

**Springfield Public Schools**  
**SCIENCE**

**KINDERGARTEN**

**COURSE DESCRIPTION**

Science in kindergarten is taught for 30-40 minutes three to four times weekly within a regular self-contained classroom. The program emphasizes a hands-on approach to learning using the scientific process. Curriculum integration with other content areas is highly encouraged.

**MAJOR INSTRUCTIONAL GOALS**

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

1. The student will communicate scientific ideas through questioning and observation.
  - a. Work with a group to solve a problem giving due credit to the ideas and contributions of each group member. (SC 7; 2.3; 3.6; 4.4; 4.6)  
Conduct a simple investigation (fair test) to answer a question (7.1.A.K.b.)  
Plan and conduct a simple investigation (fair test) to answer a question (7.1.A.1.b.) (7.1.A.2.b.)
  - b. Ask questions and make observations relating objects, organisms, and events in the environment. (SC 4; SC 7, 1.1)  
Make qualitative observations using the five senses (7.1.B.K.a.)  
Compare explanations with prior knowledge (7.1.B.K.d.)  
Pose questions about objects, materials, organisms and events in the environment (7.1.A.K.a.) (7.1.A.1.a.)  
Sort objects based on observable physical properties (e.g., size, material, color, shape, mass) (1.1.A.1.c.)
  - c. Measure objects or conditions using appropriate tools. (SC 7; 1.3)  
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.1.a.)  
Identify materials (e.g., cloth, paper, wood, rock, metal) that make up an object and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility) (1.1.A.1.b.)  
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.)  
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.)  
Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers) (7.1.B.K.b.) (7.1.B.1.b.)  
Measure length and mass using non-standard units (7.1.B.K.c.)  
Compare amounts/measurements (7.1.B.K.d.)
2. The student will recognize that science is one way people answer and explain questions about the natural world.
  - a. Investigate the effects of past scientific contributions on current human populations. (SC 8; 4.3; 4.8)
  - b. Predict possible consequences new ideas and inventions might have on human populations. (SC 8; 3.6; 3.7; 3.8; 4.7)

- c. Demonstrate recognition of how people use observations and predictions in their jobs. (SC 8; 4.8)  
Use observations as support for reasonable explanations (7.1.C.K.a.)
  - d. Classify objects into two groups; objects that occur in nature and objects designed and made by human-kind. (SC 8; 1.6)  
Recognize some objects occur in nature (natural objects); others have been designed and made by people (8.1.A.K.a.) (8.1.A.1.a.)
  - e. Use simple tools and construction materials. (SC 8; 1.3)  
Describe how tools have helped scientists make better observations (i.e., magnifiers) (8.1.B.K.a.)
3. The student will develop an interest in exploring the needs and characteristics and structures of living organisms.
- a. Sort living organisms by types, and by characteristics and structures. (SC 4; 1.5)  
Observe and compare the structures and behaviors of different kinds of plants and animals (3.1.D.K.a.)  
Distinguish between plants and animals based on observable structures and behaviors (3.1.E.1.a.)
  - b. Identify characteristics that determine whether an object or material is living or nonliving and apply that knowledge to unknown samples. (SC 3; 1.2; 1.3; 1.6)  
Identify the basic needs of most animals (i.e., air, water, food, shelter) (3.1.A.1.a.)  
Identify the basic needs of most plants (i.e., air, water, light) (3.1.A.1.b.)
  - c. Demonstrate an understanding that all living things require water for survival. (SC 1; 1.4; 1.8; 2.3; 2.7)  
Describe the basic needs of most plants (i.e., air, water, light, nutrients, temperature) (3.1.A.3.a.)  
Identify ways man depends on plants and animals for food, clothing, and shelter (4.1.A.1.a.)
  - d. Identify and discuss the similarities and differences between parents and their offspring. (SC 3; SC 4; 1.3; 1.6; 2.4)  
Recognize that living things have offspring (3.3.D.K.a.)  
Recognize a parent – offspring relationship based on the organisms' physical similarities and differences (3.3.D.K.b.)  
Identify and relate the similarities and differences between animal parents and their offspring (3.3.D.2.a.)  
Recognize similarities and differences among multiple offspring of an animal parent (3.3.D.2.b.)
4. The student will explore the basic elements of land, air, water, and weather.
- a. Classify rocks using their physical properties.  
Observe and describe the physical properties of rocks (e.g., size, shape, color, presence of fossils) (5.1.A.2.b.)
  - b. Investigate and compare the composition of soil in different locations.  
Observe and describe the physical properties (e.g., odor, color, appearance, relative grain size, texture, absorption of water) and different components (i.e., sand, clay, humus) of soils (5.1.A.2.a.)
  - c. Identify the differences between bodies of water.
  - d. Collect and record weather data and describe how daily activities are affected by weather. (SC 5; 1.3; 1.6; 3.3)  
Recognize moving air is felt as wind (5.1.C.K.a.)  
Observe and describe daily weather: precipitation (e.g., snow, rain, sleet, fog), wind (i.e., light breezes to strong wind), cloud cover, temperature (5.2.F.K.a.)  
Observe and describe the general weather conditions that occur during each season (5.2.F.K.b.)  
Observe and describe the characteristics of the four seasons as they cycle through the year (summer, fall, winter, spring) (6.2.C.K.a.)

5. The student will explore the basic elements of the universe.
  - a. Identify the sun, earth, and moon and recognize patterns of movement through observation of objects in the sky. (SC 6; **1.6; 3.5**)
    - Observe and describe the presence of the Sun, moon, and stars in the sky (6.1.A.K.a.)
    - Recognize there are more stars in the sky than anyone can easily count, but they are not scattered evenly and vary in brightness (6.1.A.K.b.)
    - Recognize the Sun appears to move across the sky from morning to night (6.2.A.K.b.)
    - Recognize the moon appears to change shape over the course of a month (6.2.B.K.b.)
  - b. Understand the basic concepts of night and day. (SC 6; SC7; **4.1**)
    - Describe the Sun as only being seen in the daytime (6.2.A.K.a.)
  - c. Explain that the sun lights and heats up the earth. (SC 6; 3.1)
    - 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.)
6. The student will investigate the properties of matter by describing objects, their characteristics and their behavior.
  - a. Identify physical properties of objects according to specific properties using the senses and simple tools (e.g. size, shape, color and texture). (SC 1; 1.4; **1.6; 4.1**)
    - 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 materials (e.g., cloth, paper, wood, rock, metal) that make up an object and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility) (1.1.A.K.b.)
    - Sort objects based on observable physical properties (e.g., size, material, color, shape, mass) (1.1.A.K.c.)
  - b. Describe the position of one object relative to another object or the background. (SC 2; 1.4; **1.8**)
    - 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.)
  - c. Demonstrate the effect a magnet has on another magnet and on other objects (SC 2; 3.2; 3.3; **3.5**)
    - Recognize magnets cause some objects to move without touching them (2.2.A.K.b.)
    - Recognize magnets attract and repel each other and certain materials (2.2.A.2.a.)
    - Describe magnetism as a force that can push or pull other objects without touching them (2.2.A.2.b.)
    - 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.)
  - d. Recognize that materials exist in different states and can be grouped into categories of solids and liquids. (SC 1; **1.6; 1.8; 2.3; 4.1**)
    - 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.)

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