

# Advanced Placement Physics B Syllabus

## Vectors and Kinematics

**Topics:**

Motion in One Dimension  
Free Fall  
Vectors  
Motion in Two Dimensions/Projectile Motion  
Relative Velocity

**Textbook Reference:**

Chapter 2 sections 1-7  
Chapter 3 sections 1-6  
Chapter 4 sections 1-5

## Dynamics, Circular Motion, Gravitation

**Topics:**

Newtons Laws  
Dynamics  
Friction  
Inclines  
Circular Kinematics  
Circular Dynamics  
Gravitation  
Orbits and Satellites  
Kepler's Laws

**Textbook Reference:**

Chapter 5 sections 1-7  
Chapter 6 sections 1-5  
Chapter 12 sections 1-3

## Work, Power and Energy

**Topics:**

Work  
Kinetic Energy  
Work-Energy Theorem  
Power  
Conservative Forces  
Potential Energy  
Hooke's Law  
Conservation of Energy

**Textbook Reference:**

Chapter 7 sections 1-4  
Chapter 8 sections 1-4

## Momentum and Collisions, Oscillations

**Topics:**

Momentum  
Impulse  
Conservation of Momentum  
Types of Collisions  
Collisions in 2 dimensions  
Oscillations

**Textbook Reference:**

Chapter 9 sections 1-6  
Chapter 13 sections 1-6

## Fluids

**Topics:**

Pressure  
Archimedes' Principle  
Buoyancy  
Fluid Flow  
Continuity  
Bernoulli's Equation

**Textbook Reference:**

Chapter 15 sections 1-8

## Heat and Thermodynamics

**Topics:**

Gas Laws  
Linear Expansion  
Kinetic Theory  
Heat Transfer  
Laws of Thermodynamics  
PV Diagrams  
Engines and Refrigerators

**Textbook Reference:**

Chapter 16 sections 2, 3, 6  
Chapter 17 sections 1-2  
Chapter 18 sections 1-10

## Electrostatics

**Topics:**

Charge  
Coulomb's Law  
Electric Fields  
Electric Potential  
Capacitance

**Textbook Reference:**

Chapter 19 sections 1-6  
Chapter 20 sections 1-6

## Circuits

**Topics:**

Current  
Resistance  
Ohm's Law  
Series and Parallel Circuits  
Kirchhoff's Rules  
Terminal Voltage  
Capacitive Circuits

**Textbook Reference:**

Chapter 21 sections 1-8

## Magnetism

**Topics:**

Magnetism  
Magnetic Forces  
Velocity Selectors and Mass Spectrometers  
Current and Magnetism  
Induction  
Faraday's Law and Lenz's Law

**Textbook Reference:**

Chapter 22 sections 1-8  
Chapter 23, sections 1-4

## Waves and Optics

**Topics:**

Waves  
Sound/Musical Instruments  
Electromagnetic Radiation  
Mirrors and Lenses  
Refraction  
Diffraction

**Textbook Reference:**

Chapter 14 sections 1, 2, 4, 6-9  
Chapter 25 sections 1-3  
Chapter 26 all  
Chapter 27 section 6  
Chapter 28 sections 1-4, 6

## Modern/Nuclear Physics

**Topics:**

Quantum Physics  
Photoelectric Effect  
Dual Nature of Light and Matter  
Models of the Atom  
Radioactivity  
Binding Energy  
Fission and Fusion

**Textbook Reference:**

Chapter 30 sections 1-6  
Chapter 31, sections 1-4  
Chapter 32 sections 1-2, 4-6