# 6th Grade Science: Year at a Glance

## First Semester

### Chemistry and Digestion 35 instructional days (including flex days)

| **Unit**  | **Chemistry and Digestion**  |
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| **TEKS**  | 6.5A, 6.5B, 6.5C, 6.6A, 6.12A, 6.12B  |
| **Stage One Snapshot**  | **Enduring Understandings** * The use of energy is driven by its availability and efficiency.
* Physical properties and chemical reactions determine the difference between elements and compounds.
* All living things are made of cells.
* All body systems work together to support the human body.
* Personal choices affect the function of the human body.
* Organisms respond to internal and external stimuli.
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## First and Second Semester

### Interactions within Ocean Systems 54 instructional days (38 1st semester, 16 2nd semester)

| **Unit**  | **Organisms and Adaptations**  | **Biodiversity (part 1)- 11 days (including flex days)**  | **Biodiversity Continued - 16 instructional days (including flex days)**  |
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| **TEKS**  | 6.6B, 6.12D, 6.12E  | 6.9B, 6.12A, 6.12B, 6.12C, 6.12D, 6.12E, 6.12F  | 6.9B, 6.12A, 6.12B, 6.12C, 6.12D, 6.12E, 6.12F  |
| **Stage One Snapshot**  | **Enduring Understandings** * Diversity is determined by the interactions between biotic and abiotic factors.
* Matter and energy interact within the ocean.
* Energy from the sun moves through organisms.
* Recognize human impacts on ocean ecosystems.
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Recognize human impacts on ocean ecosystems.  |

## Second Semester

### Wise Use of Natural Resources 26 instructional days (including flex days)

| **Unit** | **Wise Use of Natural Resources**  |
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| **TEKS** | 6.7A, 6.9A, 6.9B, 6.9C  |
| **Stage One Snapshot** | **Enduring Understandings** * Careful use of water resources is necessary to sustain life.
* The use of energy is driven by its availability and efficiency.
* A sustainable community is based on wise use of energy resources which impacts the quality of life.
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### Relationships Among Objects in Space 41 instructional days (including flex days)

| **Unit** | **Forces**  **11 instructional days (including flex days)**  | **Earth and Space**  **30 instructional days (including flex days)**  |
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| **TEKS** | 6.8A, 6.8B, 6.8C, 6.8D, 6.8E, 6.11B  | 6.6C, 6.10A, 6.10B, 6.10C, 6.10D, 6.11A, 6.11B, 6.11C  |
| **Stage One Snapshot** | **Enduring Understandings**. ✔ The relationship between force and motion dictates movements on Earth and other objects in space  | **Enduring Understandings** * Earth’s crust can be caused by plate movement and atmospheric conditions.
* Earth’s crust is affected by plate movement and atmospheric conditions
* The research among multiple scientists led to space exploration.
* Survival in space depends on regulating a variety of limiting factors
* Rock Formations are affected by Earth’s conditions and environment
* Balance within systems is regulated by the interactions between biotic and abiotic factors.
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# Science, Grade 6, TEKS Year At a Glance

1. Scientific investigation and reasoning. The student, for at least 40% of instructional time, conducts 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 Texas Education Agency‐approved safety standards
		2. practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials
2. Scientific investigation and reasoning. The student uses scientific practices during laboratory and field investigations

 (A) plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology

\*(B) design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology

* + 1. collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers
		2. construct tables and graphs, using repeated trials and means, to organize data and identify patterns

\*(E) analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends

1. Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.

\*(A) analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student

* + 1. use models to represent aspects of the natural world such as a model of Earth’s layers
		2. identify advantages and limitations of models such as size, scale, properties, and materials
		3. relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content
1. Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry.

\*(A) use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information

(B) use preventative 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

1. Matter and energy. The student knows the differences between elements and compounds. The student is expected to:

\*(A) know that an element is a pure substance represented by a chemical symbol and that a compound is a pure substance represented by a chemical formula;

* + 1. recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere; and
		2. identify 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.
1. Matter and energy. The student knows matter has physical properties that can be used for classification. The student is expected to:

\*(A) compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;

* + 1. calculate density to identify an unknown substance; and
		2. test the physical properties of minerals, including hardness, color, luster, and streak.
1. Matter and energy. 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. The student is expected to

 \*(A) research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources.

1. Force, motion, and energy. The student knows force and motion are related to potential and kinetic energy. The student is expected to:

\*(A) compare and contrast potential and kinetic energy;

* + 1. identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces;
		2. calculate average speed using distance and time measurements;
		3. measure and graph changes in motion; and
		4. investigate how inclined planes can be used to change the amount of force to move an object.
1. Force, motion, and energy. The student knows that the Law of Conservation of Energy states that energy can neither be created nor destroyed, it just changes form. The student is expected to:
	* 1. investigate methods of thermal energy transfer, including conduction, convection, and radiation;

PISD Secondary Academics • 6/28/2023

* + 1. 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; and

\*(C) demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy.

1. Earth and space. The student understands the structure of Earth, the rock cycle, and plate tectonics. The student is expected to:

\*(A) build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere;

* + 1. classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation;
		2. identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American; and
		3. describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and mountain building.
1. Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student is expected to:

(A) describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets;

\*(B) understand that gravity is the force that governs the motion of our solar system; and

(C) describe the history and future of space exploration, including the types of equipment and transportation needed for space travel.

1. Organisms and environments. The student knows all organisms are classified into domains and kingdoms. Organisms within these taxonomic groups share similar characteristics that allow them to interact with the living and nonliving parts of their ecosystem. The student is expected to:
	* 1. understand that all organisms are composed of one or more cells;
		2. recognize that the presence of a nucleus is a key factor used to determine whether a cell is prokaryotic or eukaryotic;
		3. recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains;

\*(D) identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms;

\*(E) describe biotic and abiotic parts of an ecosystem in which organisms interact; and

(F) diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem.

*Source: The provisions of this §112.18 adopted to be effective August 4, 2009, 34 TexReg 5063; amended to be effective August 27, 2018, 42 TexReg 5052.*

**2024-2025 TEKS Addressed in Gap Lesson during 2023-24 school year**

(6) Force, motion, and energy. The student knows the nature of forces and their interactions. The student is expected to:

6.6B Investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures

6.6C Identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life.

6.6D Compare the density of substances relative to various fluids.

6.6E Identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change.

(8) Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. The student is expected to:

6.8A Compare and contrast gravitational, elastic, and chemical potential energies with kinetic energy.

6.8B Describe how energy is conserved through transfers and transformations in systems such as electrical circuits, food webs, amusement park rides, or photosynthesis.

1. Organisms and environments. The student knows the impact of variation on the survival of populations. The student is expected to:

6.12A Investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as availability of light and water, range of temperatures, or soil composition.

6.12B Describe and give examples of predatory, competitive, and symbiotic relationships between organisms, including mutualism, parasitism, and commensalism.

1. Organisms and environments. The student knows that interdependence occurs among living systems and the environment. The student is expected to:

6.13A Describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from preexisting cells and are the basic unit of structure and function.

6.13C Describe how variations within a population can be an advantage or disadvantage to the survival of a population as environments change.