

2019 Presentations

J.P. Pretti	Thinking Efficiently	Modern languages like Python give us invaluable tools and immense power. While this is fantastic, it means we run the risk of using too much to solve relatively simple problems. We will explore this idea by considering the efficiency of different algorithms to solve the same problem. Our goal will be to gain a deeper understanding of what it means to “think efficiently” when solving a problem using Python
Andrew Seidel	ICS4U - Give them a Choice	Students in Grade 12 are planning to head out into the world and will need to get a good foundation for what happens after academia. The focus of the grade 12 course is to allow students to grow as individuals while giving each of them choice in what project they are working on, what language they are using, and where to guide their own learning. Come join in a meaningful discussion on how to liberate your students, and hear about my experience allowing the students to choose their own project and how to manage many languages in one class. This could prove useful for those teaching split classes (or are expecting to) going forward. Come join the conversation!
Francis Corrigan	Beginning Python	Session provides a hands-on introduction to Python language with two on-line learning sites: CS Circles (Waterloo) followed by Snakify.org. Participants will create accounts and be guided through the opening lessons. Fundamental programming concepts will be highlighted with analogies and demonstrations that can be duplicated in the classroom. No previous experience in Python is required. Upon completion of the session, participants will readily be able to further develop their Python skills by continuing on-line lessons at their own pace
Erica Morrill	Creating Virtual and Augmented Reality with CosSpaces Edu	This session is an introduction to creating Virtual Reality (VR) with the free platform CoSpaces Edu. CoSpaces is web-based environment that provides students with a new medium for creativity, self-expression, and the development of programming concepts. Students are able to select between Block-coding or Java Script using this platform. CoSpaces can also be used to create Augmented Reality with the Merge Cube. Participants in this session will see examples of CoSpace lessons, create a simple project in the environment and learn where to access classroom

		resources. Participants are encouraged to download the CoSpaces Edu app to test the VR environment.
Edith Law	Motivating Computer Science Concepts Using Comics	In this session, you will design “coding strips,” comic strips for teaching coding concepts. The session will be a design workshop, in which you work with other participants in groups to design coding strips. Although this session involves design tasks, no art skill is necessary: we will introduce design patterns and artifacts to aid the design process. Also, a few artists will be available to assist with sketching. After the workshop, we will develop these sketches into beautiful comic strips so that you can use them in your classroom. Some activities in the session will demonstrate how you can use these coding strips in classrooms. Please visit our website (https://codingstrip.github.io/) to learn about coding strip and our workshop.
Russell Gordon	Designing ICS2O to Attract More Students	<p>“Young women are one half of our available pool of students; in this session I share materials and my educated guesses about what has driven continued enrolment in ICS2O, and re-enrolment of young women in ICS3U.”</p> <p>For the first time in my teaching career, enrolment of young women in ICS3U for the coming school year outnumbers young men (at last check, 8 girls and 7 boys). More than that, 4 of the 8 girls enrolling in ICS3U just completed ICS2O with me. Enrolment in ICS2O is also healthy again (projection for 18 students at last check). This is at a school with a total population of 350 students in grades 9 through 12. With few other variables, I’m left to (cautiously) conclude that some deliberate changes in what I emphasized in ICS2O has kept the interest of young men, and grown the interest of young women at my school. In this session, I will share resources and advocate for an approach to computer studies that reflects the reality of skills required in the industry.</p>
Sam Scott	Machine Learning: Implementing the Algorithms	This session is for teachers who want to build their own and/or their students’ understanding of how Data Scientists use array programming techniques in Python to explore and summarize their data, train machine learning algorithms, and test and tweak the performance of those algorithms. We will start by describing the high level task of a machine learning system (those who attended last year’s Gentle Introduction to Machine Learning will find this a bit of a review). Then we will explore the

		<p>principles and capabilities of array programming and data visualization using the Python “numpy” and “matplotlib” libraries. Finally, we will train, test, and tweak one or two learning algorithms from the Python “sklearn” Library.</p> <p>Some familiarity with Python will be very helpful. Computers and software will be provided, but if you’re bringing your own machine, make sure you have installed the Pyzo IDE (https://pyzo.org/) and Anaconda 3.x (https://www.anaconda.com/distribution/#download-section). The activities, handouts, sample code, and other resources from the session will be made available on line.</p>
Vizarat Shaikh	Attracting Students to Engineering	<p>CETA - Computer Engineering Teacher's Association is a group of teachers in Peel. Want to get Elementary and Secondary Students excited about Engineering? Join this session and we will show you how more than 300 students participate in a fun event where teachers get to Network with their peers and kids enjoy the competition. Food, certificates and medals are provided. Our goal is to promote Engineering and fellow teachers to learn and share ideas. We design the challenge and send it out to teachers. The teacher can do this as a class project and bring the best kids to the competition or run it as a club.</p>
Rob Ceccato	Dealing with Split Classes	<p>With the change in government and the mandated class size increase, many teachers are now in the situation where they are teaching a split class to keep their courses alive. So this begs the question, how do I teach a split class? In this session we are going to focus on strategies and best practices that can be used to teach the ICS 3U and 4U split course. We are going to look at the expectations in both courses and come together to find a way to integrate both of these creatures into one functional class, while trying to maintain our sanity! Bring your ideas or your interest and my goal by the end of the session will be for you to walk away with a good idea of how you can do this in an efficient and effective manner. As an aside, I have never taught a split course before, so this session will rely heavily on the feedback that I have received from teachers who have taught split courses in the past.</p>
J.F. Michaud	Engineering Projects: Robots for Students in Grades 5-10	<p>Participants will be building a Robot using an Arduino board, Aluminum chassis, DC motors, LEDs, a piezo buzzer and use an online platform</p>

		<p>to assemble and learn the programming of the robot. This workshop is ideal for teachers of Grade 5 to 10. The challenge is to use these basic parts and build a robot that can perform a dance routine while playing music and lighting up LEDs. There are thousands of ways to build this robot. The curriculum covers all aspects of STEAM.</p> <p>This project can be run as a class project, an after-school activity or run as a competition. The curriculum to build and program the robot is completely laid out on the interactive platform so participants would need to bring a computer.</p>
Grant Hutchison	Scenario based Java Programming	<p>In this session we will explore all aspects of Java object-oriented design and programming including: polymorphism, inheritance, encapsulation, and composition using new features of Java including JavaFX for graphics (with and without Scene Builder).</p> <p>We will explore student activities and assignments including how to guide student understanding using Peer Instruction (PI), worked examples, code sketching, and sub-goal labeling. We will also examine some ideas for integrating performance based evaluations and single-point rubrics. Project management and source code management will also be included in the workshop.</p> <p>This session is primarily targeting the Grade 12 - ICS4U curriculum expectations and we will be using Eclipse as our IDE throughout the workshop.</p>
Sandy Graham	How Data is Represented in a Computer	<p>This session will cover some of the details of how data is represented in a computer. In particular, we will find out why doing calculations with floating point numbers can cause surprising results in higher-level languages and why in some languages if you add two large positive integers you get a negative number result. We will explore some of the different ways a sequence of bits can be interpreted.</p>
Michael Chan	Grade 9 Mathematics/Coding in Artificial Intelligence	<p>The outcry for Coding in education from educators/administrators at all levels has been going for a long time. Unfortunately little fruitful outcomes, if any, materialize, principally due to lack of technical know-hows, endeavours and supporting resources. The goal of this workshop is to demonstrate</p>

		<p>coding works well together with mathematics in Artificial Intelligence (AI), the hottest stream in current technological development. Surprisingly simple, coding in elementary AI is nothing more than seeing the whole Grade 9 Mathematic Curriculum in action.</p> <p>Hopefully this presentation could convince teachers that there are rationale, room, and benefits for coding in the classroom in all disciplines, and reasons to change our traditional ways of teaching in face of advancing technology, so that we as teachers could prepare, orient and equip our students better to meet the challenges they are facing in today's digital age. This would be a great opportunity for teachers to discuss, reflect and exchange ideas on the issue. Coding implementations of basic AI principles in Java as well as Python, such as colors detection, shapes recognition and distortions corrections are explained and demonstrated. Practical and easy applications are recommended for introductory computer engineering, computer programming and even cross-curriculum courses with no prerequisites and for everyone!</p>
Lucas Pacentrilli	Phidgets Inc: Taking Coding to the Next Level	<p>Phidgets are interactive USB sensors that make physical computing easy. No soldering or breadboards required—students simply plug in a Phidgets sensor, code in their preferred language and start creating.</p> <p>In this hands-on session, you will work through our Getting Started Kit to learn the basics. Afterwards, you can try out an additional educational kit or one of hundreds of affordable sensors.</p> <p>To learn more, visit our website at: https://www.phidgets.com/education</p>