

Honors Physics Pacing Guide 2022-2023

Unit	Days	Major Topics	Standards	Learning Targets
Kinematics	10	1-D Kinematics Graphing Motion Projectile Motion	SP1 a SP1 b SP1 c SP1 d	<p>LT1: I can calculate position, velocity, and acceleration for objects moving in one dimension.</p> <p>LT2: I can analyze and interpret position, velocity, and acceleration vs time graphs for a moving object.</p> <p>LT3: I can calculate position, velocity, and acceleration for objects moving in two dimensions</p>
Forces	7	Newton's Laws Statics Dynamics	SP2 a SP2 b SP2 c	<p>LT1: I can describe how each of Newton's Laws applies to an object experiencing forces</p> <p>LT 2: I can draw free body diagrams and solve forces for objects in equilibrium.</p> <p>LT3: I can draw free body diagrams and solve forces for dynamic systems.</p>
Circular Motion and Gravity	8	Centripetal Forces Universal Gravitation	SP2 d SP2 e	<p>LT1: I can calculate the relationships between velocity, mass, and radius for objects moving in a circular fashion.</p> <p>LT2: I can identify which forces on a free body diagram act centripetally.</p>

				<p>LT3: I can describe and calculate planetary motion in circular orbits.</p> <p>LT4: I can describe how Kepler's Laws govern planetary motion in elliptical orbits</p>
Energy	10	<p>Work</p> <p>Power</p> <p>Conservation of Energy</p> <p>Simple Harmonic Motion</p>	<p>SP3 a</p> <p>SP3 b</p> <p>SP2 c</p>	<p>LT1: I can calculate the relationship between work, energy, and net force</p> <p>LT2: I can describe and calculate the relationship between power and energy</p> <p>LT3: I can describe the difference between conservative and nonconservative forces</p> <p>LT4: I can calculate the potential and kinetic energies, height, and velocities of object in closed systems.</p> <p>LT5: I can calculate the energy, velocity, periods, and frequencies of objects in simple harmonic motion.</p>
Momentum	10	<p>Momentum</p> <p>Impulse</p> <p>Collisions</p>	<p>SP3 a</p> <p>SP3d</p>	<p>LT 1: I can describe and calculate the relationship between momentum, impulse, and force</p> <p>LT 2: I can describe and perform calculations involving one dimensional momentum</p> <p>LT3: I can experimentally compare and contrast inelastic and elastic collisions.</p>
Waves – Inteference and Sound	10	Wave Properties	<p>SP4 a</p> <p>SP4 b</p>	<p>LT1 : I can develop and use mathematical models to explain mechanical as a</p>

		Constructive and Destructive Interference Standing Waves	SP 4 c SP4 g	<p>propagating disturbance that transfers energy.</p> <p>LT 2: I can describe and calculate the patterns that form in standing waves</p> <p>LT 3: I can describe Doppler Effect, standing waves, wavelength, the relationship between amplitude and the energy of the wave, and the relationship between frequency and pitch.</p>
Waves- Light and Optics	7	Reflection, Refraction, Diffraction Geometric Optics	SP4 a SP4 e SP4 f SP4 g	<p>LT 1: Develop and use mathematical models to explain electromagnetic waves as a propagating disturbance that transfers energy.</p> <p>LT 2: I can describe and calculate the patterns that form by light diffracting through a double slit</p> <p>LT3: I can draw and calculate the images that form by refraction in spherical mirrors</p> <p>LT4: I can draw and calculate the images that form for the refraction of light in thin lenses.</p>
Electricity	10	Electrostatics DC Circuits	SP5 a SP5 b SP5 c SP5 d	<p>LT 1: I can explain and draw the relationship between electric fields and electric forces</p> <p>LT2: I can explain and calculate the relationship between energy, potential, and charge</p>

				LT 3: I can build and calculate the voltage, resistance, and current in series and parallel circuits.
Electromagnetism	10	Magnetic Fields Electromagnetic Forces Electromagnetic Induction	SP5 e	<p>LT 1: I can explain how the interaction of electric and magnetic forces is the basis for electric motors, generators, and the production of electromagnetic waves</p> <p>LT 2: I can explain how a changing electric field creates a magnetic field and a changing magnetic field creates an electric field.</p> <p>LT 3: I can explain how an electromagnet functions</p>
Nuclear and Modern Physics	8	Nuclear Decay and Half Lives Quantum Mechanics Photoelectric Effect Special Relativity	SP6 a SP6 b SP6 c	<p>LT 1: I can explain the processes of nuclear fusion and fission</p> <p>LT2: I can calculate the half life and amount of material decay over a length of time</p>