

Central High School

Intro Physical Science Syllabus

Mr. D. Ladehoff

Course Description

This course is designed to give students the opportunity to learn the basic fundamentals involved in physics. Students will be able to define and use the concepts of inertia, velocity, acceleration, and momentum; distinguish the differences between force, work, and power; demonstrate and quantify potential and kinetic energy; explain gravity's effects on items such as oceans and planetary orbits; find the relationship between magnetism and electricity, voltage and currents, circuits and coils; and identify properties of waves including frequency, amplitude, and velocity, resonance and interference, and the electromagnetic spectrum

Course Objectives

Students to understand the magnitude of a force using $F=ma$.

Students to know that whenever a force is exerted by one object to another, and equal and opposite is exerted back on the first object.

Students to understand that momentum is conserved.

Students to distinguish between inertia and gravitational mass.

Students to understand Newton's Law of Universal Gravitation.

Students to understand the types of motion such as linear, circular, parabolic, and periodic.

Students should understand energy is the ability to change matter or the ability to do work; the ways to measure energy; and the difference between potential and kinetic energy.

Students to understand that like charges repel and opposite charges attract.

Students should understand that a magnetic field is generated around an electrical current and that certain materials are insulators and others conductors of electricity.

Students to understand properties of waves such as reflection, refraction, interference, as well as frequency, wavelength, amplitude, and the way energy travels in sound and light.

Required Materials

Paper for laboratory reporting

Spiral notebook

Student handbook

Textbook

Conceptual Physical Science Explorations, Hewitt, Addison Wesley, 2003

Course Outline

Science-

Scientific method, Hypothesis, Technology, Physical Sciences

Mechanics-

Newton's 1st Law: Law of Inertia, Net Force, Equilibrium Forces

Newton's 2nd Law, $F=ma$, mass, acceleration, friction, free fall

Newton's 3rd Law, action and reaction,

Impulse, momentum, Law of Conservation of Momentum, elastic, inelastic

Work, $W=Fd$, power, potential energy, kinetic energy, Law of Conservation of Energy

Gravity, Newton's Law of Universal Gravitation, ocean tides

Projectile motion, altitude, range, satellites, orbits

Electricity and Magnetism

Charge, Coloumb's Law, current, voltage, resistance, Ohm's Law, series circuit, parallel circuit

Attraction, repulsion, electromagnetic induction, generators, insulators, conductors

Waves: Sound and Light-

Transverse, longitudinal, reflection, refraction, frequency, resonance, interference, standing waves

Electromagnetic spectrum, primary colors, pigments,

Dispersion, lenses, image. polarization, wave-particle duality

Quizzes

The occasional need to discover how you are progressing will require the occurrence of a quiz or two depending on the difficulty of the unit. There may not be a formalized or verbalized notice for a quiz.

Test Schedule

Test 1: Science/Newton's 1st Law – Sept. 17

Test 2: Newton's 2nd Law/ Newton's 3rd Law – Oct. 7

Test 3: Momentum/Work/Energy – Oct. 28

Test 4: Gravity/Projectile Motion – Nov. 18

Test 5: Electricity/Magnetism – Dec. 17

Test 6: Light/Color – Jan. 13

Comprehensive Final included/added to Test 6 for 1st Semester. Weighted score of 15% of Semester Grade.

Final Grade

To achieve a final grade it will be tabulated from

Homework/Worksheet	:25%
Quizzes	:15%
Laboratory Reports	:25%
Tests	:20%
Final Exam	:15%
	100%

Scale Percentages

The grading scale used in the chemistry class is designed to the standards set by the administration. Students are assessed using the following scale:

A ⁺ → 98-100%	D ⁺ → 75-76%
A → 94-97%	D → 72-74%
A ⁻ → 92-93%	D ⁻ → 70-71%
B ⁺ → 90-91%	F → ≤ 69%
B → 87-89%	
B ⁻ → 85-86%	
C ⁺ → 83-84%	
C → 79-82%	
C ⁻ → 77-78%	

Classroom Procedures

1. Start the beginning task written on the board.
2. Discipline yourself to listen first.
3. Life long learning comes one step at a time.
4. Write names on the upper right on any assignment along with the class period.
5. Do your own work, share your thoughts, and avoid temptation to take from others.

Laboratory Reports

The writing of laboratory reports will consist of a title page, a data collection page or table (include with that the required calculations), answers to questions in complete sentences, and a conclusion paragraph telling what you learned of the lab and its relevance towards your understanding of the physical sciences.

Instructor Contact

I can be reached through e-mail at dladehoff@cusd4.org, in B154 before school Monday, Tuesday, and Wednesday.