



Program Transfer Goals

- Ask questions, recognize and define problems, and propose solutions.
- Safely and ethically collect, analyze, and evaluate appropriate data.
- Utilize, create, and analyze models to understand the world.
- Make valid claims and informed decisions based on scientific evidence.
- Effectively communicate scientific reasoning to a target audience.

PACING

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|----------------------------|------------------------------|-------------------------|----------------------------|
| FIRST 9 WEEKS 8/21 - 10/13 | SECOND 9 WEEKS 10/16 - 12/15 | THIRD 9 WEEKS 1/3 - 3/9 | FOURTH 9 WEEKS 3/19 - 5/31 |
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|---|--|--|---|--|---|---|---|
| Unit 1 Process Skills 2 weeks 8/21 - 9/1 | Unit 2 Earth 4 weeks 9/5 - 10/2 | Unit 3 Ecology 3 weeks 10/3 - 10/23 | Unit 4 Meteorology 3 weeks 10/24 - 11/13 | Unit 5 Sun Earth Moon 3 weeks 11/14 - 12/12 | Unit 6 Universe 4 weeks 1/3 - 1/31 | Unit 7 Chemistry 5 weeks 2/1 - 3/8 | Unit 8 Physics 4 weeks 3/19 - 4/16 |
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Assurances for a Guaranteed and Viable Curriculum

Adherence to this scope and sequence affords every member of the learning community clarity on the knowledge and skills on which each learner should demonstrate proficiency. In order to deliver a guaranteed and viable curriculum, our team commits to and ensures the following understandings:

Shared Accountability: Responding to the Needs of All Learners

- High levels of learning for all students.
- The district and course formative assessments aligned to the standards for this course support educators and learners in monitoring academic achievement and leveraging interventions.

Shared Understanding: Curriculum Design

- The district curriculum design weaves together the elements of content, skills and assessments in order to adhere to curriculum design at the macro and micro level, ensuring vertical alignment.
- The district curriculum incorporates standards, scope and sequence, enduring understandings, essential questions, performance assessments, and recommended resources.

Interdependence: Curriculum Units

Members of the learning community utilize the curriculum units, plan collaboratively, and reflect on results for continuous improvement.

The district curriculum units may be found: <http://tinyurl.com/Coppell-Curriculum>

UNIT 1: SCIENTIFIC INVESTIGATION AND REASONING

TIMELINE: 2 WEEKS - 1ST 9 WEEKS

Unit Summary: Students will understand and demonstrate proper lab safety using provided lab equipment. Students will also use comparative investigations and reasoning conduct laboratory and field investigations using a variety of methods such as Argument Driven Inquiry, will use graphing and measurement tools and will identify and understand the limitations of models.

Students will know...

- Scientists have made significant and relevant contributions to society.
- Different types of scientific investigations are conducted for different reasons but all involve asking questions, making observations, collecting and analyzing data, and formulating conclusions.
- Models of objects and events are tools for understanding the natural world, yet models have limitations.

Students will be skilled at...

- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

UNIT 2: EARTH SCIENCE

TIMELINE: 4 WEEKS - 1ST 9 WEEKS

Unit Summary: In the Earth Unit, students will study the plate tectonic theory and relate it to the formation of crustal features. Students will also view and interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.

Students will know...

- Natural events can impact Earth systems.
- Scientists have made significant and relevant contributions to society.

Students will be skilled at...

- Describe the historical development of evidence that supports plate tectonic theory.
- Relate plate tectonics to the formation of crustal features.
- Interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

UNIT 3: ECOLOGY

TIMELINE: 3 WEEKS - 1ST 9 WEEKS

Unit Summary: Students will understand and describe the *relationships in Marine, freshwater, and terrestrial Food Webs (including producer/consumer, predator/prey and parasite/host relationships)*. * Students will also investigate dependence and competition for biotic and abiotic factors including quantity of light, water, temperature range and soil composition. Students will explore short and long term environmental changes affect organisms traits in future populations and recognize human dependence on ocean systems and explain how human activities modify these systems as well as investigate and understand runoff, artificial reefs and use of resources.

Students will know...

- Interdependence occurs among living systems and the environment.
- Human activities can affect living systems and the environment.
- Scientists have made significant and relevant contributions to society.
- Humans depend on ocean systems.

Students will be skilled at...

- *Describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems.**
- Investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition.
- Explore how short- and long-term environmental changes affect organisms and traits in subsequent populations.
- Explain how human activities have modified ocean systems.
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

**will be omitted in 2018-2019*

UNIT 4: METEOROLOGY

TIMELINE: 3 WEEKS - 2ND 9 WEEKS

Unit Summary: Students will recognize that the Sun provides the energy that drives convection within atmosphere and oceans and producing winds currents. Students will also identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts as well as identify the role of the oceans in the formation of weather systems such as hurricanes.

Students will know...

- Interactions among Earth, ocean, and weather systems influence climate.
- Scientists have made significant and relevant contributions to society.

Students will be skilled at...

- Recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds *and ocean currents**.
- Identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts.

- Identify the role of oceans in the formation of weather systems such as hurricanes.
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

**will be omitted in 2018-2019*

UNIT 5: EARTH, MOON, SUN

TIMELINE: 3 WEEKS - 2ND 9 WEEKS

Unit Summary: Students will model and illustrate how the tilted earth rotates on its axis causing day and night and revolves around the sun causing changes in seasons. students will also demonstrate and the sequence of events in the lunar cycle and relate the position of the moon and sun to their effect on ocean tides.

Students will know...

- Cyclical movements of the Sun, Earth, and Moon system result in observable patterns of change.
- Scientists have made significant and relevant contributions to society.

Students will be skilled at...

- Model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun causing changes in seasons.
- Demonstrate and predict the sequence of events in the lunar cycle.
- Relate the position of the Moon and Sun to their effect on ocean tides.
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

UNIT 6: UNIVERSE

TIMELINE: 4 WEEKS - 3RD 9 WEEKS

Unit Summary: Students will identify the theories and scientific data about the origins of the universe and identify the components of the universe. Students will categorize stars using methods such as Hertzsprung-Russell Diagrams and will recognize that the Sun is a medium-sized star near the edge of a disc-shaped galaxy of stars. Students will also explore electromagnetic spectrum, including the distance and properties of the waves included therein.

Students will know...

- Astronomers have described specific characteristics of the universe.
- Scientific data are used as evidence to develop scientific theories to describe the origin of the universe.

Students will be skilled at...

- Describe components of the universe, including stars, nebulae, and galaxies.
- Use models such as the Hertzsprung-Russell diagram to classify stars.
- Recognize that the Sun is a medium-sized star near the edge of a disc-shaped galaxy of stars.

- Recognize that the Sun is many thousands of times closer to the Earth than is any other star.
- Explore how different wavelengths of the electromagnetic spectrum such as light and radio waves are used to gain information about distances and properties of components of the universe.
- Research how scientific data are used as evidence to develop scientific theories to describe the origin of the universe.

UNIT 7: CHEMISTRY

TIMELINE: 5 WEEKS - 3RD 9 WEEKS

Unit Summary: Students will recognize and understand the structure of atoms, interpret the arrangement, including patterns and trends, of the Periodic Table, recognize the characteristics of chemical formulas and understand the properties and characteristics of chemical reactions. *Students will also recognize that balanced and unbalanced chemical equations relates to the law of conservation of mass.**

Students will know...

- Matter is composed of atoms and has chemical and physical properties.
- Scientists have made significant and relevant contributions to society.

Students will be skilled at...

- Describe the structure of atoms, including the masses, electrical charges, and locations of protons and neutrons in the nucleus and electrons in the electron cloud.
- Identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity.
- Interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements.
- Recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas.
- Investigate how evidence of chemical reactions indicates that new substances with different properties are formed.
- *Recognize whether a chemical equation containing coefficients is balanced or not and how that relates to the Law of Conservation of Mass.**
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.

**will be omitted in 2018-2019*

UNIT 8: PHYSICS

TIMELINE: 4 WEEKS - 4TH 9 WEEKS

UNIT SUMMARY: Students will demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion; differentiate between speed, velocity, and acceleration; and investigate and describe applications as it

relates to Newton's law of inertia, law of force and acceleration and law of action-reaction.

Students will know...

- There is a relationship between force, motion, and energy.
- Scientists have made significant and relevant contributions to society.

Students will be skilled at...

- Demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.
- Differentiate between speed, velocity, and acceleration.
- Investigate and describe applications of Newton's law of inertia, law of force and acceleration, and law of action-reaction such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches.
- Conduct laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices.
- Use scientific inquiry methods during laboratory and field investigations.
- Use critical thinking, scientific reasoning, and problem solving to make informed decisions.
- Use a variety of tools and safety equipment to conduct science inquiry.