

CARLISLE AREA SCHOOL DISTRICT
Carlisle, PA 17013

ELEMENTARY SCIENCE

GRADE 4

Date of Board Approval: May 21, 2009
Revised Date: January 19, 2012

**CARLISLE AREA SCHOOL DISTRICT
PLANNED INSTRUCTION COVER PAGE**

Title of Course: Science Subject Area: Science Grade Level: Fourth

Course Length: (Semester/Year): Year Duration: _____ Frequency: _____

Prerequisites: Not Applicable Credit: Not Applicable Level: Not Applicable

Course Description/Objectives: The district shall provide for attainment of the academic standards per Chapter 4, Section 4.12. Each student shall demonstrate proficiency in the following areas: unifying themes; inquiry and design; biological sciences; physical science, chemistry and physics; earth sciences; technology education; science, technology and human endeavors; watersheds and wetlands, renewable and non-renewable resources; environmental health; agriculture and society; integrated pest management; ecosystems and their interactions; threatened, endangered and extinct species; humans and the environment; and, environmental always and regulations.

Major Text(s)/Resources:

Curriculum Writing Committee: Cindy Birdwell Bonnie Mehls Deb Them Traci Brunner
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D. Bailor Karen Lyter Rachel Placek Sherry Mann Kim Walters

Unit: Scientific Method	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.2A Identify and use the nature of scientific and technological knowledge.	<ul style="list-style-type: none"> • Distinguish between a scientific fact and an opinion. (PSSA) • Provide clear explanations that account for observations and results. (PSSA) 	
3.2A Identify and use the nature of scientific and technological knowledge.	<ul style="list-style-type: none"> • Understand scientists use specific tools to complete different inquiry processes. 	
3.2A Identify and use the nature of scientific and technological knowledge.	<ul style="list-style-type: none"> • Categorize inquiry tools according to tasks such as measuring distance volume, temperature, mass, wind, speed and direction, and the pull of gravity. 	
3.2B Describe objects in the world using the five senses.	<ul style="list-style-type: none"> • Determine best descriptors to be used in observational writing. • Know specific vocabulary: standard measure, pan balance, spring scale, beaker, microscope, anemometer, binoculars, compass 	
3.2C Recognize and use the elements of scientific inquiry to solve problems.	<ul style="list-style-type: none"> • Generate a question and formulate an appropriate hypothesis that can be answered through scientific investigation. (PSSA) 	

Unit: Scientific Method	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.2C Recognize and use the elements of scientific inquiry to solve problems.	<ul style="list-style-type: none"> • Understand the scientific method is a consistent way to organize an inquiry process in science. 	
3.2C Recognize and use the elements of scientific inquiry to solve problems.	<ul style="list-style-type: none"> • Design an investigation as an individual or class project. (PSSA) • Conduct an experiment. (PSSA) • State a conclusion that is consistent with the information. (PSSA) 	
3.2C Recognize and use the elements of scientific inquiry to solve problems.	<ul style="list-style-type: none"> • Know that conclusions can lead to solutions for real-life problems. • Distinguish between a fair and an unfair test. (PSSA) • Describe an investigation (a fair test) to test one variable. (PSSA) 	

Unit: Sun-Earth-Moon System	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.1A Know that natural and human-made objects are made up of parts.	<ul style="list-style-type: none"> Identify and describe the parts that make up the solar system. (PSSA) Diagram and explain the sun-Earth-moon system that affects time. 	
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Know revolution and rotation are movements within the system. Use different types of models to make observations about how sun-Earth-moon system works. (PSSA) 	
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Know the Earth's axis is tilted. Know the sun is stationary. 	
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Label and interpret the phases of the moon. Apply models as tools for prediction and insight. (PSSA) 	
3.1C Illustrate patterns that regularly occur and reoccur in nature.	<ul style="list-style-type: none"> Use knowledge of movement of Sun-Earth-Moon in seasons, progression of shadows, day/night, sunrise/sunset, and lunar phases. (PSSA). 	

Unit: Sun-Earth-Moon System	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.1C Illustrate patterns that regularly occur and reoccur in nature.	<ul style="list-style-type: none"> • Identify lunar phases. • Know rotation causes day/night and shadow. • Observe the sun's effect on shadow's. 	
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> • Recognize Earth's place in the solar system. (PSSA) • Explain and illustrate the causes of seasonal changes. (PSSA) 	
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> • Know revolution causes shadows and change of season. • Understand the position of the Sun-Earth-Moon causes lunar or solar eclipses. 	
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> • Describe motions of the Sun-Earth-Moon system. • Explain how the motion of the sun-Earth-moon system relates to time (e.g., days, months, years) 	
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> • Predict what would happen if: The Earth did not rotate The Earth did not revolve The Earth's axis was not tilted 	

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PA Academic Standards	Performance Indicators	Assessments
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> Describe the causes of seasonal change as they relate to the revolution of Earth and the tilt of Earth's axis. 	
3.4D Describe the composition and structure of the universe and the Earth's place in it.	<ul style="list-style-type: none"> Summarize Earth's rotation and sun's effect on the progression of shadows. 	
3.7B Select appropriate instruments to study materials.	<ul style="list-style-type: none"> Identify the telescope as an astronomer's tool for observing space objects. (PSSA) 	

Unit: Sources of Energy	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.1A Know that natural and human-made objects are made up of parts.	<ul style="list-style-type: none"> Identify system parts (simple electrical circuits (PSSA)). 	
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Construct series and parallel circuits. Build and apply models of circuits as tools for prediction and insight. 	
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Use light to produce heat, color or images. 	
3.4A Recognize basic concepts about the structure and properties of matter.	<ul style="list-style-type: none"> Use physical properties to describe matter, (e.g., mass shape, size, volume color, texture, magnetism, state, and conductivity). 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> Know that there are electrical (current), light and sound forms of energy. 	

Unit: Sources of Energy	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Identify energy forms and examples (e.g., sunlight, heat, stored). (PSSA) • Describe the flow of energy through an object or system, feeling radiant heat from a light bulb or using a battery to light a bulb. (PSSA) 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Understand that energy can be converted from one form to another. • Understand that electromagnetism is magnetism produced by electricity. 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Understand light is a source of heat energy that can be absorbed, reflected or refracted. 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Recognize or diagram simple direct current series and parallel circuits composed of batteries, light bulbs, wire, and on/off switches. (PSSA) 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Describe static electricity in terms of attraction, repulsion and sparks. • Build and apply models of series and parallel circuits as tools for prediction and insight. (PSSA) 	

Unit: Sources of Energy	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Use a graphic organizer to compare and contrast circuits. • Recognize difference between open and closed circuit. 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Explain which type of circuit would continue to produce current if interrupted. 	
3.4B Know basic energy types, sources and conversions.	<ul style="list-style-type: none"> • Classify materials as conductors and nonconductors. (PSSA) • Know and demonstrate the basic properties of heat by producing it in a variety of ways (e.g., electrical current, light, friction) (PSSA) 	
3.4B Know basic energy types, sources and conversions	<ul style="list-style-type: none"> • Construct an electromagnet. • Recognize the characteristics of light (e.g., reflections, refraction, absorption). 	
3.4B Know basic energy types, sources and conversions	<ul style="list-style-type: none"> • Infer what variables affect the strength of an electromagnet. 	

Unit: Sources of Energy	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.4C Observe and describe different types of force and motion.	<ul style="list-style-type: none"> • Know Earth has a magnetic field. • Know magnets have North and South poles. 	
3.4C Observe and describe different types of force and motion.	<ul style="list-style-type: none"> • Describe changes in motion caused by forces (e.g., magnetic, attract, repel, pushes or pulls, gravity, friction) (PSSA). • Know attract and repel as key vocabulary 	
3.4C Observe and describe different types of force and motion.	<ul style="list-style-type: none"> • Identify characteristics of sound (pitch, loudness, reflection/echoes). 	
3.4C Observe and describe different types of force and motion.	<ul style="list-style-type: none"> • Identify characteristics of light (radiant, refracted, reflected, absorbed). 	

Unit: Watersheds	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.1B Know models as useful simplifications of objects or processes.	<ul style="list-style-type: none"> Analyze how drawings or maps of watersheds show changes in terrain. Interpret diagrams of watersheds to describe their functions. 	
3.5A Know basic landforms and earth history.	<ul style="list-style-type: none"> Describe various earth structures (e.g., mountains, faults, drainage basins, watersheds, peninsulas, lakes, rivers, valleys) through the use of models (PSSA). 	
3.5A Know basic landforms and earth history.	<ul style="list-style-type: none"> Describe how prominent earth features in PA (e.g., mountains, valleys, caves, sinkholes, lakes, rivers) were formed. 	
3.5A Know basic landforms and earth history.	<ul style="list-style-type: none"> Describe the composition of soil as weathered rock and decomposed organic remains. 	
4.1A Identify various types of water environments.	<ul style="list-style-type: none"> Compare and contrast the system (e.g., creeks, rivers, streams) and describe the lentic system (e.g., ponds, lakes, swamps) (PSSA). 	

Unit: Watersheds	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
4.1A Identify various types of water environments.	<ul style="list-style-type: none"> Know a watershed is an earth structure that drains water to a specific destination e.g., lake, river, ocean. 	
4.1A Identify various types of water environments.	<ul style="list-style-type: none"> Know wetlands (marshes, salt water areas, swamps, bogs) are the bridge between watersheds and their end destination. 	
4.1A Identify various types of water environments.	<ul style="list-style-type: none"> Know our local watersheds: Susquehanna river, Chesapeake Bay, Atlantic Ocean. 	
4.1B Explain the differences between moving and still water.	<ul style="list-style-type: none"> Explain why water moves or does not move. Identify lentic and lotic water. Classify lentic and lotic systems. 	
4.1E Recognize the impact of watersheds and wetlands on animals and plants.	<ul style="list-style-type: none"> Explain the role of watersheds in water sources. (e.g., water storage, ground water recharge, water filtration, water source, water cycle) (PSSA). 	

Unit: Watersheds	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
4.1E Recognize the impact of watersheds and wetlands on animals and plants.	<ul style="list-style-type: none"> Identify plants and animals supported by a wetland (PSSA). 	
4.3B Identify how human actions affect environmental health.	<ul style="list-style-type: none"> Identify pollutants. (PSSA) Identify sources of pollution. (PSSA) 	
4.3B Identify how human actions affect environmental health.	<ul style="list-style-type: none"> Understand human actions can have a positive or negative impact on a watershed. 	
4.3B Identify how human actions affect environmental health.	<ul style="list-style-type: none"> Identify litter and its effect on the environment (PSSA). Describe how people can reduce pollution (PSSA). Analyze how humans interact with a watershed. 	
4.8 C Explain how human activities may change the environment.	<ul style="list-style-type: none"> Analyze everyday human activities and how they affect the watershed (PSSA). 	

Unit: Plant and Animal Survival	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
3.3C Know that characteristics are inherited and, thus, offspring closely resemble their parents.	<ul style="list-style-type: none"> Identify physical characteristics that appear in both parents and offspring and differ between families, or species. (e.g., height, hair color, eye color, attached earlobes, ability to roll tongue). (PSSA). 	
3.3C Know that characteristics are inherited and, thus, offspring closely resemble their parents.	<ul style="list-style-type: none"> Identify inherited characteristics and offspring as key vocabulary. Know that offspring resemble parents. 	
4.7B Know that adaptations are important for survival.	<ul style="list-style-type: none"> Explain how specific adaptations can help a living organism to survive. (e.g., protective coloration, mimicry) (PSSA) 	
4.7B Know that adaptations are important for survival.	<ul style="list-style-type: none"> Identify extinct and endangered as key vocabulary. Provide an example when protective coloration or mimicry supports an animal's survival. 	
4.7B Know that adaptations are important for survival.	<ul style="list-style-type: none"> Analyze what happens to a living thing when its food, water, shelter or space is changed using cause and effect evaluation (PSSA). 	

Unit: Plant and Animal Survival	Subject Area: Science	Grade: 4
PA Academic Standards	Performance Indicators	Assessments
4.7B Know that adaptations are important for survival.	<ul style="list-style-type: none"> • Know adaptations are important for survival. • Understand that biological pests and invasive species compete with humans for resources. 	
4.7B Know that adaptations are important for survival.	<ul style="list-style-type: none"> • Identify biological pests as mold, fungi, foxtail, purple loose strife, Eurasian water milfoil, ticks, aphids, mice, zebra mussels, caterpillars and gypsy moths. 	
4.7C Define and understand extinction.	<ul style="list-style-type: none"> • Explain that the inability to adapt can cause extinction. • Convince members of a community to take action to prevent an endangered animal's extinction. 	

Adaptations/Modifications for Students with I.E.P.s

Adaptations or modifications to this planned course will allow exceptional students to earn credits toward graduation or develop skills necessary to make a transition from the school environment to community life and employment. The I.E.P. team has determined that modifications to this planned course will meet the student's I.E.P. needs.

Adaptations/Modifications may include but are not limited to:

INSTRUCTION CONTENT

- Modification of instructional content and/or instructional approaches
- Modification or deletion of some of the essential elements

SETTING

- Preferential seating

METHODS

- Additional clarification of content
- Occasional need for one to one instruction
- Minor adjustments or pacing according to the student's rate of mastery
- Written work is difficult, use verbal/oral approaches
- Modifications of assignments/testing
- Reasonable extensions of time for task/project completion
- Assignment sheet/notebook
- Modified/adjusted mastery rates
- Modified/adjusted grading criteria
- Retesting opportunities

MATERIALS

- Supplemental texts and materials
- Large print materials for visually impaired students
- Outlines and/or study sheets
- Carbonless notebook paper
- Manipulative learning materials
- Alternatives to writing (tape recorder/calculator)