Physics Syllabus

Purpose

Today much of the so-called “science” is junk science. Junk science is information NOT based on the scientific method.

Thus, the first goal of this physics course is to equip you with the necessary tools for making informed decisions on scientific information. The second goal of this physics course is to familiarize you with matter, its motion and the energy involved. The third goal of this physics class is to open your thinking to a world of discovery by questioning, testing and challenging the world around you.

Objectives

Theory

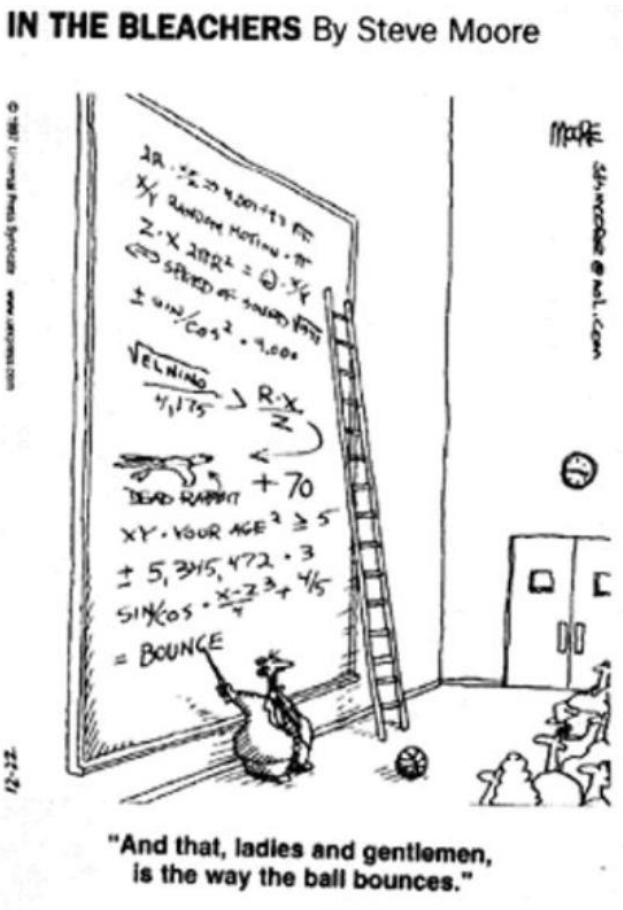
- Understand what science is and is not
- **Investigate** Newton's First Law of Motion — Inertia
- Develop the concepts of force, net force and equilibrium
- Differentiate between speed, velocity, distance and displacement
- Define Vectors: Force, Velocity and Component
- **Investigate** Newton's Second Law of Motion
- Explore acceleration, forces and friction
- Take a look at friction and resistance forces
- **Investigate** Projectile Motion
- Describe and define gravity and free fall
- **Investigate** Newton's Third Law
- Defining systems and Action/Reaction
- **Investigate** Momentum
- Define the concepts of momentum and impulse
- Determine Conservation of Momentum and Collisions
- **Investigate** Energy
- Explore the relationships of energy, work and power
- Describe the Conservation of Energy
- Explore the nature of machines and efficiency
- **Investigate** Rotational Motion
- Define Circular Motion and Rotational Inertia
- Explore Torque, Centripetal Force and Angular Momentum
- **Investigate** the Universal Law of Gravity
- Understand the development of the Universal Gravitational Constant — G

Skills

- Learn to use the calculator as a tool.
- Know the metric system and SI units.
- Determine precision, accuracy and significant figures.
- Develop problem-solving skills.
- Understand how to collect, prepare and interpret data.
- Learn how to prepare a proper presentation.

Projects

- Mousetrap Racer
- Mini Catapult
- Egg drop Crash
- Popsicle Stick Bridge
- Paper roller coaster



"A great pleasure in life is doing what peo ple say you cannot do."
-- Walter Gagehot