

## ARCHITECTURE

- **BITS AND PIECES** Bring your favorite image electronically on a flash drive--a picture of you, your friends, your family, your pet—and learn how you can send graphic data to a laser cutting machine that will cut up your image without using your hands. At the end of the workshop you will have only bits and pieces of your favorite image, but every time you or someone else assembles it, your favorite memory will be fully visible. You will learn about spatial organization and problem solving strategies that are typical in architectural conversation.

*Maria del C. Vera, School of Architecture, 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

- **GENETIC INFLUENCE OF DEVELOPMENTAL BIOLOGY.** Learn how molecular biologists use various laboratory techniques to study how genes influence embryonic development. We will address polymerase chain reaction (PCR), gel electrophoresis, and fluorescent microscopy. We will discuss careers that these techniques can prepare you for including scientific researcher, college professor, and medical histologist.

*Buffy S. Ellsworth, School of Medicine, SIUC*

## CHEMISTRY

- **LET'S HAVE FUN WITH CHEMISTRY.** From natural fibers to plastics, polymers are everywhere. Check them out and make your own.

*Michiko Eberle, Department of Chemistry, John A. Logan College.*

- **BRIGHTER WORLD OF TINY CLUSTERS.** Learn about extremely brilliant fluorescent nanoparticles. Discover how to make them and find out how they are being used for the treatment of cancer and other diseases.

*Punit Kohli, Department of Chemistry, SIUC.*

## ENGINEERING AND TECHNOLOGY

- **INTRODUCTION TO ROBOTS.** Program a robot to perform a simple assembly operation. Use a machine vision system (camera) to identify and separate shapes using a robot. Earn how robots are used to make cars, perform surgery, explore space and play musical instruments.

*Julie Dunston, Department of Technology, SIUC.*

- **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.*

- **MAKING YOUR INVENTION SUCCESSFUL-USE ENGINEERING, SCIENCE, LAW AND GOOD WRITING.**

An inventor may earn good money from an invention as long as she has a patent for it. The patent needs to describe all ways that the invention will be used so that others won't be able to cash in on the inventor's work. Come examine one recent tasty invention and help figure out how to patent it.

*Elaine Edelman, Information Management Systems, SIUC*

- **WHAT DOES A HOME NETWORK WIRELESS ROUTER DO?** Have you ever wondered what allows you to use your laptop to wirelessly surf the web? Would you like to know more about how your cable or phone company's internet service is shared among multiple computers using those mysterious "routers"? Are you concerned that "hackers" could be breaking into your home network or listening in on your internet usage? This workshop will explore how small router-based wired and wireless home networks work.  
*Belle Woodward & Tom Imboden, Information Management Systems, SIUC*

## **FORESTRY**

- **LIQUID PLANET: EXPLORING OUR WATER RESOURCES.** We will be doing some hands-on activities involving water pollution detection and measurements, along with discussing interesting water phenomena from around the globe.  
*Billy Beck, Department of Forestry, SIUC*

## **GEOLOGY**

- **INTRODUCTION TO WATER RESOURCES.** Earth's water resources include underground aquifers, rivers, lakes, and oceans. Humans need water for drinking, sanitation, agriculture, and industry. In many regions the drinking water supplies are under stress. Because contaminated water can spread illnesses and diseases, the clean water supplies are both an environmental and a public health issue. Get a chance to learn how water is distributed around the globe; how it cycles among the oceans, atmosphere, and land; and how human activities are affecting our finite supply of usable water.  
*Liliana Lefticariu, Department of Geology, SIUC*

## **MATHEMATICS**

- **INTRO TO GRAPHING CALCULATORS.** Mathematics is so much more than basic computation and calculation of the correct answer. Using a graphing calculator (provided), we will work on problems that help you visualize what your ANSWER represents. No prior knowledge of graphing calculators is required. Each activity will be fully explained as we progress.  
*Brenda Berg, Carbondale Community High School, Math Teacher*
- **INTERNET ACTIVITIES IN MATH, SCIENCE, AND ENGINEERING.** Hands-on workshop to try out the educational and entertaining websites available on the Internet.  
*Virginia Appuhn, Math Teacher, Technology Facilitator, Carbondale Community High School.*

## **MEDICINE**

- **"A GOOD HORSE IS NEVER A BAD COLOR".** How many colors of horses can you name? Black, white, gray, bay, chestnut for starters. What about cremello, perlino, grullo and champagne? What breeds of horses only come in 1 color? How can a horse also be a tiger, a seal or a leopard? What colors can you breed together to get a certain color foal? Bring your questions and a picture of your favorite horse!  
*Sandra Shea, School of Medicine, SIUC*
- **HISTOLOGY: SOLVING MICROSCOPE MYSTERIES.** Discover the art and science of Histotechnology. Learn how tissue is processed, cut and stained to make microscope slides. Observe the cellular details that unlock the secrets of trauma and disease.  
*Maureen Doran, School of Medicine, SIUC*

## PHYSICS

- **LIGHT ME UP! THE POWER OF ELECTROMAGNETIC FORCES.** From the very composition of all matter and living world around us to fascinating natural phenomena such as lightning and rainbows and the operation of electronic devices, electromagnetic forces constantly manifest themselves in our everyday life. Come to set these forces in action in our hands-on experiments to unveil their extraordinary nature  
*Mercedes Calbi & Mark Byrd, Department of Physics, SIUC.*

## PHYSICAL FITNESS

- **PERSONAL TRAINING: THE EXERCISE SCIENTIST.** Why is this a field to consider? Learning to construct a proper exercise program, Physiological Calculations, basic Anatomy and Physiology. These may sound like “over your head” topics, but by participating in some “hands on” explanations of these terms will make it exciting and easy to understand.  
*Alan Beck, Recreational Center, SIUC.*
- **PILATES.** Come discover the world of Pilates! Pilates is a physical fitness system developed in the early 20th century by Joseph Pilates in Germany. The program focuses on the core postural muscles which help keep the body balanced and which are essential to providing support for the spine. In particular, Pilates exercises teach awareness of breath and alignment of the spine, and aim to strengthen the deep torso muscles. A technique practiced by people in all walks of life from ballerinas to football players.  
*Tracy Bohland, Licensed Pilates Instructor.*

## PLANT BIOLOGY

- **ENJOY MULTIFACETED PLANT BIOLOGY IN ART AND COMPUTER.** Plant Biology is no longer about growing plants. We use art to illustrate a secret life of plants. Did you know why ferns don't have seeds? We apply plastic models and computer models to understand the secrets of DNA, the code from which life is made. Come join us to enjoy a multifaceted plant biology exhibit in art and computers.  
*Jane Geisler-Lee & Matt Geisler, Department of Plant*

## ZOOLOGY

- **ENVIRONMENTAL ASSESSMENT.** Is the water in your neighborhood safe for aquatic animals? Do you want to know how pollution can move from your home to the water and what you can do to protect your local environment? Learn some of the methods environmental scientists use to make sure the water is safe and see some of the animals we are trying to protect.  
*Amanda Harwood, Zoology, SIUC.*