

# EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 5, 2022



## BIOLOGICAL SCIENCES

- **GAMIFICATION OF SCIENCE:** How do plants compete for light, water and nutrients? Why did the dinosaurs go extinct? How does a cell signal other cells? How do we survive the next pandemic? What mysteries can be found in the Amazon forest? We are using the strategic board games like Photosynthesis™ so attendees can practice shade avoidance to grow or place seeds. Tyranno Ex™ gives clues on climate change and extinction. In Cytosis™ you control the DNA, RNA, proteins and metabolites of a cell. In Pandemic all players have different professions and cooperate to fight off a world disrupting disease. In Amazonas™ players explore a dangerous paradise looking for new species.

*Matt Geisler, Plant Biology, SIUC*

- **MICROBES AND THEIR ROLE IN HEALTH & DISEASE:** Microbes are all around us and they include viruses, bacteria and fungi. In this lab we will explore the microbes. Since they are too small to be seen with a naked eye, we will color them in the lab and observe them under the microscope. We will also collect and grow microbes from our mouths, as well as our hands before and after washing with soap. Will we see any differences? Let's do the experiment!

*Vjollca Konjufca, Microbiology, SIUC*

## CHEMISTRY

- **FOOD, COLORS AND FLAVORS USING CHEMISTRY**

A fun-filled demonstration of food, colors, and flavors through the use of chemistry.

*Punit Kohli, Department of Chemistry, SIUC*

- **MOLECULES, MAGNETS AND MRI – OH MY!:** MRI, or magnetic resonance imaging, can detect tumors, show injuries to soft tissues, and "map" our brains during thinking. Importantly, the signals used to create the MRI images comes from stable atomic nuclei within our bodies, and not from ionizing radiation like x-rays. But then how does an MRI actually "work" to make the pictures and why does it need to make all of those funny sounds? And what do molecules and magnets have to do with it? Students will see how MRI -- and a related spectroscopy called NMR -- actually work. Students will be able to take their own NMR spectra, and MRI scans, of some common everyday items and substances to learn about their internal structures.

*Boyd Goodson, School of Chemical and Biomolecular Sciences, SIUC*

## PHYSICAL FITNESS

- **THE PATH TO PERSONAL TRAINING**

Learn about the path to becoming a personal trainer. We'll take you through the different sciences involved with physical fitness and how that knowledge can impact helping others in their own journey.

*Sydney Devine, Recreational Sports and Services-SIUC*

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## ENGINEERING AND TECHNOLOGY

- **AUTOMATING ART: USING CODE TO DRAW.** Learn how to program, but with a creative twist! Using the Python programming language and a graphics library, we will cover the basics of programming from variables to loops. Automate the drawing process by writing code that moves your pen across a digital canvas.  
*Renee Davis, Tech Dawgs, 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.  
*Renee Davis, President, Society of Women Engineers, SIUC*
- **BUILDING AND CODING ELECTRONICS PROJECTS WITH ARDUINOS.** Participants will work with Arduino microcontrollers and electronic components to build small projects working with LEDs, small motors, and sound and will modify code to change how their mini-projects work and act.  
*Thomas Imboden, ITEC Program, SIUC*

## GEOLOGY

- **EXPLORING OUR WORLD USING GEOGRAPHIC INFORMATION SYSTEMS (GIS).** We will use GIS data to explore some community issues and create printable maps.  
*Amina Naliaka, GIS Club, SIUC*
- **LET'S TALK TRASH: CLEAN SOIL:** Clean Soil is a non-profit initiative where science and civic engagement meet. The goal is to clean up and prevent litter in southern Illinois. In this workshop, we will explore the impacts of different types of litter in our area.  
*Katrina Medernach, Touch of Nature Environmental Center*

## COMPUTING

- **AUTOMATING ART, USING CODE TO DRAW:** Learn how to program, but with a creative twist! Using the Python programming language and a graphics library, we will cover the basics of programming from variables to loops. Automate the drawing process by writing code that moves your pen across a digital canvas.  
*Renee Davis/Belle Woodward, Tech Dawgs, SIUC*

## MATHEMATICS

- **THE ART OF PAPER FOLDING WITH MATHEMATICAL GAMES:** 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.  
*Dhanuska Welagedara, AMS Student Chapter Math Club, SIUC*

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## MEDICINE

- **DENTAL HYGIENE IS MORE THAN JUST CLEANING TEETH.** In this session, participants will experience the following:

1. Explain the duties of a dental hygienist.
2. Evaluate dental images and indicate different materials used to restore teeth.
3. Determine ways to assess patient's oral health conditions.
4. Work with hands-on activities such as removing "fake" calculus buildup from extracted teeth; and learning how dental sealants are placed on teeth.

*Jennifer Sherry, Dental Hygiene, 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

- **SOLAR SCIENCE: PREPARING FOR THE NEXT SOLAR ECLIPSE.** Participants will learn about the layers of the Sun and visible signs of solar activity such as sun spots and solar flares. We will discuss the upcoming solar eclipse, why it occurs, and how to view it safely.

*Corinne Brevik, School of Physics and Applied Physics, SIUC*

## PSYCHOLOGY

- **IMAGINE A WORLD WITHOUT BULLYING: CREATING A SAFE AND INCLUSIVE ENVIRONMENT.** Bullying permeates all school systems within the country. Bullying can occur during or after school hours with up to 26% of students in grades 6-12 experiencing bullying. But how do we identify bullying behaviors? What can we do effectively intervene in the moment? Discover more about bullying behaviors and learn how to identify and intervene when witnessing a bullying event.

*Ashley Harrison, School of Psychology, SIUC*

## ZOOLOGY

- **RIVER ECOLOGY: WHAT LIES BENEATH THE SURFACE?** Rivers are not just muddy water; they are teeming with life from tiny plankton to algae to insects to fish. Looking at what organisms live in rivers and how they interact with one another can tell us how healthy the river and the organisms are. In Southern Illinois, we are surrounded by rivers, but we may not know exactly what lives in the water we swim in, fish on, and drink. Using microscopes, sampling equipment, and observations, we will look at what organisms make rivers their home.

*Shaley Valentine, SIUC Center For Fisheries*

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