**Honors Physics**

**Syllabus**

Unit I. Introduction to Physics

 1. Nature of Physics

2. The scientific method

3. Mathematics in Physics

 - Units

 - Scientific notation

4. Measurement

 - Uncertainties in measurement

 - Significant figures

- Precision and Accuracy

5. Graphing data

Unit II. Mechanics

 1. Describing motion

 - Coordinate systems

 - Scalars and vectors

 2. Vector addition and subtraction

 3. Force and Motion

 - Newton’s laws of motion

 - Relative motion

 - Projectiles

 - Circular motion

 - Rotational motion

 - Universal gravitation

 4. Momentum and conservation

5. Energy and work

 - Forms of energy

 - Conservation of energy

 - Simple machines

Unit III. States of matter

 1. Solids

 - Elasticity

 - Stress and strain

 - Fracture

 2. Fluids

 - Pascal’s principle

 - Buoyancy and Archimedes’ principle

 - Bernoulli’s principle

 - Surface tension and capillarity

Unit IV. Waves and Light

 1. Wave properties

 2. Sound waves

 3. Light waves

 - Interaction of light and matter

 4. Optics

 - Reflection and Refraction

 - Mirrors and lenses

 - Diffraction and Interference

Unit V. Heat Energy

 1. Thermal energy

 2. Thermodynamics

Unit VI. Electricity

 1. Static Electricity

 - Electrical charge and electrical force

 2. Current Electricity

 - Electric current and Resistance

 - Series and parallel circuits

 3. Electromagnetism