

Physics and Honors Physics - Course Syllabus & Policies

Welcome to physics! This year you will be introduced to the finest of all the sciences, indeed the foundation upon which all other sciences are built! You will learn about some of the most influential and significant ideas developed by humankind, empowering you to have a much better understanding of the universe. In fact, a famous physicist, Ernest Rutherford, once said, "All science is either physics or stamp collecting." No matter if your natural talents are in math and science, or you're more apt to study art or humanities, you'll likely gain fondness for physics and have new skills for life!

SYLLABUS – SIX UNITS OF STUDY

Fall Semester

1. OPTICS

- A. Reflection & Mirrors
- B. Refraction & Lenses
- C. Optical Phenomena
- D. Human Vision

2. WAVES

- A. Wave Properties
- B. Sound
- C. Diffraction & Interference
- D. Wave Phenomena

3. ELECTRICITY

- A. Static Electricity
- B. Current Electricity
- C. Electrical Circuits

Spring Semester

4. KINEMATICS

- A. Motion in One Dimension
- B. Motion in Two Dimensions
- C. Relative Motion

5. DYNAMICS

- A. Newton's Law of Motion
- B. Torque and Rotation
- C. Circular Motion
- D. Gravitation

6. ENERGY, MOMENTUM, RELATIVITY

- A. Work and Energy
- B. Impulse and Momentum
- C. Conservation Laws
- D. Special and General Relativity

PHYSICS LAB NOTEBOOK & OTHER MATERIALS

Every day you will need to bring:

- Your physics lab notebook (3 ring binder)...this is a must...please make it a priority!!
- Binder paper for notes and homework, pencils for lab data collection and analysis, homework solutions
- A calculator with trigonometric functions, preferably a TI-84, or a low-cost TI-36.

BEHAVIOR AND CLASS RULES

In the physics classroom, you should feel comfortable, positive, and enthusiastic. You are expected to work diligently, conscientiously, and consistently, at all times. Your teacher is expected to do the same!

No food or drinks (other than water) in the classroom at all times.

Bathroom breaks need to be kept to a minimum. If you must use the bathroom please ask me first. Excessive use of bathroom breaks will result in loss of "good citizenship" benefits (see below).

Cell phones must be off or on airplane mode and stored in the cell phone caddy during class. School policy allows the teacher the right to confiscate a cell phone if it rings in class.

Also, cell phones that are not "off and away" will result in loss of "good citizenship" benefits (see below).

GRADING

Grading is based on total accumulated points within *weighted* categories. Minimum for letter grades are shown below.

Categories (Percentages):

- Homework (15%)
- Quizzes (25%)
- Midterms (20%)
- Labs (20%)
- Final Exam (20%)

Grading Scale:

A+	97%	C+	77%
A	93%	C	73%
A-	90%	C-	70%
B+	87%	D+	67%
B	83%	D	63%
B-	80%	D-	60% (F below 60%)

ATTENDANCE AND CITIZENSHIP (policies apply each semester)

Incentive for good attendance and citizenship

- Lowest quiz score will be dropped with one or fewer tardy and three or fewer absences.
- Semester grades will round up 0.5% with three or fewer tardies and five or fewer absences.
- Semester grade will round up 1% if the final exam grade exceeds the semester grade.

Students will lose these benefits if they exhibit poor citizenship, which includes excessive bathroom breaks, forgetting to put your cell phone in the caddy case, not working on physics until the bell rings at the end of the period, and most importantly having a pattern of absences on quiz/exam days. Expect very few warnings before the benefit is lost.

Disincentive for bad attendance

- **At 6 tardies or 8 absences, your quiz correction points will be cancelled. This is a major loss of benefit! ☹**

HOMEWORK

Homework is assigned three days per week and usually checked for completion (stamped) the following class. Completed sets of a week's homework are collected and graded for correctness the following week, usually on Tuesdays, from every student. *Not all* homework problems are reviewed *each* day, following each assignment, but *some* of the problems will be addressed each week, and additional review will occur before a quiz.

To help complete homework you should do assigned reading from physicsclassroom.com and/or the textbook, review class slideshow presentations and examples, and check answers to quantitative questions that are posted online. Also, a *homework solutions binder* is available in class for you to check your work at any time, but only with teacher supervision. No part of the solutions may be copied, photographed, or removed from the classroom. It is strictly an opportunity for you to check your work and to ask the teacher for assistance on homework. Those who regularly check their homework solutions do better in class. Those who try to copy will soon suffer from lack of understanding!

Lost points on homework are the result of missing stamps, not showing complete work, copied work from the solutions set or another student, incorrect work. Also, there is a **10% penalty per day for late homework**. Do not make late homework a habit!

QUIZZES

Quizzes are a way to check to see if you have done your homework, including reading and problem solving, as well as lab analysis and questions. Typically there are about 4-5 multiple-choice problems and 3-4 computational problems to solve, showing all work for credit. Some questions will require drawings, diagrams, or other modeling skills. Quizzes are given every other week and cover all work from the previous two weeks, and also may include questions related to previous topics.

Absence: A missed quiz must be made up within two days. A quiz given on a Tuesday is usually returned by Friday so Smart period is the latest time for a quiz makeup. If you do not make up a quiz, it will be marked as "missing" in the grade book, which will result in zero points for that grade until the end of the unit, when the midterm exam score for the unit will replace your missing quiz. This is NOT a good idea, so avoid if possible.

Corrections: If you score below 70% on a quiz, you *may* be allowed to do corrections (only in the classroom) to raise your score to 75%. If you score between 70-79% your corrections *may* raise your score to 80%.

MIDTERM EXAMS

Midterm exams are given at the end of each unit. However, the last unit of study in the semester will be covered on a cumulative final exam, not by a separate midterm exam. A review sheet will be provided before each midterm exam. The review sheets are optional, but highly recommended.

Absence: If you miss a midterm exam please email immediately to explain your absence and to arrange a make-up exam. There are only two midterms (and a final exam) per semester, so missing any one of these days is unusual and requires a confirmed and legitimate excused absence involving an email or phone call with me and your parents.

LABS

Each week you will have a lab that includes data collection, data analysis and relevant questions and calculations. There are no "formal" lab reports.

Labs are a great way to learn physics, and also the easiest way to improve your overall class grade. See below for how the labs are graded for a total of 20 points. Generally, each lab group earns one group grade so choose your lab partners wisely. If a lab partner does considerably less than the others, that student will receive fewer points.

Absence: If you miss a lab, you must make it up as soon as possible at lunch, after school, or during smart period, but no later than smart period the following week. You cannot just get data from a friend to earn credit for the lab.

You must bring a friend with you so that you have a lab partner to help explain the procedure and use the equipment to collect data. When the lab is completed, it is your responsibility to show me the results in order to receive a grade.

	Instructions	Use of time/cleanup	Lab techniques	Lab report
Full Credit (5pts)	<ul style="list-style-type: none">• Group needs no supervision• Group follows oral and written instructions which includes carefully reading all lab procedures• Each partner understands the purpose of lab and all the lab procedures.• Lab partners ask insightful questions.	<ul style="list-style-type: none">• Partners works equally on data collection and analysis with own calculators.• No unnecessary socializing within or between groups.• When finished, each partner is working on physics until bell.• Lab areas are clean and lab stools put away	<ul style="list-style-type: none">• Group data collection techniques lead to precise and accurate data.• Group implements techniques to avoid experimental error.• Graphing calculators are used when required to check for individual or group mistakes, and minimize rounding errors.	<ul style="list-style-type: none">• Presentation is neat, sequential, and only in pencil• Data tables, graphs, and drawings, are labeled and complete• Calculations, lab analysis, and questions are detailed.• All measurements and results have appropriate variables and units.