

Science – Grade 3

Course Prerequisites:

Enrollment in Science Grade 3 presumes mastery of Science Grade 2 course objectives.

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.

Course Performance Objectives:

Students will meet the below performance objectives and meet 2009 NJCCCS in Science in Life Science, Earth Science, Science Process Skills, and Physical Science.

A. Unit I: Life Science Knowledge

In this unit, students learn how plants live and grow and how flowering plants and conifers grow from seeds. Students will explore the life cycles of spiders, insects, fish, amphibians, and mammals and find out how animal babies learn. Students explore where living things live, how animals and plants are adapted to their environment, and how they get food. Finally, students learn how environments change and discover how people affect animals and plants.

B. Unit II Physical Science - Knowledge

In this unit, students will learn about matter and the physical and chemical changes matter undergoes. Students learn what makes things move and about gravity and magnetism. Students also discover simple machines and how they work. Students explore forms of energy, such as heat, light, and electricity. Finally, students discover how sound is made, how it travels, and how living things make and use sound.

C. Unit III Earth Science - Knowledge

In this unit, students learn how earthquakes, volcanoes, water and living things change the earth's land form. Students discover the characteristics of rocks and mines and explore how soil is formed. Students also investigate how the sun *affects* the Earth and how the moon moves. Finally, students explain the formation of clouds and describe the causes of storms.

Science Processing Skills:

1. Observing – Involves the use of all five senses to gather information about objects and events.
2. Communicating – Involves the use and sharing of words, pictures and body language.
3. Classifying – Involves the arranging or grouping objects according to common properties. Learn about, understand, and recognize the properties of objects. Create new ways to group objects.
4. Estimating and Measuring – Estimate the object's properties, then measure and describe them in either metric or customary units.
5. Inferring – Involves making a measurable guess based on what is observed.
6. Modeling – Involves making a representation or copy of something. Involves using tools for explaining ideas, objects, and events.

7. Formulating Questions and Hypotheses – Involves the pursuit of the scientific inquiry process beginning with asking a question because, sometimes, questions lead to even more useful ones. This also involves formulating a hypothesis and design experiments.
8. Collecting and Interpreting Data – Involves observing things and taking measurements and putting information on graphs, tables, charts, and/or diagrams.
9. Identifying and Controlling Variables – Involves changing and modifying a variable to ascertain the effects and/or results of experiments.
10. Experimenting – Involves the design of an investigation to solve a problem, i.e. stating the problem, formulating a hypothesis, identifying/controlling the variables, testing of hypotheses in experiments, collecting data, interpreting data, and the stating of conclusions. From this, conclusions can be drawn about whether or not one's data supports a hypothesis.

Assessments: Unit quizzes and tests; Daily Checking for Understanding (Exit and Entry Tickets/Discussions); Student Projects; and Labs.

2009 Science NJCCCS:

5.3.4.D.1 Compare the physical characteristics of the different stages of the life cycle of an individual organism, and compare the characteristics of life stages among species.

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.

5.2.2.B.1 Generate accurate data and organize arguments to show that not all substances respond the same way when heated or cooled, using common materials, such as shortening or candle wax.

5.2.4.B.1 Predict and explain what happens when a common substance, such as shortening or candle wax, is heated to melting and then cooled to a solid.

5.2.4.C.1 Compare various forms of energy as observed in everyday life and describe their applications.

5.2.4.C.2 Compare the flow of heat through metals and nonmetals by taking and analyzing measurements.

5.2.4.C.3 Draw and label diagrams showing several ways that energy can be transferred from one place to another.

5.4.4.C.1 Create a model to represent how soil is formed.

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.

5.1.4.A.1 Demonstrate understanding of the interrelationships among fundamental concepts in the physical, life, and Earth systems sciences.

5.1.4.A.3 Use scientific facts, measurements, observations, and patterns in nature to build and critique scientific arguments.

5.1.4.B.1 Design and follow simple plans using systematic observations to explore questions and predictions.

5.1.4.B.2 Measure, gather, evaluate, and share evidence using tools and technologies.

5.1.4.B.3 Formulate explanations from evidence.

5.1.4.B.4 Communicate and justify explanations with reasonable and logical arguments.

5.1.4.C.1 Monitor and reflect on one's own knowledge regarding how ideas change over time.

5.1.4.C.2 Revise predictions or explanations on the basis of learning new information.

5.1.4.C.3 Present evidence to interpret and/or predict cause-and-effect outcomes of investigations.

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