

2022 STEM DAY DESCRIPTIONS

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Our Nearest Star: The Sun

Presented by Bob McGovern

We are entering another sunspot maximum with a total solar eclipse in 2024, so there will be a lot of interest in the sun and its effect on life here on Earth. Following a PowerPoint covering the basics, we could view the Sun through a special telescope if the sky cover permits.

Diverse Shapes of Proteins in Sensor Cells and Coronavirus

Presented by Whasil Lee, PhD

Every protein has a unique shape to play its unique mission in our body. A 1D long chain of amino acids has to fold into a 3D structure to perform its specialized function. Erroneously-folded proteins are linked to human diseases, and often we need to fix the wrong proteins to be healthy. We will learn the role

and shape of two proteins - Piezo (pressure sensor) and Spike proteins (receptor in COVID19 virus), and then we will sculpt their unique shapes using clay!

Applications Make Anything Possible

Presented by Michelle Chiantera, Chief Marketing Officer

Applications are part of our everyday life. Your parents use them for work; you use them for school and for play. There are so many possibilities. Learn how applications can make our lives better. During the workshop, we will share stories that make these applications come to life!

Helping Hands: How Plastic Surgery Changes Kids' Lives Around The World

Presented by Clint Morrison, M.D. and Jackie Lyons, M.D.

Are you creative? Artistic? Like science and doing things with your hands? Come learn about how Plastic Surgery combines all of these interests into a job that allows you to change children's lives around the world! Let's talk about how to become a doctor, what a day in the life of a surgeon looks like, and what kind of patients we take care of. Walk in our shoes and experience some hands-on anatomy and help solve some surgical problems with us!

Virus Hunters

Presented by Parul Rahbari, MPH.

How can a vaccine teach our bodies how to fight a virus? In this workshop you will learn what an actual coronavirus looks like by building one, and then learn how a vaccine works by building the structure that fights the virus. And did you know viruses attack our bodies in more ways than just our nose and throat? You will also learn the connection between viruses and how what we eat and drink can affect our ability to fight them off. Come see what a virus hunter does!

Inhale-Exhale: How Do Your Lungs Work?

Presented by Theresa Bingemann, M.D. and Anitha Shrikhande, M.D.

Have you ever wondered what your doctors are listening for when they examine your lungs? You will have a chance to listen to lungs, learn about air flow through the lungs, and the sounds made when airflow is disrupted. You will learn about the anatomy of the respiratory tract and what factors influence the flow of air through the lungs. We will learn how airway resistance affects flow.

M-Statistics

Presented by Xueya Cai

Do you know the chance you will win in a raffle ticket drawing? Do you like to make decisions by flipping coins? Come and join us to learn the mystery of statistics. We will have a raffle, and winners will get prizes.

Rapid React Robot Demo

Presented by Brian Holliday and the Robotics Team

Dive into this year's Rapid React challenge presented by FIRST (For Inspiration Recognition of Science and Technology) Learn this year's design challenge and design your idea of a robot on paper. After review of ideas we will see the actual robot the team came up with.

Using Your Math Skills in Pharmacy

Presented by Mona Gandhi, PharmD

This session is designed to expose our young students to the use of basic mathematics in the career of pharmacy, which involves the measurement and distribution of medicine.

Veterinary Medicine 101

Presented by Katie Zink, DVM

I will talk to the students about what becoming a veterinarian involves (Schooling, testing, etc). I will also talk about the other careers that make up a "veterinary team". I will show several pictures which walk the students through a physical examination of a dog, show some interesting radiographs, and bring in some instruments. I will have a bandaging station, math calculation station, fine motor skill station, and a station that will have a lot of models of teeth, joints, etc, and some other interesting things for the students to look at.

Optics Suitcase

Presented by Dustin Froula, PhD & Adela Froula, MCE Alum

Light is a mysterious thing... some learn about light as photons, which are massless particles, and others describe light as waves. Have you ever wondered what the difference between "white" light and "blue" light is? Did you know that light is polarized? What does that mean and how can we use polarization to

manipulate light? We will explore light through hands-on optics projects where you will have an opportunity to do what scientists do every day by asking, "how does that work?"

Optics and the Eyes

Dr. Light - Lisen Xu, Ph.D.

Hello everyone, this is Dr. Light (Lisen Xu) from the Optical Society of America. I am working on a novel way to correct people's vision using lasers. Today we will first look at different color projectors and see how they mix together with some hands-on activities. Then each of you will have the opportunity to "dissect" an eye model and put it back together. Look forward to seeing you at the STEM event!