



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

## **Planned Course for Science**

**Course:** Advanced Placement (AP) Physics C (Calculus-Based)

### **College Board Science Practices**

- Visual Representations
- Question and Method
- Representing Data and Phenomena
- Data Analysis
- Theoretical Relationships
- Mathematical Routines
- Argumentations

### **Course Description:**

AP PHYSICS C (CALCULUS-BASED) is intended to form the first part of the college sequence, which serves as the foundation in physics for students majoring in engineering or the physical sciences. It is designed to help students develop a deep understanding of the foundational principles that shape classical mechanics. By confronting complex physical situations or scenarios, the course will enable students to develop the ability to reason about physical phenomena using important science practices, such as creating and analyzing representations of physical scenarios, designing experiments, analyzing data, and using mathematics to model and to solve problems. Students will explore concepts such as kinematics; Newton's laws of motion, work, energy, and power systems of particles and linear momentum; rotation; oscillations and gravitation. In addition, students will explore concepts such as electrostatics, conductors, capacitors and dielectrics, electric circuits, magnetic fields, and electromagnetism. Hands-on laboratory work and in-class activities will investigate phenomena and use calculus to solve problems.

### **Prerequisite(s):**

- Successful completion or concurrent enrollment in a Calculus course; AND
- Earn a minimum grade of a B+ in Physics; OR
- Earn a minimum grade of a B in AP Physics I

### **Measurable objectives to be attained by students:**

Specific objectives for this course are aligned to the College Board Course Science Practices and Course Content for AP Physics C: Mechanics and AP Physics C: Electricity and Magnetism.

**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 for 3 days on a 6 day cycle (alternating A/B Block Schedule)

**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:**

Jewett and Serway. *Physics for Scientists and Engineers*. 10<sup>th</sup> Edition. Cengage, 2019.

**Teacher Resources:**

Online Instructor Resources for: Jewett and Serway. *Physics for Scientists and Engineers*. 10<sup>th</sup> Edition. Cengage, 2019.

**Technology:**

District approved supplemental resources

**Other Resources:**

Teacher created resources

District approved supplemental resources and labs