

Nebraska State Accountability - Science (NeSA-S)
Table of Specifications

Grade 5

INQUIRY, THE NATURE OF SCIENCE, AND TECHNOLOGY

Grade 5 Abilities to do Scientific Inquiry	Focus Words
SC 5.1.1 Students will plan and conduct investigations that lead to the development of explanations.	
SC 5.1.1.a Ask testable scientific questions	Testable Question
SC 5.1.1.b Plan and conduct investigations and identify factors that have the potential to impact an investigation	Investigation
SC 5.1.1.c Select and use equipment correctly and accurately	Scientific Equipment
SC 5.1.1.d Make relevant observations and measurements	Observation/Measurement
SC 5.1.1.e Collect and organize data	Organize Data
SC 5.1.1.f Develop a reasonable explanation based on collected data	Reasonable Explanation
SC 5.1.1.g Share information, procedures, and results with peers and/or adults	Sharing Information
SC 5.1.1.h Provide feedback on scientific investigations	Feedback
SC 5.1.1.i Use appropriate mathematics in all aspects of scientific inquiry	Use Math
Grade 5 Nature of Science	Focus Words
SC 5.1.2 Students will describe how scientists go about their work.	ASSESSED AT THE LOCAL LEVEL
SC 5.1.2.a Recognize that scientific explanations are based on evidence and scientific knowledge	
SC 5.1.2.b Recognize that new discoveries are always being made which impact scientific knowledge	
SC 5.1.2.c Recognize many different people study science	
Grade 5 Technology	Focus Words
SC 5.1.3 Students will solve a simple design problem.	ASSESSED AT THE LOCAL LEVEL
SC 5.1.3.a Identify a simple problem	
SC 5.1.3.b Propose a solution to a simple problem	
SC 5.1.3.c Implement the proposed solution	
SC 5.1.3.d Evaluate the implementation	
SC 5.1.3.e Communicate the problem, design, and solution	

PHYSICAL SCIENCE

PHYSICAL SCIENCE	
Grade 5 Matter	Focus Words
SC 5.2.1 Students will explore and describe the physical properties of matter and its changes.	
SC 5.2.1.a Identify mixtures and pure substances	Mixture/Pure Substances
SC 5.2.1.b Identify physical properties of matter (color, odor, elasticity, weight, volume)	Physical Properties
SC 5.2.1.c Use appropriate metric measurements to describe physical properties	Metric Measurements
SC 5.2.1.d Identify state change caused by heating and cooling solids, liquids, and gasses	Causes of State Changes
Grade 5 Force and Motion	Focus Words
SC 5.2.2 Students will identify the influence of forces on motion.	
SC 5.2.2.a Describe motion by tracing and measuring an object's position over a period of time (speed)	Speed
SC 5.2.2.b Describe changes in motion due to outside forces (push, pull, gravity)	Changes in Motion
SC 5.2.2 c Describe magnetic behavior in terms of attraction and repulsion	Magnetic Behavior
Grade 5 Energy	Focus Words
SC 5.2.3 Students will observe and identify signs of energy transfer.	
SC 5.2.3.a Recognize that sound is produced from vibrating objects; the sound can be changed by changing the vibration	Sound
SC 5.2.3.b Recognize that light travels in a straight line and can be reflected by an object (mirror)	Light
SC 5.2.3.c Recognize that light can travel through certain materials and not others (transparent, translucent, opaque)	Transparent/Translucent/Opaque
SC 5.2.3.d Identify ways to generate heat (friction, burning, incandescent light bulb)	Generate Heat
SC 5.2.3.e Identify materials that act as thermal conductors or insulators	Thermal Conductors/Insulators
SC 5.2.3.f Recognize that the transfer of electricity in an electrical circuit requires a closed loop	Electric Circuit

LIFE SCIENCE	
Grade 5 Life Science	Focus Words
SC 5.3.1 Students will investigate and compare the characteristics of living things.	
SC 5.3.1.a Compare and contrast characteristics of living and nonliving things	Living/Nonliving Characteristics
SC 5.3.1.b Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect move, root of a plant helps the plant obtain water)	Function of Parts of Organisms
Grade 5 Heredity	Focus Words
SC 5.3.2 Students will identify variations of inherited characteristics and life cycles.	
SC 5.3.2.a Identify inherited characteristics of plants and animals	Identify Inherited Characteristics
SC 5.3.2.b Identify the life cycle of an organism	Life Cycle
SC 5.3.3 Students will describe relationships within an ecosystem.	
SC 5.3.3.a Diagram and explain a simple food chain beginning with the Sun	Food Chain
SC 5.3.3.b Identify the role of producers, consumers, and decomposers in an ecosystem	Roles within Ecosystem
SC 5.3.3.c Recognize the living and nonliving factors that impact the survival of organisms in an ecosystem	Living/Nonliving Factors
SC 5.3.3.d Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live	Changes Due to Organisms
SC 5.3.4 Students will describe changes in organisms over time.	
SC 5.3.4.a Describe adaptations made by plants or animals to survive environmental changes	Adaptations

EARTH AND SPACE SCIENCE

EARTH AND SPACE SCIENCE	
Grade 5 Earth in Space	Focus Words
SC 5.4.1 Students will observe and describe characteristics, patterns, and changes in the sky.	
SC 5.4.1.a Recognize that the observed shape of the Moon changes from day to day during a one month period	Moon Shapes
SC 5.4.1.b Recognize the motion of objects in the sky (the Sun, the Moon, stars) change over time in recognizable patterns	Motion of Celestial Objects
Grade 5 Earth Structures and Processes	Focus Words
SC 5.4.2 Students will observe and describe Earth's materials, structure, and processes.	
SC 5.4.2.a Describe the characteristics of rocks, minerals, soil, water, and the atmosphere	Earth Materials Characteristics
SC 5.4.2.b Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface	Earth's Surface Processes
SC 5.4.2.c Identify how Earth materials are used (fuels, building materials, sustaining plant life)	Use of Earth Materials
Grade 5 Energy in Earth's Systems	Focus Words
SC 5.4.3 Students will observe and describe the effects of energy changes on Earth.	
SC 5.4.3.a Describe the Sun's warming effect on the land and water	Sun's Warming Effect
SC 5.4.3.b Observe, measure, and record changes in weather (temperature, wind direction and speed, precipitation)	Changes in Weather
SC 5.4.3.c Recognize the difference between weather, climate, and seasons	Weather/Climate/Seasons
Grade 5 Earth's History	Focus Words
SC 5.4.4 Students will describe changes in Earth.	
SC 5.4.4.a Describe how slow processes (erosion, weathering, deposition) and rapid processes (landslides, volcanic eruptions, earthquakes) change Earth's surface	Changes in Earth's Surface

Nebraska State Accountability - Science (NeSA-S)
Table of Specifications

Grade 8

INQUIRY, THE NATURE OF SCIENCE, AND TECHNOLOGY

Grade 8 Abilities to do Scientific Inquiry	Focus Words
SC 8.1.1 Students will design and conduct investigations that will lead to descriptions of relationships between evidence and explanations.	
SC 8.1.1.a Formulate testable questions that lead to predictions and scientific investigations	Testable Question/Prediction
SC 8.1.1.b Design and conduct logical and sequential investigations including repeated trials	Investigation
SC 8.1.1.c Determine controls and use dependent (responding) and independent (manipulated) variables	Variables
SC 8.1.1.d Select and use equipment appropriate to the investigation, demonstrate correct techniques	Scientific Equipment
SC 8.1.1.e Make qualitative and quantitative observations	Qualitative Observation/Quantitative Observation
SC 8.1.1.f Record and represent data appropriately and review for quality, accuracy, and relevancy	Record/Represent Data
SC 8.1.1.g Evaluate predictions, draw logical inferences based on observed patterns/relationships, and account for non-relevant information	Interpret Data
SC 8.1.1.h Share information, procedures, results, and conclusions with appropriate audiences	Sharing Information
SC 8.1.1.i Analyze and provide appropriate critique of scientific investigations	Analyze Investigations
SC 8.1.1.j Use appropriate mathematics in all aspects of scientific inquiry	Use Math
Grade 8 Nature of Science	Focus Words
SC 8.1.2 Students will apply the nature of science to their own investigations.	ASSESSED AT THE LOCAL LEVEL.
SC 8.1.2.a Recognize science is an ongoing process and the scientific community accepts and uses explanations until they encounter new experimental evidence not matching existing explanations	
SC 8.1.2.b Describe how scientific discoveries influence and change society	
SC 8.1.2.c Recognize scientists from various cultures have made many contributions to explain the natural world	

Grade 8 Technology	Focus Words
SC 8.1.3 Students will solve a design problem which involves one or two science concepts.	ASSESSED AT THE LOCAL LEVEL.
SC 8.1.3.a Identify problems for technical design	
SC 8.1.3.b Design a solution or product	
SC 8.1.3.c Implement the proposed design	
SC 8.1.3.d Evaluate completed technological designs or products	
SC 8.1.3.e Communicate the process of technical design	
SC 8.1.3.f Distinguish between scientific inquiry (asking questions about the natural world) and technological design (using science to solve practical problems)	
SC 8.1.3.g Describe how science and technology are reciprocal	
SC 8.1.3.h Recognize that solutions have intended and unintended consequences	
SC 8.1.3.i Compare and contrast the reporting of scientific knowledge and the reporting of technological knowledge	
PHYSICAL SCIENCE	
Grade 8 Matter	Focus Words
SC 8.2.1 Students will identify and describe the particulate nature of matter including physical and chemical interactions.	
SC 8.2.1.a Compare and contrast elements, compounds, and mixtures	Element/Compound/Mixture
SC 8.2.1.b Describe physical and chemical properties of matter	Physical/Chemical Property
SC 8.2.1.c Recognize most substances can exist as a solid, liquid, or gas depending on temperature	State of Matter and Temperature
SC 8.2.1.d Compare and contrast solids, liquids, and gasses based on properties of these states of matter	Properties of States of Matter
SC 8.2.1.e Distinguish between physical and chemical changes (phase changes, dissolving, burning, rusting)	Physical/Chemical Change
SC 8.2.1.f Recognize conservation of matter in physical and chemical changes	Conservation of Matter
SC 8.2.1.g Classify substances into similar groups based on physical properties	Classify Substances into Groups

Grade 8 Force and Motion	Focus Words
SC 8.2.2 Students will investigate and describe forces and motion.	
SC 8.2.2.a Describe motion of an object by its position and velocity	Velocity
SC 8.2.2.b 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)	Newton's 1 st Law
SC 8.2.2.c Compare the motion of objects related to the effects of balanced and unbalanced forces	Balanced/Unbalanced Forces
SC 8.2.2.d Recognize that everything on or around Earth is pulled towards Earth's center by gravitational force	Gravity
Grade 8 Energy	Focus Words
SC 2.3 Students will identify and describe how energy systems and matter interact.	
SC 8.2.3.a Recognize that vibrations set up wave-like disturbances that spread away from the source (sound, seismic, water waves)	Waves
SC 8.2.3.b Identify that waves move at different speeds in different materials	Speed of Waves
SC 8.2.3.c Recognize that light interacts with matter by transmission (including refraction), absorption, or scattering (including reflection)	Reflection/Refraction
SC 8.2.3.d 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 sources	Seeing Objects
SC 8.2.3.e Recognize that heat moves from warmer objects to cooler objects until both reach the same temperature	Heat Transfer
SC 8.2.3.f Describe transfer of energy from electrical and magnetic sources to different energy forms (heat, light, sound, chemical)	Transfer of Energy
SC 8.2.3.g Recognize all energy is neither created nor destroyed	Conservation of Energy

LIFE SCIENCE

LIFE SCIENCE	
Grade 8 Structure and Function of Living Systems	Focus Words
SC 8.3.1 Students will investigate and describe the structure and function of living organisms.	
SC 8.3.1.a Recognize the levels of organization in living organisms (cells, tissues, organs, organ systems, organisms)	Levels of Organization
SC 8.3.1.b 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	Cell Theory
SC 8.3.1.c Recognize specialized cells perform specialized functions in multicellular organisms	Cell Specialization
SC 8.3.1.d Identify the organs and functions of the major systems of the human body and describe ways that these systems interact with each other	Body Systems
SC 8.3.1.e Describe how plants and animals respond to environmental stimuli	Response to Stimuli
Grade 8 Heredity	Focus Words
SC 8.3.2 Students will investigate and describe the relationship between reproduction and heredity.	
SC 8.3.2.a Recognize that hereditary information is contained in genes within the chromosomes of each cell	Hereditary Information
SC 8.3.2.b Compare and contrast sexual and asexual reproduction	Sexual/Asexual Reproduction
Grade 8 Flow of Matter and Energy in Ecosystems	Focus Words
SC 8.3.3 Students will describe populations and ecosystems.	
SC 8.3.3.a Diagram and explain the flow of energy through a simple food web	Food Web
SC 8.3.3.b Compare the roles of producers, consumers, and decomposers in an ecosystem	Roles within Ecosystems
SC 8.3.3.c Recognize that producers transform sunlight into chemical energy through photosynthesis	Photosynthesis
SC 8.3.3.d Determine the biotic and abiotic factors that impact the number of organisms an ecosystem can support	Biotic/Abiotic Factors
SC 8.3.3.e Recognize a population is all the individuals of a species at a given place and time	Populations
SC 8.3.3.f Identify symbiotic relationships among organisms	Symbiotic Relationships
SC 8.3.3.g Identify positive and negative effects of natural and human activity on an ecosystem	Environmental Impact

Grade 8 Biodiversity	Focus Words
SC 8.3.4 Students will identify characteristics of organisms that help them survive.	
SC 8.3.4.a Describe how an inherited characteristic enables an organism to improve its survival rate	Survival Rate
SC 8.3.4.b Recognize the extinction of a species is caused by the inability to adapt to an environmental change	Extinction
SC 8.3.4.c Use anatomical features of an organism to infer similarities among other organisms	Similarities among Organisms
EARTH AND SPACE SCIENCE	
Grade 8 Earth in Space	Focus Words
SC 8.4.1 Students will investigate and describe Earth and the solar system.	
SC 8.4.1.a Describe the components of the solar system (the Sun, planets, moons, asteroids, comets)	Solar System
SC 8.4.1.b Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons	Moon Phases/Seasons/Eclipses
SC 8.4.1.c Describe the effects of gravity on Earth (tides) and the effect of gravity on objects in the solar system	Effects of Gravity
Grade 8 Earth Structures and Processes	Focus Words
SC 8.4.2 Students will investigate and describe Earth's structure, systems, and processes.	
SC 8.4.2.a Describe the layers of Earth (core, mantle, crust, atmosphere)	Earth Layers
SC 8.4.2.b Describe the physical composition of soil	Soil
SC 8.4.2.c Describe the mixture of gasses in Earth's atmosphere and how the atmosphere's properties change at different elevations	Atmosphere
SC 8.4.2.d Describe evidence of Earth's magnetic field	Magnetic Field
SC 8.4.2.e Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, earthquakes) that impact Earth's surface	Constructive/Destructive Forces
SC 8.4.2.f Describe the rock cycle	Rock Cycle
SC 8.4.2.g Describe the water cycle (evaporation, condensation, precipitation)	Water Cycle
SC 8.4.2.h Classify Earth materials as renewable or nonrenewable	Renewable/Nonrenewable Resources

Grade 8 Energy in Earth's Systems	Focus Words
SC 8.4.3 Students will investigate and describe energy in Earth's systems.	
SC 8.4.3.a Describe how energy from the Sun influences the atmosphere and provides energy for plant growth	Sun's Energy
SC 8.4.3.b Identify factors that influence daily and seasonal changes on Earth (tilt of the Earth, humidity, air pressure, air masses)	Causes of Seasonal Change
SC 8.4.3.c Describe atmospheric movements that influence weather and climate (air masses, jet stream)	Atmospheric Movement
Grade 8 Earth's History	Focus Words
SC 8.4.4 Students will use evidence to draw conclusions about changes in Earth.	
SC 8.4.4.a Recognize that Earth processes we see today are similar to those that occurred in the past (uniformity of processes)	Uniformity of Processes
SC 8.4.4.b Describe how environmental conditions have changed through use of the fossil record	Use of Fossil Record

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Grade 11

INQUIRY, THE NATURE OF SCIENCE, AND TECHNOLOGY

Grade 11 Abilities to do Scientific Inquiry	Focus Words
SC 12.1.1 Students will design and conduct investigations that lead to the use of logic and evidence in the formulation of scientific explanations and models.	
SC 12.1.1.a Formulate a testable hypothesis supported by prior knowledge to guide an investigation	Hypothesis
SC 12.1.1.b Design and conduct logical and sequential scientific investigations with repeated trials and apply findings to new investigations	Investigation
SC 12.1.1.c Identify and manage variables and constraints	Variables/Constraints
SC 12.1.1.d Select and use lab equipment and technology appropriately and accurately	Lab Equipment/Technology
SC 12.1.1.e Use tools and technology to make detailed qualitative and quantitative observations	Qualitative Observation/Quantitative Observation
SC 12.1.1.f Represent and review collected data in a systematic, accurate, and objective manner	Represent Data/Review Data
SC 12.1.1.g Analyze and interpret data, synthesize ideas, formulate and evaluate models, and clarify concepts and explanations	Analyze Data/Evaluate Model
SC 12.1.1.h Use results to verify or refute a hypothesis	Verify Hypothesis
SC 12.1.1.i Propose and/or evaluate possible revisions and alternate explanations	Revisions/Alternative Explanation
SC 12.1.1.j Share information, procedures, results, conclusions, and defend findings to a scientific community (peers, science fair audience, policy makers)	Scientific Communication
SC 12.1.1.k Evaluate scientific investigations and offer revisions and new ideas as appropriate	Evaluate Investigations
SC 12.1.1.l Use appropriate mathematics in all aspects of scientific inquiry	Use Math

Grade 11 Nature of Science	Focus Words
SC 12.1.2 Students will apply the nature of scientific knowledge to their own investigations and in the evaluation of scientific explanations.	ASSESSED AT THE LOCAL LEVEL.
SC 12.1.2.a Recognize that scientific explanations must be open to questions, possible modifications, and must be based upon historical and current scientific knowledge	
SC 12.1.2.b Describe how society influences the work of scientists and how science, technology, and current scientific discoveries influence and change society	
SC 12.1.2.c Recognize that the work of science results in incremental advances, almost always building on prior knowledge, in our understanding of the world	
SC 12.1.2.d 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	
Grade 11 Technology	Focus Words
SC 12.1.3 Students will solve a complex design problem.	ASSESSED AT THE LOCAL LEVEL.
SC 12.1.3.a Propose designs and choose between alternative solutions of a problem	
SC 12.1.3.b Assess the limits of a technological design	
SC 12.1.3.c Implement the selected solution	
SC 12.1.3.d Evaluate the solution and its consequences	
SC 12.1.3.e Communicate the problem, process, and solution	
SC 12.1.3.f Compare and contrast the reasons for the pursuit of science and the pursuit of technology	
SC 12.1.3.g Explain how science advances with the introduction of new technology	
SC 12.1.3.h Recognize creativity, imagination, and a good knowledge base are all needed to advance the work of science and engineering	

PHYSICAL SCIENCE

Grade 11 Matter	Focus Words
SC 12.2.1 Students will investigate and describe matter in terms of its structure, composition and conservation.	
SC 12.2.1.a Recognize bonding occurs when outer electrons are transferred (ionic) or shared (covalent)	Ionic/Covalent Bonding
SC 12.2.1.b Describe the energy transfer associated with phase changes between solids, liquids, and gasses	Energy in Phase Changes
SC 12.2.1.c Describe the three normal states of matter (solid, liquid, gas) in terms of energy, particle arrangement, particle motion, and strength of bond between molecules	Molecular Motion
SC 12.2.1.d 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 atoms	Oxidation/Reduction/Acid/Base Reactions
SC 12.2.1.e Identify factors affecting rates of chemical reactions (temperature, particle size, surface area)	Factors Affecting Reactions
SC 12.2.1.f Recognize the charges and relative locations of subatomic particles (neutrons, protons, electrons)	Subatomic Particles
SC 12.2.2.1.g Describe properties of atoms, ions, and isotopes	Atomic Properties
SC 12.2.1.h Describe the organization of the periodic table of elements with respect to patterns of physical and chemical properties	Periodic Table
Grade 11 Force and Motion	Focus Words
SC 12.2.2 Students will investigate and describe the nature of field forces and their interactions with matter.	
SC 12.2.2.a Describe motion with respect to displacement and acceleration	Displacement/Acceleration
SC 12.2.2.b Describe how the law of inertia (Newton's 1st law) is evident in a real-world event	Application of Newton's 1 st Law
SC 12.2.2.c Make predictions based on relationships among net force, mass, and acceleration (Newton's 2nd law)	Newton's 2 nd Law
SC 12.2.2.d Recognize that all forces occur in equal and opposite pairs (Newton's 3rd law)	Newton's 3 rd Law
SC 12.2.e Describe how Newton's 3rd law of motion is evident in a real-world event	Application of Newton's 3 rd Law
SC 12.2.2.f Describe gravity as a force that each mass exerts on another mass, which is proportional to the masses and the distance between them	Gravity
SC 12.2.2.g 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	Magnetic/Electric Force

Grade 11 Energy	Focus Words
SC 12.2.3 Students will describe and investigate energy systems relating to the conservation and interaction of energy and matter.	
SC 12.2.3.a Describe mechanical wave properties (speed, wavelength, frequency, amplitude) and how waves travel through a medium	Mechanical Waves
SC 12.2.3.b. Recognize that the energy in waves can be changed into other forms of energy	Change in Wave Energy
SC 12.2.3.c Recognize that light can behave as a wave (diffraction and interference)	Behavior of Light
SC 12.2.3.d 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)	Temperature and Heat
SC 12.2.3.e Compare and contrast methods of heat transfer and the interaction of heat with matter via conduction, convection, and radiation	Conduction/Convection/Radiation
SC 12.2.3.f Recognize that the production of electromagnetic waves is a result of changes in the motion of charges or by a changing magnetic field	Electromagnetic Waves
SC 12.2.3.g Compare and contrast segments of the electromagnetic spectrum (radio, micro, infrared, visible, ultraviolet, x-rays, gamma) based on frequency and wavelength	Electromagnetic Spectrum
SC 12.2.3.h 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	Nuclear Reactions
SC 12.2.3.i Interpret the law of conservation of energy to make predictions for the outcome of an event	Conservation of Energy
SC 12.2.3.j Identify that all energy can be considered to be either kinetic, potential, or energy contained by a field (e.g. electromagnetic waves)	Kinetic/Potential Energy
SC 12.2.3.k Identify endothermic and exothermic reactions	Endo/Exo Thermal Reactions

LIFE SCIENCE

LIFE SCIENCE	
Grade 11 Structure and Function of Living Systems	Focus Words
SC 12.3.1 Students will investigate and describe the chemical basis of the growth, development, and maintenance of cells.	
SC 12.3.1.a Identify the complex molecules (carbohydrates, lipids, proteins, nucleic acids) that make up living organisms	Organic Molecules
SC 12.3.1.b Identify the form and function of sub-cellular structures that regulate cellular activities	Sub-cellular Structures
SC 12.3.1.c Describe the cellular functions of photosynthesis, respiration, cell division, protein synthesis, transport of materials, and energy capture/release	Cellular Functions
SC 12.3.1.d Describe how an organism senses changes in its internal or external environment and responds to ensure survival	Response to Stimulus
Grade 11 Heredity	Focus Words
SC 12.3.2 Students will describe the molecular basis of reproduction and heredity.	
SC 12.3.2.a Identify that information passed from parents to offspring is coded in DNA molecules	DNA Function
SC 12.3.2.b Describe the basic structure of DNA and its function in genetic inheritance	DNA Structure
SC 12.3.2.c Recognizes how mutations could help, harm, or have no effect on individual organisms	Mutations
SC 12.3.2.d Describe that sexual reproduction results in a largely predictable, variety of possible gene combinations in the offspring of any two parents	Sexual Reproduction
Grade 11 Flow of Matter and Energy in Ecosystems	Focus Words
SC 12.3.3 Students will describe, on a molecular level, the cycling of matter and the flow of energy between organisms and their environment.	
SC 12.3.3.a Explain how the stability of an ecosystem is increased by biological diversity	Ecosystem Stability
SC 12.3.3.b Recognize that atoms and molecules cycle among living and nonliving components of the biosphere	Organic/Inorganic Cycles
SC 12.3.3.c 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	Carrying Capacity
SC 12.3.3.d Analyze factors which may influence environmental quality	Environmental Quality

Grade 11 Biodiversity	Focus Words
SC 12.3.4 Students will describe the theory of biological evolution.	
SC 12.3.4.a Identify different types of adaptations necessary for survival (morphological, physiological, behavioral)	Adaptations
SC 12.3.4.b 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	Biological Evolution
SC 12.3.4.c Explain how natural selection provides a scientific explanation of the fossil record and the molecular similarities among the diverse species of living organisms	Natural Selection
SC 12.3.4.d Apply the theory of biological evolution to explain diversity of life over time	Diversity of Life
EARTH AND SPACE SCIENCE	
Grade 11 Earth in Space	Focus Words
SC 12.4.1 Students will investigate and describe the known universe.	
SC 12.4.1.a Describe the formation of the universe using the Big Bang Theory	Big Bang Theory
SC 12.4.1.b Recognize that stars, like the Sun, transform matter into energy by nuclear reactions which leads to the formation of other elements	Stellar Nuclear Reactions
SC 12.4.1.c Describe stellar evolution	Stellar Evolution
Grade 11 Earth Structures and Processes	Focus Words
SC 12.4.2 Students will investigate the relationships among Earth's structure, systems, and processes.	
SC 12.4.2.a Recognize how Earth materials move through geochemical cycles (carbon, nitrogen, oxygen) resulting in chemical and physical changes in matter	Geochemical Cycles
SC 12.4.2.b Describe how heat convection in the mantle propels the plates comprising Earth's surface across the face of the globe (plate tectonics)	Plate Tectonics
SC 12.4.2.c Evaluate the impact of human activity and natural causes on Earth's resources (groundwater, rivers, land, fossil fuels)	Human Impact

Grade 11 Energy in Earth's Systems	Focus Words
SC 12.4.3 Students will investigate and describe the relationships among the sources of energy and their efforts on Earth's systems.	
SC 12.4.3.a Describe how radiation, conduction, and convection transfer heat in Earth's systems	Earth Conduction/Convection
SC 12.4.3.b Identify internal and external sources of heat energy in Earth's systems	Heat Energy
SC 12.4.3.c Compare and contrast benefits of renewable and nonrenewable energy sources	Renewable/Nonrenewable Resources
SC 12.4.3.d Describe natural influences (Earth's rotation, mountain ranges, oceans, differential heating) on global climate	Global Climate
Grade 11 Earth's History	Focus Words
SC 12.4.4 Students will explain the history and evolution of Earth.	
SC 12.4.4.a 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)	Superposition/Relative Age Dating
SC 12.4.4.b Interpret Earth's history by observing rock sequences, using fossils to correlate the sequences at various locations, and using data from radioactive dating methods	Interpreting Earth's History
SC 12.4.4.c Compare and contrast the physical and biological differences of the early Earth with the planet we live on today	Earth's Evolution