Course Overview

Middle School | 8 | Science - *Last Updated on August 19, 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

This course is structured to deepen students' understanding of scientific concepts through hands-on, inquiry-based learning. Throughout the year, students will explore a series of interconnected units covering key topics such as forces and motion, energy transfer, waves, genetics, evolution, and the Earth's systems. Each unit is crafted to build on prior knowledge while introducing new concepts through real-world phenomena and collaborative investigations. Students will engage in activities that promote critical thinking, problem-solving, and the application of scientific principles to everyday situations.

By the end of the course, students will have developed a strong foundation in scientific inquiry and engineering design practices. They will learn to formulate questions, design and conduct experiments, analyze data, and construct evidence-based explanations. In addition to mastering content knowledge, students will enhance their collaboration, communication, and computational thinking skills. The course emphasizes the integration of crosscutting concepts such as patterns, cause and effect, and systems and system models, preparing students not only for higher-level science courses but also for informed and responsible participation in a scientifically complex world.

STANDARDS

Pennsylvania - Grade 6-8 - Science, Technology & Engineering, And Environmental Literacy & Sustainability Standards (STEELS) (2023)

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3.1.6-8.H 3.2.6-8.G 3.2.6-8.H 3.2.6-8.L 3.2.6-8.Q 3.2.6-8.R 3.2.6-8.I 3.2.6-8.K

3.2.6-8.P 3.2.6-8.J 3.3.6-8.A 3.3.6-8.B 3.3.6-8.C 3.1.6-8.B 3.1.6-8.D 3.1.6-8.E

3.1.6-8.M 3.1.6-8.N 3.1.6-8.R 3.1.6-8.O 3.1.6-8.P 3.1.6-8.Q 3.1.6-8.S 3.1.6-8.T

3.5.6-8.N 3.5.6-8.P

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
- Initial Models to Explain Phenomena
- Lesson Progress Tracker
- Revised Explanations of Phenomena
- Peer Feedback Cycles
- Group Models and Building Understandings Discussion

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
OpenSciEd 8 Instructional Resources Activate/OpenSciEd 8 Student Consumable Books Activate OpenSciEd 8 Consumables Kits	Activate Online Learning Platform Activate Insight Assessment Tool	