

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

**THIRD GRADE**

**COURSE DESCRIPTION**

Science in third grade is taught on a daily basis approximately 45 minutes each day within a regular self-contained classroom. The third grade student will be introduced to different objectives in the areas of matter, force and motion, earth systems, the universe, and living systems. The program emphasizes a hands-on approach to learning and scientific inquiry.

**MAJOR INSTRUCTIONAL GOALS**

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

1. The student will use the scientific method to plan and conduct hands-on investigations.
  - a. Use simple metric tools to accurately measure objects (length, mass, capacity and temperature) and record the data. (SC7; 1.4; **1.8**; 2.1)

Describe and compare the masses of objects to the nearest gram using balances (1.1.A.4.a.)  
Describe and compare the volumes (the amount of space an object occupies) of objects using a graduated cylinder (1.1.A.4.b.)  
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 qualitative observations using the five senses (7.1.B.3.a.) (7.1.B.5.a.)  
Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders) (7.1.B.3.b.)  
Measure length to the nearest centimeter, mass using grams, temperature using degrees Celsius, volume using liters (7.1.B.3.c.)  
Compare amounts/measurements (7.1.B.3.d.)  
Judge whether measurements and computation of quantities are reasonable (7.1.B.3.e.) (7.1.B.5.e.)

- b. Use words, pictures, model, numbers, graphs, charts and maps to organize and communicate observations, ideas and explanations from investigations. (SC7; 1.4; **1.5**; **1.8**; **2.1**; 2.7; **4.1**)

Use observations as support for reasonable explanations (7.1.C.2.a.)  
Use observations to describe relationships and patterns and to make predictions to be tested (7.1.C.2.b.)  
Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, single line, pictograph), writings (7.1.E.3.a.)

- c. Plan and conduct simple investigations that involve the manipulation of one variable while all others are held constant. (SC7; 1.1; 1.2; **1.3**; 1.4; **2.1**; 3.1)  
Plan and conduct a simple investigation (fair test) to answer a question (7.1.A.1.b.) (7.1.A.2.b.) (7.1.A.3.b.)

2. The student will demonstrate knowledge of the effects science and technology has on people and environment.
  - a. Identify individuals from various backgrounds that have advanced science and technology through their contributions. (SC8; **1.5**; **2.1**)

- b. Evaluate safety and security as basic needs of humans and that safety involves freedom from danger, risk and injury. (SC8; 2.3; **3.5**)
  - c. Describe the various ways in which science and technology impact careers and occupational areas. (SC8; 1.10; 4.3; 4.8)
  - d. Design alternative strategies to solve existing and potential technological problems, analyze and evaluate alternatives by comparing strengths and weaknesses. (SC8; 3.6; 3.7; 3.8)
3. The students will explore biological concepts through experiences with organisms, life cycles and habitats.
- a. Observe and record the phases in the life cycle of different types of organisms. (SC; **1.3; 1.6**)
    - Recognize that animals progress through life cycles of birth, growth and development, reproduction, and death (3.1.B.2.a.)
    - Record observations on the life cycle of different animals (e.g., butterfly, frog, chicken) (3.1.B.2.b.)
    - Sequence the stages in the life cycle of animals (i.e., butterfly, frog, chicken) (3.1.B.2.c.)
    - Recognize plants progress through life cycles of seed germination, growth and development, reproduction, and death (3.1.B.3.a.)
    - Sequence and describe the stages in the life cycle of a flowering plant (3.1.B.3.b.)
  - b. Demonstrate recognition that plants need energy from sunlight and various raw materials to live. (SC3; 1.2; **1.3; 3.5**)
    - Describe the basic needs of most plants (i.e., air, water, light, nutrients, temperature) (3.1.A.3.a.)
    - Identify sunlight as the primary source of energy plants use to produce their own food (4.2.A.3.a.)
  - c. Differentiate whether characteristics are inherited from parents or acquired as a result of interaction with the environment. (SC3; 3.4)
    - Identify and relate the similarities and differences between plants and their offspring (i.e., seedlings) (3.3.D.3.a.)
  - d. Apply knowledge gained through investigations to determine how variations provide an advantage in survival and reproduction. (SC3; **1.3**)
    - Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism) (4.1.A.4.a.)
  - e. Demonstrate the recognition of the interrelationship of organisms in a food chain, including producer and consumer. (SC4; **3.5**)
    - Classify populations of organisms as producers or consumers by the role they serve in the ecosystem (4.2.A.3.b.)
    - Predict the possible effects of removing an organism from a food chain (4.2.A.3.d.)
  - f. Observe and record environmental changes and the reaction of organisms over time (SC4; **1.10; 2.3**)
4. The student will recognize properties, patterns, and movements of the solar system and the universe, as well as investigate space exploration.
- a. Describe the motion of the Earth in relation to the Sun and how it relates to the seasons. (SC6; **1.3; 1.6; 2.1**)
    - Recognize the Sun as the primary source of energy for temperature change on Earth (1.2.C.5.a.)
    - Describe the changes in length and position (direction) of shadows from morning to midday to afternoon (6.2.C.3.b.)

Describe how the Sun's position in the sky changes the length and position of shadows (6.2.C.3.c.)  
Relate changes in the length and position of a shadow to the time of day and apparent position of the Sun in the sky, as determined by Earth's rotation (6.2.C.5.b.)

- b. Describe what a manned and unmanned space mission involves. (SC8; 1.1; 2.1)
  - c. Explore how telescopes and satellites allow scientists to observe objects in the sky. (SC6; 1.4; 1.10)
  - d. Demonstrate the relationship that the rotation of the earth has on the day/night cycle. (SC6; 1.3; 1.6; 2.1)
    - Recognize the Earth rotates once every 24 hours (6.2.C.5.a.)
    - Relate the apparent motion of the Sun, moon, and stars in the sky to the rotation of the Earth (Do not assess apparent motion of polar constellations) (6.2.C.5.c.)
  - e. Compare and contrast properties of the moon and the earth including moon phases. (SC6; 1.6; 2.1)
    - Observe the change in the moon's appearance relative to time of day and month over several months and note the pattern in this change (6.2.B.3.b.)
    - Sequence images of the lit portion of the moon seen from Earth as it cycles day-to-day in about a month in order of occurrence (Do NOT assess cause of moon phases) (6.2.B.5.a.)
    - Recognize there is a day/night cycle every 24 hours (6.2.C.3.a.)
5. The student will investigate the earth and its physical properties.
- a. Compare and categorize rocks, soils, and minerals on the basis of physical characteristics and their movement. (SC5; 1.6)
    - 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.)
    - Observe and describe the physical properties of rocks (e.g., size, shape, color, presence of fossils) (5.1.A.2.b.)
    - Identify and describe the components of soil (e.g., plant roots and debris, bacteria, fungi, worms, types of rock) and its properties (e.g., odor, color, resistance to erosion, texture, fertility, relative grain size, absorption rate) (5.1.A.4.a.)
    - Compare the physical properties (i.e., size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties) (5.1.A.4.b.)
  - b. Evaluate patterns and relationships in information to predict and identify areas that store water. (SC5, 1.3; 1.6; 2.4; 3.5)
    - Classify major bodies of surface water (e.g., rivers, lakes, oceans, glaciers) as fresh or salt water, flowing or stationary, large or small, solid or liquid, surface or groundwater (5.1.B.5.a.)
    - Relate the type of water body to the process by which it was formed (5.1.B.5.b.)
  - c. Observe and describe the effects of the environment on a variety of objects (dissolving, weathering, shrinking, melting, and rusting). (SC4; 1.10, 2.3)
    - Identify water as a solvent that dissolves materials (Do NOT assess the term solvent) (1.1.B.4.a.)
    - Observe and recognize examples of slow changes in the Earth's surface and surface materials (e.g., rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind (5.2.A.2.a.)
6. The student will investigate the properties of matter and laws of force and motion and the relationship between them.
- a. Use appropriate tools to measure mass and the force of gravity on objects. (SC2; 1.3; 1.4)
    - Determine the gravitational pull of the Earth on an object (weight) using a spring scale (2.2.B.4.a.)

- b. Plan and conduct investigations to study the effects of magnetic force on the motion of an object. **(SC2; 1.2; 1.3; 1.6; 2.1)**  
 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.)
- c. Analyze the relationship of the amount of force applied to an object, the mass of an object, and the amount of change in the object's motion. **(SC2; 1.6)**  
 Describe the direction and amount of force (i.e., direction of push or pull, strong/weak push or pull) needed to change an object's motion (i.e., faster/slower, change in direction) (2.2.D.2.a.)  
 Describe and compare the distances traveled by heavier/lighter objects after applying the same amount of force (i.e., push or pull) in the same direction (2.2.D.2.b.)  
 Describe and compare the distances traveled by objects with the same mass after applying different amounts of force (i.e., push or pull) in the same direction (2.2.D.2.c.)  
 Recognize that balanced forces do not affect an object's motion (2.2.D.4.a.)  
 Describe how unbalanced forces acting on an object changes its speed (faster/slower), direction of motion, or both (2.2.D.4.b.)  
 Explain how increasing or decreasing the amount of force on an object affects the motion of that object (2.2.D.4.c.)  
 Explain how the mass of an object (e.g., cars, marbles, rocks, boulders) affects the force required to move it (2.2.D.4.d.)  
 Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object (2.2.D.4.e.)  
 Describe how friction affects the amount of force needed to do work over different surfaces or through different media (2.2.D.5.a.)
- d. Demonstrate the uses and advantages of simple machines and their effect on work. **(SC2; 1.2; 1.3; 1.6)**  
 Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height, with or without using inclined planes (ramps) of different slopes (2.2.F.2.a.)  
 Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height, with or without using levers (2.2.F.2.b.)  
 Apply the use of an inclined plane (ramp) and/or lever to different real life situations in which objects are raised (2.2.F.2.c.)  
 Recognize simple machines change the amount of effort force and/or direction of force (2.2.F.5.b.)  
 Identify the simple machines in common tools and household items (2.2.F.5.d.)  
 Compare the measures of effort force (measured using a spring scale to the nearest Newton) needed to lift a load with and without the use of simple machines (2.2.F.5.c.)
- e. Conduct investigations to study the effects of an electrostatic force on an object. **(1.3; 1.6)**  
 Predict the effects of an electrostatic force (static electricity) on the motion of objects (attract or repel) (2.2.D.4.f.)

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