

[AP Physics C]

[11th-12th grade] (10 Credits)

- Meets high school graduation requirement for Physical science
- Meets the UC/CSU subject area "(A-G)" requirement



General Information

Description of course topics and timelines on conceptual units

1. **Fundamental electromagnetism:** electrostatics, DC circuits, resistance, capacitance, magnetic fields, magnetic forces, electromagnetic induction.
Math skills: Algebra II, trigonometry **Time line: ten weeks**
2. **Advanced mechanics with calculus:** non-constant acceleration, air friction, work, work-energy theorem, non-linear springs, center of mass, impulse, variable mass systems, tapping, rotations, moments of inertia, harmonic motion, gravitational fields and satellites.
Math skills: fundamental differential and integral calculus, vector operations of vector addition, dot product and cross product. **Time line: thirteen weeks**
3. **Advanced electromagnetism:** Gauss' law, electric potential, Ampere's law, Faraday's law and circuits with inductors.
Math skills: fundamental differential and integral calculus. **Time line: nine weeks**
4. **Waves and optics:** mechanical waves, electromagnetic waves, wave behavior, lenses and mirrors.
Math skills: algebra **Time line: four weeks**

Expectations and Goals

AP testing: the students will be prepared to take both the AP Physics C exam on Mechanics and the AP Physics C exam on Electromagnetism. These are two separate exams. Please refer to the College Board website for their syllabi.

<https://apstudent.collegeboard.org/apcourse/ap-physics-c-electricity-and-magnetism>

<https://apstudent.collegeboard.org/apcourse/ap-physics-c-mechanics>

Estimated Homework

Time demands on the students: five hours of class time and two hours of homework per week. Exams occur approximately every two weeks.

This Class Is Best For...

AP Physics C is a second year physics course. The students will be expected to have mastered fundamental high school physics: college-prep physics or AP Physics 1. Students in AP physics C are typically junior and senior level students with a desire to enter into the field of science or engineering.

Required Materials

This is a great place to include information about the textbooks used in class, or other required materials so families can do some research before taking the class.

- Physics for Scientists and Engineers Randall Knight. Pearson Education, Inc. ISBN 0-8053-8960-1.

- Physics C Online notes and Problems

<http://teachers.sduhsd.net/tpscience/physics/physicsC.html>

Additional Information and Resources

Course Description

<http://media.collegeboard.com/digitalServices/pdf/ap/ap-physics-c-course-description.pdf>

Physics C Mechanics overview

<http://media.collegeboard.com/digitalServices/pdf/ap/ap-course-overviews/ap-physics-c-mechanics-course-overview.pdf>

Physics C electricity and magnetism overview

<http://media.collegeboard.com/digitalServices/pdf/ap/ap-course-overviews/ap-physics-c-electricityand-magnetism-course-overview.pdf>