Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Physical Science	Study of Matter	HS.SC.PS.M.1	Classification of matter	Pure Substance, Element, Atom,Compound, Heterogeneous mixture, Homogenous mixture, Solution, Suspension, Colloid, Viscosity, Conductivity, Malleability, Melting Point, Boiling Point, *Saturated, *Unsaturated, *Solubility, Filtration, Distillation, Density (m vs V graph), Physical Change, Chemical Property, Flammability, Reactivity, Chemical Change, Precipitate	
Physical Science	Study of Matter	HS.SC.PS.M.2	Atoms	Proton (p+), Neutron (n0), Electron (e-), Atomic Mass Unit, Alpha Particles, Deflection, Nucleus, *Plum Pudding Theory, Nuclear Theory, Atomic Number, Atomic Mass, EM spectrum, Visible Light Spectrum, Wavelength, Frequency Net Atomic Charge, Cation, Anion, Atomic Number, Atomic Mass, Isotope, *Average Atomic Mass	
Physical Science	Study of Matter	HS.SC.PS.M.3	Periodic trends of the elements	Periodic Table, Periodic Law, Metal properties, Nonmetal properties, Metalloids, Alkali Metals, Alkaline Earth Metals, Halogens, Noble Gases (Inert Gases)	
Physical Science	Study of Matter	HS.SC.PS.M.4	Bonding and compounds	Metals (cations), Non Metal (anions), Charges Attract & Repel, “Opposites Attract”, “Likes Repel”, Ionic Bond, Crystalline Lattice, Covalent Bond, Sharing electron, Molecules, Molecular Substances, *Covalent Lattice, Binary Compounds, Subscripts, Ionic Compounds, Common Ion Charges of Group 1, 2, 17 oxygen & hydrogen (no transition metals), Covalent Compounds, Greek Prefixes (up to 10),	
Physical Science Physical Science	Study of Matter Energy and Waves	HS.SC.PS.M.5 HS.SC.PS.EW.1	Reactions of matter Conservation of energy	Conservation of Matter/Atoms, Reactant, Product, Word Equations, Skeletal Equation, Coefficients, Balanced Chemical Equations, *Ionic Equations, *Net Ionic Equations, Heat, Thermal Energy, Joules, *Calories, *BTU, Exothermic, Endothermic, Strong Nuclear Force, Radioactive Decay, Radio (active) Isotopes, Half-life, Radioactive, Decay Graphs, *Half-Life, *Radioactive Dating, Nuclear Fission (split), *Atomic Bomb, Fission Reactor, Nuclear Fusion (combine), *Hydrogen Bomb, *Alpha Decay, * Beta Decay, Energy, Kinetic Energy, Gravitational Potential Energy, Reference Point, Velocity, Zero height, Motion,	
Physical Science	Energy and Waves	HS.SC.PS.EW.2	Transfer and transformation of energy (including work)	Work, Joules, Energy transfer, Displacement, Force, Newton, Watt	

Physical Science Physical Science	Energy and Waves Energy and Waves	HS.SC.PS.EW.3 HS.SC.PS.EW.4	Waves Thermal energy	Wave, Wave Speed, Frequency, Wavelength, Amplitude, Refraction, Reflection, Diffraction, Absorption, Superposition, *Interference, *Slit Diffraction, Radiant Energy, Electromagnetic Radiation, Electromagnetic Spectrum, Speed of Light, Opaque, Thermal energy, Doppler Effect, Red Shift Thermal Energy, Heat, Specific Heat, Conduction, Convection, Radiation, Thermal Conduction, Thermal Insulators, Conductivity, Temperature	
Physical Science	Energy and Waves	HS.SC.PS.EW.5	Electricity	Electric Charge, Attraction, Repulsion, Coulomb's Law, Friction, Conductor, Insulator, Electric Current, Electrons, Direct Current, Alternating Current, Voltage, Electric Potential (Voltage), Resistors, Ohm's Law, Circuit, Series Circuit, Parallel Circuit, Electric Power, Energy, Conservation of Energy	
Physical Science	Forces and Motion	HS.SC.PS.FM.1	Motion	Magnitude, Direction, Vector Quantity, Scalar Quantity, Frame of Reference, Position, Inertial Frame of Reference, Non- Inertial Frames of Reference, Displacement, Distance, Change in Position, Time, Speed, Velocity, Average Velocity, Instantaneous Velocity, Velocity Vector, Displacement Vector, *Combined Velocity (2D), Acceleration, Change in Velocity, Speed Up (+a), Slow Down (-a), *Change Direction, Constant Acceleration, *Calculate displacement while using interval method (const acc). *Calculate displacement using formulas (const acc)., Free Fall, *Calculate Free Fall time or distance, Slope, Rise, Run, Displacement (Δ position), Slope of flat line	
Physical Science	Forces and Motion	HS.SC.PS.FM.2	Forces	Push, Pull, Newton, *Pound, Force diagram, Net Force in 1D, *Net Force in 2D (graphical method)*Terminal Velocity, Gravity, Normal, Normal Force, Friction, Tension Field model, 3 dimensions, Scalar Quantities, Vector Quantities, Weight = mass x g [W=m.g], Gravity, *Centripetal Force, *Orbit	
Physical Science	Forces and Motion	HS.SC.PS.FM.3	Dynamics (how forces affect motion)	Newton's 1st Law, Net External Force, Resting (v=0) (a=0), Newton's 1st Law, Net External Force, Inertia, Mass, Constant Velocity (v=# that is not changing) (a=0), Acceleration, Net external force, Mass (inertia), Newton's 2nd Law, Newton's 3rd Law, *Momentum [p = m.v], *Impulse, *Law of Conservation of Momentum	
Physical Science	The Universe	HS.SC.PS.U.1	History of the universe	Doppler Effect, *Hubble's Law, Red Shift, *Big Bang Theory	

Physical Science Physical Science	The Universe The Universe	HS.SC.PS.U.2 HS.SC.PS.U.3	Galaxies Stars	*Galaxy, *Star, *Star System, *Star Cluster, *Gravity Universe, Gravity, Stars, Luminosity, Mass, Hertzprung-Russell Diagram, *Interstellar Gases, *Nuclear Reaction, *Nuclear Fusion, *Heavy Elements, *Gravity	

Environmental Science	Earth Systems	HS.SC.EN.ES.1	Biosphere	biotic factors, abiotic factors, habitat, resources, ecosystem, ecology	
Environmental Science	Earth Systems	HS.SC.EN.ES.2	Atmosphere	air pressure, troposphere, stratosphere, ozone layer, mesosphere, thermosphere, air mass,	
Environmental Science	Earth Systems	HS.SC.EN.ES.3	Lithosphere	crust, mantle, tectonic plates, landforms, deposition, core,	
Environmental Science Environmental Science Environmental Science	Earth Systems Earth Systems Earth's Resources	HS.SC.EN.ES.4 HS.SC.EN.ES.5 HS.SC.EN.ER.1	Hydrosphere Movement of matter and energy through the hydrosphere, lithosphere, atmosphere and biosphere Energy resources	evaporation, transpiration, precipitation, condensation, aquifer, groundwater biogechemical cycles, law of conservation of matter, nutrients, cellular respiration, renewable energy, non-renewable energy, energy efficiency,	
Environmental Science	Earth's Resources	HS.SC.EN.ER.2	Air and air pollution	fossil fuel, smog, acid deposition, emission, chlorofluorocarbon	
Environmental Science	Earth's Resources	HS.SC.EN.ER.3	Water and water pollution	point-source pollution, nonpoint-source pollution, red tide, algal bloom, eutrophication	
Environmental Science	Earth's Resources	HS.SC.EN.ER.4	Soil and land	bedrock, weathering, soil horizon, soil profile, clay, silt, sand, loam	
Environmental Science Environmental Science Environmental Science	Earth's Resources Global Environmental Problems and Issues Global Environmental Problems and Issues	HS.SC.EN.ER.5 HS.SC.EN.GP.1 HS.SC.EN.GP.2	Wildlife and wilderness Human Population Potable water quality, use and availability	biodiversity, hotspot, biome, species survival plan demography, life expectancy, demographic transition conservation, flood plain, water table, spring, artesian well, aquifer, permeability	
Environmental Science Environmental Science Environmental Science	Global Environmental Problems and Issues Global Environmental Problems and Issues	HS.SC.EN.GP.3 HS.SC.EN.GP.4	Climate change Sustainability	El Nino, greenhouse gas, thermohaline circulation, global warming, proxy indicator, coral bleaching, green revolution, integrated pest management,	
Environmental Science	Global Environmental Problems and Issues	HS.SC.EN.GP.5	Species depletion and extinction	habitat fragmentation, endangered species, threatened species, extirpation, poaching	

Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Environmental Science	Global Environmental Problems and Issues	HS.SC.EN.GP.6	Air quality	montreal protocol, catalytic converter, ozone hole, clean air act	
Environmental Science	Global Environmental Problems and Issues	HS.SC.EN.GP.7	Food production and availability	arable land, genetic engineering, aquaculture, seed bank, sustainable agriculture,	

Environmental Science Environmental Science Physical Geology	Global Environmental Problems and Issues Global Environmental Problems and Issues Minerals	HS.SC.EN.GP.8 HS.SC.EN.GP.9 PG.M.1	Deforestation and loss of biodiversity Waste management (solid and hazardous) Atoms and elements	monoculture, salvage logging, sustainable forestry, resource management, maximum sustainable yield sanitary landfill, leachate, incineration, municipal solid waste, biodegradable, composting, recycling Dalton's atomic theory, Atoms, Compound, Chemical formula, Electron, Nuclear Atom, Nucleus, Proton, Neutron, Isotope, Atomic	
Physical Geology	Minerals	PG.M.2	Chemical bonding (ionic, covalent, metallic)	Ionic compound, Molecular Compound, Binary compounds, Polyatomic ions,Bond, Conductivity, Malleability, Ductility, Melting point, Boiling point, Ionic bonding, Covalent	
Physical Geology Physical Geology Physical Geology Physical Geology Physical Geology	Minerals Minerals Minerals Igneous, Metamorphic, and Sedimentary Rocks	PG.M.3 PG.M.4 PG.M.5 PG.IMS.1	Crystallinity (crystal structure) Criteria of a mineral (crystalline solid, occurs in nature, inorganic, defined chemical composition) Properties of minerals (hardness, luster, cleavage, streak, crystal shape, fluorescence, flammability, density/specific gravity, malleability) Igneous	Crystal lattice, Unit Cell, Hexagonally Closest Packed, Cubic Closest Packed Naturally Occuring, Inorganic Compounds, Definite Composition Color, Luster, Cleavage Planes,, Steak Color, Mohs Hardness Scale, Ores, Mining, Mining Techniques Lava, Magma, Intrusive Rock, Extrusive Rock, Felsic Rock, Mafic Rocks,	
Physical Geology Physical Geology	Igneous, Metamorphic, and Sedimentary Rocks Igneous, Metamorphic, and Sedimentary Rocks	PG.IMS.2 PG.IMS.3	Metamorphic Sedimentary	Rock Cycle, Subduction, Metamorphism, Recrystallization (without melting), Distorted Banding Sediment, Lithification, Precipitation, Dating	

Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Physical Geology Physical Geology	Igneous, Metamorphic, and Sedimentary Rocks Earth's History	PG.IMS.4 PG.EH.1	Ocean The geologic rock record	barrier island, neap tide, coriolis effect, upwelling, intertidal zone, neritic zone, pelagic zone, benthic zone, abyssal zone Geological Time Scale, Rock Record, Principle of Uniformity, Principle of Super Position, Principle of Cross-Cutting, Unconformity, Index Fossils, Radioactive	
Physical Geology	Plate Tectonics	PG.PT.1	Internal Earth	Magma, Mantle Convection, Radioactive Decay, Friction, Residual Heat,	
Physical Geology	Plate Tectonics	PG.PT.2	Structure of Earth	Lithosphere, Mantle, Outer Core (liquid), Inner Core (solid), Continental Crust, Ocean Crust	
Physical Geology	Plate Tectonics	PG.PT.3	Historical review	continental drift, pangaea, lithosphere, panthalassa	
Physical Geology	Plate Tectonics	PG.PT.4	Plate motion	Geosyncline, Continental Drift, Sea Floor Spreading, Rift Valleys, Magnetic Switch, Tectonic Plates, Plate Boundaries, Subduction, Hot Spot, Volcanic Arch, Earthquakes, W Wave, P Wave, Richter	

Physical Geology Physical Geology	Earth's Resources Earth's Resources	PG.ER.1 PG.ER.2	Energy resources Air	nuclear fusion, geothermal energy, solar energy, hydroelectric energy, renewable resource, wind energy, nonrenewable energy Atmosphere, Permanent Gases, Variable Gases, Water Vapor, Humidity, Dew Point, Troposphere, Isotherm Layer, Stratosphere, Temperature Inversion, Ozone Layer, Ultraviolet Radiation, Solar Radiation, Mesosphere, Thermosphere, Uplift, Convergence, Fog, Pressure Gradient, Hadley Cells, Coriolis Effect, Jet Stream, Air Mass, Fronts (Cold, Warm, Occluded, Stationary), Cyclone, Thunderstorm, Hurricane	
Course / Strand	**Topic**	**Core Standard**	**Description**	**Key Vocabulary**	**Instructional Strategies and Resources**
Physical Geology	Earth's Resources	PG.ER.3	Water	Hydrosphere, Seawater, Freshwater, Glaciers, Ground Water, Hydrophilic, Capillary Action, Water Vapor, Hydrologic (Water) Cycle, Evaporation, Precipitation, Condensation, Runoff, Surface Water, Infiltration, Irrigation	
Physical Geology Physical Geology Physics Physics	Earth's Resources Glacial Geology Motion Motion	PG.ER.4 PG.GG.1 HS.SC.P.M.1 HS.SC.P.M.2	Soil and sediment Glaciers and glaciation Motion Graphs Problem Solving	Physical Weathering, Chemical Weathering, Horizontal Sorting, Mass Wasting, Leaching, Tilling, Nitrogen Fixation, Loam, Parent Rock, Top Soil, Subsoil, Humus, Clays, Alfisol, Mollisol, Oxisol, Aridisol Glaciers, Zone of Accumulation, Glacial Front, Glacial Till, Moraines, Terminal Moraines, Medial Moraines, Lateral Moraines, Icebergs, Glacial Advance, Glacial Retreat Vector, Scalar, Distance, Displacement, Time, Speed, Velocity, Acceleration, Slope, Integral, Rate of Change, Vector, Scalar, Distance, Displacement, Time,	
Physics	Motion	HS.SC.P.M.3	Projectile Motion	Launch Angle, Launch Speed (exit or muzzle velocity, time of flight (hang time), Horizontal Motion, Vertical Motion, Range, Maximum	
Physics	Momentum and Motion	HS.SC.P.F.1	Newton's laws applied to complex problems	Force (push/pull), Inertia, Mass, Net Force, At Equilibrium (balanced) , Not at Equilibrium (unbalanced), Reaction Force, Weight (Force of Gravity), Normal Force,, Tension, Compression, Spring Forces, Hooke's Law,	
Physics Physics	Momentum and Motion Momentum and Motion	HS.SC.P.F.2 HS.SC.P.F.3	Gravitational force and fields Elastic forces	Force of Gravity, Gravitation Constant (G), Scalar Field, Vector Field, Gravitational Field, Orbital Mechanics Hooke's law, Spring Constant, Tension,	
Physics	Momentum and Motion	HS.SC.P.F.4	Friction force (static and kinetic)	Friction, Amonton's Law, Static Friction, Kinetic Friction, Coefficient of Friction, Normal F	
Physics	Momentum and Motion	HS.SC.P.F.5	Air resistance and drag	Drag, Air Resistance,	
Course / Strand	**Topic**	**Core Standard**	**Description**	**Key Vocabulary**	**Instructional Strategies and Resources**
Physics	Momentum and Motion	HS.SC.P.F.6	Forces in two dimensions	Free Body Diagram	
Physics	Momentum and Motion	HS.SC.P.F.7	Momentum, impulse and conservation of momentum	Momentum, Impulse, Conservation of Momentum, Explosion, Elastic Collision,	
Physics Physics	Energy Energy	HS.SC.P.E.1 HS.SC.P.E.2	Gravitational potential energy Energy in springs	Gravitational Potential Energy, Zero Height, Weight, Gravitational Forces, Gravitational Potential, Gravity Field (g) Hooke's law, Elastic Potential Energy,	
Physics	Energy	HS.SC.P.E.3	Work and power	Work, Joule, Power, Rate of Energy Change, Watt, Horsepower,	

Physics	Energy	HS.SC.P.E.4	Conservation of energy	KInetic Energy, Mechanical Energy, Work- KE Theorem, Work- ME Theorem, Law of	
Physics Physics	Energy Waves	HS.SC.P.E.5 HS.SC.P.W.1	Nuclear energy Wave properties	Structure of Nucleus, Binding Energy, Nuclear Force, Radioactivity, Alpha Decay, Beta Decay, Gamma Decay, Nuclear Conservation Laws, Half Life, Rate of Decay, Decay Series, Radioactive Dating, Nuclear *Stability, *Tunneling Wave Velocity, Wavelength, Frequency, Hertz, Amplitude, Longitudinal Wave, Transverse Waves, Mechanical Waves, Electromagnetic Waves, Reflection, Transmission (refraction), Diffraction, Interference, Interference Patterns, Law of	
Physics	Waves	HS.SC.P.W.2	Light phenomena	Color, Color Addition, Color Subtraction, Reflection, Refraction, Diffraction, Emitted Light, Transmitted Light, Reflected Light, Law of Reflection, Snell's Law (refraction) Curved Mirror, Real Image, Virtual Image,	
Physics Physics	Electricity and Magnetism Electricity and Magnetism	HS.SC.P.EM.1 HS.SC.P.EM.2	Charging objects (friction, contact and induction) Coulomb's law	Net Charge, Conduction, Induction, Attract, Repel, Electroscope, Capacitor Force, Attraction, Repulsion, Coulomb's Constant	

Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Physics	Electricity and Magnetism	HS.SC.P.EM.3	Electric fields and electric potential energy	Field Measure, Scalar Field, Vector Field, Force Field, Uniform Field, Lines of Force, Electric PE, Electric Potential, Volts, Equipotential Lines, Potential Difference (Voltage), Potential Gain, Potential Drop,	
Physics Physics	Electricity and Magnetism Electricity and Magnetism	HS.SC.P.EM.4 HS.SC.P.EM.5	DC circuits Magnetic fields	Circuit, Potential Gain, Potential Drop, Volts, Current, Amperes, Resistance, Ohm's Law, Ohms, Series Resistors, Parallel Resistors, Kirchhoff's Rules Magnetic Field, Earth's Magnetic Field, Teslas, Paramagnetic, Ferromagnetic, Force	
Physics	Electricity and Magnetism	HS.SC.P.EM.6	Electromagnetic interactions	Attraction, Repulsion, Magnetic Flux, Induced EMF, Faraday's Law, Lenz's Law, Electric Motors, Electric Generators, Speakers, Microphones, Back EMF, Transformer, * Inductance, *PE of Magnetic Field, *LR	
Human Anatomy and Physiology Human Anatomy and Physiology Human Anatomy and Physiology Human Anatomy and	Levels of Organization Levels of Organization Levels of Organization Levels of Organization Support and Motion	HS.SC.AP.LO.1 HS.SC.AP.LO.2 HS.SC.AP.LO.3 HS.SC.AP.LO.4 HS.SC.AP.SM.1	Hierarchy of Organization Types of Tissues Homeostasis Anatomical Terminology Integumentary System	anatomy, physiology, gross anatomy, microscopic anatomy atoms, molecules, cells, tissue, organs, organ systems, organism receptor, effector, negative feedback mechanisms, positive feedback mechanisms section, plane, sagittal, transverse, thoracic cavity, mediastinum, abdominopelvic cavity, dorsal, ventral skin, keratin, epidermis, dermis, hypodermis, stratum basale, stratum spinosum, stratum	
Human Anatomy and	Support and Motion	HS.SC.AP.SM.2	Skeletal System	axial skeleton, appendicular skeleton, diaphysis, epiphyses, osteocytes, osteoblasts,	
Human Anatomy and	Support and Motion	HS.SC.AP.SM.3	Muscular System	actin, myosin, sarcomeres, motor unit, neuromuscular junctions, action potential,	

Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Human Anatomy and Physiology Human Anatomy and Physiology	Integration and Coordination Integration and Coordination	HS.SC.AP.IC.1 HS.SC.AP.IC.2	Nervous System Special Senses	central nervous system, peripheral nervous system, afferent, efferent, neuroglia, myelin sheath, neurotransmitter, axon, dendrites sclera, retina, photoreceptors, mechanoreceptors, cochlea, malleus, stapes, incus, olfactory receptors, gustatory cells	
Human Anatomy and	Integration and Coordination	HS.SC.AP.IC.3	Endocrine System	hormones, hypothalamus, pituitary gland, calcitonin, epinephrine, estrogen,	
Human Anatomy and Physiology Human Anatomy and Physiology	Transport Transport	HS.SC.AP.T.1 HS.SC.AP.T.2	Blood Cardiovascular System	erythrocytes, leukocytes, platelets, hemoglobin, polycythemia, hematopoiesis, hemostasis, hemophilia, agglutination, ABO blood groups myocardium, ventricles, atrium, systemic circulation, pulmonary circulation, aorta, mitral valve, sinoatrial node, atrioventricular node, arteries, veins, vasoconstriction, systolic	
Human Anatomy and	Transport	HS.SC.AP.T.3	Lymphatic and Immune Systems	macrophages, lymphocytes, histamine, lysozyme, inflammatory response, phagocytes,	
Human Anatomy and Physiology Human Anatomy and Physiology	Absorption and Excretion Absorption and Excretion	HS.SC.AP.AE.1 HS.SC.AP.AE.2	Digestive System Respiratory System	alimentary canal, uvula, stomach, small intestine, teeth, large intestine, segmentation, peristalsis, deglutition, defecation larynx, pharynx, trachea, lungs, epiglottis, alveoli, inspiration, expiration, tidal volume, vital capacity, bicarbonate ion, internal	
Human Anatomy and	Absorption and Excretion	HS.SC.AP.AE.3	Urinary System	kidneys, nephrons, renal cortex, urine, micturition, antidiuretic hormone, diabetes	
Human Anatomy and Physiology Science Inquiry and	Reproduction	HS.SC.AP.R.1 HS.SC.IA.1	Reproductive System Identify questions that can be answered through scientific investigations.	gonads, seminiferous tubules, prostate, uterus, oocyte, ovarian cycle, gestation period, fertilization, Scientific Method, Hypothesis, Null Hypothesis, Testable Hypothesis,	

Course / Strand	Topic	Core Standard	Description	Key Vocabulary	Instructional Strategies and Resources
Science Inquiry and Applications Science Inquiry and Applications		HS.SC.IA.2 HS.SC.IA.3	Design and conduct a scientific investigation. Use appropriate mathematics, tools and techniques to gather data and information.	Manipulate (Independent) Variable, Observed (dependent) Variable, Constant Variables, Control Group, One Tail Test, Two Tail Test, Measuring, Significant Figures, Units,	
Science Inquiry and Applications Science Inquiry and Applications		HS.SC.IA.4 HS.SC.IA.5	Analyze and interpret data. Develop descriptions, models, explanations and predictions.	Graphing, Best Fit (regression) Lines, Slope, Integral, Scatter Plot, Line Graph, Bar Graph (Histogram), Ple Chart, Percent Error, Percent Deviation, Evaluate, Deductive Reasoning, If/Then statements, Either/Or statements	
Science Inquiry and Applications		HS.SC.IA.6	Think critically and logically to connect evidence and explanations.	Conclude, Defend, Explain, Compare, Vetting of Sources	

Science Inquiry and Applications Science Inquiry and Applications		HS.SC.IA.7 HS.SC.IA.8	Recognize and analyze alternative explanations and predictions. Communicate scientific procedures and explanations.	Evaluate, Thought Experiment, Theory, Experiment Procedures, Safety Precautions,	