

Advanced Placement Physics

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Fall 2018

Class Time

- Saturdays 4:20pm–6:50pm (Starts November 3, 2018)

Course Material

- No textbook required
- Course outline, presentation slides, and homework assignments are downloadable from school website
- Please bring
 - A pen/pencil for note-taking
 - A scientific calculator for working in-class example problems

Pre-requisites

- **Physics 11 and 12:** Student will need to be competent in all the topics covered in the high-school level courses. Many topics from Physics 11 and 12 are covered more in-depth in this course.
- **Calculus:** The two “C” exams are calculus based, and students are required to perform basic differentiation and integration.
- **Vectors:** Students need to have basic understanding of vector operations, including addition and subtraction, as well as dot products and cross products.

Course Outline

1. Topics in *AP Physics C: Mechanics*

- (a) Kinematics
- (b) Dynamics
- (c) Momentum, impulse and energy
- (d) Center of mass
- (e) General circular motion and angular momentum
- (f) Simple harmonic motion—general equation of oscillatory systems, pendulums and spring-mass systems
- (g) Universal gravitation and planetary motion
- (h) **Practice AP Physics C: Mechanics exam**

2. Topics in *AP Physics C: Electricity and Magnetism* (“E&M”)

- (a) Electrostatics
- (b) Gauss’s law
- (c) Capacitance

- (d) Magnetism
- (e) Inductance
- (f) Circuit analysis (RC, RL, LC and RLC circuits)
- (g) Maxwell's equations and electromagnetic wave
- (h) **Practice AP Physics C: E&M exam**

3. Additional topics in *AP Physics 1* and *AP Physics 2*

- (a) Fluid dynamics
- (b) Thermal physics
- (c) Mechanical waves
- (d) Light and optics
- (e) Special relativity
- (f) Quantum mechanics
- (g) **Practice AP Physics 2 Exam**