

AP Physics C: Mechanics Syllabus

Dr. Wilson

dwilson@asd20.org

Classroom: 1116

Phone: 484-0091 ext. 1116

If I have seen further than others, it is by standing on the shoulders of giants.

Sir Isaac Newton

Welcome to AP Physics C! I look forward to getting to know each and all of you as we explore the exciting world of mechanics. To be successful in this course, you need to have a solid understanding of algebra and trigonometry. You must also gain an introductory understanding of differential and integral calculus, as you will use both throughout the year. But physics is much more than math. In this course we will learn to create and apply useful models of physical phenomena that will help you understand and solve difficult physics problems. There's even a chance we'll have fun along the way.

Course Description

AP Physics C is a calculus-based physics course that covers a wide range of topics, including kinematics, force, energy, momentum, rotation, and gravitation. This course ordinarily forms the first part of the college sequence that serves as the foundation in physics for students majoring in the physical sciences or engineering. At the end of the course all students will be required to take the AP Physics C exam for possible college credit. AP Calculus AB is a co-requisite for this course.

Goals

Comprehending underlying principles and correctly applying them are the key goals of this course. To achieve these goals, you will perform hands-on laboratory exercises and participate in interactive, student-centered activities including guided inquiry, laboratory work, and problem-solution analyses. You will be challenged to comprehend, analyze, and synthesize from the concepts we cover. We will also learn about key figures in the history of physics, and the evolution of their important theories.

AP Physics C Examination

The AP Physics C examination will be administered nationwide on Tuesday, May 9, 2023.

Course activities and examinations are designed to familiarize you with the format, depth of knowledge, and scope of the questions you will see on the AP examination.

Textbook

Knight, Randall Dewey. *Physics for Scientists and Engineers: A Strategic Approach : With Modern Physics, 3rd Edition*. San Francisco: Pearson Addison Wesley, 2015.

Calculator

A graphing calculator is required for this course. Most students use either a TI-83 or TI-84. If you wish to use another calculator, please check the AP Physics C website to ensure it can be used on the AP Test in May.

Use of Calculators and Equation Sheets

For all quizzes and tests—including the AP Exam—you may use the equation sheet and a calculator.

Homework

I will assign readings and/or problems from the textbook every week and will also provide the answers to homework problems. Homework will not be scored for credit, but it will be a useful, and perhaps a crucial, tool towards mastering the concepts in the class.

Low-Threat Quizzes

Expect two low-threat quizzes every week, usually on Tuesdays and Fridays. These quizzes will focus on specific concepts and processes that were recently covered in class.

Quizzes

Quizzes will be given on most Wednesdays. These quizzes will primarily focus on material from recent classes (such as the current chapter), but 20-30% of each quiz will include material from previous chapters.

Tests and the Final Exam

Three tests are scheduled for each semester. These tests will not only cover concepts from a specific block of lessons, but they will also cover material from all previous blocks. Tests will be given during a single class period. A comprehensive final examination will also be given at the end of each semester.

Estimated Grading Percentages

Homework: 0%
Low-threat Quizzes: 10%
Quizzes: 15%
Labs: 15%
Tests: 40%
Final Exam: 20%

Laboratory Exercises

Hands-on laboratory exercises will give you experience with the physical concepts being covered in the course. The labs are comparable to those in a semester-long, college-level physics course. Key aspects of lab reports will usually be required for each lab and many labs will require a pre-lab. Although you will work in teams of two or three students, each of you will complete and submit your own lab reports.

Labs and lab reports must be accomplished in ink. You will be expected to justify the validity of your approach and address any potential sources of error or inaccuracy. Some universities may want to evaluate your laboratory experience in this course and will ask to see your work. Therefore, saving your lab work is recommended.

Office Hours

I am generally available during flex or after school for anyone who needs extra help (dropping by unannounced is okay, but I recommend pre-coordinating your visit to make sure I'll be there).

Final Comments

- **Keep up with the reading.** The textbook is a great resource - read it. I will designate the appropriate sections to read throughout the year.
- **Do the homework.** Homework problems will generally be assigned after the associated concepts have been covered in class. Attempt the homework assigned to each lesson.
- **Learn the concepts.** Don't just memorize equations! Learn the concepts first, and then see how the concepts are represented in the math.
- **Participate in class.** Be attentive and take notes. Ask questions and participate in class discussions.

I hope you enjoy taking this course as much as I enjoy teaching it. I'm looking forward to a fun year.