SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Science	**Length of Course:** 30 cycles
Grade Level(s): 3	**Periods Per Cycle:** 3
Units of Credit: N/A	**Length of Period:** 30 minutes
Classification: Required	**Total Instructional Time:** 45 hours

Course Description

This course provides students with a foundation of skills in Life, Earth, and Physical Science.

Instructional Strategies, Learning Practices, Activities, and Experiences

- Anchor Charts
- Anticipatory Sets
- Bell Ringers
- Class Discussions
- Closure
- Critical Thinking
- Graphic Organizers
- Guided Reading
- Higher Level Questioning
- Homework
- Interaction Sequence
- Internet Research
- Journals
- Paper and Pencil Activities
- Posted Objectives
- Practice Exercises
- Presentations
- PSSA Released Materials
- Question-Answer Relationships
- Quizzes
- Reports and Speeches
- Research
- Small Group Interventions
- Teacher Demonstrations
- Teacher-Made Tests
- Technology Integration
- Videos/DVDs
- Wait-Time
- Wait-Time Extended

Assessments

- Homework
- Oral Projects
- Presentations
- Projects
- Reports
- Teacher Observations
- Teacher-Made Tests and Quizzes
- PSSA Practice Materials
- PSSA Item Samples

Materials/Resources

- FOSS (Full Option Science System)
- Guest Speakers
- Internet
- Leveled Readers
- Resource Books
- SAS (Standards Aligned System)
- Supplemental Readings
- Videos / DVDs

Adopted: 1/27/88
Revised: 9/3/91; 12/8/97; 11/15/01; 8/20/07; 5/19/14

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PLANNED COURSE: Science LEVEL: Grade 3

Science and Technology and Engineering Education

3.1 Biological Sciences **3.1.A Organisms and Cells**	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Common Characteristics of Life	3.1.3.A1. – Describe characteristics of living things that help to identify and classify them.
Energy Flow	3.1.3.A2. – Describe the basic needs of living things and their dependence on light, food, air, water, and shelter.
Life Cycles	3.1.3.A3. – Identify differences in the life cycles of plants and animals.
Form and Function	3.1.3.A5. - Identify the structures in plants that are responsible for food production, support, water transport, reproduction, growth, and protection.
Science as Inquiry	3.1.3.A9. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.1.B. Genetics	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Heredity	3.1.3.B1. - Understand that plants and animals closely resemble their parents.
Unifying Themes	3.1.3.B5. - PATTERNS - Identify characteristics that appear in both parents and offspring.
Science as Inquiry	3.1.3.B6. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.1.C. Evolution	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Natural Selection	3.1.3.C1. - Recognize that plants survive through adaptations, such as stem growth towards light and root growth downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors (e.g. hibernation, migration, trees shedding leaves).
Adaption	3.1.3.C2. - Describe animal characteristics that are necessary for survival.
Unifying themes	3.1.3.C3. - CONSTANCY AND CHANGE - Recognize that fossils provide us with information about living things that inhabited the Earth long ago.
Science as Inquiry	3.1.3.C4. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.2. Physical Sciences: Chemistry and Physics
3.2.A. Chemistry

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS
Properties of Matter	3.2.3.A1. - Differentiate between properties of objects such as size, shape, weight and properties of materials that make up the objects such as color, texture, and hardness. Differentiate between the three states of matter, classifying a substance as a solid, liquid, or gas.
Structure of Matter	3.2.3.A2. - Recognize that all objects and materials in the world are made of matter.
Matter and Energy	3.2.3.A3. - Demonstrate how heating and cooling may cause changes in the properties of materials including phase changes.
Reactions	3.2.3.A4. - Use basic reactions to demonstrate observable changes in properties of matter (e.g., burning, cooking).
Unifying Themes	3.2.3.A5. - CONSTANCY AND CHANGE - Recognize that everything is made of matter.

3.2.A. Chemistry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Science as Inquiry	3.2.3.A6. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.2.B. Physics	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Force and Motion of Particles and Rigid Bodies	3.2.3.B1. - Explain how movement can be described in many ways.
Energy Storage and Transformations: Conservation Laws	3.2.3.B2. - Explore energy's ability to cause motion or create change. Explore how energy can be found in moving objects, light, sound, and heat.
Heat/Heat Transfer	3.2.3.B3. - Explore temperature changes that result from the addition or removal of heat.
Electrical and Magnetic Energy	3.2.3.B4. - Identify and classify objects and materials that are conductors or insulators of electricity. Identify and classify objects and materials as magnetic or non-magnetic.
Nature of Waves (Sound and Light Energy)	3.2.3.B5. - Recognize that light travels in a straight line until it strikes an object or travels from one material to another.
Unifying Themes	3.2.3.B6. – 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.
Science as Inquiry	3.2.3.B7. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.3. Earth and Space Sciences
3.3.A. Earth Structure, Processes and Cycles

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS
Earth Features and the Processes that Change It	3.3.3.A1. - Explain and give examples of the ways in which **soil** is formed.
Earth's Resources/Materials	3.3.3.A2. - Identify the physical properties of minerals and demonstrate how minerals can be tested for these different physical properties.
Water	3.3.3.A4. - Connect the various forms of precipitation to the weather in a particular place and time.
Weather and Climate	3.3.3.A5. - Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.
Science as Inquiry	3.3.3.A7 – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.3.B. Origin and Evolution of the Universe	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Composition and Structure	3.3.3.B1. - Relate the rotation of the earth and day/night, to the apparent movement of the sun, moon, and stars across the sky. Describe the changes that occur in the observable shape of the moon over the course of a month.
Science as Inquiry	3.3.3.B3. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms, and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

3.4. Technology and Engineering Education
3.4.A. The Scope of Technology

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS
Characteristics of Technology	3.4.3.A1. - Identify how the natural made world and the human made world are different.
Core Concepts of Technology	3.4.3.A2. - Identify that some systems are found in nature while others are made by humans.

3.4.B. Technology and Society	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Effects of Technology	3.4.3.B1. - Describe how using technology can be good or bad.
Technology and Environment	3.4.3.B2. - Explain how materials are re-used or recycled.
Society and Development of Technology	3.4.3.B3. - Identify and define products made to meet individual needs versus wants.
Technology and History	3.4.3.B4. - Illustrate how people have made tools to provide food, clothing, and shelter.

3.4.C. Technology and Engineering Design	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Design Attributes	3.4.3.C1. - Recognize **design** is a creative process and everyone can design solutions to problems.
Engineering Design	3.4.3.C2. - Explain why the **design** process requires creativity and consideration of all ideas.
Research and Development, Invention and Innovation, Experimentation/Problem Solving and Troubleshooting	3.4.3.C3. - Recognize that all products and **systems** are subject to failure; many products and systems can be fixed.

3.4.D. Abilities for a Technological World	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Applying the Design Process	3.4.3.D1. - Identify people's needs and wants and define some problems that can be solved through the design process.
Using and Maintaining Technological Systems	3.4.3.D2. - Observe, analyze and document how simple **systems** work.
Assessing Impact of Products and Systems	3.4.3.D3. - Collect information about everyday products and systems by asking questions.

3.4.E. The Designed World	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Medical Technologies	3.4.3.E1. - Identify the technologies that support and improve quality of life.
Agricultural and Related Biotechnologies	3.4.3.E2. - Identify some processes used in agriculture that require different procedures, products, or systems.
Energy and Power Technologies	3.4.3.E3. - Recognize that tools, machines, products, and systems use energy in order to do work.
Information and Communication Technologies	3.4.3.E4. - Recognize that information and communication technology is the transfer of messages among people and/or machines over distances through the use of technology.
Transportation Technologies	3.4.3.E5. - Understand that transportation has many parts that work together to help people travel.
Manufacturing Technologies	3.4.3.E6. - Explain how manufacturing systems design and produce products in quantity.
Construction Technologies	3.4.3.E7. - Recognize that people live, work, and go to school in buildings representing different types of structures.

Environment and Ecology **4.1 Ecology**	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
The Environment	4.1.3.A. Differentiate between the living and nonliving components in an **environment**.
Energy Flow	4.1.3.C. - Identify sources of energy.
Biodiversity	4.1.3.D. - Identify **organisms** that are dependent on one another in a given **ecosystem**. • Define **habitat** and explain how a change in **habitat** affects an **organism**.
Succession	4.1.3.E. Identify changes in the **environment** over time.
Science as Inquiry	4.1.3.F. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

4.2 Watersheds and Wetlands	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Watersheds	4.2.3.A. - Define the term **watershed**. • Identify the **watersheds** in which you reside.
Wetlands	4.2.3.B. - Identify plants and animals found in a **wetland**.
Aquatic Ecosystem	4.2.3.C. - Identify plants and animals that live in lakes, ponds, streams, and **wetlands**.
Science as Inquiry	4.2.3.D. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

4.3 Natural Resources	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Use of Natural Resources	4.3.3.A. - Identify the **natural resources** used to make various **products**.
Availability of Natural Resources	4.3.3.B. - Identify local **natural resources**.
Science as Inquiry	4.3.3.C. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

4.4 Agriculture and Society	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Food and Fiber Systems	4.4.3.A. - Identify Pennsylvania crops that provide food for the table and **fiber** for **textiles**.
Importance of Agriculture	4.4.3.B. - Explain how **agriculture** meets the basic needs of humans.
Applying Sciences to Agriculture	4.4.3.C. - Use scientific inquiry to investigate what animals and plants need to grow.
Technology Influences on Agriculture	4.4.3.D. - Identify technology used in **agriculture**. • Identify tools and machinery used in agricultural processes.
Science as Inquiry	4.4.3.E. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.

4.5 Humans and the Environment	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
Sustainability	4.5.3.A. - Identify resources humans take from the **environment** for their survival.
Integrated Pest Management	4.5.3.B. - Define the term **pest** and identify various plants and animals that humans may call **pests**.
Pollution	4.5.3.C. - Identify different types of **pollution** and their sources.
Waste Management	4.5.3.D - Describe how waste is generated. • Identify and propose a solution for a waste issue in the school setting (e.g., **litter** in the hallway).
Science as Inquiry	4.5.3.F. – • Distinguish between scientific fact and opinion. • Ask questions about objects, organisms and events. • Understand that all scientific investigations involve asking and answering questions and comparing the answer with what is already known. • Plan and conduct a simple investigation and understand that different questions require different kinds of investigations. • 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. • Use data/evidence to construct explanations and understand that scientists develop explanations based on their evidence and compare them with their current scientific knowledge. • 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.