

ADVANCED HIGHSCHOOL PHYSICS
AP Physics 1 and 2

Instructor: Mrs. Paniagua	Time: T/Th 11:00 EST
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Syllabus Information: This syllabus is an active document. All sections, statements, and policies are subject to change. Some sections are still incomplete and will be filled in prior to the beginning of the course. To make sure you are referencing the most current version please check the date of last revision listed in the header of each page, as well as here: **June 2, 2022**.

Contact and Office Hours: Remind messages are my preferred form of contact. Email or portal messages are always acceptable as well. Zoom meetings are available by appointment or most Fridays between 12:00 and 16:00 EST.

Course Links: The following online resources will be utilized during the course

- Class Homepage:
- Vocabulary Review:
- Video Playlist:
- Project Guides [Science Buddies: Science Fair Projects](#)
- College Board Information and Resources: [AP Physics 1](#) and [AP Physics 2](#)
- OpenStax Textbook: [College Physics for AP Courses](#)

Texts and Sources: The following books are the main learning guides we will use in this course. The textbook, workbooks (one workbook for each semester), and lab manual are available as freely downloadable PDFs. The lab kit (or all of the materials contained in it) needs to be purchased prior to the beginning of the course.

- Main Textbook: [College Physics for AP Courses by OpenStax](#)
- AP 1 Review Book: [MIT AP Review Study Guide and Practice 1](#)
- AP 2 Review Book: [MIT AP Review Study Guide and Practice 2](#)
- Illustrated Guide: TBD
- Laboratory Manual: [OpenStax AP Physics Lab Manual](#) Laboratory Materials Kit:

Overview: This course is designed for high school students who are strong in science and mathematics. Content includes materials from a full year of introductory algebra-based college physics. This course has been aligned to prepare students for the AP physics exams 1 and 2. These are the algebra based physics exams. To sit these exams, you will need to contact your local high school district as early as possible to be registered with them to sit the exam. Students who do not intend to sit the AP exam may still use this course to fulfill requirements of a high-school honors course in physics. This course may also be used to prepare for acquiring college credit by examination through your local college or university. Students who are using this course to meet requirements for a physics course through a public charter school are encouraged

to share their charter school's requirements with the instructor so that she may provide guidance as to the equivalence of assignments and assist with meeting charter school requirements where possible. Parents and students who have any questions regarding these options are invited to schedule a meeting with the instructor.

Visit the [college board site](#) for more information on the AP exam.

Course Aims and Outcomes: This course is intended to provide students with the following:

- An increased understanding of the scientific method, what science is and what it is not, and how scientific thinking fits into an Orthodox worldview.
- An understanding of the basic principles of physics, their measurement, and their application to commonly experienced scenarios and to other scientific fields.
- An increased understanding of the application of mathematical principles to scientific processes.
- A comprehension of introductory physics topics equivalent to one year of introductory college physics courses, in line with the AP Physics 1 and 2 course expectations.

A complete description of all content learning objectives, as well as the enduring understandings that students can expect to take away from this course, are listed in the following document: [Course Content Objectives for AP Physics 1 and 2](#)

Prerequisites: Completion of mathematics through Algebra 2 is required. An introduction to the concepts of trigonometry, or concurrent enrollment in a trigonometry or pre-calculus class is needed. Some previous physical science course is encouraged - such as previous completion of a middle school introduction to physical science.

Grading:

Grades will be weighted by unit, not by assignment type.

Unit 0 - Introduction	2%
Units 1-7	6% each - 42%
Unit 8 - Capstone of Semester 1	4%
Units 9-16	6% each - 48%
Unit 17 - Capstone of Semester 2	4%

Format: Unit 0 is an introductory unit with assignments aimed at familiarizing and connecting students with the course expectations and assignment styles. The capstone units - 8 and 17 - consist entirely of an independent project. Units 1-7 and 9-16 are the primary content units. Each unit will span one to four chapters of textbook and extend over approximately 2 weeks. Each of these main units will include the following types of assignments, with this approximate distribution of points:

- Reading Notes: Students are expected to read 1 to 4 chapters per unit and to take notes on what they read. 15pts per assigned reading, approximately **30pts** per unit.
- Homework Problem Sets: Practice problems from the textbook and/or workbook will be assigned for students to complete independently. 10-15pts per problem set, approximately **40pts** per unit.
- Quizzes: short quizzes on vocabulary and basic concept comprehension. These will include auto-grading quizzes that students are encouraged to take as many times as needed to self-asses their comprehension of assigned readings, and reflective questions asked at the beginning of class sessions. 5pts per quiz, approximately **30pts** per unit.
- Classwork: in-class problem sets, lecture survey responses, active participation in discussions, and any additional activities designed to be completed during the class session. 5pts per class, approximately **20pts** per unit

- Labs and Laboratory Reports: Students will be expected to complete several lab activities independently at home. Keeping a detailed, well organized lab notebook to accompany these lab activities is also required. 20pts per lab (with report), or approximately **40pts** per unit.
- End of Unit Exam: An exam will be provided at the end of each unit to assess students' comprehension of all included topics explored through all of the prior assignments. Approximately **40pts** per unit.
- AP Review Assignments: Assignments aimed solely at preparing students to apply the course content to the AP Physics 1 and 2 exams will be included for the benefit of those planning on sitting these exams. These will be credit/no-credit activities assigned regularly to help students maintain a steady pace of preparation throughout the year. Approximately 20pts per unit.

Reading, Homework, and Laboratory assignments are expected to be completed prior to class on the assigned due date, so that students are prepared to discuss and review the materials in class. In-class quizzes, problem sets, and lecture survey responses may, at times, be made-up with an independent assignment. Most other in-class assignments cannot be made up by students not in attendance. End-of-unit exams are to be taken outside of class time and are to be proctored by the parents. Further details as to the requirements and expectations of each assignment will be included with the assignment.

Class Policies:

- Regular attendance is essential and expected. Some in-class activities cannot be replaced with out of class assignments.
- Timely completion of assignments is required as preparation for in-class discussion and activities that build off of out-of-class assignments. Students will need to bring relevant materials with them to class, including: access to all course books, note-taking materials, and any assignments scheduled to be discussed.

Laboratory Policies: This course is scheduled to include approximately one lab assignment per week, as well as one project each semester. Completion of these lab activities (not simply reading through or watching demonstrations) is integral to successful mastery of course content and objectives. Purchase/acquisition of lab materials listed in the lab kit is a requirement.

Instructor Assumptions and Expectations: In an AP Physics course I assume enrolled students to have a solid background and foundation in understanding the scientific method, what science is and isn't, and how to conduct a basic high school level science experiment. I assume students to be able to read and understand a science textbook independently, though instruction will be provided to review best strategies for reading a textbook and taking notes on scientific material. I assume students to have the technological skills a materials needed to fully engage in an online course - including utilizing the full function of Zoom meetings, edmodo, and email. **I expect students to:**

- Manage your time and dedicate sufficient time to assignments.
- Log into classes and test equipment needed for class at least 10-15 minutes prior to the scheduled start of class.
- Stay abreast of all course dates and deadlines, planning and completing work accordingly.
- Own your own learning.
- Check Edmodo regularly.
- Be aware of and receptive to instructor feedback, including checking grades and comments on assignments.

- Maintain high expectations of yourself and adhere to all standards of academic honesty.
- Conduct laboratory experiments responsibly.
- Communicate with the instructor promptly whenever questions about the course or assignments arise.
- Monitor your own learning and ask for help from your parent and/or instructor whenever you need it.

I expect parents to:

- Set aside a calm, quiet, distraction-free space for your child(ren) to work every day.
- Ensure virtual learning equipment is available and charged.
- Establish routines and expectations and a basic schedule for completing classwork.
- Help students ‘own’ their learning.
- Check Edmodo for communications from teachers and help students print off resources that are provided.
- Stay abreast of teacher feedback in the form of grades or other messages.
- Proctor tests, quizzes, or other assessments as scheduled by the teacher. Parents ensure academic integrity because they are on the “live” side of the screen.
- Provide an appropriate space and dedicated time for students to carry out laboratory experiments. Parents should review any safety considerations with their student and provide supervision of labs as they see fit.
- Communicate with teachers regularly via email or Edmodo regarding any questions or issues that arise.
- If your child is having trouble completing work, email teachers to schedule a time for an online meeting.

Academic Honesty: Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student’s own work.

You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. One great way to assess what you know is to teach the idea to a peer! You may also work together on problem sets and give “consulting” help to or receive “consulting” help from your peers. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in any form (e.g. email, Word doc, Box file, Google sheet, or a hard copy). Assignments that have been previously submitted in another course may not be submitted for this course.

Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can also be extended to include failure of the course.

During examinations, you must do your own work, consulting only those materials which have been explicitly described as permitted for that exam.

Important Dates:

AP Coordinator Preferred Deadline	Oct. 4, 2022
AP Final Cutoff	Nov. 15, 2022
Physics 1: Algebra-Based AP Exam	12:00 Wednesday, May 3, 2023
Physics 2: Algebra-Based AP Exam	12:00 Thursday, May 4, 2023

**Tentative Class Calendar
Fall Semester**

<i>Week</i>	Reading	Lab Activity	Workbook	AP Review
0 - Aug. 16	Chp. 1	<i>No Lab</i>		AP Sign-up
1 - Aug. 22	Chp. 2	1		Diagnostic Test 1
2 - Aug. 29	Chp. 3	2		College Board Check-in 1
3 - Sep. 5	Chp. 4	3		
4 - Sep. 12	Chp. 5	<i>No Lab</i>		CB Check-in 2
5 - Sep. 19	Chp. 6	4		
6 - Sep. 26	Chp. 7	5		CB Check-in 3 and 4
7 - Oct. 3	Chp. 8	7		
8 - Oct. 10	Chp. 9	8		
9 - Oct. 17	Chp. 10	10		CB Check-in 5 and 7
10 - Oct. 24	Chp. 16	6 and/or 9		
11 - Oct. 31	Chp. 17	11		CB Check-in 6
12 - Nov. 7	Chp. 11	17		Practice / Diagnostics
13 - Nov. 14	Chp. 12	18		CB Check-in 1
<i>Thanksgiving Break</i>				
14 - Nov. 28	Chp. 13	Project 1		Diagnostic Test 1
15 - Dec. 5	Chp. 14	Project 1		
16 - Dec. 12	Chp. 15	Project 1		CB Check-in 2

**Tentative Class Calendar
Spring Semester:**

<i>Week</i>	Reading	Lab Activity	Workbook	AP Review
1 - Jan. 9	Chp. 18	13		
2 - Jan. 16	Chp. 19	14		CB Check-in 3
3 - Jan. 23	Chp. 20	5		
4 - Jan. 30	Chp. 21	20		CB Check-in 4
5 - Feb. 6	Chp. 22	21		
6 - Feb. 13	Chp. 23	22		
7 - Feb. 20	Chp. 24	23		CB Check-in 5
<i>Spring Break</i>				
8 - March 6	Chp. 25	25		
9 - March 13	Chp. 27	27		CB Check-in 6
10 - March 20	Chp. 29	26		
11 - March 27	Chp. 30	28		
12 - April 3	Chp. 31	29		CB Check-in 7
<i>Pascha Break</i>				
13 - April 24	<i>Review</i>	<i>No Lab</i>		
14 - May 1	<i>Review</i>	Project 2		AP Physics Exams
15 - May 8	Chp.26	Project 2		
16 - May 15	Chp.28	Project 2		