



Course Overview

High School | Technology Education | Bit by Bit - Last Updated on December 11, 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, technology, engineering 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 and models.
- Integration of crosscutting concepts such as patterns, cause and effect, and systems thinking promote interdisciplinary understanding and sense-making of the natural world.
- The design process is central to the modern world. Architects, Engineers, Drafters, and Designers utilize technical tools to prototype, manufacture, and collaborate in the development of new products.

Course Description

This introductory technology course prepares students for their college and career future by creating a foundation of Digital Citizenship, Media Literacy, and Computational Thinking. Students will acquire knowledge by engaging in a variety of technology tools including computer programming, 3D printing, Raspberry Pi, little bits, and VEX robots. Students will be exposed to experiential learning with real-world applications and have the opportunity to grow in problem-solving and creativity.

STANDARDS

Pennsylvania - Grade 11-12 - Computer Science

3B.IC.28 3B.IC.27 3B.IC.26

Pennsylvania - Grade 9-10 - Computer Science

3A.IC.26 3A.CS.01 3A.AP.18 3A.AP.22 3A.IC.28 3A.IC.29 3A.IC.30

International Society for Technology in Education (ISTE) - National Technology Standards for Students (2016)

3a 3b 3c 3d 6c 7c 7d 1c 1d 2a 2b 2c 2d 4b

4d 5a 5b 5c 5d 6a 6b 6d



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COURSE OBJECTIVES

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

ASSESSMENT TYPES

The following assessment types will be used during the course:

- Formative Assessments
- Project-based Assessments
- Summative Assessments

SUGGESTED METHODS OF INSTRUCTION

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

- Instructional components outlined in *The Framework for Teaching* by Charlotte Danielson
- Posing questions for investigation
- Cooperative learning and collaboration
- Inquiry, research, engineering, and design processes
- Developing models



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RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
	<ul style="list-style-type: none"> • Checkology • ISTE Computational Thinking For All materials • Code HS • Beanz: The Magazine for Kids, Code and Computer Science • Common Sense Media • Carnegie Mellon Computer Science Academy • DigCit Utah • Mattson, Kristen. <i>Digital Citizenship in Action: Empowering Students to Engage in Online Communities</i>. International Society for Technology in Education, 2017. 	<ul style="list-style-type: none"> • 3D printers • Tinkercad • Merge Cubes • Google Cardboard • Code HS • littleBits • VEX Robots • Raspberry Pi • Sphero • Nearpod