

2025 – 2026 AP Physics 1 Syllabus

Mr. Chad Bishop, Rm 221

Conference: 10:15 to 11:15 pm, 4th period

Tutorials: Tue & Thurs 6:50- 7:20 am

Mrs. Semilla Rivera, Rm 227

Conference: 10:15 to 11:15 am, 4th period

Tutorials: Wed & Thurs: 2:50 – 3:45 PM,
or by appointment

Dr. Anthony Lau, Rm 225

Conference: 10:15 to 11:15 am, 4th period

Tutorials: TBA

Textbook:

Knight, R, Jones, B. and Field, S. *College Physics: A Strategic Approach*. 4th Edition. Boston, MA: Pearson Education.

About this course:

The AP Physics 1 course will meet for 50 minutes every day. Lab work is integral to the understanding of the concepts in this course. The AP Physics 1 course has been designed by the College Board as a course equivalent to the first semester of an algebra-based college-level physics class. At the end of the course, students will take the AP Physics 1 Exam, which will thoroughly test their understanding of the topics taught in the classroom. There are eight topics covered in the course. The *AP Physics 1: Algebra-Based, Course and Exam Description* (AP1 CED) published and found on College Board's AP Physics 1 home page goes in-depth into what concepts are covered under each topic.

The course focuses on applying three scientific practices to the concepts found in the eight topics. Detailed descriptions of the three scientific practices can also be found in the AP1 CED, including how each practice is used in the study of each sub-topic.

Evaluation:

Students will receive grades on homework, quizzes, laboratory work, projects, and exams. Exams are typically worth 100 points and will consist of questions similar to those seen on the AP Exam. Homework assignments and quizzes will consist of problems from the textbook, supplements, and old AP Exams. Projects are long-term, and typically will involve groups of students developing a plan, engineering a machine, collecting data and/or research, and presenting conclusions in a meaningful way. Laboratory work is student-centered and inquiry-based and will be discussed in more detail below.

Students are expected to be able to communicate clearly and concisely in writing as communication is one of the founding principles of science. All assignments will require students to analyze a problem, state a claim, provide a reason for the claim, and then justify the claim with evidence. Proper grammar and correct spelling are required with some leniency.

A binder or an organizer is required as maintaining a record of what a student has done is also a founding principle of science. Students will be required to keep organized various graded and ungraded work. Binder/organizers will be checked every 9-weeks. Instructor will check for Warm Ups, Quizzes, Lab papers and other graded work.

Grades will be determined by taking the number of points a student has earned and dividing it by the total number of points that the student could have achieved. This decimal is multiplied by 100, and that will be the student's grade.

Make-up assessments will be provided. There will be a 2-day window when the make-up assessment will be available. If the student misses the window, they will be allowed to take the retest for full points. However, there will not be a retest for the retest.

Late grade policy: Following campus policy, for each day an assignment is late, there will be a 10-point deduction.

Retest policy: If a student does not earn a 75 or higher on a test, there will be a retest provided for a maximum of a 75. If a student does not earn a 75 or higher on a project, an alternative project will be assigned for a maximum grade of 75.

Topics Covered:

1. Kinematics
 - a. Vectors/Scalars
 - b. One Dimensional Motion (including graphing position, velocity, and acceleration)
 - c. Two Dimensional Motion (Projectiles only)
2. Forces and Translational Dynamics
 - a. Newton's Laws of Motion and common Forces
 - b. Application of Newton's Laws to Single Body systems
 - c. Systems
 - d. Application of Newton's Laws to Multibody systems
 - e. Apply Newton's Laws of Motion to Motion
3. Work, Energy, and Power
 - a. Work and Power
 - b. Mechanical Energies
 - c. Conservation of Energy
 - d. Application of Energy to Dynamics and Kinematics
4. Linear Momentum
 - a. Impulse and Momentum
 - b. The Law of Conservation of Momentum
 - c. Center of Mass
 - d. Application of Momentum to Energy, Dynamics, and Kinematics
5. Simple Harmonic Motion
 - a. Simple Pendulums
 - b. Mass-Spring Oscillators
6. Circular Motion and Universal Law of Gravitation
 - a. Two-Dimensional Kinematics
 - b. Forces of Two-Dimensional Motion
7. Rotation – Torque, Rotational Dynamics, Energy, and Angular Momentum
 - a. Rotational Kinematics
 - b. Rotational Energy
 - c. Torque and Rotational Dynamics
 - d. Angular Momentum
 - e. Conservation of Angular Momentum
 - f. Energy, Forces, and Momentum of Orbits
8. Fluid Mechanics
 - a. Pressure and Pascal's Principle
 - b. Buoyancy and Archimedes' Principle
 - c. Energy and Bernoulli's Principle

Academic Dishonesty:

We are very serious about ensuring everyone has an equal opportunity to earn the grade they deserve. Academic dishonesty disrupts this equal opportunity. We have taken structural steps in how we design assessments to mitigate academic dishonesty.

Consequences for academic dishonesty will be a 100% deduction of earned points. Student will be allowed to take a retest up to the 75% mark on their first offense. Any subsequent offenses of academic dishonesty, the student will also lose their chance to take a retest.

- A. Electronic devices (including, but not limited to phones, Bluetooth/Wi-Fi/Cellular-enabled devices (including, but not limited to watches, ear buds, glasses, etc), tablets, and laptops) will not be allowed during assessments. Any such devices will be placed with the student's belongings. Phones may be collected individually. Any such device found on a student's person after the assessment has started may be grounds for academic dishonesty.
- B. On assessments, calculators will be the classroom calculators. If you bring your own calculator, it must be cleared by your teacher before use. For TI nSpire, a fresh instance of Press-to-Test mode is required.
- C. Artificial intelligence ("AI") refers to computer algorithms that simulate human cognition. Examples include, but are not limited to ChatGPT, Microsoft Copilot, and Google Gemini. They may not be used for labs, quizzes, or tests. They may be used to provide help with practice work, but their use should be limited as much as possible. If the "AI" is helping with every practice question, what are you, the student, doing?
- D. Cameras may be deployed around the classroom during assessments (quizzes and tests). Only video will be recorded. Videos will not be published and only the segment that is used as evidence of academic dishonesty will be saved. All videos will be deleted at the end of the school year.

Laboratory Activities:

Twenty-five percent of the course will be lab work. Labs may take several in-class days to finish, and students may have to do work outside of class as well.

Every major unit will have an inquiry-based lab, and inquiry-based labs will make up no less than half of the laboratory work. Collectively, laboratory work will engage students in all seven science practices listed in the ***AP Physics 1 and 2 Course Description***.

Projects:

Students will be required to demonstrate hands-on applications of concepts learned in the classroom by engineering machines with defined goals and limitations.

- A. Improving ancient siege machines – Students will build a water balloon launcher that is accurate at 3 different distances and is capable of launching a projectile more than 2 meters in the air.
- B. Emergency Ground Gravitational Survival System for Eggs – Students will be given limited materials and time to build machine that can protect an egg dropped from over 10 meters. Students will write a technical paper that is similar to a lab research paper (time permitting).
- C. Rube Goldberg Machine – Students will use their creativity to design a complex machine to perform a simple task. Students will be required to use video editing software to create a professional documentary of their trials and tribulations.