Liberty Hill ISD 7th Grade Science
YEAR-AT-A-GLANCE 2025-2026

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Suggested Timeframe (Does not account for special testing days)		Units of Study	Content Focus	Unit Specific TEKS
FALL SEMESTER				
1st Grading Cycle 27 days	3 days	Unit 1: Lab Safety Introduction	Students will: • investigate real-world challenges by applying principles from science, engineering, and technology to develop innovative solutions. • actively participate in hands-on activities and collaborative projects to deepen their understanding of the interconnected nature of these disciplines. • demonstrate responsible conduct and adherence to lab safety protocols, ensuring a safe and secure laboratory environment for themselves and their peers.	Introductions, SEPs, & RTCs
	18 days	Unit 2: Changes in Matter	Students will: • be able to gather and compare information about elements in the periodic table. • be able to compare and contrast elements and compounds. • distinguish between physical and chemical changes. • compare physical and chemical changes. • distinguish among the terms dilute, concentrated, and concentration and use these terms to compare different solutions. • model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions.	7.6A 7.6B 7.6C 7.6D 7.6E
	6 days	Unit 3: Forces & Motion	Students will: • calculate speeds using distance traveled and elapsed time data. • be able to describe the motion of the curlews in terms of velocity. • interpret a distance-time graph to evaluate motion • engage with the concept of the effect of balanced and unbalanced forces on the state of motion of an object using Newton's first law of motion. • analyze Newton's first law of motion in parts and relate it to real-world examples and can be applied to solve a problem.	7.7A 7.7B 7.7C 7.7D
2nd Grading Cycle 24 days	10 days			
	14 days	Unit 4: Temperature & Thermal Energy	Students will: • identify and explain thermal energy transfer into and out of systems by conduction, convection, and radiation. • investigate methods of thermal energy transfer—conduction, convection, and radiation • engage with the concept of temperature and its relationship to the kinetic energy of the molecules of a substance. • investigate and relate temperature to the kinetic energy of the particles in a substance. • engage with the concept of thermal energy transfer between hot and cold water. • describe the way that thermal energy moves from higher-temperature areas to lower-temperature areas until thermal equilibrium is reached. • describe how different insulating materials affect the rate of thermal energy exchange in different ways. • identify and explain similarities and differences between thermal energy flow rates in several different systems.	7.8A 7.8B 7.8C
3rd Grading Cycle 27 days	16 days	Unit 5: Earth & the Solar System	Students will: • engage with the concept of the advantages and limitations of models. • be able to describe the physical properties, movements, and locations (with respect to other solar system bodies) of Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune and clearly distinguish them from one another. • be able to model the effects of meteorite impacts on planets and moons. • understand what a satellite is, explain how it is related to a projectile and explain how the force of gravity combined with forward motion keeps satellites in orbit. • model how gravity affects the motions of objects in space. • engage with the concept of explaining that although Venus, Earth, and Mars are in the sun's habitable zone, only Earth has conditions to support life. • explain the characteristics of Earth that enable it to support life. • analyze the composition of Earth's atmosphere and use this information to explain why Earth is able to support life whereas other nearby planets cannot.	7.9A 7.9B 7.9C
	11 days	Unit 6: The Changing Earth	Students will: • engage with the concept of modeling how a fossil can form. • be able to describe a variety of rock formations, understand the relative ages of rocks, and how scientists know Earth has changed over time. • be able to apply scientific ideas to analyze fossils in rock layers. • be able to describe how continents and the ocean floor have changed over time. • be able to analyze and interpret fossil, landform, and ocean-floor data to construct a model that represents how the continents were once joined as a single landmass. • engage with the concept of describing patterns of volcano formation relative to tectonic plates. • be able to model the effects of collisions between different types of tectonic plates. • be able to describe the movement of tectonic plates along sliding boundaries and the formations that result from hot spots.	7.10A 7.10B
SPRING SEMESTER				
4th Grading Cycle 27 days	11 days	Unit 7: Humans & the Hydrosphere	Students will: • be able to describe the types of water that make up a watershed and the idea of, and factors affecting, aquifers. • be able to describe how dams, human activities requiring water use, and pollution affect the freshwater available for use and the water quality. • be able to describe effective ways to manage our water supply and water quality. • engage with the concept of investigating why oil spills can spread quickly in the ocean and how they affect ocean organisms. • be able to describe different ocean habitats and ocean resources that can be affected by human activities, such as disposing of garbage in the ocean. • evaluate an issue affecting ocean systems and make decisions based on evidence.	7.11A 7.11B
	16 days	Unit 8: Energy & Matter in	Students will:	7.12A

		Ecosystems	• classify organisms as producers, consumers, or decomposers and try to identify each organism. • identify producers, consumers, and decomposers and analyze how energy moves through trophic levels. • model the flow of energy within trophic levels and describe how the available energy decreases in successive trophic levels in energy pyramids. • engage with the concept of how energy flows through the biosphere and how matter and nutrients are recycled. • be able to describe the flow of energy and the cycling of matter within an ecosystem. • be able to describe how ecosystems are sustained by the continuous flow of energy and cycling of matter within them.	7.12B
5th Grading Cycle 25 days	25 days	**Unit 9: Organizations of Organisms**	Students will: • observe the parts of a seed. • be able to describe the levels of organization in an organism, from cell, to tissue, to organ, to organ system, to organism. • investigate the organization of organisms from cells and tissues to organs and systems. • model and describe the movement of a knee joint. • be able to model and describe how muscles work together in a human arm. • be able to model and describe the speed of a reflex.	7.13A 7.13B
		STAAR Window (Apr 9 - May 3): 4 DAYS		
6th Grading Cycle 27 days	14 days	**Unit 10: Inheritance and Change in Populations Over Time**	Students will: • engage with the concept of observing the asexual reproductive process of budding. • be able to investigate and compare how asexual and sexual reproduction affect the diversity of offspring in plant populations and animal populations over time. • engage with the concept of natural selection, modeling how well an organism blends into its environment. • be able to describe how the distribution of traits in a population can change over time. • be able to describe the processes of natural selection and artificial selection. • be able to connect the traits of domesticated plants to artificial selection.	7.13C 7.13D
	13 days	**Unit 11: Classification of Organisms**	Students will: • engage with the concept of classifying organisms based on their characteristics. • become familiar with the two-part naming system used to classify organisms based on physical traits • be able to describe how the taxonomic system is designed, and read branching diagrams to determine how different kinds of organisms are related • become aware of the major differences between several kingdoms of life. • be able to identify major characteristics of the six kingdoms, as well as the special group of organisms known as chromists. • be able to identify the roles that organisms from each kingdom play in healthy ecosystems.	7.14A 7.14B
Resources				
Lead4ward Field Guides National Science Teaching Association				

7th Grade Introduction

1. In Grades 6 through 8 Science, content is organized into recurring strands. The concepts within each grade level build on prior knowledge, prepare students for the next grade level, and establish a foundation for high school courses. In Grade 6, the following concepts will be addressed in each strand.
   A. Scientific and engineering practices. Scientific inquiry is the planned and deliberate investigation of the natural world using scientific and engineering practices. Scientific methods of investigation are descriptive, correlative, comparative, or experimental. The method chosen should be appropriate to the grade level and question being asked. Student learning for different types of investigations includes descriptive investigations, which have no hypothesis that tentatively answers the research question and involve collecting data and recording observations without making comparisons; correlative and comparative investigations, which have a hypothesis that predicts a relationship and involve collecting data, measuring variables relevant to the hypothesis that are manipulated, and comparing results; and experimental investigations, which involve processes similar to comparative investigations but in which a hypothesis can be tested by comparing a treatment with a control.
      a. Scientific practices. Students ask questions, plan and conduct investigations to answer questions, and explain phenomena using appropriate tools and models.
      b. Engineering practices. Students identify problems and design solutions using appropriate tools and models.
   B. Matter and energy. Students have prior experience with elements in Grade 6 and develop an understanding that compounds are also pure substances in Grade 7. Students investigate the differences between elements and compounds through observations, descriptions of physical properties, and chemical reactions. Students build upon their understanding of solutions by exploring aqueous solutions.
   C. Force, motion, and energy. Students measure, calculate, graph, and investigate how forces impact linear motion. Students build upon their understanding of the laws of motions by exploring Newton's First Law of Motion. Temperature is a measure of the average kinetic energy of molecules. Thermal energy is transferred by conduction, convection, or radiation in order to reach thermal equilibrium.
   D. Earth and space. Students explore characteristics and organization of objects and the role of gravity within our solar system. Earth has a specific set of characteristics that allows life to exist. Students further their understanding of the geosphere by illustrating how Earth's features change over time through tectonic movement. Students investigate how humans depend on and affect the hydrosphere.
   E. Organisms and environments. Students further their understanding of organisms as systems made up of cells organized into tissues, tissues into organs, and organs into organ systems by identifying the main functions of the organs within the human body. During both sexual and asexual reproduction, traits are passed on to the next generation. Students understand how traits in populations can change through the processes of natural and artificial selection. Students analyze how energy flows through trophic levels and how biodiversity impacts an ecosystem's sustainability. Students gain an understanding of the taxonomic classifications of organisms and how characteristics determine their classification.

2. Nature of science. Science, as defined by the National Academy of Sciences, is the "use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process." This vast body of changing and increasing knowledge is described by physical, mathematical, and conceptual models. Students should know that some questions are outside the realm of science because they deal with phenomena that are not currently scientifically testable.

3. Scientific observations, inferences, hypotheses, and theories. Students are expected to know that:
   A. observations are active acquisition of either qualitative or quantitative information from a primary source through the senses;
   B. inferences are conclusions reached on the basis of observations or reasoning supported by relevant evidence;
   C. hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power that have been tested over a wide variety of conditions are incorporated into theories; and
   D. Scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well established and highly reliable explanations, but they may be subject to change as new areas of science and new technologies are developed.

4. Science and social ethics. Scientific decision making is a way of answering questions about the natural world involving its own set of ethical standards about how the process of science should be carried out. Students distinguish between scientific decision-making practices and ethical and social decisions that involve science.

5. Recurring themes and concepts. Science consists of recurring themes and making connections between overarching concepts. Recurring themes include structure and function, systems, models, and patterns. All systems have basic properties that can be described in space, time, energy, and matter. Change and constancy occur

in systems as patterns and can be observed, measured, and modeled. These patterns help to make predictions that can be scientifically tested. Models have limitations but provide a tool for understanding the ideas presented. Students analyze a system in terms of its components and how these components relate to each other, to the whole, and to the external environment.
6. Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

Scientific and Engineering Practices

01. Scientific and engineering practices. The student, for at least 40% of instructional time, asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models. The student is expected to:
    a. ask questions and define problems based on observations or information from text, phenomena, models, or investigations
    b. use scientific practices to plan and conduct descriptive, comparative, and experimental investigations and use engineering practices to design solutions to problems
    c. use appropriate safety equipment and practices during laboratory, classroom, and field investigations as outlined in Texas Education Agency-approved safety standards
    d. use appropriate tools such as graduated cylinders, metric rulers, periodic tables, balances, scales, thermometers, temperature probes, laboratory ware, timing devices, pH indicators, hot plates, models, microscopes, slides, life science models, petri dishes, dissecting kits, magnets, spring scales or force sensors, tools that model wave behavior, satellite images, hand lenses , and lab notebooks or journals
    e. collect quantitative data using the International System of Units (SI) and qualitative data as evidence
    f. construct appropriate tables, graphs, maps, and charts using repeated trials and means to organize data
    g. develop and use models to represent phenomena, systems, processes, or solutions to engineering problems
    h. distinguish between scientific hypotheses, theories, and laws
02. Scientific and engineering practices. The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs. The student is expected to:
    a. identify advantages and limitations of models such as their size, scale, properties, and materials
    b. analyze data by identifying any significant descriptive statistical features, patterns, sources of error, or limitations
    c. use mathematical calculations to assess quantitative relationships in data
    d. evaluate experimental and engineering designs
03. Scientific and engineering practices. The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions. The student is expected to:
    a. develop explanations and propose solutions supported by data and models and consistent with scientific ideas, principles, and theories
    b. communicate explanations and solutions individually and collaboratively in a variety of settings and formats
    c. engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence
04. Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:
    a. relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content
    b. make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness, and methods used
    c. research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a science, technology, engineering, and mathematics (STEM) field to investigate STEM careers

Recurring Themes and Concepts

5. Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:
    A. identify and apply patterns to understand and connect scientific phenomena or to design solutions
    B. identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems
    C. analyze how differences in scale, proportion, or quantity affect a system's structure or performance
    D. examine and model the parts of a system and their interdependence in the function of the system
    E. analyze and explain how energy flows and matter cycles through systems and how energy and matter are conserved through a variety of systems
    F. analyze and explain the complementary relationship between the structure and function of objects, organisms, and systems
    G. analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems