University of Calgary Session Descriptions 2019

IMPORTANT SAFETY NOTE: For the safety of participants in **ALL sessions**, ***Explore STEM*** and the **University of Calgary** will be strictly enforcing the following:

- participants must wear long pants;
- wear closed-footed shoes (no flip flops or sandals);
- tie back long hair;
- wear a lab coat and safety glasses (if provided) and;
- NO eating or drinking in the labs.

Failure to comply will result in students not being permitted to participate.

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Decoding Optical Fingerprints

Light reflected from an object contains encoded information about the atomic and molecular composition of the object. For example, images recorded by satellites can be decoded to into maps of specific tree species, just based on characteristics of light reflected by different foliage. Images of the atmosphere can yield maps of ozone concentration, precisely locating regions of ozone depletion. Like an optical fingerprint, unique information is contained in the light reflected and absorbed by different compounds. Participants in this session will work in teams to build their own scientific instrument to decode hidden signals in light. Teams will compete to identify objects based on their optical signatures.

Electronic Gizmos

Here it is! An exciting hands-on opportunity to learn the skills you need to construct (and take home with you) your very own "electronic gizmo." You will assemble a simple circuit board with electronic components and even use a soldering iron.

Explore Geomatics

Come and explore the exciting world of geomatics engineering and the technology involved! From drones to video games, there is so much to discover!

Exploring Radiation & Medical Physics
Different forms of radiation are all around us! In medical physics, radiation is used to produce images and treat cancer. During this workshop, participants will measure radiation in household objects and explore medical applications with hands-on activities.

Fun with Wearables and Fashion-Tech
In this hands-on workshop, we're going to introduce you to the wonderful world of fashion-tech and wearables! The area is growing quickly, and desperately needs creative people like YOU to get started. In this workshop, we'll show you how to get started in wearables and fashion-tech, how sensors work on the human body, as well as some programming and electronics...all of which you'll use to design and create your own wearable!

Let's Get Techie
It is not every day that you are given the opportunity to explore Mt. Everest or the Great Wall of China. Google Expedition allows our instructors to take students on the adventure of a lifetime using virtual reality. Join us as we travel around the world to experience learning in a way never seen before!

Searching for Primes with Eratosthenes (First steps into Number Theory)
What's a prime number? How many prime numbers are there? How do we find prime numbers? Are there any patterns that appear in the primes? We will answer these questions and more as we explore the primes by using the famous Sieve of Eratosthenes.

Sustainability and Engineering
This session aims to teach students about the technologies that are currently being used to clean up and address oil spills. The Deepwater Horizon disaster is used as a real world example, and students are asked to use three different common methods to remove oil from a cup of water and discuss the effectiveness of the different options.

Virtual Reality and Collaboration Centre
The Collaboration Centre is an immersive 3D visualization space. You can go inside a projected 3D image, you can try the oculus rift headset and be immersed in activities viewing in 3D through the headset. Each participant will have the opportunity to try the 3D environment and to consider the wide range of applications for these cool tools.