Course Overview

Middle School | 7 | Science - *Last Updated on August 20, 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 7th-grade science curriculum at Saucon Valley Middle School is designed to build on foundational scientific principles, focusing on enhancing scientific thinking and logical reasoning skills. The program incorporates science and engineering practices, challenging students to pose questions, identify problems, and conduct investigations. Through collaborative experiences, students are encouraged to construct explanations and devise solutions, engaging in evidence-based arguments. This curriculum aims to cultivate a deeper understanding of scientific concepts and foster a curiosity-driven approach to learning.

In this comprehensive curriculum, students delve into key scientific concepts across various units. They explore chemical reactions through observable phenomena, developing models to depict atomic and molecular interactions. They investigate metabolic reactions in the human body, analyzing real case studies to understand chemical changes and the processing of food. The curriculum also covers the cycling of matter and photosynthesis, tracing food origins and exploring plant-based food molecules. Students examine ecosystem dynamics and biodiversity, understanding the complexity of environmental problems and designing sustainable solutions. Additionally, they investigate Earth's resources and human impact, analyzing climate change effects and evaluating solutions for community resilience. Throughout these units, students engage in hands-on investigations, modeling, and data analysis, constructing explanations, designing solutions to real-world problems, and effectively communicating their scientific findings.

STANDARDS

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

3.1.6-8.H 3.2.6-8.E 3.2.6-8.F 3.5.6-8.M 3.5.6-8.N 3.5.6-8.P 3.1.6-8.C 3.1.6-8.E

3.1.6-8.G 3.2.6-8.D 3.1.6-8.B 3.1.6-8.F 3.1.6-8.K 3.2.6-8.C 3.1.6-8.I 3.1.6-8.J

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3.1.6-8.L | 3.1.6-8.U | 3.3.6-8.M | 3.5.6-8.W | 3.3.6-8.K | 3.3.6-8.N | 3.3.6-8.O

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
- Driving Question Board
- 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 Grade 7 Curriculum and Teacher's Resources Activate/OpenSciEd 7.1 Student Consumable Workbook Activate Consumable Kits	Activate Online Learning Platform Activate Insight Assessment Tool	