Course Overview

Elementary School | 4 | Science - *Last Updated on August 18, 2024*

DESCRIPTION

K-12 Content Area | Mission & Philosophy Statement

- Young people are born investigators, with natural curiosities about the physical, biological, and social worlds they experience. Anchoring science learning in real-world phenomena connects curiosities to core conceptual understandings.
- Students actively construct understanding through inquiry, experimentation, and analysis to develop science and engineering practices such as asking questions, planning and carrying out investigations, and constructing explanations.
- Integration of crosscutting concepts such as patterns, cause and effect, and systems thinking promote interdisciplinary understanding and sense-making of the natural world.
- Science learning occurs alongside other disciplines to foster holistic understanding and application of knowledge.

Course Description

The comprehensive K-12 science program aims to cultivate scientific thinking and logical reasoning skills by incorporating science and engineering practices. A challenging curriculum will enable students to acquire the ability to pose questions, identify problems, and execute investigations. Through collaborative experiences, students will be encouraged to construct explanations and devise solutions, engaging in evidence-based arguments.

In fourth grade, students explore science through an inquiry-based approach to investigate Earth, physical, and life sciences. In Earth science, students: plan and carry out investigations by incrementally changing specific environmental conditions to determine how changing the variables of slope and water amounts impacts stream tables; analyze and interpret data from diagrams to build explanations from evidence and make predictions of future events; and study model mountains and represent landforms to look for change. In physical science, students: investigate electricity and magnetism and engage in engineering design to convert energy from one form to another; gather information about how energy is derived from natural resources and explore alternative sources of energy; investigate how energy transfer changes when balls of different masses hit stationary objects; and develop models to represent how energy moves from place to place in electric circuits and waves. In life science, students; conduct investigations with stimulus and response to gather data, develop models, and construct explanations; and design physical models to understand how structures in a system function together to provide information and resources to organisms to support survival. Throughout the course, students will explore cross-cutting concepts of patterns; cause and effect; scale, proportion, and quantity; systems and system models; and stability.

STANDARDS

Pennsylvania - Grade 4 - Science, Technology & Engineering, And Environmental Literacy &

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Sustainability Standards (STEELS) (2023)

3.1.4.A 3.1.4.B 3.2.4.A 3.2.4.B 3.2.4.C 3.2.4.D 3.2.4.E 3.2.4.F 3.2.4.G

3.3.4.A 3.3.4.B 3.3.4.C 3.3.4.D 3.3.4.E 3.4.3-5.A 3.4.3-5.B 3.4.3-5.E

3.5.3-5.K 3.5.3-5.O 3.5.3-5.P 3.5.3-5.S 3.5.3-5.T 3.5.3-5.U 3.5.3-5.V 3.5.3-5.W

3.5.3-5.A 3.5.3-5.C 3.5.3-5.D 3.5.3-5.J 3.5.3-5.M 3.5.3-5.N 3.5.3-5.Q 3.5.3-5.R

3.5.3-5.AA 3.5.3-5.CC 3.5.3-5.DD 3.5.3-5.EE 3.5.3-5.FF 3.5.3-5.GG 3.5.3-5.L

COURSE OBJECTIVES

The objective of the course is to meet the performance expectations, science and engineering practices and cross cutting concepts outlined in the STEELS standards.

ASSESSMENT TYPES

The following assessment types will be used during the course:

- Curriculum-based Measures
- Formative Assessments
- Performance-based Assessments
- Summative Assessments

SUGGESTED METHODS OF INSTRUCTION

A science program demands the use of a variety of instructional strategies to foster scientific thinking. Below is a list of suggested strategies for high-quality instruction:

- Instructional components outlined in *The Framework for Teaching* by Charlotte Danielson
- Experiencing phenomena
- Posing questions for investigation
- Cooperative learning and collaboration
- Inquiry, engineering, and design processes
- Sense-making discussions
- Recording observations and responding to questions in Science Notebooks
- Developing models

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RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
Student Text Resources: • Soils, Rocks, and Landforms: FOSS Science Resources. Delta Education/School Specialty, 2023. • Energy: FOSS Science Resources. Delta Education/ School Specialty, 2023. • Senses and Survival: FOSS Science Resources. Delta Education/School Specialty, 2023. Teacher Resources: Investigations Guides and Teacher Resources for: • Soils, Rocks, and Landforms: Full Option Science System (FOSS), Pathways Version. Delta Education/School Specialty, 2023. • Senses and Survival: Full Option Science System (FOSS), Pathways Version. Delta Education/School Specialty, 2023. • Energy: Full Option Science System (FOSS), Pathways Version. Delta Education/ School Specialty, 2023. Other Resources: • FOSS (2023 Pathways version) Resource Kits for: ◦ Energy ◦ Senses and Survival ◦ Soils, Rocks, and Landforms • Teacher created resources		Technology: • “FOSSweb.” Online Resources, www.fossweb.com. District-approved supplemental technology