

Honors Physics

Physics is a scientific study of the various interactions of matter and energy as they occur in time and space. Studying physics encourages you to ask questions about your world, helps you recognize and describe mathematical relationships among physical quantities (and make predictions based on them), and makes you a more critical problem solver. Physics has revealed some really extraordinary things about the way the world works, yet there are some truly amazing questions that we hope will be answered by some from your generation.

Course Topics/Objectives

- Semester 1:
- Analyze straight-line motion.
 - Apply the concept of vectors to the solution of physics problems.
 - Analyze motion along curved paths.
 - Apply Newton's Laws of Motion.
 - Apply the Law of Conservation of Mass/Energy.
 - Apply the Law of Conservation of Momentum.
 - Develop the Law of Universal Gravitation and explore its effects.
- Semester 2:
- Describe phenomena related to electrostatic charge.
 - Apply Coulomb's Law.
 - Apply principles of electrostatic potential and potential difference (voltage).
 - Solve problems involving electrical circuits.
 - Solve problems involving the fundamentals of magnetism.
 - Solve problems related to the concepts of thermodynamics.
 - Analyze the behavior of waves.
 - Describe the dual nature of light and matter.
 - Describe models of the atom and investigate nuclear effects.

Student Requirements and Grading

Tests (50%) Each chapter or unit will be accompanied by a test. These will consist of selected response, problem solving, and brief constructed response questions based on readings, labs, and homework assignments. Students who cannot solve homework problems independently will not perform well on assessments. **Tests are not reassessable.**

Quizzes (20%) Each chapter or unit will have one or more short quizzes that will check understanding and ensure that you are completing all reading and problem solving assignments. **Quizzes are only occasionally reassessable.** You will have to demonstrate that your homework has been completed accurately to reassess a quiz.

Laboratory/Classwork (20%) Lab investigations and activities will both introduce and reinforce concepts. Many activities will be completed in small groups. However, each student is responsible for turning in their own original lab or class work.

Homework (10%): *The completion of homework will have the most significant impact on your grade.* Homework will include textbook reading, Internet Web-based problems, textbook problems, and reading assignments from outside sources. Many test and quiz questions will come from homework assignments.

- The majority of the homework will be Internet Web-based problems and will have strict deadlines.
- The remaining homework will be worksheets, textbook problems; etc.
- Additional homework conceptual questions from the text are also assigned.
- It is important to meet the due dates to better prepare for quizzes/tests and to comprehend subsequent material.

Do not be fooled by 10% — not completing homework on time is the biggest reason students drop a letter grade.

Problem Solving Format

All homework questions should have complete sentences when appropriate. Problems should contain the following:

- 1) A simple sketch of the situation, labeled with appropriate information.
- 2) All relevant given data, with units and significant figures.
- 3) The formulas that relate the data in their original form.
- 4) An algebraic derivation for the unknown variable.
- 5) Correct values plugged in with units.
- 6) The correct answer with appropriate significant figures, units, and a box around it.

It is important to do these procedures even in web-based work.

EXPECTATIONS

- 1) Be in your seat with your writing materials and paper ready when the bell rings.
- 2) Bring necessary materials.
 - a. Binder: I will distribute most papers with three holes punched in them. You should have a separate 2 inch (or two 1 inch) three ring binder for physics.
 - b. **Scientific Calculator:** (must have trig. and log functions and scientific notation.) Bring to class every day. **(YOU CANNOT USE A GRAPHING CALCULATOR ON ASSESSMENTS.)**
 - c. Writing utensils. Pencils and erasers are essential. Pen option for notes only. No WhiteOut®.
- 3) Participate in all discussions/activities.
- 4) Make up missed work, tests, and quizzes promptly.
- 5) **Ask questions and get help when having trouble. Physics help is available**
- 6) Conduct yourself honorably during all assignments, tests, and quizzes.
- 7) Activate your Edline account so you can get my email announcements and Edline documents.
- 8) Treat school property appropriately. Do not mess with the classroom computers; they are to only be used to complete specified labs. Do not write on furniture.
- 9) Put a book cover on your textbook. **Do not tape to the book.** Generally leave your textbook at home. Treat the book well. The book binding is not strong enough for rough handling.

Academic Honesty

While students working together on homework and lab/classwork is encouraged, each student must turn in their own individualized work. Tests and Quizzes are another matter. You should be able to pledge on your honor that you have not given or received any unauthorized assistance or share information in or outside of class on any test or quiz.