

AP Physics 1 2022-23 Syllabus

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Introduction

Welcome to Advanced Placement Physics 1. This is an introductory physics course and for most of you this will be your first time taking an AP science class. Many students come into physics very nervous or even terrified. Let me take a moment to reassure you. Physics, while sometimes challenging, is also rewarding and, believe it or not, interesting! I will give 110% the entire school year and do my best to help you in any way that I can. If you also try your hardest, turn in your work, and attend class, you will pass this class. That is the Chandler Promise™.

Course Description

AP Physics 1 is an algebra-based introductory physics course. Topics to be covered include Newton's laws, interactions of systems, energy, momentum, rotation, gravitation, harmonic motion, and possibly more! The course is organized around six "Big Ideas" that relate across many disciplines. During the year, you will learn how to apply seven "Science Practices". These Science Practices are about developing skills in modeling, working with data, critical thinking and reasoning. In other words, this course will help you be a success within many career paths because you won't just learn how to do physics problems, you will learn how to think critically about any problem and solve it.

This is a student-centered classroom. The majority of class is spent in student-designed presentations, class discussions, labs, and demonstrations. Your active participation in presentations and discussions is crucial to your development of science skills and your grade.

As AP students, you will be expected to participate, ask questions, offer solutions, and contribute to discussion. Participation and asking questions are key to understanding the material and a passing grade on the AP exam. Self-assessing where you are in class often is important. You cannot afford to fall behind in this class, as each unit requires mastery of the previous content. Tutoring will be available every day, be sure to take advantage of it.

Scope and Sequence

<i>Fall Semester</i>	<i>Spring Semester</i>
Week 1-2: Safety, math review, course intro	Week 1-3: Momentum and Impulse
Week 3-6: Kinematics, representations of motion	Week 4-5: Collisions
Week 6-9: FBD's, Dynamics, Newton's Laws	Week 6-7: Simple Harmonic Motion
Week 10-13: Energy, Energy Conservation, Work and Power	Week 8-13: Torque, Rotation, Angular momentum, and Moment of inertia
Week 14-15: Gravitation and Circular Motion	Week 14-16: Review!
Week 16-17: Review and Semester Exam	May 11, 2023: AP Physics 1 Exam Day

Standards Based Grading

This year I will be implementing a standards-based grading policy. What does this mean to you? Your grades will no longer hinge on how well you do on exams, quizzes, or homework. In fact, homework is 100% optional (but still highly recommended). Grades will no longer be averaged together to come up with your grade for the class. Instead, your grades will depend on how well you have mastered the content. You must demonstrate your mastery of the information to me on quizzes and assessments. However, doing poorly on one assessment does not doom you to have a bad grade for that grading period. Simply re-assess that standard and show your mastery and your grade will be updated to represent your current level of knowledge. Each grading period will have several standards which you will need to show mastery of to get the grade you desire.

Course Objectives

By the end of the year, if you have worked your hardest and completed all your tasks, you will be able to do the following:

- Model any given system of objects: this means describe what will happen given parameters, or what has happened
- Graph any system of objects using several different types of graphing methods
- Apply different formula and calculations to determine different measurable quantities of a system
- Design a laboratory experiment in order to test a hypothesis about a physics claim
- Make claims and predictions qualitatively and quantitatively about the future state of a system
- Think critically about problems and apply sound logic and reasoning to assess possible solutions

Student Expectations

- ALWAYS ASK FOR HELP

*This class will be challenging. Make sure you ask many questions to ensure your understanding. Do not hesitate to ask a question because you do not want to “look dumb”. I 100% **guarantee** that there will be at least one other person who is wondering what you’re wondering.*

- STAY ON TASK

Off task behavior will receive reminders. Habitual off task behavior will receive phone calls to home. You simply cannot pay attention to what is happening in class and your phone at the same time. If you do not believe me, a demonstration can be arranged.

- CLEAN UP AFTER YOURSELF

This is everyone’s classroom - keep it clean. Expect to stay after class if you make a mess.

- USE ONLY TEACHER APPROVED LANGUAGE IN THE CLASSROOM

If you are unsure whether a word is appropriate it is better to just not use it. There will be absolutely no bullying or bigotry of any kind in our classroom. There is zero tolerance for that type of behavior.

A reminder: this is a university level course. The content, assignments, exams, student behavior in and out of the classroom will be expected to meet a university standard.

2022-23 AP Physics 1 - Suggested Reading and Practice Problems

Unit/Content	Suggested Reading	Suggested Practice	Complete by
<i>Unit 0:</i> Introduction to Motion	<u>Class Textbook:</u> Ch 1 & Ch 3.1-3.2 <u>OpenStax:</u> Ch 1.1-1.2, Ch 2.1-2.2	<u>Class Textbook:</u> Ch 1 – Q's 2, 4, 17; P's 18, 20, 24, 28 Ch 3 – Q's 1, 2, 3, 4; P's 1, 2 <u>OpenStax:</u> Ch 1 – CQ: 2; PE: 1, 3 Ch 2 – CQ: 2, 6, 7; PE: 1, 3	August 26, 2022
<i>Unit 1 part 1:</i> 1-D Kinematics	<u>Class Textbook:</u> Ch 2 <u>OpenStax:</u> Ch 2	<u>Class Textbook:</u> Ch 2 – Q's 1, 4, 7, 10, 15, 17; P's 2, 7, 13, 19, 21, 27, <u>OpenStax:</u> Ch 2 – CQ: 9, 10, 11; PE: 5, 9, 20, 25, 43, 61 Graphing - W HMWK Graphs of Motion.doc Calculations - W Chandler Physics Constant a... Challenge - W Velocity and Acceleration gr...	Sept 9, 2022
<i>Unit 1 part 2:</i> 2-D Kinematics	<u>Class Textbook:</u> Ch 3 <u>OpenStax:</u> Ch 3	<u>Class Textbook:</u> Ch 3 – Q's 1, 3, 18, 21, 23, 24, 26; P's 8, 9, 27 - 31 <u>OpenStax:</u> Ch 3 – CQ: 4, 12, 13; PE: 3, 25, 27, 29, 31 Level ground Projectile Motion - W 2D Motion HMWK 2.doc Projectile Motion - W 2D Motion HMWK 1.doc Challenge - W Challenge Problem 2D Moti...	Sept 23, 2022
<i>Unit 2:</i> Dynamics	<u>Class Textbook:</u> Ch 4 & 5 (omit 5.6) <u>OpenStax:</u> Ch 4 & 5 (omit 5.2)	<u>Class Textbook:</u> <u>OpenStax:</u>	
<i>Unit 3:</i> Circular Motion & Gravitation	<u>Class Textbook:</u> <u>OpenStax:</u>	<u>Class Textbook:</u> <u>OpenStax:</u>	
<i>Unit 4:</i> Energy	Class Textbook: OpenStax:	Class Textbook: OpenStax:	
<i>Unit 5:</i> Momentum	Class Textbook: OpenStax:	Class Textbook: OpenStax:	
<i>Unit 6:</i> Simple Harmonic Motion	Class Textbook: OpenStax:	Class Textbook: OpenStax:	
<i>Unit 7:</i> Torque & Rotational Motion	Class Textbook: OpenStax:	Class Textbook: OpenStax:	