



BROWNELL TALBOT

Physics Prioritized Science Standards

The prioritized standards listed align with the NGSS (Next Generation Science Standards) Performance Expectations. The NGSS also includes a set of Science and Engineering Practices for grades kindergarten through 12. A practice of science is to ask and refine questions that lead to descriptions and explanations of how the natural and designed world(s) work and which can be empirically tested. Engineering questions clarify problems to determine criteria for successful solutions and identify constraints to solve problems about the designed world. Both scientists and engineers also ask questions to clarify ideas.

(see the link at the bottom for detailed descriptions of those condensed practices, grades K-12)

PHYSICAL SCIENCE		
Motion & Stability	Forces & Motion	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. (HS-PS2-1) Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. (HS-PS2-2)
	Types of Interactions	Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. (HS-PS2-4)
Energy	Definitions	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. (HS-PS3-1) Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative position of particles (objects). (HS-PS3-2)
	Conservation & Transfer	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. (HS-PS3-1) Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). (HS-PS3-4)
Waves & Their Application	Wave Properties	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. (HS-PS4-1)
	Electromagnetic Radiation	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other. (HS-PS4-3)

Science and Engineering Practices in the NGSS: brownell.edu/ngss