

# AP Physics 1 Syllabus

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## Description:

The AP Physics 1 course is an algebra-based course that focuses on the first semester of an algebra-based, introductory college-level physics sequence. This course will provide students with enduring understandings to support future advanced course work in the sciences. Through inquiry-based learning, students will develop critical thinking and reasoning skills.

## Overview:

Students will cultivate their understanding of physics and science practices as they explore the following topics:

- Kinematics: 1-Dimensional and 2-Dimensional motion
- Dynamics: Newton's laws
- Circular motion and universal law of gravitation
- Simple harmonic motion: simple pendulum and mass-spring systems
- Impulse, linear momentum, and conservation of linear momentum: collisions
- Work, energy, and conservation of energy
- Rotational motion: torque, rotational kinematics and energy, rotational dynamics, and conservation of angular momentum
- Electrostatics: electric charge and electric force
- DC circuits: resistors only
- Mechanical waves and sound

## Laboratory Requirement:

This class requires that 25 percent of the instructional time will be spent in laboratory work, with an emphasis on inquiry-based investigations that provide students with opportunities to demonstrate the foundational physics principles. Labs may take several in-class days to complete and students may have to do work outside of class as well.

Students are expected to keep a lab notebook where they will maintain a record of their laboratory work. Lab reports will consist of the following components:

- Title
- Objective / Problem
- Design (if applicable): If the lab has no set procedure, what is to be done? Why are you doing it this way?
- Calculations / Graphs: Calculations are done here. Any graphs that need to be made go here.
- Conclusion: Data analysis occurs here, and a statement can be made about what was learned in the lab.

Error analysis also occurs here. Evaluation of the lab occurs here as well.

## Projects:

Two projects will be completed by each student. Both projects will deal with real world situations in which the student must collect and analyze data. All work for each of these projects will be completed outside of class.

## Grading:

Students will be evaluated on quizzes, tests, homework, lab reports, and projects.

Quizzes, tests, and projects	60%
Homework	20%
Lab Reports	20%

## Prerequisites:

AP Physics 1 can be taken as a first-year physics class with no prior physics course work necessary. Students should have completed geometry and be concurrently taking algebra II or an equivalent course.

## Summer Work:

There will be summer work required for this course. It will not cover physics concepts but will cover basic requirements needed to be highly successful in physics. This work will be available at the end of the school year and will be due on the first day of class.

## AP Physics 1 Exam:

Each student will be expected to take the AP Physics 1 exam in May. Date to be determined by College Board.