Course Title: Science – Grade 5 **Board Approval Date:** 11/18/13 **Credit / Hours:**

Course Description:

This course focuses on mastery of the PA Academic Standards for Environment and Ecology and Academic Standards for Science, Technology and Engineering Education. As students progress through this course they will be exposed to several different units in Earth, Life, and Physical Science.

Course work will focus on the study of the Human Body, Geology, Ecosystems, Electromagnets and Weather.

Learning Activities / Modes of Assessment:

Large group instruction
Teacher Observation
Small group work
Small group labs / activities

Tests and Quizzes Various websites Projects with Rubrics Teacher demonstrations

Instructional Resources:

HSP Science Book Brainpop.com Discovery Education Streaming Scientific books from the library Various posters and maps

Course: Science – Grade Five	
Course Unit (Topic)	Length of Instruction (Days/Periods)
1. Weather	21 days
2. Geology	29 days
3. Ecosystems	38 days
4. Electromagnets	21 days
5. Human Body Systems	<u>41 days</u>
DAYS TOTAL	150 Days

Topic: 1 - Weather

Subject(s): Science

Know:	Understand:	Do:
Know: 3.3.5.A4. – Important WATER - Explain the basic components of the water cycle. 3.3.5.A5.a – Essential WEATHER AND CLIMATE - Differentiate between weather and climate. 3.3.5.A5.b – Essential WEATHER AND CLIMATE - Explain how the cycling of water, both in and out of the atmosphere, bas an effect	Understand: Changing weather conditions have a significant impact on everyday life.	Do: Create a diagram of the layers of the atmosphere in sequential order. Identify temperature and altitude in each layer of the atmosphere. Identify basic information for each layer. Explain how uneven heating on earth's surface creates local and prevailing winds. LAB: LM-113-115 - UNEVEN HEATING OF EARTH Identify and label air masses and fronts on a weather map. Explain how fronts form? WEBSITE: VISUALS
on climate.		OF ALL 4 TYPES OF FRONTS
Components of the water cycle.		Identify symbols used for weather forecasting. ACTIVITY: CREATE OWN WEATHER MAP USING SYMBOLS
The differences between weather and climate		Compare and contrast jet streams and gulf streams.
The layers of the atmosphere.		Use weather patterns to describe the climate of an area.
Composition of each layer in the atmosphere.		
Effects of oceans on climate.		3.3.5.A5.a - WEATHER AND CLIMATE - Differentiate between weather and climate.
Global weather patterns influence weather. Ex. wind direction, wind speed, jet streams, temp., precipitation		3.3.6.A5.a - WEATHER AND CLIMATE - Describe the composition and layers of the atmosphere.
Tilt of the earth around the sun can cause uneven heating causing seasons and weather patterns.		

Curriculum: CCSD CURRICULUM Course: Science Grade 05 (11/18/13)

Topic: 1 - Weather

Subject(s): Science

Know:	Understand:	_Do:
Local and prevailing winds.		
Earths seasons and weather patterns.		
Atmosphere influences climate.		
How air masses and fronts form and their characteristics.		
Vocablulary: stratosphere, exosphere, ionosphere, mesosphere, troposphere, themosphere, meteoroid, ozone layer, prevailing winds, local winds, sea breeze, land breeze, air mass, warm front, cold front, jet stream, gulf stream, rain shadow effect, weather, climate		
3.3.5.A4 WATER - Explain the basic components of the water cycle.		
3.3.5.A5.a - WEATHER AND CLIMATE - Differentiate between weather and climate.		
3.3.5.A5.b - WEATHER AND CLIMATE - Explain how the cycling of water, both in and out of the atmosphere, has an effect on climate.		

Topic: 2 - Geology

Subject(s): Science

Know:	Understand:	_Do:
3.3.5.A1. – Essential EARTH FEATURES AND THE PROCESSES THAT CHANGE IT - Describe how landforms are the result of a combination of destructive forces such as erosion and constructive erosion, deposition of sediment, etc.	The earth is constantly changing.	Identify and categorize the three main types of rocks. LAB: IDENTIFYING ROCKS LM 82-83 List different ways humans use rocks in their everday life. Label a diagram of the rock cycle. LAB: MINERAL PROPERTY LM 29-81 HARNESS SCALE, STREAK, AND COLOR
335 A2 - Important		Create a visual representation of Earth's layers.
EARTH'S		Label each layer of Earth.
RESOURCES/ MATERIALS - Describe the usefulness of Earth's physical resources as		Identify a landform and the force of nature that created it.
raw materials for the human made world.		PROJECT: Design a conservation poster that persuades peers to conserve a natural resource.
3.3.5.A3. – Important EARTH'S HISTORY - Explain how geological processes observed today such as erosion,		Identify steps of the three R's.
novement of lithospheric plates, and changes in the composition of the atmosphere are similar to those in the past.		3.3.5.A1 EARTH FEATURES AND THE PROCESSES THAT CHANGE IT - Describe how landforms are the result of a combination of destructive forces such as erosion and constructive erosion, deposition of sediment, etc.
Landforms are formed through forces of nature.		3.3.5.A2 EARTH'S RESOURCES/MATERIALS - Describe the usefulness of Earth's physical resources as raw materials for the human made world.
Humans use rocks as building materials, electronics, tools, and for decorative items.		3.3.5.A3 EARTH'S HISTORY - Explain how geological processes observed today such as erosion, movement of lithospheric plates, and changes in the composition of the atmosphere are similar to those in the past.
Humans use natural resources to meet their needs and often misuse		4.3.5.D Explain how different items are recycled and reused.
these resources. Conservation of natural		3.3.6.A1 EARTH FEATURES AND THE PROCESSES THAT CHANGE IT - Recognize and

Topic: 2 - Geology

Subject(s): Science

Know:	Understand:	_Do:
 resources. Movement of plates create landforms such as mountains, volcanoes, and causes earthquakes. Understand the composition of Earth and identify each layer. Identify the three main types of rocks and how they are formed. Understand the history of Earth by studying fossils and Earth's composition. Differences between rocks and minerals. Understand how rocks are recycled and reused. 		 interpret various mapping representations of Earth's common features. 3.3.6.A2 EARTH'S RESOURCES/MATERIALS - Examine how soil fertility, composition, resistance to erosion, and texture are affected by many factors. 4.5.5.C Explain the difference between point and non-point source pollution.
Vocabulary: rock cycle, metamorphic, igneous,sedimentary, crystal, mineral, fossil, crust, mantle, inner core, outer core, landform, topography, moraine, barrier island, sandbar, glacial grooves, weathering, erosion, deposition, sediment, plate, magma, lava, renewable resource, nonrenewable resource, pollution, point source pollution, non-point source pollution, conservation, The Three R's:reduce, reuse, recycle		

Subject(s): Science

Know:	Understand:	Do:
<text><text><text><text><text><text></text></text></text></text></text></text>	Living things interact with one another in the environment. Energy flows from the sun to plants and animals. Adaptations help organisms survive in their ecosystem.	List the 6 land biomes and 2 water biomes of the world. Identify the characteristics of plants and animals in each biome. Investigate and determine the biological factors that affect the water quality of different areas of a watershed. LAB: PH, OXYGEN, NITRATE, SALT - FIELD TRIP Design and label the parts of a food chain. Design and label a food web that includes humans. LAB: OWL PELLET ACTIVITIY-DISESECTING PELLETS TO DETERMINE WHAT FOOLS THE OWL DIGESTED/EATING HABITS Create an energy pyramid that shows how energy moves from the sun to the plants and animals. Give an example of an animal that uses each type of adaptation and how it uses that adaptation to survive. Explain the four main causes of endangered species Recognize an animal affected by each cause. PROJECT: IDENTIFY CHARACTERISTICS (ANIMALS, LOCATION, CLIMATE, PLANTS) AND PREPARE CLASS PRESENTATION FOR ONE OF THE ECOSYSTEMS 4.2.5.C Identify physical, chemical, and biological factors that affect water quality. 3.1.5.C1 NATURAL SELECTION - Describe how life on earth depends on energy from the sun. 3.1.5.C1 NATURAL SELECTION - Describe how life on earth depends on energy from the sun.

Subject(s): Science

Know:	Understand:	_Do:
4.5.6.D. – Important Identify reasons why organisms become threatened, endangered, and extinct.		3.1.5.C2 ADAPTATION - Give examples of how inherited characteristics (e.g., shape of beak, length of neck, location of eyes, shape of teeth) may change over time as adaptations to changes in the environment that enable organisms to survive.
4.1.4.B.b – Compact Trace how death, growth, and decay cycle matter through an ecosystem.		4.1.5.A Describe the roles of producers, consumers, and decomposers within a local ecosystem.
414Ab – Compact		4.1.5.C Describe different food webs including a food web containing humans.
Explain what happens to an organism when its food supply, access to		4.5.5.D Explain the differences between threatened, endangered, and extinct organisms.
water, shelter or space (niche / habitat) is changed.		4.5.6.D Identify reasons why organisms become threatened, endangered, and extinct.
Life on Earth depends on energy from the sun. Organisms meet their	L.	3.1.6.A2 ENERGY FLOW - Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.
needs in an environment in response to stimuli from their environment.		3.1.6.C1 NATURAL SELECTION - Differentiate between instinctive and learned animal behaviors that relate to survival.
Organisms' adaptations change over time to enable organisms to survive.		
The roles of producers, consumers and decomposers within an ecosystem.		
Definition of a food web		
Parts of a food web		
Land and water biomes on earth		

Subject(s): Science

Know:	Understand:	Do:
Distinguishing characteristics of each land and water biome		
Define endangered, threatened, extinct		
Reasons why organisms become threatened, endangered or extinct.		
The cycle of growth, decay and death of matter through an ecosystem.		
What happens to an organism when there is a change to its basic needs.		
Vocabulary: ecosystem, interdependent, biome, tunda, coniferous forest, deciduous forest, tropical rainforest, grasslands, desert, marine, freshwater, watershed, dissolved oxygen, pH, nitrates, salinity, omnivore, herbivore, carnivore, food chain, decomposer, food web, energy pyramid, organism, decomposer, consumer, producer, niche, habitat, instinct, learned behavior, adaptation, threatened, endangered, extinct, permafrost, canopy, tidal pool, conifer, prairie,		

Subject(s): Science

Know:	Understand:	Do:
estuary, taiga, savanna, brackish		

Topic: 4 - Electromagnets

Subject(s): Science

Topic: 4 - Electromagnets

Subject(s): Science

Know:	Understand:	Do:
Similarities and differences of generators and motors		3.2.7.B4.a - ELECTRICAL AND MAGNETIC ENERGY - Explain how electrical current is produced by the flow of electrons.
Ohm's Law and its mathematical equation.		3.2.7.B4.b - ELECTRICAL AND MAGNETIC ENERGY - Explain and demonstrate how electric current produces magnetic forces and how moving
The relationship of electric current, resistance and voltage.		magnets produce electric current.
Vocabulary: electricity, electromagnet, current, magnetic field, energy source, motor, generator, voltage, resistance, circuit, amp, turbine, fossil fuels, uranium		
3.2.5.B4.a - ELECTRICAL AND MAGNETIC ENERGY - Demonstrate how electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.		
3.2.5.B4.b - ELECTRICAL AND MAGNETIC ENERGY - Demonstrate how electromagnets can be made and used.		

Topic: 5 - Human Body Systems

Subject(s): Science

Know:	Understand:	_Do:
 3.1.5.A5.a – Essential FORM AND FUNCTION - Explain the concept of a cell as the basic unit of life. 3.1.5.A5.b – Essential FORM AND FUNCTION - Compare and contrast plant and animal cells. 	Multlicellular organisms have a variety of specialized cells, tissues, organs and organ systems that perform specialized functions.	Construct and label parts of an animal cell. Construct and label parts of a plant cell. View plant and animal cells under a microscope. LAB: ANIMAL CELL AND PLANT CELL SLIDES - LM 26-28 View different types of tissue cells under a microscope. LAB: ANIMAL CELL AND PLANT CELL SLIDES - LM26-28
 10.1.6.B – Essential Identify and describe the structure and function of the major body systems. nervous muscular integumentary urinary endocrine reporductive immune 		Label body organs, systems of the human body. Identify major organs of each system of the human body. PROJECT: BELOW Explain how human body systems interact. PROJECT: STUDENTS REPLICATE A BODY SYSTEM AND EXPLAIN THEIR FUNCTION Explain how organs in each system work to carry out a life function. PROJECT: ABOVE
 A cell is a basic unit of life. Cells are microscopic and a microscope must be used to view them. Identify parts of an animal cell. Identify parts of a plant cell. Identify the different parts of animal and plant cells. Differences between multicellular and unicellular organisms. Understand how cells, 		 3.1.5.A5.a - FORM AND FUNCTION - Explain the concept of a cell as the basic unit of life. 3.1.5.A5.b - FORM AND FUNCTION - Compare and contrast plant and animal cells. 10.1.6.B - Identify and describe the structure and function of the major body systems. nervous nervous muscular urinary/excretory endocrine reproductive/endocrine-health digestive respiratory skeletal circulatory

Curriculum: CCSD CURRICULUM Course: Science Grade 05 (11/18/13)

Topic: 5 - Human Body Systems

Subject(s): Science

Know:	Understand:	Do:
tissues, organs, and organ systems are organized in the human body.		
Groups of cells, tissues, organs, and organ systems work together.		
Life processes that organs carry out. EX. lungs, heart		
Four major types of tissue.		
Understand the function of each of the major body systems.		
Understand the structure of each of the major body systems.		
Human body systems interact and work together.		
Organs work together in the human body.		
Vocabulary: cell, microscope,nucleus, cell membrane, cell wall, cytoplasm, plant cell, animal cell, multicellular, unicellular, tissue, organ, function, structure, circulatory, respiratory, nervous, excretory, endocrine, skeletal, muscular, digestive, chloroplast, vacuole, mitochondrion.		

Topic: 5 - Human Body Systems Subject(s):

Know:

3.1.6.A6. -

only through a microscope.

ORGANIZATION -Identify examples of unicellular and

multicellular organisms. 3.1.6.A8. - UNIFYING **THEMES - SCALE** Explain why the details of most cells are visible

ject(s): Science		C	Frade(s) : 5th
now:	Understand:	Do:	
connective, epithelial, muscle, nerve tissue, arteries, veins, trachea, bronchial tubes, bronchi, medulla, cerebrum, cerebellum, spinal cord, bladder, ureters, urethra, kidneys, pituitary gland, hormones, adrenal gland, adrenaline, thyroid, humerous, cranium, femur, pelvis, vertebrae, ligaments, tendons, voluntary muscles, involuntary muscles, esophagus, liver, small intestine, large intestine			
3.1.6.A4 CELL CYCLES - Recognize that all organisms are composed of cells and that many organisms are unicellular and must carry out all life functions in one cell.			

Days: 41