

**Course Title:** Science-Grade Kindergarten

**Board Approval Date:** 05/19/14

**Credit / Hours:** NA

**Course Description:**

This Course focuses on laying the foundation toward Mastery of the PA Academic Standards for Science and Technology and Engineering Education. Students will engage in the biological, physical, earth and space, genetic and evolutionary sciences.

**Coursework:**

- \* five senses ( used to introduce The Scientific Method)
- \* living and non-living things and the effects on the environment
- \* animal, plant and environment changes throughout the seasons
- \* animal and plant life cycles
- \* Earth's surface
- \*Energy

**Learning Activities / Modes of Assessment:**

Large group instruction  
Guided Inquiry  
Small group work  
Journals  
Test  
Checklist and Observations  
Formal and informal written responses

**Instructional Resources:**

Macmillan/McGraw-Hill Science (1995)  
Science Grade Level Kits  
Applicable literature  
Brainpop Jr  
Discovery Education  
Various websites and power points  
Rock, magnet, sand and soil samples  
posters

## Course Pacing Guide

Course: **Science – Grade Kindergarten**

<b>Course Unit (Topic)</b>	<b>Length of Instruction (Days/Periods)</b>
1. Seasons and Weather	10 days
2. Five Senses	15 days
3. Energy and Forces	10 days
4. Land	10 days
5. Water	10 days
6. Our Impact on the Earth	5 days
7. Living and Nonliving	10 days
8. Plants	10 days
9. Animals	<u>10 days</u>
<b>DAYS TOTAL</b>	<b>90 Days</b>

Topic: Animals  
 Subject(s): Science

Days: 10  
 Grade(s): Knd.

Know:	Understand:	Do:
<p><b>3.3.K.D – Important</b>            Demonstrate a basic understanding of similarities and differences that relate to environmental habitat</p> <p><b>3.3.K.E – Essential</b>            Describe basic needs of plants and animals</p> <p><b>3.3.K.F – Important</b>            Know that some organisms have similar external characteristics</p> <p><b>3.2.K.A – Essential</b>            Build an introductory vocabulary of scientific terms</p> <p><b>3.1.K.D – Essential</b>            Explore patterns that regularly occur in nature</p> <p><b>3.1.K.E – Essential</b>            Identify observable patterns</p> <p><b>3.1.K.F – Essential</b>            Develop beginning understanding of natural patterns</p> <p><b>3.1.K.J – Essential</b>            Recognize change</p>	<p>All animals have a home and basic needs in order to live. All animals grow and change.</p>	<p><b>3.3.K.C. – Essential</b>            Sort organisms according to their shared characteristics</p> <p><b>3.2.K.D – Compact</b>            Distinguish between scientific fact and a belief through literature</p> <p><b>3.1.K.C – Essential</b>            Explore realistic models</p> <p><b>3.1.K.G – Important</b>            Begin to use the understanding of patterns to make predictions</p> <p><b>3.1.K.H – Compact</b>            Explore the concept of scale</p> <p><b>3.1.K.K – Important</b>            Examine and explain change through simple observation and recording</p>

Topic: Energy and Forces  
Subject(s): Science

Days: 10  
Grade(s): Knd.

Know:	Understand:	Do:
<div><div><b>3.2.K.A – Essential</b> Build an introductory vocabulary of scientific terms</div><div><b>3.4.K.I – Compact</b> Develop a directional vocabulary</div><div><b>3.4.K.H – Compact</b> Identify directed air as a source of movement</div><div><b>3.1.K.B – Important</b> Identify how a part relates to the whole in both natural and human-made objects</div><div><b>3.1.K.J – Essential</b> Recognize change</div><div><b>3.1.K.L – Important</b> Develop simple understanding about motion</div></div>	<div>There are a variety of ways to make things move. Changes in an object's motion can be observed and described.</div>	<div><div><b>3.2.K.H – Essential</b> Demonstrating willingness to modify explanations based on experience or observation</div><div><b>3.2.K.K – Compact</b> Test out solutions</div><div><b>3.4.K.F – Compact</b> Explore basic energy types and sources</div><div><b>3.6.K.G – Compact</b> Experiment with simple machines</div><div><b>3.1.K.C – Essential</b> Explore realistic models</div><div><b>3.1.K.K – Important</b> Examine and explain change through simple observation and recording</div></div>

Topic: Five Senses

Subject(s): Science

Days: 15

Grade(s): Knd.

Know:

Understand:

Do:

**3.2.K.A – Essential**

Build an introductory vocabulary of scientific terms

There are 5 senses (sight, smell, touch, hearing, and taste)

There is a specific body part associated with each of the 5 senses

Sounds can be loud or soft

Our taste buds distinguish between 4 different tastes (salty, sweet, bitter, sour)

We can identify objects by their smell

different objects have different textures

More than one sense can be used at a time to observe and problem solve

We use our five senses to explore and learn about our surroundings.

**3.2.K.M – Compact**

Record results

**3.2.K.B – Important**

Form clear explanations based on observation and participation in common experiments

**3.2.K.E – Essential**

Use the five senses as tools with which to: observe, collect information, classify, describe.

**3.2.K.F – Essential**

Use observation to develop a descriptive vocabulary based on sensory experiences

**3.2.K.G – Important**

Demonstrate understanding of the process of scientific inquiry by:

- Participating in scientific investigations
- Asking relevant questions
- Making predictions based on experience or observation

**3.2.K.H – Essential**

Demonstrating willingness to modify explanations based on experience or observation

**3.2.K.C – Essential**

Connect known ideas with new knowledge to build understanding or refine concepts

**3.4.K.G – Important**

Explore variations of sound

Identify the 5 senses and associate the sense to the correct body part

Explore sounds of differing volumes

taste a variety of food items and classify them as salty, sweet, bitter, or sour

Topic: Five Senses  
Subject(s): Science

Days: 15  
Grade(s): Knd.

Know:	Understand:	Do:
		<p>Smell a varitivity of scented items and identify the item</p> <p>using touch, describe an item by it's texture</p> <p>use 5 senses in conjunction to make observations and solve problems</p>

Topic: Land  
Subject(s): Science

Days: 10  
Grade(s): Knd.

Know:	Understand:	Do:
<div><div><b>4.4.K.A – Important</b> Understand the importance of agriculture</div><div><b>4.4.K.B – Compact</b> Identify the components of the farming system, (farmer's role, animals, buildings, land).</div><div><b>3.2.K.A – Essential</b> Build an introductory vocabulary of scientific terms</div><div><b>3.5.K.A – Compact</b> Identify flat land, hills and mountains</div><div><b>3.6.K.E – Compact</b> Identify steps in erecting a building</div><div><b>3.1.K.A – Essential</b> Identify and describe what parts make up a whole</div></div>	<div>The world is made up of land and water. There are three different types of land that can be used in a variety of ways.</div>	<div><div><b>3.5.K.A – Compact</b> Identify flat land, hills and mountains</div><div><b>3.5.K.B – Essential</b> Distinguish between three types of earth: soil, rock and sand</div><div><b>3.1.K.C – Essential</b> Explore realistic models</div></div>

Topic: Living and Nonliving

Subject(s): Science

Days: 10

Grade(s): Knd.

Know:	Understand:	Do:
<p><b>4.2.K.A – Essential</b> Identify needs of people (basic)</p> <p><b>4.2.K.B – Important</b> Identify products that come from nature</p> <p><b>4.3.K.A – Essential</b> Know that all living things need air and water to survive</p> <p><b>4.6.K.A – Essential</b> Identify and categorize living and nonliving things</p> <p><b>4.6.K.B – Important</b> Begin to understand the concept of cycles</p> <p><b>4.7.K.A – Important</b> Identify differences in plants and animals</p> <p><b>4.7.K.B – Compact</b> Explain how specific adaptations can help a living organism to survive</p> <p><b>3.2.K.A – Essential</b> Build an introductory vocabulary of scientific terms</p> <p><b>3.3.K.B – Essential</b> Identify the life processes of living things</p>	<p>All things can be categorized as living and nonliving things.</p>	<p><b>4.2.K.A – Essential</b> Identify needs of people (basic)</p> <p><b>4.6.K.A – Essential</b> Identify and categorize living and nonliving things</p> <p><b>4.7.K.A – Important</b> Identify differences in plants and animals</p> <p><b>3.3.K.C. – Essential</b> Sort organisms according to their shared characteristics</p>



Topic: Living and Nonliving

Subject(s): Science

Days: 10

Grade(s): Knd.

Know:	Understand:	Do:
<p><b>3.3.K.F – Important</b> Know that some organisms have similar external characteristics</p>		
<p><b>3.3.K.G – Important</b> Understand that living things are made up of parts that have specific functions</p>		
<p><b>3.1.K.J – Essential</b> Recognize change</p>		
<p><b>3.3.K.A – Essential</b> Identify the similarities and differences of living things</p>		
<p><b>3.3.K.E – Essential</b> Describe basic needs of plants and animals</p>		
<p><b>3.3.K.J – Important</b> Describe changes in living things over time</p>		
<p><b>3.3.K.L – Essential</b> Describe basic needs of plants and animals</p>		
<p><b>3.3.K.M – Important</b> Know that some organisms have similar external characteristics</p>		

Topic: Our Impact on the Earth  
Subject(s): Science

Days: 5  
Grade(s): Knd.

Know:	Understand:	Do:
<div>4.2.K.C – Important Identify ways to conserve</div> <div>4.3.K.B – Important Identify litter and its effect on the environment</div> <div>4.8.K.A – Important Explain how humans can change their environment or their behavior to live</div> <div>4.8.K.B – Important Identify human activities that affect the environment</div> <div>4.9.K.A – Compact Understand how laws and regulations can protect the environment</div> <div>3.2.K.A – Essential Build an introductory vocabulary of scientific terms</div> <div>3.1.K.J – Essential Recognize change</div>	<div>We have an impact on our environment.</div>	<div>3.2.K.I – Compact Identify and explain basic problems</div> <div>3.2.K.J – Compact Identify possible solutions</div>

Topic: Plants  
 Subject(s): Science

Days: 10  
 Grade(s): Knd.

Know:	Understand:	Do:
<p><b>3.2.K.A – Essential</b> Build an introductory vocabulary of scientific terms</p> <p><b>3.1.K.A – Essential</b> Identify and describe what parts make up a whole</p> <p><b>3.1.K.B – Important</b> Identify how a part relates to the whole in both natural and human-made objects</p> <p><b>3.1.K.J – Essential</b> Recognize change</p> <p><b>3.3.K.E – Essential</b> Describe basic needs of plants and animals</p> <p><b>3.3.K.F – Important</b> Know that some organisms have similar external characteristics</p> <p><b>3.3.K.G – Important</b> Understand that living things are made up of parts that have specific functions</p> <p><b>3.3.K.I – Important</b> Identify characteristics for animal and plant survival identified with seasonal changes</p> <p><b>3.3.K.J – Important</b> Describe changes in living things over time</p>	<p>All plants have basic parts. All plants have needs in order to live.</p>	<p><b>3.1.K.K – Important</b> Examine and explain change through simple observation and recording</p> <p><b>3.1.K.C – Essential</b> Explore realistic models</p> <p><b>3.3.K.C. – Essential</b> Sort organisms according to their shared characteristics</p> <p><b>3.1.K.H – Compact</b> Explore the concept of scale</p> <p><b>3.1.K.M – Compact</b> Describe change to objects caused by heat, cold, light or chemicals</p>

Topic: Seasons and Weather

Subject(s): Science

Days: 10

Grade(s): Knd.

Know:

Understand:

Do:

**3.2.K.A – Essential**  
 Build an introductory vocabulary of scientific terms

**3.1.K.D – Essential**  
 Explore patterns that regularly occur in nature

**3.1.K.E – Essential**  
 Identify observable patterns

**3.1.K.F – Essential**  
 Develop beginning understanding of natural patterns

**3.1.K.J – Essential**  
 Recognize change

**3.5.K.C – Essential**  
 Build a vocabulary of weather related terms

**3.5.K.D – Important**  
 Distinguish between different types of precipitation

**3.5.K.E – Compact**  
 Distinguish between clouds and fog

**3.5.K.H – Essential**  
 Explain how the different seasons affect plants, animals and daily human life

**3.3.K.I – Important**  
 Identify characteristics for animal and plant survival identified with seasonal changes

Changes in the seasons and weather affect our environment and everyday lives.

**3.5.K.F – Important**  
 Explore thermometers as tools for measuring temperature

**3.5.K.G – Essential**  
 Identify how weather affects daily circumstances

**3.1.K.G – Important**  
 Begin to use the understanding of patterns to make predictions

**3.1.K.K – Important**  
 Examine and explain change through simple observation and recording

**3.1.K.M – Compact**  
 Describe change to objects caused by heat, cold, light or chemicals

Identify the seasons and weather changes associated with each season

Describe how animals change during seasons

Describe how plants change through the seasons

State activities and changes that occur during each season

Topic: Seasons and Weather  
Subject(s): Science

Days: 10  
Grade(s): Knd.

Know:	Understand:	Do:
<p>The weather changes during each season</p> <p>Animal behaviors change during each season</p> <p>Plant life changes during each season</p> <p>Our daily lives change during each season</p>		

Topic: Water  
 Subject(s): Science

Days: 10  
 Grade(s): Knd.

Know:	Understand:	Do:
<p><b>4.1.K.A – Important</b>            Identify different bodies of water (e.g., creeks, rivers, streams, ponds, lakes, swamps, ocean)</p> <p><b>4.1.K.B – Important</b>            Begin to understand the differences between moving and still water</p> <p><b>3.2.K.A – Essential</b>            Build an introductory vocabulary of scientific terms</p> <p><b>3.4.K.A – Compact</b>            Understand the meaning of what matter is</p> <p><b>3.4.K.E – Compact</b>            Develop a working vocabulary that manages concepts of material characteristics</p> <p><b>3.5.K.I – Essential</b>            Identify stream, river, lake, and ocean</p> <p><b>3.5.K.K – Compact</b>            Identify examples of water in solid and liquid states</p> <p><b>3.5.K.L – Essential</b>            Identify a variety of uses for water</p> <p><b>3.1.K.J – Essential</b>            Recognize change</p>	<p>The world is made up of land and water. There are two different types of water that can be used in a variety of ways. Water is found in three states on Earth.</p>	<p><b>3.2.K.H – Essential</b>            Demonstrating willingness to modify explanations based on experience or observation</p> <p><b>3.2.K.K – Compact</b>            Test out solutions</p> <p><b>3.2.K.L – Compact</b>            Record steps taken</p> <p><b>3.2.K.M – Compact</b>            Record results</p> <p><b>3.4.K.B – Compact</b>            Describe properties of matter</p> <p><b>3.4.K.D – Compact</b>            Demonstrate an understanding that combining two or more substances can make new materials with different properties</p> <p><b>3.5.K.J – Essential</b>            Explore the difference between fresh and saltwater bodies</p> <p><b>3.1.K.K – Important</b>            Examine and explain change through simple observation and recording</p> <p><b>3.1.K.M – Compact</b>            Describe change to objects caused by heat, cold, light or chemicals</p>