

Course Name: AP Physics 1

Duration: 1 Semester Full Year

Grade Level: 9th 10th 11th 12th (check all that apply)

Are there any prerequisites for the course?

Science Prerequisite: None.

Math Prerequisite: Algebra 2.

WHAT this course is about:

AP Physics 1 is a college level introductory algebra-based Physics course in the supportive environment of the high school setting. The purpose is to learn the first principles of physical science: motion, force, conservation laws. The emphasis during first semester is on lab skills, from designing appropriate research questions and methods to analyzing data and communicating results. The emphasis during second semester is problem solving, with focus on the type of problems in the AP Physics 1 exam. Analytical skills will be developed during the entire year using foundational physical concepts. Although the workload is comparable to a first-year college course in physics, it is easily manageable and fairly slow paced.

WHY take this course:

Physics is the second oldest science, after astronomy. All physical sciences use the concepts that are developed in this class, and all other quantitative sciences can be reduced to problems in physical quantities. In any physics course the student learns how to see the world in a new way, a way that allows the student to understand, explain and predict anything that has mass or energy. AP Physics 1 is unique because it prepares students for non-technical careers, specifically those that don't require calculus or calculus-based science courses in their college programs (pre-law, pre-med, life sciences).

WHAT you'll learn:

- Determine strategies of what helps you learn and develop conceptual understanding.
- Conceptual understanding at the college level with various topics in physics.
- Analytical and critical thinking, with emphasis on problem solving skills appropriate for any higher level of academia.
- The proper role and limitations of mathematical models of behavior.
- Theoretical Physics skills, including mathematical modeling and the use of equations to make predictions about the universe we live in.
- Experimental Physics skills, including experimental design, data analysis and basic statistics.
- Hands-on approaches to learning, including science and engineering practices.

WHAT you'll do:

- Hands-on science and engineering investigations, from guided activities to open inquiry.
- Systems analysis for a variety of familiar situations, from arcade games to the Big Bang Theory.
- Engage in an I do, we do, you do approach to learning.
- Have options for deepening practice and understanding physics concepts
- Work collaboratively with others in a variety of thinking, processing, and hands-on activities

WHERE this could take you:

AP Physics 1 can bring about many opportunities for students. For students who opt to take the AP Physics 1 Exam in May, there is a possibility of credit and/or course advancement for students achieving a 3 or above. This is dependent on the university/college of attendance and major of study. Regardless of AP Physics 1 Exam outcomes, students have strong foundations in college physics that will help them in their future college requirements.

OPTIONAL Course Outline (“scope and sequence”, sequence chart, etc.)

Year at a Glance for AP Physics 1

- U1 Kinematics, the study of motion (position, velocity, acceleration).
- U2 Dynamics, the foundational material for most engineering fields.
- U3 UCM and Gravitation, the study of Kepler’s Laws and Newton’s Universal Law of Gravitation.
- U4 Energy, an introduction to the Conservation of Energy..
- U5 Momentum, an introduction the Conservation of Momentum.
- U6 Oscillations, an extension of previous units into vibrational motion.
- U7 Rotation, an extension of previous units into rotational motion.
- AP PHYSICS 1 EXAM
- Applied Physics Project