



7th Science Year at a Glance (YAG)

2022 - 2023



This course emphasizes problem solving using an inquiry-based approach with a focus on earth and life science. Content strands are emphasized with more depth at the 7th grade level to include *scientific investigations, reasoning and the relationship between structure and function*, whereby the student conducts laboratory and field investigations on the following concepts: *matter and energy, force, motion, and energy; Earth and space, and organisms and environments*. Mathematics and technology are embedded in this curriculum. Overarching concepts include change and constancy, patterns and cycles, systems, models, and scale.

First Semester		Second Semester	
1st Nine Weeks – 41 days (August 15 th – October 12 th) (September 5 th – Labor day – No School) (October 10 th – Staff Development)		3rd Nine Weeks – 47 days (January 3 rd – March 10 th) (January 16 th – MLK – No School) (February 20 th Staff Development -Presidents Day) (March 13 th – 17 th – Spring Break)	
TEKS Nature of Science (7.1a,b; 7.2 a-e; 7.3 a-d; 7.4 a,b) Energy Flow (7.5 a; 7.6 a; 7.7 a) Structures and Function of Cells (7.12 c-f)	Nature of Science (19 days) Students conduct descriptive, comparative and experimental laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices utilizing appropriate scientific tools and methods, SI Units, graphs/tables,critical thinking, reasoning and problem solving, analysis, evaluation, models, research and other tools and safety equipment to conduct science inquiry. Energy Flow (20 days) Students learn radiant energy from the Sun is transformed into chemical energy through photosynthesis, distinguish between physical and chemical changes in matter, and illustrate the transformation of energy within an organism Structures and Function of Cells (2 days) Students learn the levels of organization in plants and animals (cells, tissues, organs, organ systems and organisms), differentiate between structure and function in plant and animal organelles (cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast and vacuole), compare cell organelle functions to organ system functions and recognize the components of cell theory.	TEKS Structure & Function of Living Systems (7.7 a; 7.12b) Homeostasis (7.6a; 7.7b; 7.13 b) Genetic Variations (7.14 a-c) Adaptations, structure & function of living systems (7.11 a-c; 7.7 b; 7.12 a; 7.13 a,b)	Structure & Function of Living Systems and Homeostasis (23 days) Students learn to illustrate the transformation of energy within an organism such as the transfer from chemical energy to thermal energy, identify the main functions of the systems of the human organism (circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous and endocrine), distinguish between physical and chemical changes in matter and demonstrate and illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism and circulation of blood and describe and relate responses in organisms that result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance. Genetic Variations (24 days) Students learn to examine organisms or their structures (such as insects or leaves) and use dichotomous keys for identification, explain variation within a population or species by comparing external features, behaviors or physiology of organisms that enhance survival (migration, hibernation or storage of food in a bulb, and identify changes in genetic traits over generations through natural selection or selective breeding. Students define heredity (passage of genetic instructions over generation, compare uniform or diverse offspring from asexual or sexual reproduction and recognize inherited traits from genetic material found in genes within chromosomes. Students learn to illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism and circulation of blood, investigate and explain adaptations in internal structures, investigate how organisms respond to external stimuli and describe and relate responses in organisms that result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance.



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2 nd Nine Weeks – 42 days (October 13 th – December 16 st) (November 21 st – 25 th – Thanksgiving Break) (December 19 th – January 2 nd – Holiday Break)		4 th Nine Weeks – 45 days (March 21 th – May 24 th) (April 7 th – Good Friday – No School) (April 15 th – Battle of Flowers – No School)	
<p>TEKS Structures and Function of Cells (7.12 c-f)</p> <p>Structure & Function of Living Systems (7.7 a; 7.12b) Homeostasis (7.6a; 7.7b)</p>	<p>Structures and Function of Cells (17 days) Students learn the levels of organization in plants and animals (cells, tissues, organs, organ systems and organisms), differentiate between structure and function in plant and animal organelles (cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast and vacuole), compare cell organelle functions to organ system functions and recognize the components of cell theory.</p> <p>Structure & Function of Living Systems and Homeostasis (25 days) Students learn to illustrate the transformation of energy within an organism such as the transfer from chemical energy to thermal energy, identify the main functions of the systems of the human organism (circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous and endocrine), distinguish between physical and chemical changes in matter and demonstrate and illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism and circulation of blood.</p> <p><i>(5/25 days are devoted to our Fall STEM project)</i></p>	<p>TEKS Genetic Variations (7.11 a-c; 7.14 a-c) Adaptations, structure & function of living systems (7.7 b; 7.12 a; 7.13 a,b)</p> <p>Organisms and the Environment (7.5b; 7.10 a-c; 7.11b)</p> <p>Factors Impacting the Earth (7.8 a-c)</p> <p>Solar System and Exploration (7.9 a,b)</p>	<p>Genetic Variations and Adaptations, structure & function of living systems (12 days) Students learn to examine organisms or their structures (such as insects or leaves) and use dichotomous keys for identification, explain variation within a population or species by comparing external features, behaviors or physiology of organisms that enhance survival (migration, hibernation or storage of food in a bulb), and identify changes in genetic traits over generations through natural selection or selective breeding. Students define heredity (passage of genetic instructions over generation, compare uniform or diverse offspring from asexual or sexual reproduction and recognize inherited traits from genetic material found in genes within chromosomes.</p> <p>Students learn to illustrate forces that affect motion in organisms such as emergence of seedlings, turgor pressure, geotropism and circulation of blood, investigate and explain adaptations in internal structures, investigate how organisms respond to external stimuli and describe and relate responses in organisms that result from internal stimuli and describe and relate responses in organisms that result from internal stimuli.</p> <p>Organisms and the Environment (15 days) Students learn to diagram the flow of energy through living systems, such as food chains, food webs and energy pyramids, observe and describe how different environments support different varieties of organisms, describe how biodiversity contributes to sustainability of an ecosystem, observe, record and describe the role of ecological succession, and explain variation within a population or species by comparing external features, behaviors or physiology of organisms that enhance survival (migration, hibernation or storage of food in a bulb).</p> <p>Factors Impacting the Earth (10 days) Students learn to predict and describe how catastrophic events (floods, hurricanes, or tornadoes) impact ecosystems, analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas and model the effects of human activity on groundwater and surface water in a watershed.</p> <p>Solar System and Exporation (10 days) Students learn to analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water and composition of the atmosphere and identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration.</p>