

Introduction to Physics

Course Description

This course is perfect for 6 through 8 graders who have little or no prior experience with physics. The prerequisite is algebra 1. We will go over the basics of physics and get prepared for high school honors physics classes. This class is interactive and there will be minimum homework. The class will be 60 minutes long. No textbook is required.

Course Units

1. Introduction to Physics

- 1.1 What is Physics?
- 1.2 Math Review
- 1.3 Vectors and Scalars

2 Mechanics

- 2.1 Defining and Graphing Motion
- 2.2 Kinematic Equations
- 2.3 Projectiles
- 2.4 Relative Motion
- 2.5 Newton's 1st Law of Motion
- 2.6 Newton's 2nd Law of Motion
- 2.7 Newton's 3rd Law of Motion
- 2.8 Friction
- 2.9 Dynamics Applications
- 2.10 Impulse and Momentum
- 2.11 Collisions
- 2.12 Describing Circular Motion
- 2.13 Centripetal Acceleration and Force
- 2.14 Gravitation
- 2.15 Rotational Kinematics

- 2.16 Torque
- 2.17 Rotational Dynamics
- 2.18 Work and Power
- 2.19 Energy
- 2.20 Conservation of Energy
- 2.21 Simple Harmonic Motion

3 Electricity (optional)

- 3.1 Electric Fields and Forces
- 3.2 Electric Potential Difference
- 3.3 Current and Resistance
- 3.4 Ohm's Law and Power
- 3.5 Circuits and Electrical Meters
- 3.6 Circuit Analysis
- 3.7 RC Circuits
- 3.8 Magnetic Fields and Properties
- 3.9 Current-Carrying Wires
- 3.10 Introduction to Electromagnetic Induction

4 Waves (optional)

- 4.1 Wave Characteristics
- 4.2 Wave Interference
- 4.3 Wave Phenomena