

## COURSE OUTLINE

### INTRODUCTORY PHYSICS

DEPARTMENT: Science

COURSE NAME: Physical Science (*Introductory Physics Emphasis*)

CREDIT VALUE: Six

GRADE LEVEL: 9<sup>th</sup>

MAJOR TEXT: Foundations of Physical Science with Earth & Space Science, Tom Hsu  
- CPO Science 2003

COURSE DESCRIPTION: Introductory Physical Science (*Physics Emphasis*) is a course covering Science & Measurement, Mathematical Models, Forces & Motion, Machines & Mechanical Systems, Work, Energy & Power, Electricity & Electric Circuits, Magnets & Motors, Harmonic Motion, Waves, Sound & Music, Light & Color and Optics. Homework is assigned on a daily basis, quizzes, tests and term projects are required.

An introductory course in Physical Science (*Physics Emphasis*) is differentiated from a more advanced course in physics by the breadth and complexity of material covered during the course and by the level of math skills required.

CURRICULUM FRAME WORK ITEM NUMBERS: 1.12, 1.3, 1.4, 1.1, 1.7, 1.10, 1.8, 1.9, 2.1, 2.2, 2.3, 2.6, 2.4, 2.5, 1.11, 1.5, 3.1, 3.2, 3.4, 3.3, 4.1, 4.2, 4.3, 4.8, 4.9, 4.4, 6.3, 6.1, 6.2, 4.6, 4.5, 4.7, 6.4, 5.1, 5.2, 5.3, 5.5, 5.4 & 5.6.

#### COURSE GOALS & OBJECTIVES:

- To learn the basic theories of mechanics, magnetism, electricity, wave theory & optics.
- To utilize hands-on experience to devise a scientific model and to use that model to predict physical behavior.

ESSENTIAL OR GUIDING QUESTION: Physical Science (*Physics Emphasis*) is a pure science that deals with natural laws and processes and the states and properties of matter and energy. With a good understanding of the principles of physics (*learned in the course*), the student will be inspired towards the understanding how things work.

**CONTENT STANDARDS:** Basic comprehension of the conceptual underpinnings of introductory Physical Science (*Physics Emphasis*) in conjunction with acceptable performance in conventional physics problem solving techniques.

**PERFORMANCE STANDARDS:** Upon completion of the course, students will be able to show an understanding of physical concepts through written & oral responses and to solve physical problems.

**PREREQUISITES:** Introductory Algebra, and a willingness to independently and enthusiastically meet all course work and study requirements.

**STUDENT OUTCOMES OF THE COURSE:** Upon completion of the course, students will be able to:

- Understand how physics has evolved as a science which explains the universe.
- Understand classical mechanics, wave phenomena & electrical circuits..
- Understand how various devices are used in the lab to model real world phenomena.

**COURSE CONTENT:**

- Physics Perspectives - Historical & relationship to other sciences.
- Kinematics - Vectors, displacement, velocity, acceleration & projectile motion in one dimension.
- Mechanics - Newton's Laws of Motion, friction, work, energy, energy conservation and energy transformations.
- Electricity - Electric forces & fields, electric energy & capacitance, current & resistance, circuits & circuit elements, magnetism.
- Waves - Simple harmonic motion, wave properties, wave interactions, sound/music & light.

**ASSESSMENT STRATEGIES:** Grades will be based on tests, quizzes, homework, term projects and in class participation..

