Quarter						Instructional Shifts						
1	2	3	4		*Concepts and Skills*	Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
				SR	***Science Investigation and Reasoning***							
				SR.A	***40% of instructional time will be conducting laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.***							
				1	Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards							
				2	Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.							
				SR.B	***Student uses scientific inquiry methods during laboratory and field investigations***							
				1	Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology							
				2	Design and implement experimental investigations by making observations asking well-defined questions, formulate testable hypotheses, and select and use appropriate equipment and technology							

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					3	Collect and record data using the International System of Units and qualitative means such as labeled drawing, writing, and graphic organizers								
					4	Construct tables and graphs, and models using repeated trials and means to organize data and identify patterns and predict and/or describe phenomena								
					5	Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends. Identify criteria of successful design solutions using a systematic process to determine how well the problem is solved.								
					SR.C	***Student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists***								
					1	Analyze, evaluate, identify possible bias and critique scientific explanation by using empirical evidence, logical reasons, and experimental and observation testing, including examining all sides of scientific evidence of those scientific explanation so as to encourage critical thinking								
					2	Use model to represent aspects of the natural world such as a model of Earth's layers								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					3	Identify advantages and limitations of models such as size, scale, properties, and materials								
					4	Relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content								
					5	Explain and demonstrate how engineering advances have led to importand discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems								
					6	Technology use and scientific research varies from region to region over time as differences in climate, natural resources and economic conditions individual and societal needs, desires and values								
					SR.D	***Student knows how to use a variety of tools and methods to conduct science inquiry safely***								
					1	Collect record and analyze information using								
					1a	Journal/notebooks								
					1b	Microscopes								
					1c	Test tubes								
					1d	Computers								
					1e	Microscopes								
					1f	Metric measurement								
					1g	Thermometers								
					1h	Triple beam balance								
					1i	Graduated cylinders								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					1j	Pan Balances								
					1k	Beakers								
					1l	Spring scales								
					1m	Hot plates								
					1n	Meter sticks								
					1o	Calculators								
					1p	Timing devices, clocks and stopwatches								
					1q	Other equipment deemed necessary								
					2	Use preventive safety equipment, including chemical splash goggles, aprons, and gloves, and be prepared to use emergency safety equipment, including an eye/face wash, a fire blanket, and a fire extinguisher								
					ME	***Matter and Energy***								
					ME.A	***The student knows the difference between elements and compounds***								
					1	Knows that an element is a pure substance represented by chemical symbols energy								
					2	Recognizes that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere								
					3	Differentiates between elements and compounds on the most basic level								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					4	Identifies the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate or color change								
					ME.B	***The student knows matter has physical properties that can be used for classification***								
					1	Compare metals, nonmetals, and metalloids using physical properties such as luster, conductifity, or malleability								
					2	Calculate density to identify an unknown substance								
					3	Test the physical properties of minerals, including hardness, color, luster, and streak								
					ME.C	***The student knows that some of Earth's energy resources are available on a nearly perpetual basis, while others can be renewed over a relatively short period of time. Some energy resources, once depleted, are essentially nonrenewable***								
					1	Research and debate the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal and solar resources								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					2	Design a logical plan to manage energy resources in the home, schools, or community								
					SPM	***Structure and Properties of Matter***								
					1	Develop models to describe the atomic composition of simple molecules and extended structures and represent models of molecules that vary in complexity.								
					1a	Understand and use the Periodic Table as the exemplar model for atomic composition including identifying properties of elements: calculate density, physical properties (luster, hardness,conductivity, malleabillity), chemical properties (evaporation, condensation, flamability, precipitation, temperature, color change for all chemical reactions)								
					1b	Examples of simple molecules could include amonia and methanol								
					1c*	Understand and can write the components of a chemical formula (*extended learning)								
					1d*	Examples of extended structures could include sodium chloride or diamonds (*extended learning)								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					1e*	Examples of molecular-level models could include drawings, 3D ball and stick structures, or computer representations showing different molecules with different types of atoms (*extended learning)								
					2	Identify synthetic materials and explain their benefit to society as a complement to natural resources to include renewable and non-renewable resources								
					2a	Natural resources can undergo a chemical process to form the synthetic material (new materials could include new medicine, foods, and alternative fuels such as nuclear power, biomass, wind hydro-power, geothermal and solar resources).								
					3	Design and/or evaluate the school conservation plan to include recycling, re-use, reduce, etc.								
					4	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment (examples of impact: water usage [building dams and levees, polluting water sources such as aquifers, streams and rivers]; land usage [urban development, agriculture, removal of wetlands]; pollution [air, water, or land pollution]								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					FME	***Force, Motion and Energy***								
					FME.A	**The student knows force and motion are related to potential and kinetic energy**								
					1	Compare and contrast potential and kinetic energy								
					2	Identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces.								
					3	Calculate average speed using distance and time measurements								
					4	Measure and graph changes in motion								
					5	Investigate how inclined planes and pulleys can be used to change the amount of force to move an object								
					FME.B	***The student knows that the Law of Conservation of Energy states that energy can neither be created or destroyed, it just changes form***								
					1	Investigate methods of thermal energy transfer, including conduction, convection, and radiation								
					2	Verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					3	Develop a model that predicts changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed								
					3a	Adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of state occurs (examples of models could include drawings and diagrams; example of particles could include molecules or inert atoms; examples of pure substances could include water, carbon dioxide and helium								
					4	Demonstrate energy transformations such as energy in a flashlight changes from chemical energy to electrical energy to light energy								
					MF	***Magnetic Force***								
						The student defines electric and magnetic force.								
					1	Electric and magnetic forces could include elctromagnets, electric motors, or generators								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					2	Use experimental design to show that fields exist between objects exerting forces on each other even though the objects are not in contact (examples: the interactions of magnets, electrically-charged strips of tape, and electrically-charged pith balls through first-hand experiences or simulations)								
					CS	**Communication Sources**								
					1	Distinguish between qualitative scientific data and technical information to support the a scientific claim								
					2	Identify the different types of waves and their purpose (examples include using fiber optic cable to transmit light pulses, radio wave pulses in wifi devices, and conversion of stored binary patterns to make sound or text on a computer)[use technology teacher as a resource]								
					ESS	***Earth, Space and Solar System***								
						The student understands the structure of Earth, the rock cycle, and plate tectonics; organization of the solar system and relationships among the various bodies that comprise it.								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					1	Build a model to illustrate the structural layers of Earth, including the inner core, outer core, mantle crust, asthenosphere, and lithosphere								
					2	Classify rocks as metamorphic igneous, or sedimentary by the processes of their formation								
					3	Identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American								
					4	Describe how plate tectonics causes major geological events such as ocean basin, earthquakes, volcanic eruptions, and mountain building								
					5	Describe the physical properties, locations, and movements of the sun, planets, Galilean moons, meteors, asteroids, and comets to include developing a scale model of a planet (examples of scale properties include the sizes of an object's layers [crust and atmosphere], surface features [volcanoes], and orbital radius; data can be represented through statistical information, drawings, photographs, models)								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					6	Understand that gravity is the force that governs the motion of our soloar system (model emphasizes gravity as the force that holds together the solar system and Milky Way galzxy and controls orbital motions within them [exampls of models can be physical models-analogy of distance along a football field or computer visualizations of elliptical orbits; conceptual models-mathematical proportions relative to the size of familiar objects such as students' school or state)								
					7	Describe the history and future of space exploration, including the types of equipment and transportation needed for space travel								
					HI	***Human Impact***								
					1	Identify and chart or graph natural hazards to identify patterns and forecast future catastrophic events and inform the development of technologies to mitigate their effects								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					2	Some natural hazards, such as volcanic eruptions and severe weather, are preceded by phenomena that allow for reliable predictions, but others, such as earthquake, occur suddenly and with no notice, and are not yet predictable (examples: interior proceses-earthquakes, vocanic eruptions; surface processes-mass wasting and tsunamis; severe weather events-hurricanes, tornadoes, floods; data can include locations, magnitudes and frequencies of the natural hazard; global systems monitor hurricanes, forest fires; safety systems can include storm cellars and basements for tornado-regions; reservoirs, water tables and aquifers mitigate drought regions)								
					3	Gather evidence showing how increases in human populations and per-capita consumption of natural resources impact Earth's systems (evidence includes grade-appppropriate databases on human populations and the rates of consumption of food and natural resources [freshwater, mineral, energy]; impacts include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change [consequences of increases in human populations and consumption of natural resources]								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					4	Sort and catagorize the factors that have caused the rise in global temperatures, especially human activities, over the past century (fossil fuel combustion, cement production, agricultural, volcanic activity, incoming solar radiation [use tables, graphs and maps of global and regional temperatures, atmospheric levels of gases-carbon dioxide, methane])								
					5	Describe the history and future of space exploration, including the types of equipment and transportation needed for space travel								
					OE	***Organisms and Environments***								
						The student knows all organisms are classified into Domains and Kingdoms. Organisms within these taxonomic groups share similar characteristics which allow them to inteeract with the living and nonliving parts of their ecosystem								
					1	Understand that all organisms are composed of one or more cells								
					2	Recognize that the presence of a nucleus determines whether a cell is prokaryotic or eukaryotic.								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					3	Recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains								
					4	Identify the basic characteristics of organisms including prokaryotic or eukaryotic, unicellular or multi-cellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized Kingdoms.								
					5	Describe biotic and biotic parts of an ecosystem in which organisms interact .								
					6	Diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem.								
					7	Define complete and incomplete metamorphosis								
					8	Analyze and interpret data from the Geologic Timeline to identify patterns of changes in the level of complexity of anatomical structures in organisms and the chronological order of fossil appearance in the rock layers								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					9	Apply scientific ideas to compare and contrast anatomical similarities and differences among modern organisms (emphasize explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures)								
					10	Define and identify dominant and recessive traits in living organisms; introduce mathematical representation for example Punnett Square to illustrate probability and proportions of traits								
					ED	***Engineering Design***								
					1	Analyze the steps of a design in the process of solving a problem to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions; for example analyze the steps of the development of the "earthquake proof building" or the development of the system to re-route the San Antonio River.								
					2	Identify criteria of successful design solutions using a systematic process to determine how well the problem is solved.								

1	2	3	4			*Concepts and Skills*		Lab inves-tigations	Close Read Strategy	Tier II Vocab	Text Dependent Questions	Evidence Based	Writing Element	Speaking Element
					3*	Develop a model to generate data for iterative testing and modifications of a proposed object, tool, or process such that an optimal design can be achieved (*extended learning)								
					4*	Develop a model to generate data for iterative testing and modifications of a proposed object, tool, or process such that an optimal design can be achieved (*extended learning)