Course Title: Science – Grade 3
Board Approval Date: 3/18/12
Credit / Hours: NA

Course Description:

This course focuses on the mastery of the PA Academic Standards for Science and Technology and Engineering Education. Students will engage in the biological, physical, earth and space, and science inquiry branches of the PA Academic Standards.

Course work will focus on:

- How all animals and plants must depend and interact with resources in their environment in order to survive.
- The methods in which rocks are classified into different categories based on their unique properties.
- Why simple machines are devices that improve the quality of life by allowing us to do work with less effort.
- How our solar system consists of eight planets that rotate on their axis and revolve around the sun.

Learning Activities / Modes of Assessment:

Large Group Instruction	Instructional Technology
Science Inquiry Experiments/Labs	Tests and Quizzes
Various Interactive Websites	Projects with Rubrics
Small Group Work	Formal and Informal Written Responses
Role Playing / Simulations	Teacher Observation

Instructional Resources:

HSP Pennsylvania Science Text (Harcourt School Publishers) 2009	Solar System Models
Science Grade Level Kits	Life Cycle Examples
Various Videos	Harcourt Multimedia
Discs	Simple Machine Models
Various Websites	Agricultural Lab
Non-Fiction Texts from the Library and Bookroom	Microscopes
Various Posters and Maps	
Rock, Mineral, and Fossil Samples	

Course Pacing Guide

Course: **Science – Grade Three**

Course Unit (Topic)	**Length of Instruction (Days/Periods)**
1. Forces and Motion	12 days
2. Rocks and Minerals	18 days
3. Space	20 days
4. Plants and Animals	25 days
DAYS TOTAL	75 Days

Curriculum: CCSD CURRICULUM

Course: Science Grade 03 (3/18/13)

PENNSYLVANIA

Date: February 6, 2013 ET

Topic: 1-Forces and Motion

Subject(s): Science

Days: 12

Grade(s): 3rd

Know:

3.2.3.B1. – Important
FORCE & MOTION OF PARTICLES AND RIGID BODIES - Explain how movement can be described in many ways.

3.4.3.E3. – Compact
ENERGY AND POWER TECHNOLOGIES - Recognize that tools, machines, products, and systems use energy in order to do work.

3.2.4.B1. – Compact
FORCE & MOTION OF PARTICLES AND RIGID BODIES - Explain how an object's change in motion can be observed and measured.

Movement is caused by forces acting on an object.

Force is something that causes an object to move, stop, or change its motion.

The largest force on Earth is gravity.

The two types of motions that require a force are pushes and pulls.

Simple machines allow people to change the direction or size of a force.

Understand:

Machines are devices that improve the quality of life by allowing us to do work with less effort.

Do:

3.2.3.B2.a – Essential
ENERGY STORAGE AND TRANSFORMATIONS: CONSERVATION LAWS - Explore energy's ability to cause motion or create change.

3.2.3.B2.b – Essential
ENERGY STORAGE AND TRANSFORMATIONS: CONSERVATION LAWS - Explore how energy can be found in moving objects, light, sound, and heat.

SI.K-4.1 – Essential
Distinguish between scientific fact and opinion.

SI.K-4.2 – Essential
Ask questions about objects, organisms, and events.

SI.K-4.3 – Essential
Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known.

SI.K-4.4 – Essential
Plan and conduct a simple investigation and understand that different questions require different kinds of investigations.

SI.K-4.5 – Essential
Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information.

SI.K-4.6 – Essential
Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.

SI.K-4.7 – Essential
Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Topic: 1-Forces and Motion
Days: 12
Subject(s): Science
Grade(s): 3rd

Know:	Understand:	Do:
There are six types of simple machines that require force, energy, and motion. Work is the use of force to move an object.		Explore how simple machines use energy to create change. Categorize examples in our world as one of the six various types of simple machines. Explore how energy can be found in moving objects, light, sound, and heat.

Curriculum: CCSD CURRICULUM

Course: Science Grade 03 (3/18/13)

PENNSYLVANIA

Date: February 6, 2013 ET

Topic: 2-Rocks and Minerals

Subject(s): Science

Days: 18

Grade(s): 3rd

Know:	Understand:	Do:
3.3.4.A1.c – Unranked EARTH FEATURES AND THE PROCESSES THAT CHANGE IT - Recognize that the surface of the earth changes due to slow processes and rapid processes. **3.3.4.A3. – Unranked** EARTH'S HISTORY - Recognize that fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time. **3.3.4.A6.b – Unranked** UNIFYING THEMES - CONSTANCY/ CHANGE Identify simple changes in the earth system as air, water, soil and rock interact. **3.1.3.C3. – Essential** UNIFYING THEMES - CONSTANCY AND CHANGE Recognize that fossils provide us with information about living things that inhabited the Earth long ago Fossils are the remains of plants and animals from long ago. Weathering and erosion is the breaking down of earth's rocks and minerals.	Rocks are classified into different categories based on their unique properties.	**3.2.3.A1.a – Essential** PROPERTIES OF MATTER - Differentiate between properties of objects such as size, shape, and weight and properties of materials that make up the objects such as color, texture, and hardness. **3.3.3.A2. – Essential** EARTH'S RESOURCES/MATERIALS - Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties. **SI.K-4.1 – Essential** Distinguish between scientific fact and opinion. **SI.K-4.2 – Essential** Ask questions about objects, organisms, and events. **SI.K-4.3 – Essential** Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. **SI.K-4.4 – Essential** Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. **SI.K-4.5 – Essential** Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. **SI.K-4.6 – Essential** Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. **SI.K-4.7 – Essential** Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Curriculum: CCSD CURRICULUM
Course: Science Grade 03 (3/18/13)

PENNSYLVANIA
Date: February 6, 2013 ET

Topic: 2-Rocks and Minerals
Subject(s): Science

Days: 18
Grade(s): 3rd

Know:	Understand:	Do:
There are three types of rocks that are formed through different processes on the Earth's surface. The rock cycle continually repeats itself.		**3.3.4.A1.b – Unranked** EARTH FEATURES AND THE PROCESSES THAT CHANGE IT - Identify the layers of the earth. **3.1.4.C3. – Important** UNIFYING THEMES - CONSTANCY AND CHANGE Compare fossils to one another and to currently living organisms according to their anatomical similarities and differences. **4.1.3.E. – Important** Identify changes in the environment over time. Describe the different properties of rocks and minerals and how they can be tested for these properties. Explain how earth's processes change its soil and rocks. Identify the four layers of the earth. Carry out investigations that simulate how the three types of rocks are formed. Compare and contrast trace and body fossils.

Curriculum: CCSD CURRICULUM

Course: Science Grade 03 (3/18/13)

PENNSYLVANIA

Date: February 6, 2013 ET

Topic: 3-Space

Subject(s): Science

Days: 20

Grade(s): 3rd

Know:	Understand:	Do:
3.3.4.B1.b – Unranked COMPOSITION AND STRUCTURE - Describe the earth's place in the solar system that includes the sun (a star), planets, and many moons.	Our solar system consists of eight planets that rotate on their axis and revolve around the sun.	**3.3.3.B1.a – Essential** COMPOSITION AND STRUCTURE - Relate the rotation of the earth and day/night, to the apparent movement of the sun, moon, and stars across the sky.
3.3.4.B1.c – Unranked COMPOSITION AND STRUCTURE - Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.		**3.3.3.B1.b – Essential** COMPOSITION AND STRUCTURE - Describe the changes that occur in the observable shape of the moon over the course of a month.
3.3.4.B2.a – Unranked UNIFYING THEMES - SCALES Know the basic characteristics and uses of telescopes.		**SI.K-4.1 – Essential** Distinguish between scientific fact and opinion.
3.3.5.B1. – Unranked COMPOSITION AND STRUCTURE - Provide evidence that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours.		**SI.K-4.2 – Essential** Ask questions about objects, organisms, and events.
3.3.6.B1.c – Compact COMPOSITION AND STRUCTURE - Explain why the planets orbit the sun in nearly circular paths.		**SI.K-4.3 – Essential** Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known.
3.3.7.A4.b – Unranked WATER - Describe the motions of tides and identify their causes.		**SI.K-4.4 – Essential** Plan and conduct a simple investigation and understand that different questions require different kinds of investigations.
		SI.K-4.5 – Essential Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information.
		SI.K-4.6 – Essential Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge.
		SI.K-4.7 – Essential Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

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PENNSYLVANIA
Date: February 6, 2013 ET

Topic: 3-Space
Subject(s): Science

Days: 20
Grade(s): 3rd

Know:	Understand:	Do:
There are eight planets in our solar system that have unique characteristics. The Earth is the third planet from the sun and has one moon. The planets orbit the sun in a nearly circular path. The Earth revolves around the sun once every 365 days. The Earth rotates on its axis once approximately every 24 hours. Our home galaxy is one of many in the universe. Tides are the rise and fall of sea level caused by the combined effects of the rotation of the Earth and the gravitational forces exerted by our Moon and Sun. Display images of objects in space as viewed through a telescope.		**3.3.4.B1.a – Unranked** COMPOSITION AND STRUCTURE - Identify planets in our solar system and their basic characteristics. **3.3.4.B2.b – Unranked** UNIFYING THEMES - PATTERNS/PHASES Identify major lunar phases. **3.3.4.B2.c – Unranked** UNIFYING THEMES - PATTERNS Explain time (days, seasons) using solar system motions. **3.3.6.B1.a – Unranked** COMPOSITION AND STRUCTURE - Compare and contrast the size, composition, and surface features of the planets that comprise the solar system as well as the objects orbiting them. Identify the major lunar phases. Explain time (days and seasons) using solar system motions. Demonstrate how the Earth revolves around the sun in one year and rotates on its axis once approximately every 24 hours (which causes day and night.) Compare and contrast the size, composition, and surface features of the planets in our solar system. Describe the motions of tides and identify their causes.

Curriculum: CCSD CURRICULUM

Course: Science Grade 03 (3/18/13)

PENNSYLVANIA

Date: February 6, 2013 ET

Topic: 4-Plants and Animals

Subject(s): Science

Days: 25

Grade(s): 3rd

Know:	Understand:	Do:
3.1.3.A1. – Essential COMMON CHARACTERISTICS OF LIFE - Describe characteristics of living things that help to identify and classify them. **3.1.3.A5. – Essential** FORM AND FUNCTION - Identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth, and protection. **3.1.3.B1. – Important** HEREDITY - Understand that plants and animals closely resemble their parents. **3.1.3.B5. – Important** UNIFYING THEMES - PATTERNS Identify characteristics that appear in both parents and offspring. **3.1.3.C1.a – Unranked** NATURAL SELECTION - Recognize that plants survive through adaptations, such as stem growth towards light and root growth downward in response to gravity. **3.1.4.B1. – Essential** HEREDITY - Describe features that are observable in both parents and their offspring.	All animals and plants must depend and interact with resources in their environment in order to survive.	**3.1.3.A2. – Essential** ENERGY FLOW - Describe the basic needs of living things and their dependence on light, food, air, water, and shelter. **3.1.3.A3. – Essential** LIFE CYCLES - Illustrate how plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death. **SI.K-4.1 – Essential** Distinguish between scientific fact and opinion. **SI.K-4.2 – Essential** Ask questions about objects, organisms, and events. **SI.K-4.3 – Essential** Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. **SI.K-4.4 – Essential** Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. **SI.K-4.5 – Essential** Use simple equipment (tools and other technologies) to gather data and understand that this allows scientists to collect more information than relying only on their senses to gather information. **SI.K-4.6 – Essential** Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. **SI.K-4.7 – Essential** Communicate procedures and explanations giving priority to evidence and understanding that scientists make their results public, describe their investigations so they can be reproduced, and review and ask questions about the work of other scientists.

Topic: 4-Plants and Animals
Subject(s): Science
Days: 25
Grade(s): 3rd

Know:	Understand:	Do:
3.1.4.B2. – Compact REPRODUCTION - Recognize that reproduction is necessary for the continuation of life. Food provides living things with energy. All plants and animals are made of cells. Plant cells differ from animal cells. Trees, scrubs, and grass are all types of plants. Deciduous, evergreen, pine, maple, oak, fern, and palmetto are all examples of different types of leaves. Plants can make their own food through a process called photosynthesis. Animals inherit some traits from their parents. Living things can be either a producer, consumer, or a decomposer. Consumers can be carnivores, herbivores, or omnivores.		**3.1.5.A3. – Unranked** LIFE CYCLES - Compare and contrast the similarities and differences in life cycles of different organisms. **3.2.3.B6. – Essential** UNIFYING THEMES - ENERGY Recognize that light from the sun is an important source of energy for living and nonliving systems and some source of energy is needed for all organisms to stay alive and grow. Diagram the life cycles of plants and animals. Create a model of a food chain and energy pyramid. (Include predator/prey relationship)