3rd Grade Science
Overview
2024 - 2025

This document is designed to provide parents/guardians/community an overview of the curriculum taught in the FBISD classroom. This document supports families in understanding the learning goals for the course, and how students will demonstrate what they know and are able to do. The overview offers suggestions or possibilities to reinforce learning at home.

Included at the end of this document, you will find:

- A glossary of curriculum components
- The content area instructional model
- Parent resources for this content area

To advance to a particular grading period, click on a link below.

The standards below describe ways in which students are expected to engage with the content. The Scientific and Engineering Practices (SEPs) describe practices that students need to do in the classroom in order to learn the content. The Recurring Themes and Concepts (RTCs) describe how students need to think about the content in order to learn it.

Scientific and Engineering Practices (SEPs) TEKS:

3.1A Ask questions and define problems based on observations or information from text, phenomena, models, or investigations.
3.1B Use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems.
3.1C Demonstrate safe practices and the use of safety equipment during classroom and field investigations as outlined in Texas Education Agency-approved safety standards.
3.1D Use tools, including hand lenses; metric rulers; Celsius thermometers; wind vanes; rain gauges; graduated cylinders; beakers; digital scales; hot plates; meter sticks; magnets; notebooks; Sun, Earth, Moon system models; timing devices; materials to support observation of habitats of organisms such as terrariums, aquariums, and collecting nets; and materials to support digital data collection such as computers, tablets, and cameras, to observe, measure, test, and analyze information.
3.1E Collect observations and measurements as evidence.
3.1F Construct appropriate graphic organizers to collect data, including tables, bar graphs, line graphs, tree maps, concept maps, Venn diagrams, flow charts or sequence maps, and input-output tables that show cause and effect.
3.1G Develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem.
3.2A Identify basic advantages and limitations of models such as their size, properties, and materials.
3.2B Analyze data by identifying any significant features, patterns, or sources of error.
3.2C Use mathematical calculations to compare patterns and relationships.
3.2D Evaluate a design or object using criteria.
3.3A Develop explanations and propose solutions supported by data and models.
3.3B Communicate explanations and solutions individually and collaboratively in a variety of settings and formats.
3.3C Listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion.
3.4A Explain how scientific discoveries and innovative solutions to problems impact science and society.
3.4B 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 (RTCs) TEKS:

3.5A Identify and use patterns to explain scientific phenomena or to design solutions.

3.5B Identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems.
3.5C Use scale, proportion, and quantity to describe, compare, or model different systems.
3.5D Examine and model the parts of a system and their interdependence in the function of the system.
3.5E Investigate the flow of energy and cycling of matter through systems.
3.5F Explain the relationship between the structure and function of objects, organisms, and systems.
3.5G Explain how factors or conditions impact stability and change in objects, organisms, and systems.

Grading Period 1

Unit 1: Matter and Energy

Estimated Date Range: 8/8/24 – 9/20/24
Estimated Time Frame: 31 Days

Unit Overview:
In this unit, students will begin their science learning by engaging in discussions about safety in science and the scientific practices that scientists implement when conducting investigations. The unit focuses on how the physical properties of matter can be measured to determine how matter is identified, classified, changed, and used. Students will measure, test, and record the physical properties of matter including temperature (using a Celsius thermometer), mass (using a pan scale and digital scale), magnetism, and the ability of matter to sink or float in water while including physical properties learned in previous grade levels (color, shape, texture, material of an object, size, weight, flexibility). Students will also expand their understanding about physical states of matter by describing and classifying matter as being either a solid or liquid to now include gases. Students will demonstrate that solids have a definite shape, and that liquids and gases take the shape of their container. These experiences will help them use data to observe and make reasonable predictions as they record the changes and form conclusions in the physical state of matter caused by heating or cooling in a variety of substances. Additionally, students will be expected to demonstrate that materials can be combined based on their physical properties to create or modify objects and justify the selection of materials based on their physical properties. Students will build on these concepts in 4th grade as they deepen their understanding of how physical properties of matter can be observed, measured, and tested.

At home connections:

- Allow your child to test the properties of objects around the home. 3rd graders can test objects to see if they are magnetic and whether they sink or float in water.
- When talking about temperature in daily life, such as the weather forecast or body temperature at the doctor's office, talk about what those same measurements would be in degrees Celsius. Note that students do not need to make conversions between Fahrenheit and Celsius in 3rd grade.
- Students are describing matter by physical state. With adult help in the kitchen, observe what happens to water's state when it boils on the stove, and how water's state changes in the freezer.

Concepts within Unit #1 **Link to TEKS**	**Success Criteria for this Concept** *Students can…*
Concept #1: Launching Scientific Mindsets 3.1B, 3.1C	• Identify safe practices that must be followed when conducting classroom and field investigations. • Describe the use of safety equipment to keep everyone safe. • Describe the Scientific and Engineering Practices that they will use to conduct investigations and design solutions to problems. • Describe how scientists' work and engineers' work are different from each other. • Describe common mindsets that they will use to conduct investigations and design solutions to problems. • Set up their interactive notebook.
Concept #2: Physical Properties 3.6A, 3.6B	• Use tools to make and record observations about the scale, proportion, and quantity of the observable properties of matter: Color, Shape, Texture, Material matter is made of, and Physical state: solid, liquid, and gas.

	• Use tools to make and record observations about the scale, proportion, and quantity of the measurable properties of matter: Temperature (with a Celsius thermometer), Mass (with balances and a digital scale), and Size (measuring length and width using metric rulers/meter sticks) • Use tool to make and record observations about the scale, proportion, and quantity of the testable properties of matter: Magnetism, Ability to sink or float in water, and Flexibility. • Analyze data to identify patterns to classify matter by physical state: Solid, Liquid, and Gas
Concept #3: Changes in State of Matter 3.6C	• Use data to make predictions about the cause-and-effect relationship of how heating and cooling can change the physical state of matter in a variety of substances.
Concept #4: Combining Matter 3.6D	• Construct an argument from evidence in order to explain how materials can be used or combined to help an object function in a specific manner.

Unit 2: Force and Motion

Estimated Date Range: 9/23/24 – 10/9/24
Estimated Time Frame: 11 Days

Unit Overview:
The unit focuses on how forces can act on objects in motion and position in everyday life. Students will expand their understanding about pushes and pulls to now include, magnetism, as a force, and gravity. Students will also be introduced to the idea of how forces can be either a contact force or a force that can act on an object at a distance. Pushes and pulls is a contact force since objects are in contact in order for there to be a force of objects pushing or pulling. Magnetism is a force that is dependent on the strength of the magnets involved and the distance between them and can attract or repel. Gravity is a force that always attracts and is dependent on the masses of the objects involved and the distance in between them. Students will then apply their understanding as they plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects. Students will build on these concepts in 4th grade as they deepen their understanding of forces by contact or at a distance by investigating the patterns of forces and how they act on objects.

At home connections:

- Kids see pushes and pulls at play with their toys and playing outside. Allow your child to investigate kicking a ball with more or less force, in different directions, or what happens to a ball when it strikes a wall or the ground.
- With a few fridge magnets and scraps of paper, your child can test the strength of the magnetic field of the different magnets. How many pieces of paper will each magnet hold up on the fridge? Do larger magnets hold more?

Concepts within Unit #2 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Forces and their Interactions 3.7A	• Construct an explanation to describe the cause-and-effect relationship how forces (magnetism, gravity, pushes, and pulls) act on an object to change its position and motion.
Concept #2: Changes in Position and Motion 3.7B	• Plan and conduct an investigation using models to demonstrate the cause-and-effect relationship of how force can change the position and motion of an object. • Construct an explanation about the cause-and-effect relationship of how force can change the position and motion of an object.

Grading Period 2

Unit 2: Force and Motion (Continued)

Estimated Date Range: 10/16/24 – 10/25/24
Estimated Time Frame: 8 Days

Unit Overview:
In this portion of Unit 2, students will continue to apply their understanding about forces as they plan and conduct a descriptive investigation to demonstrate and explain how position and motion can be changed by pushing and pulling objects. Students will build on these concepts in 4th grade as they deepen their understanding of forces by contact or at a distance by investigating the patterns of forces and how they act on objects.

At home connections:

- Kids see pushes and pulls at play with their toys and playing outside. Allow your child to investigate kicking a ball with more or less force, in different directions, or what happens to a ball when it strikes a wall or the ground.
- With a few fridge magnets and scraps of paper, your child can test the strength of the magnetic field of the different magnets. How many pieces of paper will each magnet hold up on the fridge? Do larger magnets hold more?

Concepts within Unit #2 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #2: Changes in Position and Motion (Continued) 3.7B	• Plan and conduct an investigation using models to demonstrate the cause-and-effect relationship of how force can change the position and motion of an object. • Construct an explanation about the cause-and-effect relationship of how force can change the position and motion of an object.

Unit 3: Energy

Estimated Date Range: 10/28/24 – 11/22/24
Estimated Time Frame: 15 Days

Unit Overview:
The unit focuses on how energy exists in many forms, including mechanical, thermal, light, and sound. The students identify forms of energy in everyday life and how different systems can use and produce energy in different forms. Students will also plan and conduct investigations that demonstrate how the speed of an object is related to its mechanical energy.

At home connections:

- Energy is all around us at home! Encourage conversations with your child about how energy is useful in our daily lives, such as how thermal energy cooks our food and light energy helps us to see.

Concepts within Unit #3 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Examples of Energy 3.8A	• Use evidence to identify different examples of energy in systems. • Use evidence to identify how different examples of energy are present in everyday life in systems.
Concept #2: Speed and Mechanical Energy 3.8B	• Use evidence to explain the cause-and-effect relationship of speed and mechanical energy.

Unit 4: Patterns in the Natural World

Estimated Date Range: 12/2/24 – 12/20/24
Estimated Time Frame: 15 Days

Unit Overview:
The unit focuses on students learning about the relationship of the Sun, Earth, and Moon system and the patterns of their movement in Earth's solar system. This is the first time in elementary when students are expected to learn about the movements of objects in Earth's solar system. Since this is an abstract idea, it is important for students to construct and use models to demonstrate and explain how the Earth orbits around the Sun as the Moon orbits around Earth. Additionally, students are

expected to analyze their models to determine strengths and limitations of the models. This concept will set the foundation for 4th grade when students learn about changes in the appearance of the Moon. In this unit, students also identify the sequence of the planets in Earth's solar system in relation to the Sun. Students should have experience labeling models of Earth's solar system, but it is not essential that students know the composition of each planet or the length of its revolution around the Sun.

At home connections:

- The relationship between the Earth, Sun and Moon can seem abstract to 3rd graders. This is a great opportunity to build models. Ask your child to build a model out of household objects and use it to explain the relationship to you. Ask them what parts of their model has limitations – such as its limited size or scale, its materials, or its movements.

Concepts within Unit #4 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Sun, Earth, and Moon Relationship 3.9A	• Construct models that demonstrate the observable patterns of the orbits of Earth and the Moon in relation to the Sun. • Construct an argument from evidence to explain the observable patterns of the orbits of Earth and the Moon in relation to the Sun.
Concept #2: Order of the Planets 3.9B	• Develop models that identify the pattern in the order of the planets in relation to the Sun in Earth's solar system.

Grading Period 3

Unit 5: Processes and Patterns on Earth

Estimated Date Range: 1/09/25 – 2/13/25
Estimated Time Frame: 25 Days

Unit Overview:
In this unit, students will learn how soil is formed and the components that made up soil. Students will explore different samples of soil to identify their components. In addition, students will build models to identify some large forces that made rapid changes to the Earth's crust. Students will predict how landforms would change by the catastrophic events such as a volcanic eruption, earthquake and landslide. Students are expected to describe events that have rapidly changed the Earth's surface and explain how they are related. In addition, students will compare four important components of weather: cloud coverage, precipitation, wind, and temperature in different cities at the same time. Students are expected to understand that the components of weather change every day and are different depending on the location of the place studied.

At home connections:

- This would be a great time to start a compost pile together. As your child is learning about how soil forms, they see two processes at play: weathering of rock and decomposition of organic matter. While weathering takes a very long time, composting takes much less time, and can benefit your soil!
- Talk with your child about the weather each day, and about the patterns you notice. Has it been cold all week? Or has it rained lately? If you have friends or family members in other cities or countries, encourage your child to search weather data for those cities and compare. Is it hotter, cloudier, or drier at grandma's house?

Concepts within Unit #5 Link to TEKS	**Success Criteria for this concept** *Students can…*
Concept #1: Soil Formation 3.10B	• Explain how soils are formed by weathering of rock and the decomposition of plant and animal remains.
Concept #2: Rapid Changes to Earth's Surface 3.10C	• Describe rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.
Concept #3: Weather 3.10A	• Compare and describe how weather components change in different cities at the same time.

Unit 6: Natural Resources and their Management

Estimated Date Range: 2/18/25 – 3/07/25
Estimated Time Frame: 13 Days

Unit Overview:
In this unit, students will understand how natural resources are important and can be managed. Students will start their exploration of natural resources by discovering how humans use natural resources in moder life. Next, students will explain why conserving natural resources is important to all organisms and the planet. Additionally, students will study the 3Rs (Reducing, Reusing, and Recycling) and determine ways to conserve natural resources using these processes.

At home connections:

- As you use different products at home, talk with your child about the natural resources that made them. For example, the glass they are drinking from starts as liquefied sand.
- As you discard items at home, talk with your child about which items could be recycled or repurposed instead of traveling to the landfill.

Concepts within Unit #6 Link to TEKS	**Success Criteria for this concept** *Students can…*
Concept #1: Uses of Natural Resources 3.11A	• Explain how humans use natural resources in construction, in agriculture, in transportation, and to make products.

Concept #2: Management of Natural Resources 3.11B	• Explain why the conservation of natural resources is important. • Identify ways to conserve natural resources through reducing, reusing, or recycling.

Grading Period 4

Unit 7: Interactions within Environments

Estimated Date Range: 3/17/25 – 4/17/25
Estimated Time Frame: 23 Days

Unit Overview:
In this unit, students will describe patterns, cycles, systems, and relationships within environments. Students are expected to explain how animal growth and behavior is affected by temperature and precipitation, which involves the study of migration, hibernation, and dormancy. In addition, students will identify the flow of energy in a food chain and predict how changes to those food chains affect the ecosystem. Furthermore, students will describe the effects that changes such as droughts and floods have on organisms, which causes them to thrive, move, or perish. Lastly, students will complete the study of this unit by identifying fossils as evidence of past organisms and environments.

At home connections:

- While we are learning about food chains, investigate where your meals come from. Challenge your child to trace each item on their plate back to the energy from the Sun.
- Discuss what would happen to your plants or lawn if there was no rain (drought) or too much rain (a flood).
- While this unit discusses environmental changes, there are also mentions of natural disasters. This is a good time to talk about your family's preparedness in the case of a natural disaster, such as storing dry food, water, and flashlights with batteries in the case of a hurricane.

Concepts within Unit #7 Link to TEKS	**Success Criteria for this Concept** *Students can…*
Concept #1: Organisms and their Environments 3.12A	• Explain how temperature and precipitation affect animal growth and behavior through migration and hibernation and plant responses through dormancy.
Concept #2: Effects of Natural Changes in Environments 3.12C	• Describe how natural changes to the environment such as floods and droughts cause some organisms to thrive and others to perish or move to new locations.
Concept #3: Flow of Energy in Food Chains 3.12B	• Identify and describe the flow of energy in a food chain. • Predict how changes in a food chain affect the ecosystem.
Concept #4: Fossil Evidence 3.12D	• Identify fossils as evidence of past living organisms and environments, including common Texas fossils.

Unit 8: Structures and Growth of Organisms

Estimated Date Range: 4/22/25 – 5/16/25
Estimated Time Frame: 19 Days

Unit Overview:
In this unit, students will study that organisms have structures and undergo processes that help them interact and survive within their environments. Student is expected to explain the structures and functions of animals on how they help them survive in the environment where they live. Students will also investigate the life cycles of plants and animals. Students will investigate and compare how animals and plants undergo a series of sequential changes in their unique life cycles such as tomato plants, frogs, and lady bugs.

At home connections:

- In this unit, we explore the ways that animals have physical structures like body parts or coverings that make them well suited to survive in their environment. This is a great time to encourage animal research! Find an animal of interest and encourage your child to read about how its body helps it survive in its environment. For example, giraffes are well-suited to live in the African savannah because they eat leaves on high tree branches that they can reach with their elongated necks.

- While learning about life cycles, plant seeds! There are a variety of fast-sprouting seeds, such as bean plants, that are easy to grow with minimal supplies. Encourage your child to document the life cycle of their plant with pictures or drawings of what it looks like every few days.

Concepts within Unit #8 **Link to TEKS**	**Success Criteria for this Concept** *Students can…*
Concept #1: Structures and Functions of Animals 3.13A	• Explain how external structures and functions of animals enable them to survive in their environment.
Concept #2: Comparing Life Cycles 3.13B	• Illustrate and compare life cycles in organisms, including plants, insects, and mammals.

Unit 9: Making Connections

Estimated Date Range: 5/19/25 – 5/29/25
Estimated Time Frame: 8 Days

Unit Overview:
In this unit, students will explore the engineering process to solve real-world problems. Students will have opportunities to follow the engineering design cycle to analyze a problem, brainstorm solutions, design a product, test, and re-design a product to find the best solution.

At home connections:

- This unit is all about identifying a problem and designing a solution. Encourage your child to tinker with building materials such as interlocking blocks or discarded, dry household materials such as paper towel tubes. Discuss the properties of the chosen materials that make them ideal for building.
- Engage in a STEM challenge as a family. Develop a tall tower of cards or a strong bathtub-floating boat together. Throughout the challenge, develop a plan together and test your designs.

Concepts within Unit #9 **Link to TEKS**	**Success Criteria for this Concept** *Students can…*
Concept #1: Student Projects 3.1A, 3.1B, 3.1c, 3.1D, 3.1E, 3.1F, 3.1G, 3.2A, 3.2B, 3.2C, 3.2D, 3.3A, 3.3B, 3.3C, 3.4A, 3.4B	• Use critical thinking and scientific problem solving to make informed decisions. • Analyze, evaluate, and critique scientific explanations by using evidence, logical reasoning, and experimental and observational testing.

Glossary of Curriculum Components

Overview– The content in this document provides an overview of the pacing and concepts covered in a subject for the year.
TEKS – Texas Essential Knowledge and Skills (TEKS) are the state standards for what students should know and be able to do.
Unit Overview – The unit overview provides a brief description of the concepts covered in each unit.
Concept – A subtopic of the main topic of the unit.
Success Criteria—a description of what it looks like to be successful in this concept.
Competency—Standards-Based Grading communicates students' understanding of the Texas Essentials Knowledge and Skills (TEKS). Using the TEKS, teachers developed grade-level competencies to communicate student progress in the Standards-Based gradebook. The competencies are the same for each grade-level content area (i.e. 1st grade math) across the district. Teachers report students' progress on the competencies using learning progressions.

Parent Resources

The following resources provide parents with ideas to support students' understanding. For sites that are password protected, your child will receive log-in information through their campus.

Resource	How it supports parents and students
EduSmart	This resource provides hand-on and vocabulary activities that are great to review the concepts learned in the classroom. Students sign in through their school account in Clever.
Pebble Go	This resource provides access to books for reading and learning more about concepts in the science content.
Britannica School	This is an information resource for elementary students. It has encyclopedia articles, multimedia, primary sources, games, and other learning resources that support student learning.
Ebsco Host	This online reference system serves all content areas.
World Book	World Book contains thousands of informational articles with stunning illustrations, videos, interactive maps, and activities.
National Geographic Kids	This resource is a fact-filled, fast-paced magazine created especially for ages 6 and up. It has an award-winning combination of photos, facts, and fun.

Instructional Model

An instructional model is the structure in which students engage in a particular content that ensures understanding of that content. In science, the instructional model is the 5E Instructional Model.

The 5E Model is an inquiry-based approach to teaching and learning science concepts over time. It is research-based and emphasizes that children build conceptual understanding and make meaning through experiences. Each "E" represents a stage in a learning cycle.

- Engage: Students interact with a phenomenon that sparks curiosity and assesses prerequisite knowledge or misconceptions.
- Explore: Students begin to interact with the content through hands-on investigations.
- Explain: Students connect the hands-on experience to the instruction of the concept using grade level appropriate academic vocabulary.
- Elaborate: Students apply the concept learned to a new context through problem solving or an additional hands-on experience.
- Evaluate: Evaluation of student understanding and progress occurs throughout the learning cycle.

As students learn each concept in the curriculum, they will have the opportunity to develop conceptual understanding as the teacher navigate the content as telling a story. The graphic below summarizes each component that occurs within each of the 5E stages.