CRM 4 El Sistema del Sol, la Tierra y la Luna	**Administración** • **25 days** • **Nov. 13-Dec. 20** • **Weeks 12-17**

RESULTADOS ESPERADOS

Formando Conceptos

Concepts in the study of the Sun, Earth, and Moon System help explain many patterns of change we observe in the world around us. Students examine changes in the sky and build an understanding of the Earth and our place in the solar system. These concepts in this unit build a foundation for the study of Astronomy, Climate Change, and Environmental Sciences. The following make meaning valuable for learners and are investigated in this unit:

- The Sun, Earth, and Moon interact in a system and are intricately interconnected. The motion of the Sun, Earth, and moon and tilt of the Earth cause observable patterns: the apparent movement of the Sun in the sky, day/night, daily and seasonal changes in the length of shadows, seasons, phases of the moon, and the movement of stars in the night sky.
- Earth is part of a broader system: the solar system, which is a small part of the Milky Way Galaxy which is one of many galaxies in the universe.
- Gravity holds the planets in orbit around the Sun, and the gravity of various planets holds their moons in orbit around them.

The Sun is the major source of energy for Earth, and fuels the water cycle and weather.

Transferencia: Students will observe, graph, and analyze patterns of change in both weather and objects in the sky to build an understanding of interactions among the Sun, Earth, and Moon. Students will analyze the position of the planets to understand as the Earth and other planets formed, the heavier elements fell to their centers. On planets close to the Sun, the lighter elements were mostly blown or boiled away by radiation from the newly formed the Sun. On the outer planets, the lighter elements still surround them as a thick layer of gas or frozen solid layers. So, how the planets are positioned in the solar system gives you an idea of how they were formed and their composition.

Entendimiento perdurable:

- El sol guía muchos de los ciclos en la Tierra.
- Podemos observar, describir y anotar objetos y patrones en nuestro cielo y en la Tierra.
- Ocho planetas de diferentes tamaños, composiciones, y superficies orbitan el sol.

Preguntas Esenciales:

- ¿Cómo nos afectan los patrones y ciclos del sistema de la Tierra, la Luna y el Sol?
- ¿Cómo se posicionan los planetas en nuestro sistema solar?

Vocabulario Esencial

- air mass / masa de aire
- air pressure/presión atmosférica
- anemometer / anemómetro
- atmosphere / atmósfera
- axis/eje
- barometer/barómetro
- condensation /condensación
- evaporation/evaporación
- forecast / pronóstico
- front / frente metereológico
- ground water/agua subterránea
- high tide/marea alta
- high-pressure area / área de alta presión
- humidity / humedad
- low-pressure area / área de baja presión
- meteorologist / meteorólogo
- percolation/percolación
- phase/fase
- position/posición
- precipitation/ precipitación
- rain gauge/pluviómetro
- revolution/vuelta
- rotation/rotación
- solar system/sistema solar
- tide/ marea
- transpiration/ transpiración
- weather map/ Mapa del tiempo
- weather symbols/ símbolos de tiempo
- wind vane / manga de viento

Vocabulario de apoyo

- Vocabulario de apoyo para las escuelas primarias

• hydrometer / hidrómetro • low tide/marea baja		

Requisitos de conocimiento previo del estudiante:
Students should know:

- weather is always changing and occurs locally over a short time.
- thermometers measure temperature (heat energy).
- the Sun is a medium sized star that provides heat and light energy for the water cycle.
- the water cycle consists of the movement of water above and on the surface of the Earth, causing patterns and cycles in Earth's weather.
- water evaporates from the Earth's surface, rises and cools, condenses into precipitation, and falls again to the surface.
- water that falls to the ground collects in streams, rivers, and lakes, and eventually flows back into the oceans.
- models help us understand the relationships, positions and orbits of the Sun, Moon, and Earth system.
- the Sun is the center of our Solar System and its gravity keeps all the planets and other objects in orbit around it.
- the moon orbits the Earth in a 28 day cycle which causes different parts of the moon to be illuminated and seen from the Earth. (moon phases)
- the Earth orbits the Sun in a 365 day cycle. (one year)
- the Sun, moon, and Earth all rotate. The Earth's rotation causes day and night cycles on Earth.
- the Earth tilts on its axis at a 23.5 degree angle. This tilt coupled with the revolution gives us the seasons.
- the Earth is one of 8 planets that revolve around the Sun in nearly circular orbits.
- Each planet has unique characteristics and a unique position in the solar system.

Recursos Kit del módulo de AISD, Carpeta de lecciones modelo, Libros electrónicos: Libros nivelados de ciencias de Envisions, Texto de Scott Foresman, Recursos para el cuaderno de ciencias, BrainPop Jr., Discovery Education, Recursos y Estrategias de Diferenciacion, Weather Whiz Kids , Tree House **Weather Kids** - University of Illinois Extension

ELPS: Bajo el mandato del Código Administrativo de Texas (19 TAC §74.4), haz clic en el enlace English Language Proficiency Standards (ELPS) para proporcionar apoyo a los Aprendices del Idioma Inglés.

TEKS Conocimientos y Destrezas	**Adquisición** *Conocimientos y Destrezas Importantes*	
STAAR: RC = Área de Conocimientos; DC = Destrezas de Doble Codificación; **Estándar de Preparación Esencial**; ***Estándar de Apoyo,*** ~~Conceptos~~ son tratados en otra unidad.	**Los estudiantes conocerán:**	**Los estudiantes serán capaces de:**
4.8: La Tierra y el espacio. El estudiante entiende que hay patrones reconocibles en la naturaleza y entre el sistema formado por el Sol, la Tierra y la Luna. Se espera que el estudiante:		
4.8A: mida y anote los cambios en el estado del tiempo y haga predicciones usando mapas del estado del tiempo, y símbolos y claves en mapas del estado del tiempo. RC3	• Weather is always changing and occurs locally over a short time. • Thermometers measure temperature (heat energy). • Rain gauges measure precipitation levels. • Wind vanes measure wind direction. • Many weather changes are caused by changes in air pressure systems.	• Observe, measure and record daily changes in weather over time. (temperature, precipitation, wind direction and wind conditions). • Graph and compare recorded weather data in different locations. • Use weather maps, symbols, and map keys to predict.
4.8B: describa e ilustre el movimiento continuo del agua en la tierra, en la superficie y por encima de esta, durante el ciclo del agua y explique el papel del Sol como fuente principal de energía en este proceso. RC3	• The Sun, the major source of energy for Earth, is a medium sized star that provides heat and light energy for the water cycle. • The water cycle consists of the movement of water above and on the surface of the Earth, causing patterns and cycles in Earth's	• Create a diagram of the Sun and its effect on Earth. • Describe and illustrate the continuous movement of water above and on the surface of Earth. • Investigate the water cycle processes through hands-on explorations.

	weather. • Water evaporates from the Earth's surface, rises and cools, condenses into precipitation, and falls again to the surface. Water that falls to the ground collects in streams, rivers, and lakes, and eventually flows back into the oceans.	
4.8C: reúna y analice información para identificar secuencias y prediga los patrones de cambio en las sombras, mareas, estaciones del año y en la apariencia observable de la Luna a través del tiempo. RC3	• Models help us understand the relationships of the Sun, Moon, and Earth system. • Earth rotates on its axis, causing the Sun to appear to move across the sky and creating changes in shadows throughout the day. • Tides are the alternating rise and fall in sea level with respect to the land, produced by the gravitational attraction of the moon. • Tides occur twice a day or about every 12 hours. • The Earth orbits the Sun in a 365 day cycle. (one year) • The Earth tilts on its axis at a 23.5 degree angle. This tilt coupled with the revolution causes direct and indirect lighting in the hemispheres giving Earth different seasons. • The moon orbits the Earth in a 28 day cycle which causes different parts of the moon to be illuminated and seen from the Earth. (moon phases)	• Collect and analyze data collected from observations and research, then predict the movement of the Sun in the sky and shadow formation. • Collect, analyze and predict tidal occurrence using data from tidal activity. • Collect, analyze and predict patterns of change as the Earth goes through the cycle of seasons. • Collect, analyze and predict the observable appearance of the moon using models, data, and observations.
3.8 La Tierra y el espacio. El estudiante entiende que hay patrones reconocibles en la naturaleza y entre los objetos en el cielo. Se espera que el estudiante:		
3.8D: identifique los planetas en nuestro sistema solar y sus posiciones con relación al Sol. RC3	• People cannot determine how the Solar System is put together just by observing the night sky. • The Earth is one of 8 planets that revolve around the Sun in nearly circular orbits. • Each planet has unique characteristics and a unique position in the Solar System.	• Illustrate and describe the position of each of the 8 planets in our solar system • Describe the unique characteristics of each of the planets
El estudio de las Ciencias se enseña a través de la perspectiva de los Procesos Científicos (TEKS 4.1-4.4) por lo tanto, los Conocimientos y Destrezas Esenciales de Texas (TEKS) deberán enseñarse en conjunto con el contenido durante el transcurso del año. Sugerencias para integrar los TEKS en cada unidad se ofrecen en el Itinerario Anual; sin embargo, los TEKS que se pueden tratar dentro de una unidad dependen en gran parte de las actividades de aprendizaje en que están participando los estudiantes. Por esta razón, el maestro debe considerar las actividades que se emplearán con los estudiantes para asegurar que todos los Procesos Científicos TEKS estén debidamente incorporados durante el curso. En el cuarto grado, se recomienda a los distritos que faciliten la realización de investigaciones en el laboratorio y de campo		

por lo menos en 50 por ciento de tiempo de instrucción.

EVIDENCIA DE EVALUACIÓN	
Productos del trabajo del estudiante/evidencia de evaluación	
Actividades de Desempeño Académico	**Otras pruebas o evidencia (ej. exámenes de unidad, exámenes con preguntas abiertas, tipo ensayo, pruebas breves, ejemplos de trabajo diario del estudiante, observaciones, etc.)**
• Students record daily weather for several weeks in their science notebook to build concept and language attainment. • Identify weather patterns including the water cycle process from diagrams and lists using the sentence stem today's weather is___ the temperature ___ . • Measure weather patterns including temperature, rainfall, wind speed, cloud formations, make a graph, and draw conclusions about patterns from the data. • Read, analyze, and then create a weather map. • Use of a weather map and data to make an oral weather report to predict the weather for the next few days. • Water Cycle Labs • Draw and label the water cycle showing how water travels through the cycle. • Collect and analyze researched data to draw conclusions about the patterns and occurrence of shadows, tides, seasons, and moon phases. • Illustrate and describe Earth's solar system.	**Evaluación de Ciclo Corto** • *SCA Testing Window: December 4-12, 2012* *Tested TEKS: 4.8A, 4.8B* • *SCA Testing Window: December 13-20, 2012* *Tested TEKS: 4.8C,3.8D* **Sugerencias Adicionales para la Evaluación** • Student Interactive Notebook • Student discussions • Weather Calendars and Data collection • Graphs and comparisons of weather from different places • Weather Map use and predictions using the data on the maps • descriptions of the water cycle and identification of real world applications of the water cycle • analyze pictorial representations and data to predict and recognize patterns of change in shadows, tides, seasons, and moon phases. • solar system diagrams • Teacher observations: Use of safety rules and equipment • Teacher observations: management and use of tools • Tools foldable/web in Interactive Notebook • Students' use of evidence to support explanations and claims.

HERRAMIENTAS PARA LA PLANEACIÓN DE LECCIONES DE CLASE
En el transcurso de la planeación de lecciones de clase, la expectativa es que los maestros tomen en cuenta consideraciones del estudiante en su totalidad como incluirán elementos que cubren todos los aspectos de diferenciación instructiva, educación especial, aprendizaje del idioma inglés, nivel de dotados y talentosos, aprendizaje social y emocional, actividad física y bienestar.
LECCIÓN MODELO- WATER CYCLE • Water Cycle Suggested Pacing: (4 days) TEKS: 4.8B, 4.8A
LECCIÓN MODELO- OBSERVING, MEASURING, AND RECORDING WEATHER • Measuring Weather with Tools • Weather Symbols and Maps Suggested Pacing: (7 days) TEKS: 4.8A

HERRAMIENTAS PARA LA PLANEACIÓN DE LECCIONES DE CLASE
En el transcurso de la planeación de lecciones de clase, la expectativa es que los maestros tomen en cuenta consideraciones del estudiante en su totalidad como incluirán elementos que cubren todos los aspectos de diferenciación instructiva, educación especial, aprendizaje del idioma inglés, nivel de dotados y talentosos, aprendizaje social y emocional, actividad física y bienestar.
LECCIÓN MODELO- PATTERNS OF CHANGE • Sun's Angle & Temperature • Sun Shadow Tracers • Reason for the Seasons • Moon Phases • Tides Suggested Pacing: (10 days) TEKS: 4.8C
LECCIÓN MODELO- OUR SOLAR SYSTEM Review Lessons (Optional) • Our Solar System Suggested Pacing: (4 days) TEKS: 3.8D