

Standard Code	Standards
HS-SCI-PHY.SI.01.00.0	The student will demonstrate an understanding of how scientific inquiry, and mathematical modeling and analysis can be used appropriately to query, answer and develop solutions.
HS-SCI-PHY.SI.01.A.0	Apply established rules for significant digits, both in reading scientific instruments and in calculating derived quantities from measurement
HS-SCI-PHY.SI.01.B.0	Use appropriate laboratory apparatuses, technology and techniques safely and accurately when conducting a scientific investigation
HS-SCI-PHY.SI.01.C.0	Use scientific instruments to record measurement data in appropriate metric units that reflect the precision and accuracy of each particular instrument
HS-SCI-PHY.SI.01.D.0	Design a scientific investigation with appropriate methods of control to test a hypothesis (including independent and dependent variables), and evaluate the designs of sample investigations
HS-SCI-PHY.SI.01.E.0	Organize and interpret the data from a controlled scientific investigation by using (including calculations in scientific notation, formulas, and dimensional analysis), graphs, tables, models, diagrams, and/or technology
HS-SCI-PHY.SI.01.F.0	Evaluate the results of a controlled scientific investigation in terms of whether they refute or verify the hypothesis
HS-SCI-PHY.SI.01.G.0	Evaluate conclusions based on qualitative and quantitative data (including the impact of parallax, instrument malfunction, or human error) on experimental design
HS-SCI-PHY.SI.01.H.0	Evaluate a technological design or product on the basis of designated criteria (including cost, time, and materials)
HS-SCI-PHY.SI.01.I.0	Communicate and defend a scientific argument or conclusion
HS-SCI-PHY.SI.01.J.0	Use appropriate safety procedures when conducting investigations
HS-SCI-PHY.FM.02.00.0	The student will demonstrate an understanding of the principles of motion and the relationships between position, velocity and acceleration.
HS-SCI-PHY.FM.02.A.0	Represent vector quantities (including displacement, velocity, acceleration and force) and use vector addition.
HS-SCI-PHY.FM.02.B.0	Apply formulas for velocity and/or speed and acceleration to one and two-dimensional problems.
HS-SCI-PHY.FM.02.C.0	Interpret the velocity or speed and acceleration of one and two-dimensional motion on distance-time, velocity-time and acceleration-time graphs.
HS-SCI-PHY.FM.03.00.0	The student will demonstrate an understanding of the principle of force and the relationships defined by Newton's three laws.
HS-SCI-PHY.FM.03.A.0	Interpret the resulting motion of objects by applying Newton's three laws of motion: inertia; the relationship among net force, mass and acceleration ($F=ma$); and action/reaction pairs.
HS-SCI-PHY.FM.03.B.0	Explain the factors that influence the dynamics of falling objects and projectiles
HS-SCI-PHY.FM.03.C.0	Apply formulas for velocity and acceleration to solve problems related to projectile motion
HS-SCI-PHY.FM.03.D.0	Use a free body diagram to determine the net force and component forces acting upon an object.
HS-SCI-PHY.FM.03.E.0	Distinguish between static and kinetic friction and the factors that affect the motion of objects
HS-SCI-PHY.FM.03.F.0	Explain how torque is affected by the magnitude, direction and point of application of force

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HS-SCI-PHY.FM.03.G.0	Explain the relationships among speed, velocity, acceleration and force in rotational systems
HS-SCI-PHY.FM.04.00.0	The student will demonstrate an understanding of the conservation, transfer, and transformation of mechanical energy
HS-SCI-PHY.FM.04.A.0	Apply energy formulas to determine potential and kinetic energy and explain the transformation from one type to the other
HS-SCI-PHY.FM.04.B.0	Explain the relationships among internal energy, heat and work
HS-SCI-PHY.FM.04.C.0	Explain both conceptually and quantitatively, how energy can transfer from one system to another (including work, power, and efficiency)
HS-SCI-PHY.FM.04.D.0	Explain both conceptually and quantitatively, the factors that influence periodic motion
HS-SCI-PHY.FM.04.E.0	Explain the factors involved in producing a change in momentum (including impulse and the law of conservation of momentum in both linear and rotational systems)
HS-SCI-PHY.FM.04.F.0	Compare elastic and inelastic collisions in terms of conservation laws
HS-SCI-PHY.FM.05.00.0	The student will demonstrate an understanding of the properties of current electricity.
HS-SCI-PHY.FM.05.A.0	Recognize the characteristics of static charge and explain how a static charge is generated
HS-SCI-PHY.FM.05.B.0	Use diagrams to illustrate an electric field (including point charges and electric field lines)
HS-SCI-PHY.FM.05.C.0	Summarize current, potential difference and resistance in terms of an electron point charge
HS-SCI-PHY.FM.05.D.0	Compare how current, voltage and resistance are measured in a series and in a parallel electric circuit and identify the appropriate units of measurement
HS-SCI-PHY.FM.05.E.0	Analyze the relationships among voltage, resistance and current in a complex circuit by using Ohm's law to calculate voltage, resistance and current at each resistor, any branch and the overall circuit
HS-SCI-PHY.FM.05.F.0	Carry out calculations for electric power and electric energy for circuits
HS-SCI-PHY.FM.06.00.0	The student will demonstrate an understanding of the properties of electric and magnetic fields and forces and the relationships between them.
HS-SCI-PHY.FM.06.A.0	Explain the effects of magnetic forces on the production of electrical currents and on current carrying wires and moving charges
HS-SCI-PHY.FM.06.B.0	Distinguish between the function of motors and generators on the basis of the use of electricity and magnetism by each
HS-SCI-PHY.ME.07.00.0	The student will demonstrate an understanding of the properties and behaviors of light including wave and ray optics.
HS-SCI-PHY.ME.07.A.0	Analyze relationships among the properties of waves (including frequency, amplitude, wavelength, period, phase and speed)
HS-SCI-PHY.ME.07.B.0	Analyze wave behaviors (including reflection, refraction, diffraction, and constructive and destructive interference)
HS-SCI-PHY.ME.08.00.0	The student will demonstrate an understanding of the properties and behaviors of sound
HS-SCI-PHY.ME.08.A.0	Summarize the production of sound and its speed and transmission through various media

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HS-SCI-PHY.ME.08.B.0	Explain Doppler effect in terms of the frequency of the waves and pitch of the sound
HS-SCI-PHY.ME.08.C.0	Explain pitch, loudness, and tonal quality in terms of wave characteristics that determine what is heard
HS-SCI-PHY.ME.08.D.0	Apply formulas in order to solve for resonant wavelengths in problems involving open and closed tubes
HS-SCI-PHY.ME.08.E.0	Explain how musical instruments produce resonance and standing waves