

UTDallas Science/Math Education Mini-CAST 2023 Offerings



What Makes a Habitable World? Exploring the Solar

System and Beyond

8:30-9:20

Mary Urquhart and Stephanie Taylor, UT Dallas

Room: A130

Earth is the only known planet with life, yet we live in a solar system filled with other worlds, a galaxy of hundreds of billions of stars, and there are more galaxies in the known universe than stars in our Milky Way. From better understanding life on Earth to exploring worlds in our solar system and beyond, what are scientists looking for? Through discussions, activities, and resources come learn what makes a habitable world!



All About Energy: What Does That Form Really Mean?

9:30-10:20

Mary Urquhart, UT Dallas

Room: A130

Energy is present in motion, is stored, transferred, and harnessed to do work. What do the forms of energy, as described in the elementary and middle school TEKS, really mean? What happens in energy transformations? How is energy, like money, saved & spent yet never used up? In this session, we will engage in fun energy transformations using toys and other common or easy-to-obtain materials, discuss conceptual ideas of energy, and more as we explore helping students tackle important energy concepts.



Prepare for the Great Texas Solar Eclipses!

10:30-11:20

Mary Urquhart and Marc Hairston, UT Dallas

Room: A130

Join two space scientists/astronomy educators for this interactive session to prepare for the two upcoming "Great Texas Eclipses": an annular eclipse that for DFW will cover ~80% of the Sun on Saturday, October 14, 2023 and **a total solar eclipse** in our Metroplex on Monday, April 8, 2024. In this hands-on session, we will show **how to observe safely observe eclipses with or without any equipment.** Come to use engaging activities to explore the causes of solar eclipses and why they're rare at any particular location. See how eclipses relate to the TEKS, lunar phases, and scale and orbits in the Earth-Moon-Sun system. We will provide abundant resources, answer participant questions, and more!

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Bringing Alive Ecology Concepts with Sea Monkeys!

10:30-11:20

Vinita Hajeri, UT Dallas

Room: A219

Come explore how you can add excitement and bring alive ecological concepts in your science classroom with brine shrimp, also popularly known as sea monkeys. Learn how you can simulate the ecological conditions of the Great Salt Lake of Utah using low-budget pet store supplies, recyclable soda bottles, and brine shrimp eggs. Brine shrimp eggs are cheap, easily available at most pet stores and are also sold on Amazon. This hands-on interactive workshop will focus on conducting authentic real-world scientific inquiries with brine shrimp at a low budget. Discover the value of brine shrimp to teach complex topics in ecology such as organisms and their interactions with the environment, biotic and abiotic factors, food chain, life cycle and growth and development.

Classroom ready resources including vendor information for these organisms, care and feeding requirements, links to free teaching resources/interactives, and alignments to TEKS across grade levels will be provided.



Engage Students with a Vivid Earth Science Introduction to

Plate Tectonics

11:30-12:20

Mary Urquhart, UT Dallas

Room: A130

Plate tectonics is a subject that is often challenging to both teach and learn. At the University of Texas at Dallas a multidisciplinary team of geoscientists/educators (Drs. Wang, Stern, and Urquhart) and local middle school teachers came together for more than two years to create a new series of six engaging, short, TEKS-aligned videos on the subject of Plate Tectonics designed to integrate into Texas classrooms. In this multimedia session learn about the science, the collaboration, how to access the free videos, and more!

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Using Zebrafish as a "hook" for increasing students'

scientific curiosity and advancement

11:30-12:20

Vinita Hajeri and Pam Kirkland, UT Dallas

Room: A219

Come explore how you can use recyclable materials and a pet store fish to get your students "hooked" on learning science by engaging in real-world science inquiries and build on their scientific process skills while exploring content knowledge. Zebrafish are a freshwater fish greatly used in biomedical research and can be used by science educators as they are easily and inexpensively maintained, reproduce abundantly, mature quickly, and develop as "see through" embryos. Participants will explore the value of zebrafish to teach multiple topics including organisms' interactions with their environment, cell structure and processes, growth, development, reproduction of organisms, ecology, and genetics. Participants will also explore the value of zebrafish to spark students' scientific curiosity through incorporating multiple-learning modalities for today's diverse student populations. Classroom ready resources including links to free teaching resources/interactives, and alignments to TEKS across grade levels will be provided.



Game On! Using Motivational Strategies to Encourage

Academic Engagement

1:30-2:20

Pam Kirkland and Emily Hennessy, UT Dallas

Room: A131

We will model how educators can easily use game-based strategies to create a supportive and engaging learning environment to encourage peer-to-peer interactions, where students feel motivated to take academic risks, deepen their understanding of science concepts, and develop their use of academic language. Focus on supporting emerging bilinguals will also be addressed.



Taste the Chemistry

1:30-2:20

Stephanie Taylor, UT Dallas

Room: A130

We'll taste a periodic trend, talk about taste buds, why water is not a true "universal solvent", make ice cream and more. Here, we will bring science and chemistry into the kitchen.