

**SCIENCE
GRADE 4**

PURPOSE

The fourth grade science program will continue to focus on using a broad range of science skills in understanding the natural world. The grade four curriculum integrates all the natural sciences so that the students can appreciate the ideas that unify the science and make the connections between these ideas and concepts.

Student will experience the richness and excitement of scientific discovery of the natural world through investigating phenomena and applying scientific concepts, skills and processes to everyday experiences. The aim of this program is to help students develop scientific dispositions and habits of mind including curiosity, demand for verification, respect for logic and rational thinking, attention to accuracy, precision and patience.

Making detailed observations, drawing conclusions and recognizing unusual or unexpected data are skills needed to be able to use and validate information. The science curriculum heightens critical thinking skills by providing opportunities for students to generalize, evaluate and apply information, and solve problems by asking appropriate questions. Utilizing scientific methodology is strongly reinforced.

I. Student Outcomes

A. Scientific Process

Students will:

1. Comprehend that most systems are components of larger systems.
2. Understand how components of a system influence and interact with one another.
3. Be able to communicate experimental findings using words, charts, graphs, pictures and diagrams.
4. Be able to collect and organize data to support the results of an experiment.
5. Determine that scientific theories emerge over time and depend on the contributions of many people.
6. Identify how people apply scientific knowledge using tools, technology, and other devices to solve problems.
7. Grasp how science uses mathematics as a tool to determine and support conclusions.

B. Life Science 5.5

Students will:

1. Determine the needs and characteristics of basic organisms. A, B, C
2. Describe lifecycles of organisms. B
3. Understand organisms and their environments. A

C. Physical Science 5.6

Students will:

1. Describe and sort objects according to the materials from which they are made and their physical properties. A
2. Recognize that matter can exist as a solid, liquid, or gas and can be transformed from one state to another by heating or cooling. A, B, 5.7 B
3. Demonstrate that motion of an object can vary in speed and direction. 5.7 A
4. Demonstrate that the position and motion of an object can be changed by pushing or pulling and that the changed is related to the strength of the push or pull. 5.7 A
5. Demonstrate an understanding of heat, light and magnetism. 5.7 B

D. Earth Science 5.8

Students will:

1. Observe and identify objects and their apparent motion in the day and night sky. 5.9, A, B, C, D
2. Relate the motions of the earth-sun-moon system to units of time (day, months, seasons, years). 5.9 A
3. Construct a model of the solar system. 5.9 B

II. CONTENT**A. Scientific Process 5.1**

1. Observing
 - a. Comparing and contrasting
 - b. Recognizing cause and effect
2. Organizing and Communicating Information 5.3
 - a. Classifying and sequencing
 - b. Using tables, graphs, charts and journals 5.3 D
3. Practicing Scientific Process 5.1
 - a. Forming a hypothesis
 - b. Testing a hypothesis through experiment
 - c. Representing and interpreting data 5.3 D

B. Life Science (Unit A Ch. 1, 2, 3,4)

1. Plant Structure and Function 5.5 A, B
 - a. How are plants grouped?
 - b. Parts of a flower
 - c. Seeds and Fruits
 - d. The life cycle of a flowering plant.
2. Animal Structure and Function 5.5 B, C
 - a. Animals alike and different
 - b. How do animals with backbones vary?
 - c. Which characteristics do animals get from their parents?
3. Energy in Ecosystems 5.5 A
 - a. What is an ecosystem?
 - b. How do plants get energy?
 - c. How do other living things get energy
 - d. Food chains and webs
4. Surviving in the Environment 5.10 A, B
 - a. What structures help plants and animals survive?
 - b. What behaviors help animals survive
 - c. The environment and survival.

C. Physical Science (Unit B Ch. 1, 3, 4)

1. Changing Matter
 - a. What is matter? 5.6 A
 - b. Measurement of length and volume 5.3 B
 - c. Mass and density 5.6 A
 - d. What are physical changes? 5.6 A
 - e. What are chemical changes? 5.6 A
2. Electricity and Magnetism 5.7 A, B
 - a. What is an electric current?
 - b. How do electric circuits work?
 - c. Magnetism and electricity
3. Light and Sound 5.7 B
 - a. What is light?
 - b. How does sound travel?
 - c. How do we hear sound?

D. Earth Science (Unit C Ch. 1,2,4, 3*optional, if time permits)

1. Measuring Weather 5.8 B
 - a. Sunlight and air temperature
 - b. Temperature and air movement
 - c. Clouds and precipitation
 - d. Weather prediction
2. The Makeup of the Earth 5.8
 - a. The Earth's surface A
 - b. Weathering and erosion B
 - c. Materials of the Earth A
 - d. Resources of the Earth A
3. Movements in the Solar System 5.9
 - a. Effects of the Earth's movement A
 - b. Effects of the Moon's movements A
 - c. How does the Earth compare with other planets?
B
 - d. Distant planets B
 - e. Objects in the solar system B

III. Evaluation

Students will:

- A. Be prepared and ready for work and prepare work neatly.
- B. Follow directions.
- C. Hand in completed class work and homework assignments.
- D. Participate in class discussions, activities and experiments.
- E. Prepare for and successfully complete all tests and quizzes.
- F. The final grade represents the teacher’s professional judgment of the student’s performance. All of the above areas are included in the evaluation process.

Recommended sequence for instruction:

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| 1. Life Science, Unit A | Plants and Animals, Chapters 1 and 2 |
| 2. Life Science, Unit A | Energy and Ecosystems, Chapter 3 |
| 3. Life Science, Unit A | Adaptations, Chapter 4 |
| 4. Physical Science, Unit B | Measuring Matter, Chapter 1 |
| 5. Physical Science, Unit B | Electricity/Magnetism, Chapter 3 |
| 6. Physical Science, Unit B | Light and Sound, Chapter 4 |
| 7. Earth Science, Unit C | Weather, Chapter 1** |
| 8. Earth Science, Unit C | Makeup of the Earth, Chapter 2 |
| 9. Earth Science, Unit C | Exploring the Oceans, Chapter 3* (Elective) |
| 10. Earth Science, Unit C | Movements/Solar System, Chapter 4 |
- (This chapter should be completed in coordination with Planetarium trip)

**The committee recommends discussion of weather through current forecasts and the use of technology in the classroom.

A. Text: Scott Foresman Science, 2000

B. Teacher Resources

1. Science Resource Kit
2. Teacher’s Assessment Package
3. Interactive Transparency
4. Lab Manual
5. www.sfscience.com
6. Habitat (Magic School Bus)
7. www.sciencenetlinks.com

****Include activity bank and quick quizzes**
Integrate with language arts literacy and social studies when appropriate

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