EXPANDING YOUR HORIZONS WORKSHOP CHOICES

NOVEMBER 4, 2023

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 US:** 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

- **RIVER ECOLOGY: WHAT LIES BENEATH THE SURFACE?:** Rivers are not just muddy water; they are teaming 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

CHEMISTRY

- **CHEMISTRY: COLORFUL, COOL AND FUN!:**
  A fun-filled demonstration of food, colors, and flavors through the use of chemistry.
  Annie Vargas-Lizarazo, 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

ENGINEERING AND TECHNOLOGY

- **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

GEOLOGY

- **SPLISH SPLASH – LET'S TALK ABOUT WATER:** Water is everywhere around us and is the most essential element to life. There are many careers that need people with knowledge about water, and all are filled with science and excitement! Learn how water will shape humans' future on planet Earth and about different opportunities for exciting careers in water-related fields. Activities will include demonstrations of water processes that shape the world around us and help participants get some insights in assessing the clean water needs of each of us.
- *Lilliana Lefticaru, School of Earth Systems and Sustainability, SIUC*

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.
  Daniel Vollmer, President, Tech Dawgs, SIUC

- **AUTOMATIC STORYTELLING: USING CODE TO TELL STORIES:** 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.
  Ahyoni Kronwell, President, WiCys, SIUC

MEDICINE

- **THE SKY'S THE LIMIT IN DENTAL HYGIENE:** 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

HISTOLOGY

- **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

- **SHOCKING BUT TRUE – PHYSICS IS PHUN!:** We will see how electricity is produced, electricity and magnetism are related and interact, and how electromagnetic waves can be used to discover the composition of distant stars. This is done through demonstrations and interactions with experiments.
- *Mark Byrd, 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

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