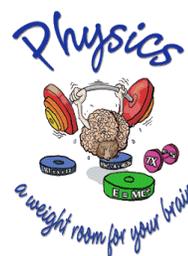




AP Physics 1 Syllabus

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Course Description

You can't play a game if you don't know the rules, and the more you know the rules the more you enjoy the game. Physics is the study of nature's "rules" – the rules and laws governing the universe in which you are a part. So, to learn physics is to learn about ourselves and the arena of physical and natural laws that govern all aspects of our lives, from the atoms within our cells to the motions of galaxies and the energies in distant quasars!

AP Physics 1 examines, in depth, topics in Classical Mechanics, Electromagnetism, and simple circuitry to prepare you for the AP Physics 1 test in May of 2018. My goal is not to teach to the test; rather, it is to teach the subject and cognitive skills that go along with it. When striving for that goal, testing becomes secondary and a natural extension of the learning process.

This course will also teach you to become critical thinkers and develop analytical reasoning that will give you problem-solving skills that apply across all disciplines. To that end, an inquiry-based instructional environment is utilized, one in which the traditional practice of "I do-we do-you do" is reversed. There will be many practice problems, assessments, and homework assignments – it is imperative that you complete all work to the best of your ability. Physics is learned by doing, not by watching.

Expectations

According to the College Board AND based on my experience, students are expected to give a minimum of one hour of study to AP Physics every night. This time should be used to organize class notes, rework proofs and derivations, and work on assessments. Tests and exams will require additional time, as will final preparation for the AP Exam at the end of the course.

This course also has Saturday sessions, some offered by NMSI (National Math and Science Initiative) and the others offered by me. The NMSI sessions bring in experts from all over the country to help you understand basic concepts and prepare you for the AP exam; the other Saturday sessions are recitations – a forum to ask questions and go over problems. You are expected to attend the NMSI sessions and highly encouraged to attend the recitations.

Cell Phone Policy

No cell phones, tablets, or earbuds are allowed in the classroom – keep them quiet and put away! Anyone caught using a cell phone will face the following discipline, as outlined in the Student Planner:

1st Offense: 1 day ISS/2 days lunch detention 2nd Offense: 2 days ISS or 1 day OSS 3rd Offense: 2 days OSS

Major Units of Study

Semester 1: Kinematics, Dynamics, Mechanics, Energy

Semester 2: Mechanics, Waves and Sound, Electrostatics, Circuits

Materials

Textbooks:

1. "College Physics" by Eugenia Etkina, Michael Gentile, and Alan Van Heuvelen. Pearson.
2. "College Physics for AP Courses" by Irina Lyublinskaya (Principle Author). Open Stax. Found on the course website.
3. "Quantitative Skills in the AP Sciences" published by the College Board. Found on the course website.

Student Supply Information: Notebook and binder, pencil (mechanical serves best), calculator (scientific)

Grading

Formative Assessments: 20%

Lab Work: 25%

Summative Assessments: 55%

Website

The course has a website, which you may access at www.physics-is-phun.org and then select AP Physics 1 from the main menu. Assessments, textbooks, classroom materials (such as Goals and Scales), a calendar, and other tools are there for you to utilize. A password is required to enter the AP Physics 1 section, which will be provided.

AP Physics 1 Late Work and Missed Test Policies

- Work is expected to be turned in on the due date. In the case of an excused absence, assignments are due the day you return. Late work is subject to a 25% penalty and must be accompanied with a completed Late Work Request Form. No work will be accepted after a unit test.
- If you miss a laboratory exercise with an excused absence, you may be exempted from the work (to be determined by the instructor).
- If you miss a summative assessment (test or exam) and have an excused absence, you have one week to make up that test. Make-up time is by appointment only and will not happen during class time.

General Classroom Guidelines

- We practice and expect respect at all times – to our teacher, our classmates, and ourselves.
- We come to class prepared and excited to learn.
- We appreciate the value of education.
- We work to maintain a positive learning environment.
- We strive to do our best.
- We believe in academic integrity.
- We will keep our classroom and supplies neat.

General Classroom Procedures

- We arrive to class on time, enter in a respectful way, and begin any bell work.
- We raise our hands to be recognized.
- We do not leave our seats unless given permission.
- We do not leave our trash on the floor. Trash is to be thrown out at the end of class.
- We do not eat, drink, or chew gum in this classroom.
- No cell phones or tablets!

General Classroom Policies

- Work is to be turned in on the due date. Late work must be accompanied with a Late Work Form and may be subject to a 25% penalty.
- No work will be accepted after the unit test.
- A missed test with an excused absence must be made up within one week – Not during class. If the absence is excused, full credit may be earned; if unexcused, a maximum score of 75% may be earned.
- You are responsible for work from any absence
- Any act of cheating results in a grade of 0.
- Do not arrive late for class. Four tardies per quarter yields a referral.
- Behavior that is not compliant with the student handbook will be addressed by the procedures outlined in the handbook.

Course Outline:

Quarter 1

Kinematics

Kinematics in one dimension
Vectors and scalars
Kinematics in two dimensions
Projectile motion

Dynamics 1

Forces
Newton's Laws of Motion
Friction
Simple machines: Pulleys

Quarter 2

Dynamics 2

Uniform circular motion
Dynamic circular motion
Gravitation

Energy

Work
Power
Kinetic energy
Gravitational potential energy
Elastic potential energy
Conservation of energy

Quarter 3

Dynamics 3

Impulse and momentum
Conservation of momentum
Elastic and inelastic collisions

Dynamics 4

Linear restoring force and simple harmonic motion
Simple harmonic motion graphs
The simple pendulum
Mass-spring systems

Dynamics 5

Rotational motion
Torque
Center of mass
Rotational kinematics and inertia
Rotational energy
Angular momentum
Conservation of angular momentum

Mechanical waves and sound 1

Traveling waves
Wave characteristics
Sound
Principle of superposition

Quarter 4

Mechanical waves and sound 2

Standing waves on a string
Standing sound waves

Electrostatics

Electric charge
Conservation of charge
Electrostatic force
Coulomb's Law

DC Circuits

Electric resistance
Ohm's Law
Circuits – Series and Parallel
Kirchhoff's Law

Sample Late Work Request Form

Late Work Request for Revised Due Date

Name: _____ Date: _____ Period: _____

Missing Assignment: _____

Reason(s) for missing the due date:

- | | |
|---|--|
| <input type="checkbox"/> Job/work requirements | <input type="checkbox"/> Procrastination |
| <input type="checkbox"/> Difficulty with material/lack of understanding | <input type="checkbox"/> Heavy course load |
| | <input type="checkbox"/> Other (explain below) |

Details:

Teacher's Signature: _____ Student's Signature: _____

Parent/Guardian Signature: _____ Date: _____

When all three signatures are obtained, a revised completion date will be assigned. This form must be attached to the assignment. Work is subject to a 25% penalty and will not be accepted after a unit test.

Revised Completion Date: _____ Teacher's Initials: _____

Acknowledgements

Please read and fill out this acknowledgement page and return to Mr. Webber.

I, _____, have read the syllabus for AP Physics 1. I
Name of Student
understand Mr. Webber's Guidelines, Procedures, and Policies, including the use of cell phones and tablets, and the expectations of me, including the time and work expected outside of class. I also understand the discipline and academic consequences for not living up to those expectations. I recognize that the science of physics is very demanding and rigorous and that it will require discipline, planning, and studying on my part.

Signature of Student

Date

As the parent(s)/guardian(s) of the above named student, I/we also understand the Guidelines, Procedures, and Policies of Mr. Webber's class. In addition, I/we understand the academic demands of the course and will provide support to our student, Mr. Webber and the class as a whole.

Signature of Parent/Guardian

Date

Parent/Guardian Email

Phone