

Springfield Public Schools
SECONDARY SCIENCE

**SEVENTH GRADE SCIENCE
COURSE DESCRIPTION**

Seventh grade science will provide an opportunity for students to increase learning about life science concepts and apply those concepts to the world around them. This course will emphasize hands-on laboratory activities through the use of scientific inquiry and the scientific method. A variety of lab equipment and techniques will be used to investigate the physiology, ecology, heredity, and life processes of living organisms.

**SEVENTH GRADE SCIENCE
MAJOR INSTRUCTIONAL GOALS**

The intent of the Springfield R-12 Secondary Science Program is to provide a solid science education. Students will:

1. Apply concepts of scientific inquiry.
 - a. Create basic tables and graphs from sets of scientific data. (SC7; 1.8, 2.1)
 - b. Describe trends and direct relationships in data displayed in simple tables and graphs. (SC7; 1.6)
 - c. Conduct a scientific investigation making use of control groups and constant variables. (SC7; 1.2)
 - d. Measure a variety of objects using appropriate units of metric measurement. (SC7; 1.3)
 - e. Develop questions that can be answered through scientific investigations. (SC7; 1.1)
 - f. Apply knowledge of the safety rules and regulations by exploring risks associated with biological hazards. (SC7; 1.10, 4.7)
 - g. Use common scientific equipment to observe and record characteristics of living things. (SC 3; 1.4)

2. Demonstrate an understanding of the influence of scientific discovery on society.
 - a. Explore how diverse cultures contribute to science and technology. (SC8; 1.4)
 - b. Understand science's role in answering questions and explaining the natural world. (SC8; 3.2, 4.7)
 - c. Discover the qualities and characteristics of individuals engaged in scientific careers and related fields, such as health professionals. (SC8; 2.2, 4.4)

3. Investigate how structure and function affect living things.
 - a. Classify organisms into kingdoms based on their similarities and differences. (SC4; 1.3, 1.4, 3.7)
 - b. Identify cellular structures (organelles) and their function in both plant and animal cells. (SC3; 1.6, 2.1)
 - c. Explain the relationship between the levels of organization within organisms. (SC3; 1.3, 1.8)

4. Analyze how reproduction and inheritance affects an organism's ability to survive.
 - a. Describe how variations within a population increase the likelihood of survival. (SC3; 1.2, 1.3, 1.6)
 - b. Compare and contrast sexual and asexual reproduction. (SC3; 1.2, 1.7, 3.5)
 - c. Explain how genetic material is transmitted from parent to offspring. (SC3; 2.3, 2.4)
 - d. Demonstrate the appearance, diversity and extinction of a variety of organisms by using fossil records. (SC4; 1.3, 1.7)

5. Predict how abiotic and biotic factors influence living processes.
 - a. Diagram the recycling of matter through the ecosystem (i.e., water cycle, carbon cycle, nitrogen cycle). (SC5; 1.8)
 - b. Analyze the flow of energy through the energy pyramid. (SC3; 3.1, 4.1)
 - c. Compare and contrast the processes of photosynthesis and cellular respiration. (SC4; 1.6, 1.8, 3.5)
 - d. Identify environmental conditions that would affect the number of species that ecosystems can support. (SC4; 1.5, 1.8).
 - e. Identify and give an example of each level of organization within the biosphere (i.e., species, population, communities, etc.). (SC4; 1.6, 2.2, 4.1)
 - f. Investigate how organisms such as viruses bacteria, fungi, protists and parasites can be beneficial or detrimental to humans and ecosystems. (SC4; 1.2)
 - g. Examine the effect overpopulation has on the environment and its resources.(SC4; 3.1, 3.4, 3.6)

6. Explore the interaction of systems within the human body.
 - a. Identify major organs and organ systems. (SC3; 1.8)
 - b. Diagram the passage of nutrients and waste materials through the digestive, circulatory and excretory systems. (SC3; 1.8)
 - c. Describe the path of oxygen and carbon dioxide through the respiratory and circulatory systems. (SC3; 1.6)
 - d. Describe the path of a nerve impulse though the nervous system from stimulus to the response. (SC3; 1.8)
 - e. Explain the cause and effect of diseases on the human body (AIDs, cancer, MS, diabetes, hypertension, etc.). (SC3; 1.6)