SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
S1 – 1st Grade	S6 – 6th Grade	SC 11 – 11th Grade – Environmental Science
S2 – 2nd Grade	SC 7– 7th Grade – Life Science	SC 9-12– 11th Grade – Chemistry
S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
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		SC 9-12– 12th Grade – Anatomy & Physiology

S7 Outcome 1: Abilities to do Science Inquiry

Outcome Number	Objective	Standard
SC7.1.1	Students will design and conduct investigations that will lead to descriptions of relationships between evidence and explanations.	8.1.1
SC7.1.2	Formulate testable questions that lead to predictions and scientific investigations.	8.1.1a
SC7.1.3	Design and conduct logical and sequential investigations including repeated trials.	8.1.1b
SC7.1.4	Determine controls and use dependent (responding) and independent (manipulated) variables.	8.1.1c
SC7.1.5	Select and use equipment appropriate to the investigation, demonstrate correct techniques	8.1.1d
SC7.1.6	Make qualitative and quantitative observations.	8.1.1e
SC7.1.7	Record and represent data appropriately and review for quality, accuracy, and relevancy.	8.1.1f
SC7.1.8	Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information.	8.1.1g
SC7.1.9	Share information, procedures, results, and conclusions with appropriate audiences.	8.1.1h
SC7.1.9	Analyze and provide appropriate critique of scientific investigations.	8.1.1i
SC7.1.9	Use appropriate mathematics in all aspects of scientific inquiry.	8.1.1j

S7 Outcome 2: Nature Of Science

Outcome Number	Objective-Nature of Science	Standard
SC 7.2.1	Students will apply the nature of science to their own investigations.	8.1.2
SC 7.2.2	Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new evidence not matching existing explanations.	8.1.2a
SC 7.2.3	Describe how scientific discoveries influence and change	8.1.2b

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	society.	
SC 7.2.4	Recognize scientists from various cultures have made many contributions to explain the natural world.	8.1.2c

S7 Outcome 3: Technology

Outcome Number	Objective	Standard
SC 7.3.1	Students will solve a design problem which involves one or two scientific concepts.	8.1.3
SC 7.3.2	Identify problems for technical designs	8.1.3a
SC 7.3.3	Design a solution or a product	8.1.3b
SC 7.3.4	Implement the proposed design	8.1.3c
SC 7.3.5	Evaluate completed technological designs or products	8.1.3d
SC 7.3.6	Communicate the process of technical design	8.1.3e
SC 7.3.2	Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems)	8.1.3f
SC 7.3.3	Describe how Science and technology are reciprocal	8.1.3g
SC 7.3.4	Recognize the solutions have intended and unintended consequences	8.1.3h
SC 7.3.5	Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge.	8.1.3i

S7 Outcome 4: Heredity

Outcome Number	Objective- Heredity	Standard
SC 7.4.1	Students will investigate and describe the relationship between reproduction and heredity.	8.3.2
SC 7.4.2	Recognize that heredity information is contained in genes within the chromosomes of each cell.	8.3.2a
SC 7.4.3	Compare and contrast sexual and asexual reproduction.	8.3.2b

S7 Outcome 5: Life Science

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
S1 – 1st Grade	S6 – 6th Grade	SC 11 – 11th Grade – Environmental Science
S2 – 2nd Grade	SC 7– 7th Grade – Life Science	SC 9-12– 11th Grade – Chemistry
S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
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Outcome Number	Objective-Structure and function of Living Systems	Standard
SC 7.5.1	Students will investigate and describe the structure and function of living organisms.	8.3.1
SC 7.5.2	Recognize the levels of organisms in living organisms (cells, tissue, organ, organ systems and organisms)	8.3.1a
SC 7.5.3	Recognize that all organisms are composed of one or many cells; that these cells must grow, divide and use energy; and that all cells function similarly.	8.3.1b
SC 7.5.4	Recognize specialized cells perform specialized functions in multicellular organisms.	8.3.1c
SC 7.5.5	Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other.	8.3.1d

S7 Outcome 6: Flow of Matter and Energy in Ecosystem

Outcome Number	Objective-	Standard
SC 7.6.1	Students will describe populations and ecosystems.	8.3.3
SC 7.6.2	Diagram and explain the flow of energy through a simple food web	8.3.3a
SC 7.6.3	Compare the roles of producers, consumers, and decomposers in an ecosystem	8.3.3b
SC 7.6.4	Recognize that producers transform sunlight into chemical energy through photosynthesis	8.3.3c
SC 7.6.5	Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support	8.3.3d

S7 Outcome 7: Biodiversity

Outcome Number	Objective-Biodiversity	Standard
SC 7.7.1	Students will identify characteristics of organisms that help them survive	8.3.4

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
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S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
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SC 7.7.2	Describe how an inherited characteristic enables an organism to improve its survival rate	8.3.4a
SC 7.7.3	Recognize the extinction of a species is caused by the inability to adapt to an environmental change	8.3.4b
SC 7.7.4	Use anatomical features of an organism to infer similarities among other organisms	8.3.4c

S8 Outcome 1: Force and Motion

Outcome Number	Objective-Force and Motion	Standard
SC 8.1.1	Students will investigate and describe forces and motion.	8.2.2
SC 8.1.2	Describe motion of an object by its position and velocity.	8.2.2a
SC 8.1.3	Recognize an object that is not being subjected to a force will continue to move at a constant speed in a straight line or stay at rest (Newton's 1st law).	8.2.2b
SC 8.1.4	Compare the motion of objects related to the effects of balanced and unbalanced forces.	8.2.2c
SC 8.1.5	Recognize that everything on or around Earth is pulled towards Earth's center by gravitational force.	8.2.2d

S8 Outcome 2: Energy

Outcome Number	Objective-Energy	Standard
SC 8.2.1	Students will identify and describe how energy systems and matter interact.	8.2.3
SC 8.2.2	Recognize that vibrations set up wave-like disturbances that spread away from the source(sound, seismic, water waves).	8.2.3a
SC 8.2.3	Identify that waves move at different speeds in materials.	8.2.3b
SC 8.2.4	Recognize that light interacts with matter by transmission (including refraction) absorption, or scattering (including reflection).	8.2.3c
SC 8.2.5	Recognize that to see an object, light from the surface of the object must enter the eye; the color seen depends on the properties of the surface and the color of the available light source.	8.2.3d
SC 8.2.6	Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature.	8.2.3e

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SC 8.2.7	Describe transfer of energy from electrical and magnetic sources to different energy forms (heat, light, sound and chemical).	8.2.3f
SC 8.2.8	Recognize all energy is neither created nor destroyed.	8.2.3g

S8 Outcome 3: Physical Science

Outcome number	Objective	Standard
SC 8.3.1	Students will identify and describe the particulate nature of matter including physical and chemical interactions.	8.2.1
SC 8.3.2	Compare and contrast elements, compounds and mixtures.	8.2.1a
SC 8.3.3	Describe physical and chemical properties of matter.	8.2.1b
SC 8.3.4	Recognize most substances can exist as a solid, liquid, or gas depending on temperature.	8.2.1c
SC 8.3.5	Compare and contrast solids, liquids and gases based on properties of these states of matter.	8.2.1d
SC 8.3.6	Distinguish between physical and chemical changes (phase changes, dissolving, burning and rusting).	8.2.1e
SC 8.3.7	Recognize conservation of matter in physical and chemical changes.	8.2.1f
SC 8.3.8	Classify substances into similar groups based on physical properties.	8.2.1g

S8 Outcome 4: Earth and Space

Outcome Number	Objective-Earth and Space	Standard
SC 8.4.1	Students will investigate and describe Earth and the solar system.	8.4.1
SC 8.4.2	Describe the components of the solar system (sun, planets, moons, asteroids and comets)	8.4.1a
SC 8.4.3	Describe the relationship between motion of objects in the solar system and the phenomena of say, year, eclipses, phases of the Moon and seasons.	8.4.1b
SC 8.4.4	Describe the effects of gravity on Earth (tides) and the effects of gravity on objects in the solar system.	8.4.1c

S8 Outcome 5: Earth Structures and Processes

Outcome Number	Objective-Earth in Space	Standard
SC 8.5.1	Students will investigate and describe Earth's structure, systems and processes.	8.4.2

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
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SC 8.5.2	Describe the layers of Earth (core, mantle, crust, atmosphere)	8.4.2a
SC 8.5.3	Describe the physical composition of soil.	8.4.2b
SC 8.5.4	Describe the mixture of gases in Earth's atmosphere and how the atmosphere's properties change at different elevations.	8.4.2c
SC 8.5.5	Describe evidence of Earth's magnetic field.	8.4.2d
SC 8.5.6	Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, and earthquakes) that impact Earth's surface.	8.4.2e
SC 8.5.7	Describe the rock cycle.	8.4.2f
SC 8.5.8	Describe the water cycle (evaporation, condensation, precipitation).	8.4.2g
SC 8.5.9	Classify Earth's materials as renewable or nonrenewable.	8.4.2h

S8 Outcome 6: Energy in Earth's Systems

Outcome Number	Objective-Energy in Earth's System	Standard
SC 8.6.1	Student's will investigate and describe energy in Earth's atmosphere.	8.4.3
SC 8.6.2	Describe how energy from the Sun influences the atmosphere and provides energy for plant growth.	8.4.3a
SC 8.6.3	Identify factors that influence daily and seasonal changes on earth (tilt of the Earth, humidity, air pressure and air masses).	8.4.3b
SC 8.6.4	Describe atmospheric movements that influence weather and climate (air masses and jet stream).	8.4.3c

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S8 Outcome 7: Earth's History

Outcome Number	Objective-Earth's History	Standard
SC 8.7.1	Students will use evidence to draw conclusions about changes in Earth.	8.4.4
SC 8.7.2	Recognize that Earth processes we see today are similar to those that occurred in the past (uniformity of processes).	8.4.4a
SC 8.7.3	Describe how environment conditions have changed through use of the fossil record.	8.4.4b

S9 Outcome 1: Matter

Outcome Number	Objective-Matter	Standard
SC 9.1.1	Recognize that bonding occurs when outer electrons are transferred (ionic) or shared (covalent)	12.2.1a
SC 9.1.2	Describe the energy transfer associated with the phase changes between solids, liquids and gases	12.2.1b
SC 9.1.3	Describe the tree normal states of matter (solid, liquid, and gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules	12.2.1c
SC 9.1.4	Recognize a large number of chemical reactions involve the transfer of wither electrons (oxidation/reduction) or hydrogen ion (acid/base) between reacting ions, molecules or atoms	12.2.1d
SC 9.1.5	Identify factors affecting rates of chemical reactions (temperature, particle size surface area)	12.2.1e
SC 9.1.6	Recognize the charges and relative locations of subatomic particles (neutrons, electrons and protons)	12.2.1f
SC 9.1.7	Describe properties of atoms, ions, and isotopes	12.2.1g
SC 9.1.8	Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties	12.2.1h

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S9 Outcome 2: Force and Motion

Outcome Number	Objective-Force and Motion	Standard
SC 9.2.1	Describe motion with respect to displacement and acceleration	12.2.2a
SC 9.2.2	Describe how the law of inertia (Newton's 1st Law) is evident in the real world	12.2.2b
SC 9.2.3	Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd Law)	12.2.2c
SC 9.2.4	Recognize that all forces occur in equal and opposite pairs (Newton's 3rd Law)	12.2.2d
SC 9.2.5	Describe how Newton's 3rd law of motion is evident in a real-world event	12.2.2e
SC 9.2.6	Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them	12.2.2f
SC 9.2.7	Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between them	12.2.2g

S9 Outcome 3: Energy

Outcome Number	Objective-Energy	Standard
SC 9.3.1	Describe mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium	12.2.3a
SC 9.3.2	Recognize that the energy in waves can be changed into other forms of energy	12.2.3b
SC 9.3.3	Recognize that light can behave as a wave (diffraction and interference)	12.2.3c
SC 9.3.4	Distinguish between temperate (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature)	12.2.3d
SC 9.3.5	Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation	12.2.3e

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SC 9.3.6	Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field	12.2.3f
SC 9.3.7	Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength	12.2.3g
SC 9.3.8	Recognize that nuclear reactions (fission, fusion, radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater than the energy in chemical interactions	12.2.3h
SC 9.3.9	Interpret the law of conservation of energy to make predictions for the outcome of an event	12.2.3i
SC 9.3.10	Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g. electromagnetic waves)	12.2.3j
SC 9.3.11	Identify endothermic and exothermic reactions	12.2.3k

S10 Outcome 1: Structure And Function Of living Systems

Outcome Number	Objective-Structure and function of living Systems	Standard
SC 10.1.1	Students will investigate and describe the chemical basis of the growth, development, and maintenance of cells	12.3.1
SC 10.1.2	Identify the complex molecules (carbohydrates, lipids, proteins, nucleic acids) that make up living organisms	12.3.1a
SC 10.1.3	Identify the form and function of sub-cellular structures that regulate cellular activities	12.3.1b
SC 10.1.4	Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release	12.3.1c
SC 10.1.5	Describe how an organism senses changes in its internal or external environment and responds to ensure survival	12.3.1d

S10 Outcome 2: Heredity

Outcome Number	Objective-Heredity	Standard
SC 10 2.1	Students will describe the molecular basis of reproduction and heredity	12.3.2

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SC 10.2.2	Identify that information passed from parents to offspring is coded in DNA molecules	12.3.2a
SC 10.2.3	Describe the basic structure of DNA and its function in genetic inheritance	12.3.2b
SC 10.2.4	Recognize how mutations could help, harm, or have no effect on individual organisms	12.3.2c
SC 10.2.5	Describe that sexual reproduction results in a largely predictable, variety of possible gene combinations in the offspring of any two parents	12.3.2d

S10 Outcome 3: Flow of Matter and Energy in the Ecosystem

Outcome Number	Objective-Flow of matter and energy in Ecosystems	Standard
SC 10 3.1	Students will describe, on a molecular level, the cycling of matter and the flow of energy between organisms and their environment	12.3.3
SC 10.3.2	Explain how the stability of an ecosystem is increased by biological diversity	12.3.3a
SC 10.3.3	Recognize that atoms and molecules cycle among living and nonliving components of the biosphere	12.3.3b
SC 10.3.4	Explain how distribution and abundance of different organisms in ecosystems are limited by the availability of matter and energy and the ability of the ecosystem to recycle materials	12.3.3c
SC 10.3.4	Analyze factors which may influence environmental quality	12.3.3d

S10 Outcome 4: Biodiversity

Outcome Number	Objective-Biodiversity	Standard
SC 10 4.1	Students will describe the theory of biological evolution	12.3.4
SC 10.4.2	Identify different types of adaptations necessary for survival (morphological, physiological, behavioral)	12.4.4a
SC 10.4.3	Recognize that the concept of biological evolution is a theory which explains the consequence of the interactions of: (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring	12.4.4b

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SC 10.4.4	Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms	12.4.4c
SC 10.4.5	Apply the theory of biological evolution to explain diversity of life over time	12.4.4d

S11 Outcome 1: Earth's History

Outcome Number	Objective	Standard
SC 11 1.1	Students will explain the history and evolution of Earth	12.4.4
SC I11.1.2	Recognize that in any sequence of sediments or rocks that has not been overturned, the youngest sediments or rocks are at the top of the sequence and the oldest are at the bottom (law of superposition)	12.4.4a
SC 11.1.3	Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods	12.4.4b
SC 11.1.4	Compare and contrast the physical and biological differences of the early Earth with the planet we live on today	12.4.4c

S11 Outcomes 2: Inquiry, the Nature of Science and Technology

Outcome Number	Objective-Energy in Earth's System	Standard
SC 11.2.1	Students will investigate and describe the relationships among the sources of energy and their effects on Earth's systems	12.4.3
SC 11.2.2	Describe how radiation, conduction, and convection transfer heat in Earth's systems	12.4.3a
SC 11.2.3	Identify internal and external sources of heat energy in Earth's systems	12.4.3b
SC 11.2.4	Compare and contrast benefits of renewable and nonrenewable energy sources	12.4.3c
SC 11.2.5	Describe natural influences (Earth's rotation, mountain ranges, oceans, differential heating) on global climate	12.4.3d

S11 Outcome 3: Energy In Earth's Systems

Outcome Number	Objective-Earth Structures and Processes	Standard
SC 11.3.1	Students will investigate the relationships among Earth's structure, systems, and processes.	12.4.2
SC 11.3.2	Recognize how Earth materials move through geochemical	12.4.2a

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	cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter	
SC 11.3.3	Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (plate tectonics)	12.4.2b
SC 11.3.4	Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels)	12.4.2c

S11 Outcome 4: Earth and Space

Outcome Number	Objective-Earth in Space	Standard
SC 10.5.1	Students will investigate an describe the known universe	12.4.1
SC 10.5.2	Describe the formation of the universe using the Big Bang Theory	12.4.1a
SC 10.5.3	Recognize that stars, like the Sun, transform matter into energy by nuclear reactions which leads to the formation of other elements	12.4.1b
SC 10.5.4	Describe stellar evolution	12.4.1c

S11 Outcome 5: Earth's Structures and Process

Outcome Number	Objective-Earth Structures and Processes	Standard
SC 11.5.1	Students will investigate the relationships among Earth's structure, systems, and processes.	12.4.2
SC 115.2	Recognize how Earth materials move through geochemical cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter	12.4.2a
SC 11.5.3	Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (plate tectonics)	12.4.2b
SC 11.5.4	Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels)	12.4.2c

S12 Outcome 1:

Outcome Number	Objective-Ability to do Scientific Inquiry	Standard

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
S1 – 1st Grade	S6 – 6th Grade	SC 11 – 11th Grade – Environmental Science
S2 – 2nd Grade	SC 7– 7th Grade – Life Science	SC 9-12– 11th Grade – Chemistry
S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
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SC 12.1.1	Students will design and conduct investigations that will lead to use of logic and evidence in the formulation of scientific explanations and models	12.1.1
SC 12.1.2	Formulate a testable hypothesis supported by prior knowledge to guide and investigation	12.1.1a
SC 12.1.3	Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations	12.1.1b
SC 12.1.4	Identify and manage variables and constraints	12.1.1c
SC 12.1.5	Select and use lab equipment and technology appropriately and accurately	12.1.1d
SC 12.1.6	Use tools and technology to make detailed qualitative and quantitative observations	12.1.1e
SC 12.1.7	Represent and review collected data in a systematic, accurate, and objective manner	12.1.1f
SC 12.1.8	Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations	12.1.1g
SC 12.1.9	Use results to verify or refute a hypothesis	12.1.1h
SC 12.1.10	Propose and/or evaluate possible revisions and alternate explanations	12.1.1i
SC 12.1.11	Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers)	12.1.1j
SC 12.1.12	Evaluate scientific investigations and offer revisions and new ideas as appropriate	12.1.1k
SC 12.1.13	Use appropriate mathematics in all aspects of scientific inquiry	12.1.1l

S12 Outcome 2:

Outcome Number	Objective-Inquiry, the nature of Science and Technology	Standard
SC 12.2.1	Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations	12.1.2

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
S1 – 1st Grade	S6 – 6th Grade	SC 11 – 11th Grade – Environmental Science
S2 – 2nd Grade	SC 7– 7th Grade – Life Science	SC 9-12– 11th Grade – Chemistry
S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
S4 – 4th Grade	SC 9– 9th Grade – Physical Science	SC 9-12– 12th Grade – Physics
		SC 9-12– 12th Grade – Anatomy & Physiology

SC 12.2.2	Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge	12.1.2a
SC 12.2.3	Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society	12.1.2b
SC 12.2.4	Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world	12.1.2c
SC 12.2.5	Research and describe the difficulties experienced by scientific innovators who had to overcome commonly held beliefs of their times to reach conclusions that we now take for granted	12.1.2d

S12 Outcome 3:

Outcome Number	Objective Technology	Standard
SC 12.3.1	Students will solve a complex design problem.	12.1.3
SC 12.3.2	Propose designs and choose between alternative solutions to a problem.	12.1.3a
SC 12.3.3	Assess the limits of technical designs.	12.1.3b
SC 12.3.4	Implement the selected solution.	12.1.3c
SC 12.3.5	Evaluate the solution and the consequences.	12.1.3d
SC 12.3.6	Communicate the problem, process and solution.	12.1.3e
SC 12.3.7	Compare and contrast the reasons for the pursuit of science and pursuit of technology.	12.1.3f
SC 12.3.8	Explain how science advances with the introduction of new technology.	12.1.3g
SC 12.3.9	Recognize creativity, imagination, and a good knowledge base is all needed to advance the work of science and engineering.	12.1.3h

S12 Outcome 4:

Outcome Number	Objective-Matter	Standard
SC 12.4.1	Students will investigate and describe matter in terms of its structure, composition and conservation.	12.2.1
SC 12.4.2	Recognize bonding occurs when outer electrons are	12.2.1a

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S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
S4 – 4th Grade	SC 9– 9th Grade – Physical Science	SC 9-12– 12th Grade – Physics
		SC 9-12– 12th Grade – Anatomy & Physiology

	transferred (ionic) or shared (covalent).	
SC 12.4.3	Describe the energy transfer associated with phase changes between solids, liquids, and gases.	12.2.1b
SC 12.4.4	Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules.	12.2.1c
SC 12.4.5	Recognize a large number of chemical reactions involve the transfer of either electrons (oxidation/reduction) or hydrogen ions (acid/base) between reacting ions, molecules or ions.	12.2.1d
SC 12.4.6	Identify factors affecting rates of chemical reactions (temperature, particle size, surface area)	12.2.1e
SC 12 4.7	Recognize the charges and relative locations of subatomic particles (neutrons, protons, electrons)	12.2.1f
SC 12.4.8	Describe properties of atoms, ions, and isotopes	12.2.1g
SC 12.4.9	Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties	12.2.1h

S12 Outcome 5:

Outcome Number	Objective	Standard
SC 12.5.1	Students will investigate and describe the nature of field forces and their interactions with matter	12.2.2
SC 12.5.2	Describe motion with respect to displacement and acceleration	12.2.2a
SC 12.5.3	Describe how the law of inertia (Newton's 1st law) is evident in a real-world event	12.2.2b
SC 12.5.4	Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd law)	12.2.2c
SC 12.5.5	Recognize that all forces occur in equal and opposite pairs (Newton's 3rd law)	12.2.2d
SC 12.5.6	Describe how Newton's 3rd law of motion is evident in a real-world event	12.2.2e

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
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SC 12.5.7	Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them	12.2.2f
SC 12.5.8	Recognize that an attractive or repulsive electric force exists between two charged particles and that this force is proportional to the magnitude of the charges and the distance between them	12.2.2g

S12 Outcome 6:

Outcome Number	Objective	Standard
SC 12.6.1	Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter	12.2.3
SC 12.6.2	Describe a mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium	12.2.3a
SC 12.6.3	Recognize that the energy in waves can be changed into other forms of energy	12.2.3b
SC 12.6.4	Recognize that light can behave as a wave (diffraction and interference)	12.2.3c
SC 12.6.5	Distinguish between temperature (a measure of the average kinetic energy of atomic or molecular motion) and heat (the quantity of thermal energy that transfers due to a change in temperature)	12.2.3d
SC 12.6.6	Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation	12.2.3e
SC 12.6.7	Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field	12.2.3f
SC 12.6.8	Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength	12.2.3g
SC 12.6.9	Recognize that nuclear reactions (fission, fusion, radioactive decay) convert a fraction of the mass of interacting particles into energy, and this amount of energy is much greater that the energy in chemical reactions	12.2.3h

SK – Kindergarten	S5 – 5th Grade	SC 10– 10th Grade – Biology
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S3 – 3rd Grade	SC 8– 8th Grade – Earth Science	SC 9-12 – 11th Grade – Advanced Biology
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SC 12.6.10	Interpret the law of conservation of energy to make predictions for the outcome of an event	12.2.3i
SC 12.6.11	Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g. electromagnetic waves)	12.2.3j
SC 12.6.12	Identify endothermic and exothermic reactions	12.2.3k