

Mount Royal University Session Descriptions 2017

Safety note: For the safety of participants in all sessions, *Explore IT* and Mount Royal University would ask that only closed-footed shoes be worn (no sandals) and that participants bring something to tie long hair back in the labs. Thank you!!

Alice in Wonderland - a programming adventure!

Computer programming is a misunderstood art form, even though it exists in almost every area of our lives. With the help of "Alice" you will learn how to build your own animated story, 3D video game or music video just by interacting with objects in a virtual 3D world. Playing games is fun, but programming games allows you to express yourself and watch others have fun with your creation.

Design and Program a Lego Robot

Don't you wish that you didn't have to clean up the floor of the toy room after some young visitors left a mess? Sure, you can turn on the Roomba, but you'll probably want something better. In this session, you will complete the construction of a floor-sweeping robot and then program it to sweep an area clean.

Environmental Mysteries

Here is a chance to learn who makes sure the air you breathe, the water you drink, the food you eat and the stuff you buy won't hurt you. A whirlwind tour of the University's facilities will give you a chance to understand what environmental actions are taken every day to ensure your health and safety. You may want to check the radiation levels from your cell phone or the sound levels from your iPod. We'd love to help you explore the fascinating world of the environment. Welcome aboard!

Fourier Analysis: the mathematical nuts and bolts of digital revolution

We live in a world that is experiencing a digital revolution with a data overdose. There are plenty of gadgets around, but if you want to see the underlying mathematics, come to our interactive session on Fourier Analysis.

Gene Hunter

Ever wondered how DNA stores biological information as a long molecule? Participants will extract DNA from strawberries, and then examine how DNA is used to store cellular instructions. Explore the software used by molecular biologists when they need to determine the identity or function of a piece of DNA, and then write "secret messages" as a gene!

I've Got a Secret: An Introduction to the Science of Secrecy

For centuries there has been an ongoing battle between people who study how to send secrets in private (by practicing cryptography) and people trying to steal these secrets (using cryptanalysis). Join us for an interactive and historical look at the science of secrecy!

Seeing the Invisible

Have you ever thought or wished to be invisible. But is there really such thing as being invisible? Come and join us in learning and exploring how to see things that we might have thought to be invisible like your breath, a cough or even the rays coming out of your remote control.

Symmetry: the fascinating world of art, computing and mathematics.

Math + Photoshop = Art

In this session, you will use a few ideas from mathematics and Adobe Photoshop to create a tessellation from your choice of pictures. A tessellation is a tiling with all tiles the same shape and no gaps between tiles. Our end result is an amazing design you can use as a screen saver or print off to show your friends.

The Beauty of Chemistry and the Chemistry of Beauty

Chemistry is involved in how your body absorbs nutrients from the food you eat, and how your cell phone works; it explains why you use shampoo to wash your hair, and is important in the color, texture, and scent of make-up and perfume. Learn how technology is used to model molecular structure and behaviour, and then enter the lab to make your own skin cream to take home with you.

NOTE: For lab safety students must be wearing pants that cover the leg and ankle, and shoes that enclose the foot. Sandals and ballet-style slippers are not acceptable.

The Thrill of Flight

Be a pilot in an aviation simulator. Learn how to conduct a take-off, leave the runway surface and fly up into the great blue sky!

Where IS that Hidden Treasure?

Geocaching is the latest game around: 'geo' for 'geography', and 'cache' for 'hidden stash'. We use a GPS to find hidden treasure, and in the process learn about map reading, and the use of Global Positioning Systems for locating and navigating. **NOTE:** We will be outdoors so appropriate clothing is required!