



Course Overview

High School | Astrophysics - Last Updated on April 4, 2025

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

Astrophysics is a science elective where any student with a desire to learn and experience the wonders of your universe will succeed. Each topic is approached with three objectives: The students will assimilate know information, investigate the instrument and tools used to study the topic and explore phenomenon. The course is designed as an entry level course but requires students to gain knowledge of the physical properties necessary to study the universe.

Astrophysics is a science elective, which introduces physical phenomenon outside the Earth. Two main themes are presented: Structure in the Universe and Space Exploration. Through Structures of the Universe, students explore the planets and moons of our solar systems and galaxies. The segment on stars includes our sun, solar systems, the life cycle of stars, structures associated with different stages of a star's life, and types of stars. The Space Exploration theme encompasses human achievement, cosmology, and surrent projects. Cosmology covers the big bang and other possible beginnings of the universe, the present state of the univrs, and possible ends to the universe.

STANDARDS

Pennsylvania - Grade 10 - Science and Technology and Engineering

3.3.10.A8

3.3.10.B1

3.3.10.B2

3.3.10.B3

Pennsylvania - Grade 12 - Science and Technology and Engineering

3.3.12.B1

3.3.12.B2

3.3.12.B3



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COURSE OBJECTIVES

The objectives are the course are to meet the Pennsylvania State Standards in Science and Technology.

ASSESSMENT TYPES

The following assessment types will be used during the course:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments
- Performance-Based 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
- Hands-on learning
- Posing questions for investigation
- Cooperative learning and collaboration
- Inquiry, engineering, and design

RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
	Other Resources <ul style="list-style-type: none"> • Teacher Created Resources • District approved supplemental resources and labs 	Technology <ul style="list-style-type: none"> • District approved supplemental technology