

PHYSICS

Prerequisite: Algebra II, Biology, and Chemistry or permission from instructor.

Grade Level: 11th and 12th

Credit: 1.0 – Science

Additional: This course is accepted as a science credit for h.s. graduation

This course is accepted as a science credit for college admission

This course is accepted as a science credit by the NCAA

Course Description

This course should provide students with many of the basic concepts and principles of physics and well as increase their understanding of these concepts through a wide variety of problem and application of this field of study. Students will be required to describe physical phenomena qualitatively, quantitatively, algebraically, and graphically. Students will also inquire into the Nature of Science, and how physics is present in all branches of science.

Course Objectives

Students in this course should be able to

- Identify the basic concepts and principles of physics.
- Apply learned concepts and relationships to solve a variety of application problems.
- Collect and analyze data to test physical properties and theories.

Course Outline

- Mechanics
 - Motion in one dimension
 - Vectors and two-dimensional motion
 - Laws of motion
 - Work and energy
 - Momentum and collisions
 - Circular motion and the law of gravity
 - Rotational equilibrium and rotational dynamics
 - Torque
- Harmonic Motion
 - Waves
 - Spring Oscillations
 - Pendulum Movement
 - Light
 - Sound
- Mirrors/Lenses
 - Reflection and Refraction

- Convex and Concave lenses
- Convex and Concave mirrors
- Ray Diagrams
- Electricity
 - Electric forces and electric fields
 - Electrical energy and capacitance
 - Current and resistance
 - Direct current circuits
 - Series and Parallel Circuits

Teaching Methods

This class is taught mainly through guided scientific inquiry, cooperative learning groups, individual practice, and laboratory investigations. Students will often work in cooperative learning groups and communicate their results, usually through analysis documented in a lab notebook and collaboration with their peers. Daily assignments are a major part of the learning process. Students are expected to complete every assignment and give full participation in class for successful completion of this course.

Assessment

Students will be assessed with the following:

- Homework Assignments
- Quizzes
- Labs
- Chapter and Semester Exams

Texts

Walker, J.S., Physics. Pearson 2014.