

# AP Physics B Exam Coverage and Corresponding Physics 1 and AP Physics 2 Units

<b>I. NEWTONIAN MECHANICS</b>	<b>35%</b>		
<b>A. Kinematics (including vectors, vector algebra, components of vectors, coordinate systems, displacement, velocity, and acceleration)</b>	7%	1.02	2.01
1. Motion in one dimension		1.02	2.01
2. Motion in two dimensions including projectile motion			2.01
<b>B. Newton's laws of motion (including friction and centripetal force)</b>	9%	1.03	2.02
1. Static equilibrium (first law)		1.03	2.02
2. Dynamics of a single particle (second law)		1.03	2.02
3. Systems of two or more bodies (third law)		1.03	2.02
<b>C. Work, energy, power</b>	5%	1.06	2.04
1. Work and work-energy theorem		1.06	2.04
2. Conservative forces and potential energy		1.06	2.04
3. Conservation of energy		1.06	2.04
4. Power		1.06	2.04
<b>D. Systems of particles, linear momentum</b>	4%	1.05	2.04
2. Impulse and momentum *		1.05	2.04
3. Conservation of linear momentum, collisions		1.05	2.04
<b>E. Circular motion and rotation</b>	4%	1.04	2.05
1. Uniform circular motion		1.04	2.04
3. Torque and rotational statics *			2.05
<b>F. Oscillations and gravitation</b>	6%		
1. Simple harmonic motion (dynamics and energy relationships)		1.11	2.03
2. Mass on a spring		1.11	2.03
3. Pendulum and other oscillations		1.11	2.03
4. Newton's law of gravity		1.04	2.04
5. Orbits of planets and satellites		1.04	2.04
a. Circular *		1.04	2.04

<b>II. THERMAL PHYSICS</b>	<b>15%</b>		
<b>A. Fluid Mechanics</b>	5%		2.12
1. Hydrostatic pressure			2.12
2. Buoyancy			2.12
3. Fluid flow continuity			2.12
4. Bernoulli's Equation			2.12
<b>A. Temperature and heat</b>	3%	1.07	2.06
1. Mechanical equivalent of heat		1.07	2.06
2. Specific and latent heat (including calorimetry)			2.06
3. Heat transfer and thermal expansion		1.07	2.06
<b>B. Kinetic theory and thermodynamics</b>	7%	1.07	2.06
1. Ideal gases		1.07	2.06
a. Kinetic model		1.07	2.06
b. Ideal gas law			2.06
2. Laws of thermodynamics			2.06
a. First law (including processes on pV diagrams)			2.06
b. Second law (including heat engines)			2.06

<b>III. ELECTRICITY AND MAGNETISM</b>	<b>25%</b>		
<b>A. Electrostatics</b>	5%	1.08	2.07
1. Charge, field, and potential		1.08	2.07
2. Coulomb's law and field and potential of point charges		1.08	2.07
3. Fields and potentials of other charge distributions			2.07
a. Planar *			2.07
<b>B. Conductors, capacitors</b>	4%		2.07
1. Electrostatics with conductors		1.08	2.07
2. Capacitors			2.07
a. Parallel plate *			2.07
<b>C. Electric circuits</b>	7%	1.08	2.08
1. Current, resistance, power		1.08	2.08
2. Steady-state direct current circuits with batteries and resistors only		1.09	2.08
3. Capacitors in circuits			2.08
a. Steady state *			2.08
<b>D. Magnetostatics</b>	4%	1.10	2.09
1. Forces on moving charges in magnetic fields			2.09
2. Forces on current-carrying wires in magnetic fields		1.10	2.09
3. Fields of long current-carrying wires			2.09
<b>E. Electromagnetism</b>	5%	1.10	2.09
1. Electromagnetic induction (including Faraday's law and Lenz's law) *			2.09

<b>IV. WAVES AND OPTICS</b>	<b>15%</b>		
<b>A. Wave motion (including sound)</b>	5%	1.11	2.03
1. Properties of traveling waves		1.11	
2. Properties of standing waves			2.03
3. Doppler effect		1.11	
4. Superposition		1.11	2.03
<b>B. Physical optics</b>	5%	1.13	
1. Interference and diffraction		1.13	
2. Dispersion of light and the electromagnetic spectrum			1.12
<b>C. Geometric optics</b>	5%		2.10
1. Reflection and refraction		1.12	2.10
2. Mirrors			2.10
3. Lenses			2.10

<b>V. ATOMIC AND NUCLEAR PHYSICS</b>	<b>10%</b>		
<b>A. Atomic physics and quantum effects</b>	7%		2.11
1. Alpha particle scattering and the Rutherford model			2.11
2. Photons and the photoelectric effect			2.11
3. Bohr model and energy levels			2.11
4. Wave-particle duality			2.11
<b>B. Nuclear physics</b>	3%		2.11
1. Radioactivity and half-life			2.11
2. Nuclear reactions (including conservation of mass number and charge, and mass-energy equivalence)			2.11