AP PHYSICS 1

Kinematics

- Position, Velocity, and Acceleration
- Representations of Motion

Dynamics

- Systems
- The Gravitational Field
- Contact Forces
- Newton's First Law
- Newton's Third Law and Free-Body Diagrams
- Newton's Second Law
- Applications of Newton's Second Law

Circular Motion and Gravitation

- Vector Fields
- Fundamental Forces
- Gravitational and Electric Forces
- Gravitational Field/Acceleration Due to Gravity on Different Planets
- Intertial vs. Gravitational Mass
- Centripetal Acceleration and Centripetal Force
- Free-Body Diagrams for Objects in Uniform Circular Motion
- Applications of Circular Motion and Gravitation

Energy

- Open and Closed Systems: Energy
- Work and Mechanical Energy
- Conservation of Energy, the Work-Energy Principle, and Power

Momentum

- Momentum and Impulse
- Representations of Changes in Momentum
- Open and Closed Systems: Momentum
- Conservation of Linear Momentum

Simple Harmonic Motion

- Period of Harmonic Oscillators
- Energy of a Simple Harmonic Oscillator

Torque and Rotational Motion

- Rotational Kinematics
- Torque and Angular Acceleration
- Angular Momentum and Torque
- Conservation of Angular Momentum

Science Practices

- Modeling
- Mathematical Routines
- Scientific Questioning
- Experimental Methods
- Data Analysis
- Argumentation
- Making Connections