

**Science Standard  
Catalina Foothills School District  
Grade 4**

The fourth grade science program emphasizes the skills of scientific inquiry and builds on the processes of experimentation, data analysis, and conclusions. Through a rich, inquiry-based program of study, students will demonstrate scientific literacy and the use of applicable CFSD deep learning proficiencies in the physical, life, earth, and space sciences. Content is taught through an integrated approach with an emphasis on science themes and systems thinking. Students will engage in active inquiries and investigations to develop conceptual understanding and research/laboratory skills. Science careers and technological risks and benefits are highlighted. Third grade science explores concepts in areas such as electricity, earth processes, animal classification and behavior, and the water cycle.

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**SCIENTIFIC INQUIRY**

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**SCIENTIFIC INQUIRY: GENERATING SCIENTIFIC QUESTIONS**

SC4.1a.1 Generates an experimental question that isolates a cause (independent variable) and effect (dependent variable) relationship (for example: How does the amount of water-independent variable- affect the rate of erosion-dependent variable?).

**SCIENTIFIC INQUIRY: PREDICTING AND HYPOTHESIZING**

SC4.1b.1 Develops a logical prediction in an “if/then” format (for example: If the circuit is complete, then the lamp will light).

**SCIENTIFIC INQUIRY: DESIGNING INVESTIGATIONS**

SC4.1c.1 Writes a plan for an experiment that includes a control (for example: variable, group, factor) and multiple trials based on a formulated question.

**SCIENTIFIC INQUIRY: OBSERVATION AND DATA COLLECTION**

SC4.1d.1 Records accurate and relevant data (required: control and variable; multiple trials) in an organized and appropriate format.

SC4.1d.2 Accurately measures data using a variety of tools (for example: wind speed is recorded daily using an anemometer).

**SCIENTIFIC INQUIRY: ANALYSIS AND CONCLUSION**

SC4.1e.1 Analyzes data to identify patterns and trends (for example: tree rings, fossils in desert region, weather patterns).

SC4.1e.2 Formulates conclusions based on analysis of data (required: patterns and trends, cause and effect relationships).

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## **INTERACTION OF SCIENCE AND SOCIETY**

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SC4.2.1 Describes how diverse people and/or cultures, past and present, have made important contributions to scientific innovation (for example: Thomas Edison, Michael Faraday, Benjamin Franklin).

SC4.2.2 Describes science-related career opportunities (for example: electrician, computer technician, geologist, ecologist, forester).

SC4.2.3 Describes benefits and risks of science and technology on the lives of people (for example: air conditioning, computers, medicine, rapid transportation/communication, pollution, destruction of natural resources).

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## **SYSTEMS THINKING (CFSD Deep Learning Proficiency – DLP)**

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### **SYSTEMS THINKING: BIG PICTURE**

SC4.3a.1 Creates a model of key relationships by taking a whole-system perspective on an issue or process (for example: natural events and human activities that have a positive and negative effect on environments - pollution, dams; labeled diagram that includes the interrelationships among parts of the system - water cycle, electrical circuit).

### **SYSTEMS THINKING: CHANGE OVER TIME**

SC4.3b.1 Describes a system component's continuous pattern of change over a specified period of time (required: compare types of processes that change the earth - weathering).

### **SYSTEMS THINKING: INTERDEPENDENCIES**

SC4.3C.1 Explains circular causality in a system as an ongoing reinforcing or balancing process (for example: erosion, water deposition, earth changes, electrical circuits).

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## **LIFE SCIENCE**

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### **CHARACTERISTICS OF LIVING THINGS**

SC4.4.1 Compares structures in plants and animals that contribute to growth and survival (for example: vascular/circulatory; support/skeletal; plant and animal reproduction).

SC4.4.2 Classifies animals by identifiable group characteristics (required: vertebrates -mammals, birds, fish, reptiles, amphibians; invertebrates - insects, arachnids).

### **INTERDEPENDENCE OF LIVING THINGS AND THEIR ENVIRONMENT**

SC4.5.1 Explains that beneficial characteristics (adaptations) of populations are inherited traits favorable in a particular environment.

SC4.5.2 Explains how adaptations contribute to plant and animal survival (required: camouflage – horned lizard and coyote; mimicry – monarch and viceroy butterflies; physical – cactus spines; mutualism – species of acacia that harbor ants which repel other harmful insects).

SC4.5.3 Describes the use and conservation of renewable and non-renewable resources utilized to meet the needs of a population (for example: holes in saguaros are reused by different organisms; reclaimed water used for recreational irrigation).

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## **PHYSICAL SCIENCE**

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### **STRUCTURE AND PROPERTIES OF MATTER**

Not assessed at this level.

### **INTERACTIONS OF MATTER**

SC4.7.1 Describes the properties of magnets (required: opposite poles attract, like poles repel, the force between two poles depends on the distance between them).

### **CONSERVATION AND TRANSFORMATION OF ENERGY**

SC4.8.1 Explains that electricity flowing in circuits can produce light, heat, motion, sound, and magnetic effects.

SC4.8.2 Illustrates the flow of energy within simple parallel and series circuits.

SC4.8.3 Describes the use of conductors and insulators.

SC4.8.4 Explains ways to generate electrical energy (for example: fossil fuel, solar, wind, nuclear).

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## **EARTH AND SPACE SCIENCE**

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### **STRUCTURE AND PROCESSES OF THE EARTH**

SC4.9.1 Describes the effects of water on the earth (required: distribution of water on earth's surface, deposition, weathering).

SC4.9.2 Explains the causes of erosion (for example: wind, fire, water/currents, human activity).

SC4.9.3 Compares events and processes that change the Earth (required: rapid – earthquakes, volcanoes, floods, forest fires; slow – wind, weathering, erosion).

SC4.9.4 Explains the water cycle (required: sources of water – ground, surface, atmospheric, glaciers; evaporation, condensation, precipitation, collection/accumulation).

### **STRUCTURE AND PROCESSES OF OBJECTS IN SPACE**

Not assessed at this level.