

Physics II – AP

Course number 360

Course Description:

Advanced Placement Physics is a second year course designed to be the equivalent of the first year general physics course taken in college. This course will include the in-depth study of Newtonian mechanics, thermodynamics, wave mechanics (including light and sound), electricity and magnetism, and modern physics. As part of the normal classroom activities students will utilize problems from past AP tests as a preparation to be successful on the AP Physics B examination. Students are encouraged to accept the challenge of this examination. Students will be involved in extensive laboratory investigations that support class discussion, problem solving and application.

Prerequisite: Physics I

Course Proficiencies:

The following is a list of skills and concepts students will be proficient in upon successful completion of this course. These proficiencies, developed from The College Board's AP Physics curriculum guide, form the basis of assessment of each student's achievement. Students will be able to:

1. Demonstrate the capability to collect, analyze, and report on data in a systematic and organized manner. (5.1/12 A&B; 5.3/12 A-D)
2. Employ a variety of research methods to prepare independent projects. (5.1/12 A-C; 5.4/12 A-C)
3. Apply appropriate mathematical processes/skills to solve physics problems. (5.3/12 A-D)
4. Apply Newton's Laws to analyze complex systems. (5.2/12B; 5.7/12 A1-2)
5. Explain and apply the work energy theorem. (5.7/12 A1-2)
6. Analyze collisions using concepts of impulse, plasticity, and conservation of momentum. (5.7/12 A1-2)
7. Expand knowledge of linear motion to rotational motion. (5.7/12 A1-2)
8. Analyze objects in equilibrium by the application of relevant physical laws. (5.7/12 A1-4)
9. Apply the principles of reflection and refraction to explain the functioning of lenses and mirrors. (5.7/12 B1)

10. Relate the physical properties of sound waves and wave interference to the way we perceive sound. (5.7/12 B1)
11. Explain how electric charges are generated and transported. (5.7/12 A6-8, B1)
12. Differentiate electric and magnetic fields. (5.7/12 A6-8, B4)
13. Describe the applications of electricity and magnetism. (5.7/12 A6-8, B4)
14. Describe the nature of thermal energy and its relationship to the structure of matter.
15. Apply Archimedes' and Bernoulli's Principles to practical situations. (5.2/12 B)

Note that after each course proficiency the NJ Core Content Curriculum (CCC) Standards and Cumulative Progress Indicators are referenced, for example proficiency #3 refers to 5.3/12 A-D. This notation is to indicate that proficiency #3 specifically addresses NJ State CCC Standard 5.3, Cumulative Progress Indicators at the 12th grade level for strands A-D.

Assessment:

A variety of evaluation tools will be used to determine student achievement in this course. Any or all of the following tools will be used:

- a. Tests and quizzes.
- b. Laboratory performance, reports, and journals.
- c. Class participation.
- d. Well-developed homework.
- e. Technology-based activities.
- f. Projects, including oral presentations.
- g. Self or peer assessment.
- h. Teacher observation.

Board Adopted Textbook:

Title: Physics – AP Edition
Authors: Walker, 3rd edition.
Publisher: Pearson/Prentice Hall
Copyright: 2007