



SOUTHERN LEHIGH SCHOOL DISTRICT
5775 Main Street
Center Valley, PA 18034

Planned Course for Science

Course: Applied Physics

Standards:

This course is aligned to standards within the following categories of the Pennsylvania Academic Standards for Science and Technology and Engineering Education:

3.2 Physical Sciences: Chemistry and Physics

Course Description:

The K-12 science program within Southern Lehigh School District will foster the development of scientific thinking and logical reasoning. A rigorous curriculum will provide opportunities for students to learn how to ask questions and define problems in order to plan and carry out investigations. Students will be challenged to construct explanations and design solutions through collaborative experiences where they engage in arguments that are based on evidence. Teachers will provide students with hands-on and authentic experiences aligned to a coherent progression of learning.

APPLIED PHYSICS offers students an introduction to the laws that govern motion. This course is highly recommended for students considering careers in engineering, technology, or any science. Students will learn how the entire universe can be analyzed and categorized as Matter, Forces, and Energy. Utilizing various disciplines in math, students will discover how to interact with the universe. Students will engage in laboratory investigations as they apply these analysis techniques to the topics of velocity, acceleration, gravity, Newton's Laws of Motion, vectors, momentum, energy, waves, and optics. This course provides hands-on learning experiences where students develop an understanding of concepts through labs. The students' background in mathematics is considered in determining appropriate instructional techniques and classroom applications.

Prerequisite(s):

- Successful completion of a Geometry course; AND
- Successful completion or concurrent enrollment in an Algebra II course

Measurable objectives to be attained by students:

Specific objectives for this course are aligned to the Next Generation Science Standards, the Pennsylvania Academic Standards for Science and Technology and Engineering Education, and the Pennsylvania Core Standards for Reading and Writing in Science and the Technical Subjects as outlined in the Scope and Sequence for Physics.

Instructional Strategies:

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

Estimated Instructional Time:

77 minutes per day on an alternating A/B block schedule for one school year

Forms of Assessment to Measure Attainment of Course Objectives:

- Curriculum-based measures
- Benchmark Assessments
- Formative Assessments
- Summative Assessments
- Performance-Based Assessments

Resources:**Student Text Resources:**

Zitzewitz, Paul N., et al. *Glencoe Physics: Principles and Problems*. McGraw-Hill Education, 2013.

- Student Text Printed Version

Teacher Resources:

Coletta, Vincent P. *Physics Fundamentals*. Physics Curriculum & Instruction, 2010.

- Practice problems through Webassign

Zitzewitz, Paul N., et al. *Glencoe Physics: Principles and Problems*. McGraw-Hill Education, 2013.

Technology:

Scientific calculator

District approved supplemental technology

Other Resources:

Teacher created resources

District approved supplemental resources and labs