

AP Physics 1	AP Physics 2	AP C Mechanics	AP C Electricity and magnetism	SAT Physics Subject Test
Kinematics; position, velocity, acceleration and representations of motion		Kinematics (including vectors, vector algebra, components of vectors, coordinate systems, displacement, velocity, and acceleration		Mechanics: kinematics such as velocity, acceleration, motion in one dimension, and motion of projectiles
Dynamics: Newton's laws; systems; the gravitational field; contact forces; the first, second and third laws; free-body diagrams;		Newton's laws of motion: static equilibrium (first law), dynamics of a single particle (second law) systems of two or more objects (third law)		Mechanics: dynamics such as force, Newton's laws, statics and friction
Circular motion and universal law of gravitation; vector fields; fundamental forces; gravitational and electrical forces; mass; centripetal acceleration and force; uniform circular motion		Circular motion and rotation: uniform circular motion; Oscillations and gravitation: Newton's law of gravity; orbits of planets and satellites-circular and general		Mechanics: circular motion, such as uniform circular motion and centripetal force; gravity, such as the law of gravitation, orbits, and Kepler's laws
Simple harmonic motion: period of simple harmonic oscillators; energy of simple harmonic oscillator		Oscillations and gravitation: simple harmonic motion (dynamics and energy relationships); mass on a spring; pendulum and other oscillations		Mechanics: simple harmonic motion, such as mass on a spring and the pendulum
Momentum; momentum and impulse; representations of changes in momentum; open and closed systems; conservation of linear momentum		Systems of particles, linear momentum: center of mass; impulse and momentum; conservation of linear momentum, collisions		Mechanics: energy and momentum, such as potential and kinetic energy, work, power, impulse, and conservation laws
Energy; open and closed systems; work and mechanical energy; conservation of energy, the work-energy principle and power		Work, energy, power: work and work-energy theorem; forces and potential energy; conservation of energy; power		Mechanics: energy and momentum, such as potential and kinetic energy, work, power, impulse, and conservation laws
Torque and rotational motion: rotational kinematics; torque and angular acceleration; angular momentum and torque; conservation of angular momentum		Circular motion and rotation: Torque and rotational statics; rotational kinematics and dynamics; angular momentum and its conservation		
Electric charge and electric force; conservation of charge	Electrostatics: electric systems; charge; conservation of charge; charge distribution, friction, conduction and induction; electric permittivity; electric forces; electric charges and fields;		Electrostatics: charge and coulomb's law; electric field and electric potential (including point charges); Gauss' law; Fields and potentials of other charge distributions	Electricity and magnetism: Electric fields, forces, and potentials, such as Coulomb's law, induced charge, field and potential of groups of point charges, and charged particles in electric fields
Mechanical waves and sound; properties of waves; periodic waves; interference and superposition				Waves and optics: General wave properties, such as wave speed, frequency, wavelength, superposition

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DC circuits (resistors only): Definition of circuit; resistivity; Ohm's law; Kirchoff's rules for resistors	DC circuits and RC circuits (resistors and capacitors): Resistance and capacitance; conservation of charge; resistance and capacitance; Kirchoff's rules		Electric circuits: current, resistance, power; Steady-state direct current circuits with batteries and resistors only; Capacitors in circuits- steady state and transients in RC circuits	Electricity and magnetism: circuit elements and DC circuits, such as resistors, light bulbs, series and parallel networks, Ohm's law, and Joule's law
	DC circuits and RC circuits: resistance and capacitance		Conductors, capacitors, dielectrics: Electrostatics with conductors; Capacitors: capacitance, parallel plate; spherical and cylindrical; Dielectrics	Electricity and magnetism: capacitance, such as parallel-plate capacitors and time-varying behavior in charging/discharging
	Magnetism and electromagnetic induction: Magnetic systems; magnetic permeability and dipole moment; magnetic fields and forces; magnetic flux		Magnetic fields: Forces on moving charged in magnetic fields; forces on current-carrying wires in magnetic fields; fields of long current-carrying wires; Biot-Savart and Ampere's law; Electromagnetism: electromagnetic induction (including Faraday's law and Lenz's law); inductance (including LR and LC circuits); Maxwell's equations	Electricity and magnetism: magnetism, such as permanent magnets, fields caused by currents, particles in magnetic fields, Faraday's law, and Lenz's law
	Thermodynamics: thermodynamic systems; pressure, thermal equilibrium and the ideal gas law; thermodynamics, forces and free body diagrams; heat and energy transfer; thermodynamics, collisions and conservation of momentum; thermal conductivity; probability, thermal equilibrium and entropy			Heat and thermodynamics: thermal properties, such as temperature, heat transfer, specific and latent heats, and thermal expansions; laws of thermodynamics, such as first and second laws, internal energy, entropy, and heat engine efficiency
	Fluid systems; density; pressure and forces; buoyancy; conservation of mass and energy in fluid flow			
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	<p>Geometric and physical optics: waves; EM waves; refraction, reflection and absorption; images from lenses and mirrors; interference and diffraction</p>			<p>Waves and optics: General wave properties, such as standing wave diffraction, and Doppler effect; Reflection and refraction, such as Snell's law and changes in wavelength and speed; ray optics, such as image formation using pinholes, mirrors, and lenses; physical optics, such as single-slit diffraction, double-slit interference, polarization, and color</p>
	<p>Quantum physics, atomic, and nuclear physics: fundamental forces; radioactive decay; mass-energy equivalence (<math>E=mc^2</math>); properties of waves and particles; photoelectric effect; wave functions and probability</p>			<p>Modern physics: quantum phenomena, such as photons and photoelectric effect; atomic, such as the Rutherford and Bohr models, atomic energy levels, and atomic spectra; nuclear and particle physics, such as radioactivity, nuclear reactions, and fundamental particles; relativity, such as time dilation, length contraction, and mass-energy equivalence</p>
				<p>Miscellaneous: general, such as history of physics and general questions that overlap several major topics; analytical skills, such as graphical analysis, measurement, and math skills; contemporary physics, such as astrophysics, superconductivity, and chaos theory</p>