

Honors/CP Physics

Course:

Honors/CP Physics

CP Prerequisite: Geometry and Algebra 2 or concurrent enrollment in Geometry or Algebra 2.

Honors Prerequisite: See chart on p. 27

Level Course Number	Credit
CP 324100	CW 1 Unit
Honors 324100	HW 1 Unit

Course Description

This course presents a conceptual approach to physics and stresses the understanding the application of physical phenomena such as mechanics, momentum, energy, heat, motion, optics, electricity, magnetism, waves, sound, and light. Problem solving is encouraged by the use of relevant physics materials and inquiry-based laboratory activities. The honors level for this course emphasizes a mathematical approach with extensive laboratory experiences, research, and projects. A science fair project may be required.

Instructional Philosophy

Students will be engaged through a variety of strategies including cooperative learning, project based instruction, individual work, lecture, inferring and whole class discussion. A variety of hands-on activities including laboratory experiments will be implemented. Teachers will use strategies to encourage students to develop inquiry skills and to draw conclusions. Teachers will require students to use technology thus exposing students to multiple resources and scientific information. Assignments will require students to use their academic skills from other subjects, such as related arts, mathematics, and language arts. High quality work is required.

Course Goals or Power Standards

The goal of this course is to not only provide students with a strong foundation in Physics, which will aid them in completing a collegiate-level, Calculus-based Physics course in the future, but also develop an understanding of the nature of science. It will provide students with the science skills that are necessary in physics-oriented technical careers. Students will:

Power Standards
1. Students will develop a clear understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.
2. Students will become familiar with the metric system, and be able to convert, not only from one metric unit to another, but will be able to convert from the English-Standard system to metric and vice-versa.
3. Students will understand the basic principles of motion, as well as be able to solve a variety of mathematical problems involving displacement, velocity, and acceleration. Students will also carryout various small experiments using displacement, velocity, and acceleration.
4. Students will understand the basic principles of energy, and the various forms that energy can take. They will also understand that energy is neither created nor destroyed and be able to explain where energy “goes”. Students will be able to solve a variety of questions involving energy.

5. Students will understand the basic principles of electricity and magnetism. They will be able to use relevant formulas to solve problems involving both electricity and magnetism.

Literacy, Numeracy and Technology Power Standards

6. Students will be expected to read their textbook, extract important information, and organize it into outlines. Students will also be expected to locate, read, and summarize current, relevant journal articles.

7. Students will be expected to use mathematics on a daily basis to solve physics problems of various types and difficulties.

8. Students will be expected to use scientific calculators on a daily basis, in addition to using photogates. Students will also use current reference guides to aid them in the production of their journal articles (including ProQuest).

Major Course Assignments and Projects

Assignment or Project	Description
1. Formal Assessments	At the completion of each unit students will be assessed using formal exam type assessments
2. Notebook	Students will be expected to keep an organized notebook for the class, containing all the class notes, class work, and homework completed.
3. Roller Coaster	Students will be expected to construct a working rollercoaster using motion and energy principles.
4. Scientific Study	Students will complete a formal scientific study of their choosing, using the scientific method and all appropriate fundamentals of a proper experiment.

Required Reading

Students are required to read at least two journal articles using ProQuest OR must have the approval for another journal article. All articles must be pre-approved by teacher.

Course Assessment Plan/ Determining a Grade for a Course

Assessment will include: test, quizzes, projects, and homework
 80% of grade will come from labs, quizzes, tests, homework and projects
 20% will come from Final

Extra Help

Teachers are available by appointment. Students are encouraged to participate in after school peer-to-peer tutoring, sponsored by the National Honor Society.