

AP Physics C: Mechanics

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Mechanics explores topics such as kinematics; motion and rotation; and oscillations and gravitation.

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1 Kinematics

1.1 Scalars and Vectors

1.2 Displacement, Velocity, and Acceleration

1.3 Representing Motion

1.4 Reference Frames and Relative Motion

1.5 Motion in Two or Three Dimensions

2 Force and Translational Dynamics

- 2.1 Systems and Center of Mass**
- 2.2 Forces and Free-Body Diagrams**
- 2.3 Newton's Third Law**
- 2.4 Newton's First Law**
- 2.5 Newton's Second Law**
- 2.6 Gravitational Force**
- 2.7 Kinetic and Static Friction**
- 2.8 Spring Forces**
- 2.9 Resistive Forces**
- 2.10 Circular Motion**

3 Work, Energy and Power

3.1 Translational Kinetic Energy

3.2 Work

3.3 Potential Energy

3.4 Conservation of Energy

3.5 Power

4 Linear Momentum

4.1 Linear Momentum

4.2 Change in Momentum and Impulse

4.3 Conservation of Linear Momentum

4.4 Elastic and Inelastic Collisions

5 Torque and Rotational Dynamics

5.1 Rotational Kinematics

5.2 Connecting Linear and Rotational Motion

5.3 Torque

5.4 Rotational Inertia

5.5 Rotational Equilibrium and Newton's First Law in Rotational Form

5.6 Newton's Second Law in Rotational Form

6 Energy and Momentum of Rotating Systems

6.1 Rotational Kinetic Energy

6.2 Torque and Work

6.3 Angular Momentum and Angular Impulse

6.4 Conservation of Angular Momentum

6.5 Rolling

6.6 Motion of Orbiting Satellites

7 Oscillations

7.1 Defining Simple Harmonic Motion (SHM)

7.2 Frequency and Period of SHM

7.3 Representing and Analyzing SHM

7.4 Energy of Simple Harmonic Oscillators

7.5 Simple and Physical Pendulums