



Physics I Syllabus

Grade 11

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Course Overview

Welcome to Physics I! It is the first course in a two-course sequence that altogether corresponds to a full year of College Physics. In Physics I we will lay the foundation for you to understand the most fundamental ideas of classical physics. First we will learn how to describe how things move, and then we will explain why they move in terms of the Newtonian concepts of force and momentum and the classical energy concept. Along the way we will have to consider gravitation as a result of gravitational fields and alternatively, as a result of the curvature of spacetime. Although we will not systematically develop Einstein's Theory of Relativity, we will encounter the need for this theory and describe phenomena that illustrate it. An understanding of the material in this course will benefit you in college and beyond. Even better, the physics you learn this year will spark your imagination to envision things in the natural world that might not have entered your mind until now. While the journey requires the hard work of reasoning, I hope you will enjoy the adventure as we explore some beautiful and powerful ideas in physics.

Course Objectives

- Continue to develop a sense of wonder about the natural world.
- Become proficient in the methods of scientific inquiry and develop laboratory skills.
- Conceive and understand basic models in physics.
- Develop the ability to describe and explain physical systems and processes with mathematics.
- Develop problem-solving skills.
- Develop the ability to communicate with others using the terminology of physics.

Materials needed for Physics I

- Access to computer and printer
- Spreadsheet software (e.g. Excel, Numbers, Google Sheets)
- Scientific calculator

Textbook

- **College Physics: Principles and Applications**, 6th Edition, Douglas Giancoli (provided by AP)

Course Expectations

- **Homework:** Homework is assigned nearly every class period. It most often consists of reading a few sections from the textbook and doing a few problems. Homework should be done neatly and thoughtfully. It is to be completed by the beginning of the class period of the assigned date.

- **Class Participation:** Students have many ways to participate effectively. Here are some of them: asking questions to clarify an idea or discussion, answering the questions of other students, recording insights and ideas related to our work, designing an experiment, operating lab equipment, collecting and analyzing data, reporting one's own questions and science experiences outside of class, proposing ideas that can enhance Physics I. In general, we put a high value on anything students do to enhance their classrooms.

Tutoring Hours

Lyceum (12:05 pm – 12:35 pm) on Mondays and Thursdays or by appointment in the Physics Room (Newton).

Assignments and Assessments

- **Participation**
Some of the ways to participate are listed above. Your active participation contributes to your grade.
- **Quizzes: Two kinds for two purposes**
Quizzes can be *formative* and weighted as Homework for grading purposes, and they can be *summative* and weighted as Quizzes and Tests. Formative quizzes are designed to provide you feedback about how your learning is going during a course of instruction. They may be given without notice. Likely points of difficulty are probed to see if specific, basic ideas have been understood. Summative quizzes, on the other hand, are like short tests; they are designed to test your understanding *after* a course of instruction has been completed and will be advertised in advance.
- **Tests**
Each unit of instruction ends with a test. Usually the units of instruction are the chapters in the book. The tests usually include multiple-choice items and free response questions that provide an opportunity for you to use the ideas you have learned. There are also often test questions related to the experiments that we have done.
- **Projects/Labs**
Laboratory experiments will be a regular feature in our work. We will often use student laptop computers to collect data. We will provide the data collection software at no cost to students with laptops.

As the opportunity arises we will tackle other projects that will be counted the same as lab reports.

Turning in Assignments

Assignments are collected at the beginning of class.

Late Assignment Policy

Assignments turned in one-day late receive half credit. Assignments are not accepted if they are more than one day late.

Quarter Grades

Course Work	Percentage
Participation	10%
Tests and Quizzes	40%
Lab Work	25%
Homework	25%
TOTAL	100%

Semester Grades

Course Work	Percentage
Quarter 1	45%
Quarter 2	45%
Semester 1 Exam	10%
TOTAL	100%

Academic Policies and Institutional Resources

All student work (tests, quizzes, homework, projects) will be returned within one week of submission, with minor exceptions. Essays will be returned within two weeks of submission. Please refer to Anthem Prep's Family Handbook for more information on the academy's policies.

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Curriculum Overview

First Quarter

Ch 2: Describing Motion–Kinematics in One Dimension

Ch 4: Dynamics: Newton’s Laws of Motion

Ch 3: Kinematics in Two Dimension; Vectors

Second Quarter

Ch 5: Circular Motion; Gravitation

Ch 6: Work and Energy

Third Quarter

Ch 7: Linear Momentum

Ch 8: Rotational Motion

Ch 9: Static Equilibrium; Elasticity and Fracture

Fourth Quarter

Ch 11: Vibrations and Waves

Ch 12: Sound

Lab Safety

Science Safety Rules & Parent/Student Safety Contract

Science class is an enjoyable and exciting place to learn. You are responsible for your safety and the safety of your classmates. The following are safety rules to help guide you in protecting yourself and others from injury.

1. Read all instructions before you begin.
2. Take note of every verbal or written caution given for an experiment and be fully prepared to comply with each one.
3. Do not attempt any unauthorized experiment.
4. Never engage in horseplay or practical jokes of any kind during an experiment.
5. Know the location & use of the extinguisher, eyewash, and other safety equipment.
6. Report any accident, injury, spill or incorrect procedure to your instructor at once.
7. Use safety equipment provided for you. (goggles, aprons, gloves)
8. Long hair should be tied back. Avoid hanging necklaces or bulky jewelry.
9. Only teacher approved materials are permitted in the working area.
10. Never eat or drink during the experiment. Never inhale chemicals. Do not taste any substance or draw any material into a tube with your mouth.
11. Handle lab equipment properly. Get help if you do not know how to use something.
12. Do not use chipped, cracked or dirty glassware.
13. After the experiment, clean equipment and return all materials and supplies to their proper places. Clean your area with water. Wash your hands.

STUDENT CONTRACT:

I, _____, have read the above safety rules and have had the rules explained to me. I understand these guidelines are for my own safety. I will follow these rules when participating in lab activities. I understand that my failure to follow these rules and procedures could result in a hazardous situation for me or for other class members. I realize that my failure to follow these rules and procedures will result in some or all of the following actions:

- | | |
|---|---|
| a. a verbal warning from my teacher | e. <u>suspension</u> from future labs |
| b. a zero on the lab activity | d. <u>removal</u> from the lab activity |
| c. <u>notification</u> of my parents/guardian | f. <u>further</u> disciplinary action |

Student signature

Date

PARENT CONTRACT:

I, _____ am the parent/guardian of _____

I have read the above safety items and understand them. I recognize the need for safe behavior by my child in the science lab, and support these policies. I have read the consequences for failure to comply with proper procedures/rules, and I agree that a safe environment is necessary to conduct science activities.

Parent signature

**Students: please return this page to Mr. Swackhamer by
Friday, August 26.**

*I have read and understood all the contents of the Physics II syllabus and I agree to abide
by the policies and procedures described within.*

Student's name (print)

Student's signature

Date

Parent's name (print)

Parent's e-mail

Parent's signature

Date