style-type: none"> • Preserved specimens of sheep pluck, dissecting kits, trays, aprons, gloves • Teacher generated PPT notes outline, tests, quizzes • Resource: <ul style="list-style-type: none"> www.anatomyandphysiology.com http://www.worldofteaching.com/biologypowerpoints.html • Laptops, internet connection

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BLOOD & CIRCULATORY SYSTEM

ESSENTIAL QUESTIONS: What are the phases and disorders of hemostasis? Why is blood typing important? How does blood flow through the heart? What is the difference between systemic and pulmonary circulation? What is the cause of the “lub-dub” heard during a heartbeat? What is the difference in thickness between arteries and veins? What is blood pressure and what causes variations? How do congenital heart defects and coronary artery disease effect the heart and circulatory systems?

STRAND III: Science & Society	BENCHMARK I: Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
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STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS <i>M = Master</i>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
4 t h 9 w e e k s	<p>18. Understand that scientists have characteristics in common with other individuals (e.g., employment and career needs, curiosity, desire to perform public service, greed, preconceptions and biases, temptation to be unethical, core values including honesty and openness).</p> <p>19. Know that science plays a role in many different kinds of careers and activities (e.g., public service, volunteers, public office holders, researchers, teachers, doctors, nurses, technicians, farmers, ranchers).</p>	<ol style="list-style-type: none"> 1. Analyze the phases and disorders of hemostasis. 2. Describe blood types and the relevance of blood typing. 3. Describe how blood flows through the heart. 4. Explain the difference between systemic and pulmonary circulation. 5. Explain the cause of the “lub-dub” heard during a heartbeat? 6. Describe the reason for the difference in thickness between arteries and veins. 7. Describe blood pressure and explain what can cause variations. 8. Explain the effects congenital heart defects and coronary artery disease effects the heart and circulatory system. 	<p>1-8. Students will complete PPT notes outline, guided practice worksheets, and watch instructional video on the cardiovascular system.</p> <p>1-8. Students will participate in Vernier lab activities to experience the effects different stimuli has on blood pressure and pulse.</p>	<p>1-8. Completion of notes outline and worksheets, video quiz.</p> <p>1-8. Completion of lab activity sheet and analysis questions.</p> <p>*Quiz</p> <p>*Test</p>	<ul style="list-style-type: none"> Teacher generated PPT notes outline, tests, quizzes Resource: www.anatomvandphysiology.com http://www.worldofteaching.com/biologypowerpoints.html Laptops, internet connection Vernier interface, activity sheets, blood pressure cuff, ice water

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URINARY & REPRODUCTIVE SYSTEMS

ESSENTIAL QUESTIONS: What are the main structures of the urinary system? What structures are found in the kidneys? What is the function of the kidneys? What can a urinalysis reveal during a physical exam? Why is it important to maintain electrolytes and the acid-base balance in blood? What is the difference between filtrate and urine? What is the role of mammary glands? What are the primary sex organs of males and females? What is the function of a placenta? How is fertilization accomplished? What effects do pregnancy and childbirth have on the mother?

STRAND II: The Content of Science	BENCHMARK I: Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.
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STANDARD II: (Life Science) Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

	PERFORMANCE STANDARD	CONCEPTS/SKILLS M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
4 t h 9 w e k s	<p>4. Critically analyze how humans modify and change ecosystems (e.g., harvesting, pollution, population growth, technology).</p> <p>5. Explain how matter and energy flow through biological systems (e.g., organisms, communities, ecosystems), and how the total amount of matter and energy is conserved but some energy is always released as heat to the environment.</p> <p>9. Understand variation within and among species, including:</p> <ul style="list-style-type: none"> • mutations and genetic drift • factors affecting the survival of an organism • natural selection. 	<p>1. List the main structures of the urinary system.</p> <p>2. Identify the structures found in the kidneys.</p> <p>3. Describe the function of the kidneys.</p> <p>4. Explain what a urinalysis can reveal during a physical exam.</p> <p>5. Explain why it is important to maintain electrolytes and the acid-base balance in blood.</p> <p>6. Explain the difference between filtrate and urine.</p> <p>7. Name the primary sex organs of males and females.</p> <p>8. Explain the role of mammary glands.</p> <p>9. Describe the function of the placenta.</p> <p>10. Explain how fertilization is accomplished.</p> <p>11. Describe the effects pregnancy and childbirth has on the mother.</p>	<p>1. Students will label structure of the urinary system on a diagram worksheet.</p> <p>2-3. Students will dissect a kidney and complete lab activity sheet.</p> <p>4-11. Students will complete PPT notes outline, watch instructional video, construct models and complete guided practice worksheets that answer essential questions about the urinary and reproductive systems.</p>	<p>1. Completion of worksheet</p> <p>2-3. Completion of dissection and activity sheet.</p> <p>4-11. Completion of worksheets and models.</p> <p>*Quiz</p> <p>*Test</p>	<ul style="list-style-type: none"> • Teacher generated PPT notes outline, tests, quizzes • Preserved sheep kidney specimens, dissecting kits, trays, aprons, gloves • Video/DVD, VCR • Resource: www.anatomyandphysiology.com • http://www.worldofteaching.com/biologypowerpoints.html • Laptops, internet connection • Body Models workbook