

GHS Course Syllabus

Subject: AP Physics C Year: 2017-2018

Department: Science Room #: 133 Periods Taught: 8

Course Title: Advanced Placement Physics Mechanics

Course Description: ADVANCED PLACEMENT PHYSICS*

Grade: 11, 12 **Credit:** 1.0

Recommended Prerequisites: Concurrent enrollment in Pre-calculus or Calculus.

This course is designed to provide a firm foundation in physics for students intending to emphasize science in their college or university education. This course will provide a college level, in-depth study of mechanics; calculus and/or the concepts of calculus will be utilized throughout the course. For students who are not enrolled in calculus, the basic concepts calculus (derivative & integral) will be taught in the class, but all students need to be very good at algebraic manipulations, orders of operations and the basic trigonometric functions of sine, cosine and tangent. Students will have the opportunity to take the AP Physics C-Mechanics test in the spring.

Faculty Name: John Gibbs

Course/Faculty Website: www.AstroPhysicsGHS.weebly.com

Office Hours: 8:00 – 8:30 am & 3:30 – 4:00 pm (except Thursdays)

Welcome/Introduction to Course: AP Physics is directed at college bound students who are interested in majoring in the sciences or engineering and who are interested in a very thorough and rigorous study of physics. The first semester of the course is devoted to the study of the mechanics topics of linear motion (including the derivative) and projectiles, forces, momentum and energy (including the integral), and rotational energy. The second semester will focus on torque and rotation, gravitation and oscillations. If time permits, we will also cover selected topics in electricity. This course is laboratory based and ideally students should either be currently enrolled in calculus or have previously taken calculus. **Students who are enrolled in pre-calculus this year need to be aware that this course will require additional effort to master the material.** The ultimate goal (other than learning the amazing wonders of physics) is of course the AP exam that is scheduled for Monday, May 8th, 2017 at noon. The cost is \$93 for each AP exam the student takes. Financial assistance is available for those who need it. To be ready for the exam, it is extremely important to stay up to date with all the assignments and work in the class. All AP courses work on a very tight timeline, so if you have any questions or concerns, please talk to me.

To succeed you need...

- **To come to class on time and ready to work.**
- **A scientific calculator.** Graphing calculators are great but not required. During the AP exam students will **only be allowed to use calculators on the free-response section** of the test, not the multiple choice section. Calculators that have a “qwerty” keyboard configuration are not allowed.
- **A three ring binder** to organizing your work is also essential. Keep all of your homework problems, labs and tests for reference and as review materials for the AP exam. In addition to this, some colleges and universities will ask to see this before they grant you college credit for the course even if you pass the AP exam in May.
- **A homework/lab notebook.** As noted above, organization is very important. I would like you to keep all of your homework in a bound notebook, like a composition book. This way you will not have loose scraps of loose paper floating around that have some partially finished and/or unlabeled physics problems on them. Everything will be in there in the order we did it. Again, your future college or university may like to see this. This notebook will include your solutions to all of the assigned problems as well as preliminary lab work and lab notes. The best lab books for our purposes are the black composition notebooks that are grid and NOT ruled. This is important for making accurate sketches of graphs. Office Depot should have these in stock.

Note to Parents: This is a very challenging laboratory based **science course meant to mirror the level of material that is covered in calculus based college physics course which is often taken by college freshmen and sophomores.** Students can expect approximately 45 minutes of homework (problem sets, lab report writing or reading) each night, not just days we have class.

Please contact me by email if you ever have any questions or concerns.

Learning Outcomes & Course Objectives: This course focuses on the AP guidelines necessary to pass the AP Physics C mechanics test that take place in May. The test is comprised of 35 multiple-choice questions and 3 free response questions and lasts approximately 90 minutes (45 minutes for each section).

Required Text: Principles of Physics by Serway & Jewett

Optional/Suggested Text: There are many on-line resources available to help students in Advanced Placement courses. Links to several of the resources that are specific to AP Physics can be found on my course website www.AstroPhysicsGHS.weebly.com. It is also possible to access this site by clicking on my name on the staff page of the Glencoe High School website.

It is strongly suggested that you purchase one of the following AP Physics review books. Any one of the following would be a good supplement for the course:

- 5 Steps to a 5 (McGraw-Hill)
- The Princeton Review: AP Physics B & C (Random House)
- AP Advantage by Jim Moodey (People's Publishing)

These books focus on the main topics of the test with examples and practice exams. Having any one of these is an excellent resource to supplement the textbook.

Grading, Grading Categories & Percentages: Approximately 80% of the grade will be based on unit tests & frequent quizzes over current topics and the assigned reading, (after all, this is what we are working toward) and 20% on lab work and random homework checks. It is the quiz score that will be recorded in the grade book, individual assignments will generally not be graded, but answers to assigned problems will be posted so students can check their work. Students may retake quizzes according to the new retake policy.

A student is allowed to retake any summative assessment and receive full credit, up to ten (school) days after the original summative assessment has been graded and the score communicated to the student. After ten days, the eligibility of the retake will expire unless prior arrangements have been made with the teacher. ***The teacher may require evidence of learning/additional practice prior to the retake.***

It is important for students and parents to understand that test and quiz retakes are there as a safety net and should not become a habit. It is the student's responsibility to use the initial quiz and assignments as a guide to learning the material BEFORE retaking a particular concept quiz. Students are also encouraged to come in for additional help as needed. There will be a comprehensive test at the end of each unit that will generally be worth five to ten quiz scores.

Grading Scale: Student scores will be averaged at the end of the grading period and assigned a grade according to the scale below.

Grade	Earned Score	Equivalent % (Balanced Grading)
A	85 – 100%	85 – 100%
B	70 – 84.9%	70 – 84.9%
C	55 – 69.9%	55 – 69.9%
D	40 – 54.9%	40 – 54.9%
F	0 – 39.9%	25 – 39.9%

Earned scores of less than 25% will be adjusted to 25%.

Mid-term grades reflect cumulative grade to that point in the semester.

Make-up & Late Work Policy: Students need to do the work in a timely manner. Students who are absent will have extended time to make up work, but not unlimited time. Students who have been absent should talk to the instructor when they return to class to make arrangements for make-up work.

Cheating/Plagiarism Policy: Cheating/plagiarism will not be tolerated. Any student caught cheating will face disciplinary action. See student handbook.

Course Schedule/Outline: Semester 1
Chapter 2 – Motion in One Dimension – including graphical analysis of motion (2 weeks)
Chapter 3 – Motion in Two Dimensions (3 weeks)
Chapter 4 – The Laws of Motion (3 weeks)
Chapter 5 – More Applications of Newton’s Laws (2 weeks)
Chapter 6 – Energy and Energy Transfer (2 weeks)
Chapter 7 – Potential Energy (3 weeks)
Chapter 8 – Momentum and Collisions (2 weeks)
Chapter 10 – Rotational Motion (1 week)

Semester 2
Chapter 10 – Rotational Motion: Energy & Torque (4 week)
Chapter 11 – Gravity and Planetary Orbits (3 weeks)
Chapter 12 – Simple Harmonic Motion & Oscillations (3 weeks)

The order of the topics and time spent on each may change throughout the year. Specific information about the schedule can be found on the course website.

Remaining time will be spent reviewing and covering some of the following:
Review for the AP exam and selected physics topics of interest generally selected by the class.

Classroom Conduct: All school and district guidelines apply and all consequences are outlined in the student handbook.

Cell phone Policy: As a general rule, students should not use their cell phones in class. Students are expected to turn off their cell phone/electronic device and stow it in their backpack, purse or pocket at the start of class for the duration of the class. The first violation the student receives a reminder warning, the second violation the phone will be confiscated and locked up for the student to pick up at the end of class and parents will be contacted. Subsequent violations result in the phone being sent to the administration. There will be times when cell phones may be used during class for class work, however, if the cell phone is not being used appropriately during these times the above rules will apply. Students need to learn when it is and is not appropriate to use their cell phones and as a general rule, class time is not the time for cell phone use.

Attendance: Please see student handbook for the current attendance policy as they have changed this year. Two specific changes are summarized below:
1) The expectation of Glencoe High School is that all students are punctual to all classes. If a student arrives to a classroom after the tardy bell, within the first 10 minutes of the class period they will be considered tardy.
2) The consequence for any *unexcused* tardy, is one day of After School Detention, to be served from 3:45-4:30pm. Detention will begin no later than three days after the detention is assigned.

AP PHYSICS

Students and Parents/Guardians – Please provide your signature below indicating you have read and understand the requirements and expectations of this course.

Student Signature & Date

Parent/Guardian Signature & Date

Please print the student’s name

Please print the parent or guardian’s name

Please read the syllabus carefully, print a copy of the third page, sign it and return it to Mr. Gibbs