

Academic Physics Curriculum Map

Unit	Topics Covered	NGSS Standards (HS-PS)	Key Skills & Activities
Intro to Physics	Experimental procedures, graphing, measurement, uncertainty, SI units, dimensional analysis, vectors & scalars, scientific notation, problem-solving strategies	SEPs	Experiment design, graph interpretation, error analysis, unit conversions
Motion in 1D	Kinematics, velocity, acceleration, free-fall, motion graphs, kinematic equations, problem-solving techniques	HS-PS2-1	Graphing motion, equation solving, analyzing experimental motion data
Motion in 2D	Vectors, projectile motion, circular motion, simple relative velocity	HS-PS2-1	Vector decomposition, projectile motion experiments
Newton's Laws	Forces, free-body diagrams, friction, normal force, Newton's third law, statics, dynamics	HS-PS2-1, HS-PS2-2	Force diagrams, problem-solving, Mousetrap Car Project
Universal Gravitation	Newton's Law of Gravitation, satellite motion, weight vs. mass, tides	HS-PS2-4	Gravity lab, conceptual discussions
Momentum	Impulse, conservation of momentum, elastic & inelastic collisions, Newton's cradle	HS-PS2-2, HS-PS2-3	Basic momentum lab, Egg Drop Project
Work & Energy	Work, kinetic & potential energy, energy conservation, efficiency, power, mechanical advantage, simple machines	HS-PS3-1, HS-PS3-2	Energy bar charts, problem-solving, energy conversion activities
Thermal Energy	Heat transfer, temperature, specific heat, calorimetry, thermal expansion, conduction, convection, radiation	HS-PS3-4	Specific heat calculations, heat transfer experiments
Waves	Wave properties, sound, light, reflection, refraction, diffraction, resonance, electromagnetic spectrum	HS-PS4-1, HS-PS4-3	Sound experiments, light refraction activities
Electric Circuits	Ohm's law, series & parallel circuits, resistance, electromagnetism, current vs. voltage, power	HS-PS2-5, HS-PS4-5	Circuit building, Electric House Build Project