

**Midland Park Public Schools**  
**Midland Park, New Jersey 07432**  
**Science – Grade 4**

**I. Course Prerequisites**

Enrollment in Fourth Grade Science presumes mastery of Science grade 3 objectives.

**II. Course Description**

Students will study Life Science, Physical Science, and Earth Science units with an emphasis on process skills. Each unit will expose students to a variety of content in the domains of science as they relate to New Jersey Core Curriculum Standards.

**III. Course Performance Objectives**

Upon successful completion of the requirements of this course, the student will demonstrate proficiency in the knowledge and skills listed below:

**Life Science**

1. Describe the living and non-living parts of an ecosystem.
2. Discover how energy is transferred within an ecosystem.
3. Determine the basic needs of organisms.
4. Show that living things have different levels of organization.
5. Develop a classification scheme for grouping organisms.
6. Describe the life cycles of organisms.
7. Group organisms according to the functions they serve in the food chain.
8. Identify the characteristics of animals with and without backbones.
9. Recognize that most things are made of components that, when assembled, can do things they could not do separately.
10. Show that plants and animals are made up of different parts that work together.
11. Analyze the adaptations and behaviors that help animals and plants survive in varied habitats. Identify and describe external features of plants and animals that help them survive in varied habitats.
12. Recognize the diversity of plants and animals on Earth.
13. Recognize that individuals vary in every species.
14. Identify scientists, men and women, of varying cultures who have contributed to the field of life science.

**Physical Science**

1. Describe and sort objects according to the materials from which they are made and their physical properties.
2. Recognize that matter can exist as a solid, liquid, or gas and can be transformed from one state to another by heating and cooling.
3. Investigate matter by observing things under magnification. Measure matter.
4. Define work and comprehend the laws of motion.

5. Recognize that components of a system usually influence one another and may not work when a component is missing.
6. Demonstrate how everyday tools are used to do things better and more easily.
7. Identify simple, compound, and complex machines. Recognize that most things are made of components that, when assembled, can do things they could not do separately.
8. Examine and compare toys and other familiar **objects** and explain how they work.
9. Report on how technology helps people. Investigate electricity and magnetism and their effects on matter.
10. Comprehend how light and sound travel and how the human body sees light and hears sound.
11. Investigate sources of light and show how light behaves when it strikes different objects.
12. Demonstrate that the motion of an object can vary in speed and direction.
13. Demonstrate that the position of an object can be changed by pushing or pulling and that the change is related to the strength of the push or pull.
14. Recognize that some forces are invisible and can act at a distance.
15. Investigate sources of heat and show how heat can be transferred from one place to another.
16. Demonstrate how sound can be used by vibrating objects and how the pitch of the sound depends on the rate of vibration.
17. Demonstrate how electricity can be used to produce heat, light, and sound.
18. Identify scientists, men and women, of varying cultures who have contributed to the field of physical science.

### **Earth Science**

1. Collect and record weather data to identify existing weather conditions, and recognize how those conditions affect our daily lives.
2. Diagram the water cycle. Identify major sources and uses of water, discussing the different forms in which it appears.
3. Relate the motions of the earth-sun-moon systems to units of time (days, months, seasons, years).
4. Observe and identify objects and their apparent motion in the day and night sky.
5. Compare the Earth with other planets in the solar system.
6. Construct a model of the solar system.
7. Recognize that most things are made of components that, when assembled, can do things they could not do separately.
8. Recognize that components of a system usually influence one another and may not work if a component is missing.
9. Identify landforms of earth and describe how volcanoes, earthquakes, weathering and erosion affect the Earth's features.
10. Investigate materials that make up the earth, including rocks, minerals, soils, and fossils, and how they are formed.
11. Investigate the ocean.
12. Analyze the adaptations and behaviors that help plants and animals live in aquatic environments.

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14. Analyze the adaptations and behaviors that help plants and animals live in aquatic environments.
15. Recognize and demonstrate the use of different kinds of maps.
16. Recognize that natural resources are not always renewable.
17. Investigate the interdependence of living things and their environment.
18. Explain how meeting human requirements affects the environment.
19. Identify scientists, men and women, of varying cultures who have contributed to the field of earth science.

**Assessments:** Unit Quizzes/Tests, Daily Checking for Understanding (Exit Tickets/Discussions), Student Projects; Labs

## **2009 Science NJCCCS**

5.3.4.A.1 Develop and use evidence-based criteria to determine if an unfamiliar object is living or nonliving.

5.3.4.A.2 Compare and contrast structures that have similar functions in various organisms, and explain how those functions may be carried out by structures that have different physical appearances.

5.3.4.A.3 Describe the interactions of systems involved in carrying out everyday life activities.

5.3.4.B.1 Identify sources of energy (food) in a variety of settings (farm, zoo, ocean, forest).

5.3.6.B.2 Illustrate the flow of energy (food) through a community.

5.3.6.C.3 Describe how one population of organisms may affect other plants and/or animals in an ecosystem.

5.3.4.E.1 Model an adaptation to a species that would increase its chances of survival, should the environment become wetter, dryer, warmer, or colder over time.

5.3.4.E.2 Evaluate similar populations in an ecosystem with regard to their ability to thrive and grow.

5.2.4.A.4 Categorize objects based on the ability to absorb or reflect light and conduct heat or electricity.

5.2.2.A.2 Identify common objects as solids, liquids, or gases.

5.2.4.A.4 Categorize objects based on the ability to absorb or reflect light and conduct heat or electricity.

5.2.4.A.2 Plan and carry out an investigation to distinguish among solids, liquids, and gasses.

5.2.4.A.3 Determine the weight and volume of common objects using appropriate tools.

5.2.4.A.4 Categorize objects based on the ability to absorb or reflect light and conduct heat or electricity.

5.2.4.E.2 Identify the force that starts something moving or changes its speed or direction of motion.

5.2.4.E.4 Investigate, construct, and generalize rules for the effect that force of gravity has on balls of different sizes and weights.

5.4.4.A.1 Formulate a general description of the daily motion of the Sun across the sky based on shadow observations. Explain how shadows could be used to tell the time of day.

5.4.4.A.2 Identify patterns of the Moon's appearance and make predictions about its future appearance based on observational data.

5.4.6.A.1 Generate and analyze evidence (through simulations) that the Sun's apparent motion across the sky changes over the course of a year.

5.4.6.A.2 Construct and evaluate models demonstrating the rotation of Earth on its axis and the orbit of Earth around the Sun.

5.4.6.B.1 Interpret a representation of a rock layer sequence to establish oldest and youngest layers, geologic events, and changing life forms.

5.4.6.B.2 Examine Earth's surface features and identify those created on a scale of human life or on a geologic time scale.

5.4.4.G.3 Trace a path a drop of water might follow through the water cycle.

5.4.4.G.4 Model how the properties of water can change as water moves through the water cycle.