

EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 3, 2018



ARCHITECTURE & INTERIOR DESIGN

- **TRACKING THE SUN.** In Architecture and Interior Design knowing how the sun will affect our spaces and designs is crucial for our work. The first step is to understand the sun's path. We will create a sundial specifically for Carbondale and test our work after we are complete. Learning about the sun is crucial for creating passive environmental strategies to save energy in our buildings.
Shannon Sanders McDonald, Architecture & Interior Design, SIUC

AUTOMOTIVE

- **GETTING TO KNOW YOUR CAR.** Cars? Not just for boys! Join us for a fun hands-on automotive scavenger hunt! This workshop will introduce driver controls inside the vehicle and important locations to know under the hood.
Erin Johnson, Women Automotive Transportation Technology, SIUC

AVIATION

- **AVIATION CAREERS.** Learn about careers in the aviation industry including pilot, weather observer, and aviation maintenance technician. See the university flight training aircraft and get some hands-on experience in a Frasca flight training device.
Lorelei Ruiz, Aviation Management and Flight, SIUC

BIOLOGICAL SCIENCES

- **MICROBES: THE GOOD, THE BAD AND THE UGLY.** Microorganisms, including bacteria; are essential to life on earth. Bacteria are composed of a single cell, yet they are very complex. In our bodies, bacteria outnumber our own cells and help us by making vitamins, and by protecting us from other "bad" disease-causing microbes. Many bacteria can cause diseases in humans and animals; therefore, getting to know the bacteria is important for not only appreciating the good things they do for us, but also for developing therapies against bacteria that cause disease. In the Microbiology workshop, we will learn how to "feed" and grow bacteria. We will also microscopically examine bacteria that are genetically engineered to "glow in the dark".
Vjollca Konjufca, Microbiology, SIUC

CHEMISTRY

- **CHEMISTRY IS OUT OF THIS WORLD.** Students will learn about how scientists use chemistry to study outer space. Join us to learn about the stars, study the sun and planets with electromagnetic waves, and learn how to make oxygen like astronauts do to breathe in space!
Madison McMinn, President, American Chemical Society, Department of Chemistry, SIUC
- **SIMPLE, HIGH-TECH DEVICES THROUGH LOW COST.** We will demonstrate synthesis of devices using simple, readily available, and low-cost materials. We will also have colorful chemistry demonstrations that utilize common ingredients available in the kitchen. These experiments will provide knowledge on many natural phenomena occurring in nature around you.
Punit Kohli, Department of Chemistry, SIUC
- **FORENSIC FUN.** The science of fingerprints is pretty cool.... each and every fingerprint is unique! No two people share the same fingerprints and even identical twins have different prints. This is why fingerprints are so useful in crime scene identification. The ridges, whorls and swirls that make up your fingerprints form when you are still in the womb. Their pattern is partly dependent on genetics and partly dependent on environmental factors. Learning about fingerprints and fingerprint forensics is super fun.
Stefanie Ellis, STEM Education Research
Dr. Mary Kinsel, Chemistry & Biochemistry, SIUC
Dr. Senetta Bancroft, Department of Chemistry & Biochemistry, Curriculum & Instruction, SIUC

EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 3, 2018



ENGINEERING AND TECHNOLOGY

- **LASERS AND PHOTONICS.** Lasers, polarization of light, and fiber optic cables will be explained and shown in the laboratory. Participants will also view a small laser show.
Mohammad R. Sayeh, Department of Electrical and Computer Engineering, SIUC
- **ANDROID PROGRAMMING WITH APP INVENTOR.** Students will be introduced to concepts for developing applications that run on the Android platform. Students will gain hands-on experience creating mobile applications with App Inventor, an open source visual development tool.
Belle Woodward, Department of Electrical and Computer Engineering, SIUC
- **EGG DROP CHALLENGE.** Using a variety of materials, teams will work together to create a method to protect their egg from a high drop.
Marissa Campobasso, President, Society of Women Engineers, SIUC

GEOLOGY

- **MARS EXPLORATION: IS THERE LIFE ON MARS?** During the next two decades, NASA will conduct several missions to address whether life ever arose on Mars. It's possible that life on another planet might be very different. The challenge is to be able to differentiate life from non-life no matter where one finds it, no matter what its varying chemistry, structure, and other characteristics might be. In this workshop we will learn about the ingredients necessary for life, if they have been found on Mars, and what type of life one may find on Mars in the future.
Liliana Lefticariu, Department of Geology, SIUC
- **VOLCANOES IN A DIGITAL SANDBOX.** What are different types of volcanoes and how do volcanoes affect our world? Participants will be learning answers to these questions and will also be modeling a volcano in the digital sandbox.
Caleb Harms, STEM, Department of Geology, SIUC

LINGUISTICS

- **LANGUAGING!** Did you know that human are the only species with language? Do you know how languages are created? Do you have a particular code that you talk to your friends? In this workshop, you will be learning how to create your own language by using different techniques we use in Linguistics, so that you can start languaging with your friends.
Itxaso Rodriguez- Ordóñez, Department of Linguistics and Spanish, SIUC

MATHEMATICS

- **REIMAGING THE PAPER CRANE GAME!** Learn how getting crafty with paper can touch someone's heart or even land you among the stars! See how origami can be used to make compact collapsible solar panels and heart stints while getting a chance to get hands on and try to fold paper all the way to the moon! Experience how mathematics and geometry come together to bring the second dimension into the third by folding your own flowers, animals, and 3D geometric shapes.
William Holt, Math Club; Roshini Gallage, Chathurangi Pathiravasan, AMS Grad Student Chapter, SIUC

EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 3, 2018



MEDICINE

- **A GOOD HORSE IS NEVER A BAD COLOR.** We know horses can be colors like gray, brown, white and black. And many of us know horses can be spotted, golden or red. But can you get blue, rose, champagne, spotted and striped horses? And what color is a Knabstrupper? A Grulla? A Rabicano? We'll talk about the different colors of horses and some of the genetics behind the unusual colors.
Sandy Shea, Family and Community Medicine, SIUC
- **UNCOVERING MICROSCOPIC MYSTERIES.** Ever wonder how tissues are prepared for microscopic analysis? What is needed to change a biological specimen from an animal or human into a microscope slide that can reveal clues to chemical exposure, trauma, disease or death? Learn how tissue specimens are processed, sectioned and stained to unlock the secrets of cellular structure.
Maureen Doran, BA, MS, HTL(ASCP), Saffron Scientific Histology Services, LLC

PHYSICS

- **MOMENTUM!** Participants in this workshop will experience what it's like to be a physics student. They will be introduced to the theory of conservation of linear and angular momentum and will be able to verify this theory by participating in hands-on experiments based on real labs done by our college students.
Sarah Hagen, Society of Physics Students, SIUC

PSYCHOLOGY

- **KIDS ARE CUTE! BUT HOW DO WE MEASURE THEIR BEHAVIORS?** How do our genes affect our behaviors? What is the difference between MZ and DZ twins? How do we decipher children's behaviors? Discover more about different types of twins, and learn how to code infants' and preschoolers' behaviors during testing and interactions.
Lisabeth DiLalla, Ph.D., Emma Diaz, Emily Pali
Departments of Family & Community Medicine and Psychology, SIUC
- **THE SCIENCE OF PREJUDICE.** Prejudice permeates all facets of our culture and society. This reality is not surprising, given that humans possess an evolutionary predisposition to favor people who are like them over others. Further, our minds process information in ways that create and reinforce stereotypes, and preferences for our groups over others are cognitively and motivationally intertwined with our identity and self-esteem. These biases often operate undetected and outside of awareness to reinforce systematic disparities. Join us to explore the psychology of prejudice and unearth the hidden biases that exist in all people.
Kathleen Schmidt, PhD; Jennica Young, MA Psychology, SIUC
- **THE BASICS OF NEUROSCIENCE.** The brain is complex and fascinating! Neuroscience is the study of the brain and its impact on behavior and how people think. Neuroscience affects all human functions and contributes to a better understanding of different conditions such as traumatic brain injury or Alzheimer's disease. A short presentation about neurons, synapses, and regions of the brain and their functions will be a part of this workshop. The workshop will also include an interactive tour of the Operant Learning lab and the Restorative Neuroscience lab. Both labs are neuroscience based and focus on examining treatments for traumatic brain injury. Students will be able to experience different parts of the laboratories by working at different interactive stations.
Jennica Young, Brain and Cognitive Sciences Program, SIUC

EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 3, 2018



ZOOLOGY

- **AQUATIC ECOLOGY: A DAY IN THE LIFE OF A FISH.** Water is an important resource for, not only humans, but also every other plant and animal on earth, and the lakes and rivers surrounding us here in Southern Illinois are buzzing with activity. In this workshop, we'll discover the creatures who make water their home, from microscopic organisms to insects to fish and learn about how water quality affects all of these animals. We'll use microscopes and other laboratory equipment to observe these creatures and to determine some characteristics of the water they live in.

Claire Snyder, Zoology, SIUC

More Workshops being added at <http://math.siu.edu/eyh/> .