

Springfield Public Schools
SCIENCE

FIRST GRADE

COURSE DESCRIPTION

In first grade, science is taught on an average of three to four times weekly for 30 – 45 minutes within a regular self-contained classroom. The program emphasizes a hands-on approach to learning using the scientific process. Curriculum integration with communication arts and mathematics instructional goals is highly encouraged.

MAJOR INSTRUCTIONAL GOALS

The intent of the Springfield R-12 Science Program is:

1. The student will communicate scientific inquiry through questioning, observations and participation in simple investigations.
 - a. Employ simple tools to measure objects (length, mass, capacity, and temperature). (SC7; 1.4; **1.8; 2.1**)
 - Describe and compare the physical properties of objects by using simple tools (i.e., thermometer, magnifier, centimeter ruler, balance, magnet) (1.1.A.2.a.)
 - Given an equal-arm balance and various objects, illustrate arrangements in which the beam is balanced (1.1.A.1.a.)
 - Measure and compare the mass of objects (more/less) (1.1.A.1.b.)
 - Order objects according to mass (1.1.A.1.c.)
 - Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers) (7.1.B.K.b.)
 - Measure length, mass, and temperature using standard and non-standard units (7.1.B.1.c.)
 - b. Make observations using the senses and magnification. (SC7; **1.3; 1.5; 1.8; 2.1; 2.7**)
 - Make qualitative observations using the five senses (7.1.B.1.a.)
 - Describe physical properties of objects (i.e., size, shape, color, mass) by using the senses, simple tools (e.g., magnifiers, equal arm balances), and/or nonstandard measures (e.g., bigger/smaller; more/less) (1.1.A.K.a.)
 - Identify the sounds and their source of vibrations in everyday life (e.g., alarms, car horns, animals, machines, musical instruments) (1.2.A.K.a.)
 - Compare different sounds (i.e., loudness, pitch, rhythm) (1.2.A.K.b.)
 - c. Plan and conduct a simple investigation including predictions on the outcome. (SC7; 1.1; 1.2; **1.8**)
 - Pose questions about objects, materials, organisms and events in the environment (7.1.A.K.a.) (7.1.A.1.a.) (7.1.A.2.a.) (7.1.A.3.a.)
 - Use observations to describe relationships and patterns and to make predictions to be tested (7.1.C.1.b.)
 - d. Use words, pictures, models, and numbers to communicate observations, investigations and explanations. (SC7; 1.4; **1.5; 1.8**)
 - Communicate observations using words, pictures, and numbers (7.1.E.K.a.)
 - Use observations as support for reasonable explanations (7.1.C.1.a.)
 - Compare explanations with prior knowledge (7.1.D.1.a.)
 - Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, pictograph), writings (7.1.E.1.a.)
2. The student will demonstrate an understanding of how science enables people to gain knowledge, create solutions, and invent things.

- a. Develop and use strategies to solve simple problems encountered in the school community. (SC8; 3.1; 3.2; 3.3)
 - b. Investigate the need for team work and sharing of findings. (SC8; **2.3**; **2.4**)
3. The student will understand that women and men of all ages, backgrounds and groups engage in a variety of scientific work.
- a. Investigate major scientific contributions made by men and women throughout history. (SC8; **1.2**; 1.4)
 - b. Apply the need for observation, comparison of data, and reproducing experiments. (SC7; 1.2; **1.3**; **3.5**)
 - Compare amounts/measurements (7.1.B.1.d.)
 - Describe how tools have helped scientists make better observations (e.g., magnifiers, balances, thermometers) (8.1.B.1.a.)
4. The student will observe the effects of science and technology on our society.
- a. Identify everyday uses of technology and uses of technology in the workplace. (SC8; **1.3**)
 - b. Design and report on an invention that addresses an everyday problem or task. (SC8; 3.2; 3.3; **3.5**; 3.6)
5. The student will explore needs and characteristics of living organisms and their interaction with natural and man-made factors.
- a. Examine characteristics and structures of plants and describe their basic needs. (SC3; 1.6)
 - Identify light from the Sun as a basic need of most plants (1.2.C.1.a.)
 - Identify the basic needs of most plants (i.e., air, water, light) (3.1.A.1.b.)
 - Identify and compare the physical structures of a variety of plants (e.g., stem, leaves, flowers, seeds, roots) (3.1.D.1.a.)
 - b. Examine characteristics and structures of animals and describe their basic needs. (SC3; 1.6)
 - Identify the basic needs of most animals (i.e., air, water, food, shelter) (3.1.A.1.a.)
 - Identify and compare the physical structures of a variety of animals (e.g., sensory organs, beaks, appendages, body covering) (Do NOT assess terms: sensory organs, appendages) (3.1.D.1.b.)
 - c. Identify characteristics and structures common to individuals of a species. (SC3; 1.3; 1.6; 2.4)
 - Distinguish between plants and animals based on observable structures and behaviors (3.1.E.1.a.)
 - d. Identify ways living organisms depend on other living organisms and the environment to meet their basic needs. (SC4; 3.5; 3.6; 4.6)
 - Predict and investigate the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water) (3.1.A.1.c.)
 - Describe how the seasons affect the behavior of plants and animals. (4.1.A.K.a.)
 - Describe how the seasons affect the everyday life of humans (e.g., clothing, activities) (4.1.A.K.b.)
 - Identify ways man depends on plants and animals for food, clothing, and shelter (4.1.A.1.a.)
 - e. Demonstrate an awareness that humans are similar to other living organisms. (SC3; 1.6; 3.5)

6. The student will explore the basic elements of the universe and observe objects in the sky.
- a. Describe the position of an object relative to another object including the sun, earth, and the moon. (SC6; 1.8; 1.10)
 - Describe an object's position relative to another object (e.g., above, below, in front of, behind) (2.1.A.K.a.)
 - Compare the position of an object relative to another object (e.g., left of or right of) (2.1.A.1.a.)
 - Observe and describe the presence of the Sun, moon, and stars in the sky (6.1.A.K.a.)
 - Observe the moon can be seen sometimes at night and sometimes during the daytime (6.2.B.K.a.)
 - b. Identify major sources of water (e.g. oceans, glaciers, rivers, groundwater, atmosphere). (SC5; 1.1; 1.2; 1.3; 1.4; 2.4)
 - c. Organize and share information about the earth, moon, sun, and stars to determine patterns, changes, and relationships. (SC6; 1.2; 1.3; 1.8; 3.5)
 - d. Describe measurable characteristics of weather such as: temperature, wind direction and speed, and precipitation. (SC5; 1.1; 1.2; 1.3; 2.4)
 - Recognize moving air is felt as wind (5.1.C.K.a.)
 - Observe and describe the general weather conditions that occur during each season (5.2.F.K.b.)
 - Observe, measure, record weather data throughout the year (i.e., cloud cover, temperature, precipitation, wind speed) by using thermometers, rain gauges, wind socks (5.2.F.1.a.)
7. The student will investigate the properties of force, matter and motion.
- a. Demonstrate how forces produce many types of motion (stopping, starting, falling, straight, zigzag, circular, vibration). (SC2; 2.1; 2.4)
 - Identify sources of thermal energy (e.g., Sun, stove, fire, body) that can cause solids to change to liquids, and liquids to change to gas (1.2.A.3.a.)
 - Describe an object's motion as straight, circular, vibrational (back and forth), zigzag, stopping, starting, or falling (2.1.A.1.b.)
 - b. Demonstrate that objects are attached to the Earth by gravitational pull. (SC6; 2.1 2.4)
 - Describe Earth's gravity as a force that pulls objects on or near the Earth toward the Earth without touching the object (2.2.B.2.a.)
 - c. Describe how the motion of objects can be changed by pushing and pulling. (SC2; 1.1; 1.6; 2.4)
 - Identify ways (push, pull) to cause some objects to move by touching them (2.2.A.K.a)
 - Identify the force (i.e., push or pull) required to do work (move an object) (2.2.A.1.a.)
 - Measure (using non-standard units) and compare the force (i.e., push or pull) required to overcome friction and move an object over different surfaces (i.e., rough, smooth) (2.2.A.2.c.)
 - Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop) (2.2.D.1.a.)

- d. Demonstrate that materials exist in different states and some materials, such as water, can be changed from one state to another by way of heating and cooling. (SC1; 1.2; 1.3; 1.4; 1.6; 1.8; 2.3; 4.1)
- Compare the temperature of hot and cold objects using a simple thermometer (1.2.A.1.b.)
 - Describe the change in temperature of an object as warmer or cooler (1.2.A.1.c.)
 - Identify everyday objects/substances as solid, liquid, or gas (e.g., air, water) (1.1.D.3.b.)
 - Measure and compare the temperature of water when it exists as a solid to its temperature when it exists as a liquid (1.1.d.3.d.)
 - Investigate and recognize water can change from a liquid to a solid (freeze), and back again to a liquid (melt), as the result of temperature changes (1.1.D.3.e.)
 - Observe and describe ways water, both as a solid and liquid, is used in every day activities at different times of the year (e.g., bathe, drink, make ice cubes, build snowmen, cook, swim) (5.3.A.1.a.)
- e. Describe heat as a form of energy; how it can affect common objects and how it is involved in everyday life. (SC1; 1.2; 1.3; 1.6; 2.1; 4.1)
- Identify the source of energy that causes an increase in the temperature of an object (e.g., Sun, stove, flame, light bulb) (1.2.A.1.a.)
- f. Demonstrate that light travels in a straight line until it strikes an object. (SC1; 1.2; 1.3; 2.1)
- Recognize light can be transferred from the source to the receiver (eye) through space (1.2.A.3.c.)

*Processing skills in **bold print** are assessed by the Missouri Assessment Program at this grade level.