

Major Topics in Physics 1 and Physics 2

The redesigned AP Physics B course is now divided into two separate algebra-based courses: AP Physics 1 and AP Physics 2.

The table below compares the topics of AP Physics B with AP Physics 1 and 2. Checkmarks indicate that the topic will be included on that column's exam.

Course Topics	Physics 1	Physics 2
I. Newtonian Mechanics		
A. Kinematics (including vectors, vector algebra, components of vectors, coordinate systems, displacement, velocity, and acceleration)		
1. Motion in one dimension	✓	
2. Motion in two dimensions, including projectile motion	✓	
B. Newton's laws of motion		
1. Static equilibrium	✓	
2. Dynamics of a single particle	✓	
3. Systems of two or more objects	✓	
C. Work, energy, power		
1. Work and work – energy theorem	✓	
2. Forces and potential energy	✓	
3. Conservation of energy	✓	
4. Power	✓	
D. Systems of particles, linear momentum		
1. Center of mass	✓	
2. Impulse and momentum	✓	
3. Conservation of linear momentum, collisions	✓	✓
E. Circular motion and rotation		
1. Uniform circular motion	✓	
2. Torque and rotational statics	✓	
NEW: Rotational kinematics and dynamics	✓	
NEW: Angular momentum and its conservation	✓	

Course Topics (continued)	Physics 1	Physics 2
F. Oscillations and gravitation		
1. Simple harmonic motion (dynamics and energy relationships)	✓	
2. Mass on a spring	✓	
3. Pendulum and other oscillation	✓	
4. Newton's law of gravity	✓	
5. Circular orbits of planets and satellites	✓	
II. Fluid Mechanics and Thermal Physics		
A. Fluid mechanics		
1. Hydrostatic pressure		✓
2. Buoyancy		✓
3. Fluid flow continuity		✓
4. Bernoulli's equation		✓
B. Temperature and heat		
1. Mechanical equivalent of heat		✓
2. Heat transfer and thermal expansion		✓
C. Kinetic theory and thermodynamics		
1. Ideal gases		✓
a. Kinetic theory and statistical model		✓
b. Ideal gas law		✓
2. Laws of thermodynamics		✓
a. First law (including processes on PV diagrams)		✓
b. Second law (entropy)		✓
III. Electricity and Magnetism		
A. Electrostatics		
1. Charge and Coulomb's law	✓	✓
2. Electric field and electric potential (including point charges)		✓

Course Topics (continued)	Physics 1	Physics 2
3. Fields and potentials of other charge distributions		✓
B. Conductors, capacitors		
1. Electrostatics with conductors		✓
2. Capacitors		✓
a. Capacitance		✓
b. Parallel plate		✓
C. Electric circuits		
1. Ohm's law, Kirchhoff's laws, and power	✓	✓
2. Steady-state direct current circuits with batteries and resistors only	✓	✓
3. Capacitors in circuits		✓
a. Steady state		✓
b. RC circuits		✓
D. Magnetic fields		
1. Forces on moving charges in magnetic fields		✓
2. Forces on current-carrying wires in magnetic fields		✓
3. Fields of long current-carrying wires		✓
E. Electromagnetism		✓
1. Electromagnetic induction (including Faraday's law and Lenz's law)		✓
IV. Waves and Optics		
A. Wave motion (including sound)		
1. Traveling waves	✓	
2. Wave propagation	✓	
3. Standing waves	✓	
4. Superposition	✓	✓
B. Physical optics		
1. Interference and diffraction		✓

Course Topics (continued)	Physics 1	Physics 2
2. Dispersion of light and the electromagnetic spectrum		✓
C. Geometric optics		
1. Reflection and refraction		✓
2. Mirrors		✓
3. Lenses		✓
V. Atomic and Nuclear Physics		
A. Atomic physics and quantum effects		
1. Photons, the photoelectric effect, Compton scattering, x-rays		✓
2. Atomic energy states and transitions		✓
3. Wave properties of matter		
NEW: Probability and graphical wave function		✓
B. Nuclear physics		
1. Nuclear reactions (including conservation of mass number and charge)		✓
2. Mass – energy equivalence		✓
NEW: Half-life		✓