

Springfield Public Schools
SCIENCE

SECOND GRADE

COURSE DESCRIPTION

Science in second grade is taught on a daily basis for 30 – 45 minutes within a regular self-contained classroom. The second grade student will be introduced to different objectives within the area of science processes, the environment, matter and energy, earth science, and life science. 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 conduct simple hands-on science investigations and use tools to gather data.
 - a. Use simple metric tools to accurately measure objects (length, mass, capacity and temperature) then record data. (SC7; 14.; **1.8; 2.1**).
 - Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers) (7.1.B.2.b.)
 - Measure length, mass, and temperature using standard and non-standard units (7.1.B.2.c.)
 - Compare amounts/measurements (7.1.B.2.d.)
 - Measure and compare the mass of objects (more/less) (1.1.A.1.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.)
 - b. Make observations and demonstrate the distinction between actual observation and speculations. (SC7; **1.3; 1.5; 1.8; 3.3; 3.7**)
 - 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.)
 - Make qualitative observations using the five senses (7.1.B.2.a.)
 - c. Use words, pictures, models, numbers, graphs, charts, and maps to organize and communicate observations and ideas. (SC7; 1.4; **1.5; 1.8; 2.1; 2.2; 2.7; 4.1**)
 - Use observations as support for reasonable explanations (7.1.C.2.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.2.a.)
 - Given an equal-arm balance and various objects, illustrate arrangements in which the beam is balanced (1.1.A.1.a.)
 - Order objects according to mass (1.1.A.1.c.)
 - d. Predict or hypothesize the outcome of a simple process or event. (SC7; 1.1; 1.2; **1.3**)
 - Use observations to describe relationships and patterns and to make predictions to be tested (7.1.C.2.b.)
 - Compare explanations with prior knowledge (7.1.D.2.a.)
 - Plan and conduct a simple investigation (fair test) to answer a question (7.1.A.1.b.) (7.1.A.2.b.)

2. The student will demonstrate knowledge of the impact that science has on people and the environment.
 - a. Predict problems that might occur to people, organisms, and the environment and a technological solution for each. (SC8; 1.4; **1.6**; 3.1; 3.2; 3.3)
 - Design and construct a musical instrument using materials (e.g., cardboard, wood, plastic, metal) and/or existing objects (e.g., toy wheels, gears, boxes, sticks) that can be used to perform a task (Assess Locally) (8.1.A.2.a.)
 - Describe how tools have helped scientists make better observations, measurements, or equipment for investigations (e.g., magnifiers, balances, stethoscopes, thermometers) (8.1.B.2.a.)
 - b. Plan relevant strategies using tools to solve simple environmental and social problems that a school and community encounter. (SC8; 1.2; **1.3**; 1.4; 3.1; 3.3)
3. The student will understand that women and men of all ages, backgrounds and groups engage in a variety of scientific work.
 - a. Explain the ways in which science and technology impact a variety of careers and occupational areas. (SC8; 1.10; 4.8)
 - b. Discuss recent increases in technological advances and identify resulting cause and effect relationships. (SC8; 1.2; 2.4; **4.1**)
 - c. Classify products and materials that can be and cannot be recycled. (SC8; **1.6**; **1.8**)
4. The student will explore the needs and characteristics of living organisms, their life cycles and their interdependence with the environment.
 - a. Make and record observations of the phases in the life cycle of different types of organisms. (SC3; 1.2; **1.3**)
 - 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. Explain that an organism's ability to survive is dependent on its physical characteristics and the space and condition of the environment. (SC3; 1.1; 1.2; **1.3**; **1.5**; **1.6**; 2.4)
 - c. Discuss changes that living organisms have on their environment and other living things over time. (SC4; 1.2; **1.6**; 2.1)
 - d. List a variety of resources from the living and nonliving environment, that humans depend on to meet the needs and wants of a population. (SC4; 1.6)
 - Identify ways man depends on plants and animals for food, clothing, and shelter (4.1.A.1.a.)
 - e. Organize information and ideas for human body structures in relationship to growth and survival. (SC3; 1.2; 2.4)
5. The student will investigate earth's physical features and natural forces and observe patterns in the solar system.

- a. Determine through research and information ideas about the uses and abuse of the earth's natural resources. (SC5; 1.1; 1.2; 1.4)
 - b. Classify a variety of rocks, soil types, and minerals according to their usefulness as natural resources. (SC5; 1.3)
 - Observe and describe ways humans use Earth's materials (e.g., soil, rocks) in daily life (5.3.A.2.a.)
 - c. Diagram the motion of an object by tracing its position over time (for example; pattern and relationship of the earth and sun during the day/night cycle. (SC6; 1.6; 3.5)
 - Illustrate and describe how the Sun appears to move slowly across the sky from east to west during the day (6.2.A.3.a.)
 - Illustrate and describe how the moon appears to move slowly across the sky from east to west during the day and/or night (6.2.B.3.A.)
 - d. Investigate and evaluate weathering processes and changes in the earth's surface over time. (SC5; 1.3)
 - 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.)
 - e. Identify and label the sequence of the water cycle
 - Recognize liquid water can change into a gas (vapor) in the air (5.1.C.3.a.)
 - 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.c.)
 - f. Identify and describe forms of precipitation
 - g. Measure and predict weather changes over time.
 - 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.)
 - Compare temperatures in different locations (e.g., inside, outside, in the sun, in the shade) (5.2.F.1.b.)
 - Compare weather data observed at different times throughout the year (e.g., hot vs. cold, cloudy vs. clear, types of precipitation, windy vs. calm) (5.2.F.1.c.)
 - Recognize patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation) (5.2.F.1.d.)
6. The student will investigate the properties of matter and energy.
- a. Identify and classify objects according to the properties of the materials from which they are made. (SC1; 1.3; 1.4; 1.6)
 - b. Separate, sort, and group the components of a mixture by their properties.
 - Classify objects as "one kind of material" or a mixture (1.1.A.2.b.)
 - Observe and describe how mixtures are made by combining solids (1.1.B.2.a.)
 - Describe ways to separate the components of a mixture by their physical properties (e.g., sorting, magnets, screening) (1.1.B.2.b.)
 - Observe and describe how mixtures are made by combining solids or liquids, or a combination of these (1.1.B.4.b.)
 - Distinguish between the components in a mixture (e.g., trail mix, conglomerate rock, salad) (1.1.B.4.c.)
 - c. Investigate the properties of sound. (SC1; 1.1; 1.2; 1.4; 1.6)
 - Recognize that sound travels through different mediums (i.e., air, water, solids) (1.2.A.2.a.)
 - Describe different ways to change the pitch of a sound (i.e., changes in size, such as length or thickness, and in tightness/tension of the source) (1.2.A.2.b.)
 - Describe how the ear serves as a receiver of sound (i.e., sound vibrates eardrum) (1.2.A.2.c.)
 - Recognize that the ear serves as a receiver of sound (1.2.A.K.c.)

- d. Predict the effects of light, heat and cooling on a variety of objects in the environment and conduct a simple investigation to test predictions. (SC1; 1.1; 1.2; **1.3**; 1.4; **1.6**; 3.1; 3.2)

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.)

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.)

- e. Conduct and record an investigation to show that light can be reflected by a mirror, refracted by a lens and absorbed by an object. (SC1; 1.2; **1.3**; 1.4)

Recognize light can be transferred from the source to the receiver (eye) through space (1.2.A.3.c.)

Recognize light can be transferred from the source to the receiver (eye) through space in straight lines (1.2.A.5.a.)

Recognize how an object (e.g., moon, mirror, objects in a room) can only be seen when light is reflected from that object to the receiver (eye) (1.2.A.5.b.)

Identify the three things (light source, object, and surface) necessary to produce a shadow (1.2.A.3.d.)

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