

2019 High School CS/Math Teacher Workshop: A Dialogue on CS and Math Education Itinerary

Tuesday, April 30th (DAY ONE)

Time	COMPUTER SCIENCE SESSIONS	MATHEMATICS SESSIONS
4:30 – 4:45	Opening Remarks	
4:45 – 5:30	<p>Brainstorming ideas for a document for CS high school students</p> <p>CS high school teachers, university faculty, and undergraduate students will together brainstorm ideas in creating a document that high school teachers can give to their students.</p> <p>The document will be information about how to prepare for and what the expectations of a first-year university CS course.</p> <p>The document will be developed on Day 2 of the workshop.</p>	<p>Brainstorming ideas for a document for math high school students</p> <p>Math high school teachers, university faculty, and undergraduate students will together brainstorm ideas in creating a document that high school teachers can give to their students.</p> <p>The document will be information about how to prepare for and what the expectations of a first-year university CS course.</p> <p>The document will be developed on Day 2 of the workshop.</p>
5:30 – 5:45	BREAK	
5:45 – 6:30	<p>Students' experiences taking a first-year CS course</p> <p>A few undergraduate CS students will share their experiences with first- or second-year CS courses.</p> <p>This session will have a Question and Answer format.</p>	<p>Students' experiences taking a first-year mathematics course</p> <p>A few undergraduate mathematics students will share their experiences with first- or second-year mathematics courses.</p> <p>This session will have a Question and Answer format.</p>
6:30 – 6:45	BREAK	
6:45 – 7:25	<p>Recommendations for new approaches to computer science pedagogy Kevin Browne, Professor, Mohawk College & Lecturer, McMaster University</p> <p>Recommendations for new approaches to computer science pedagogy and curriculum will be provided based on real-world experiences in innovative computer science instruction and outreach efforts, including a lunch hour learn to code club and a Coding Bootcamp program.</p> <p>BIO: Kevin Browne is a Professor at Mohawk College and Lecturer at McMaster University. Kevin is extensively involved in computer science and digital literacy outreach. He co-founded the Hamilton Code Clubs program (which has reached over 3,400 youth at Hamilton-area elementary schools since 2015) as well as the Coding Bootcamp program at Mohawk College (targeting adults not currently in education, the workforce or training). Kevin completed his PhD in computer science at McMaster University in 2016 and awarded Professor of the Year at Mohawk College in 2018.</p>	
7:25 – 7:30	WRAP-UP	

REMEMBER : This is a dialogue. Questions are always welcome. We are learning together!

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Wednesday, May 1st (DAY TWO)

Time	COMPUTER SCIENCE SESSIONS	MATHEMATICS SESSIONS
4:30 – 4:45	Opening Remarks	
4:45 – 5:20	<p style="text-align: center;">Reinventing High School Mathematics Peter Taylor, Professor, Queen's University</p> <p>Peter will talk about his math9-12.ca project that seeks to upgrade and revitalize the high school math curriculum. The upgrade is needed in terms of computational thinking and preparation for university, and the revitalization is needed as the vitality of the subject (math) is too often not well experienced in the math classroom. There is a widespread agreement among university faculty as well as high school teachers that both of these are needed.</p> <p>BIO: Peter Taylor is a professor in the Department of Mathematics and Statistics at Queen's University, cross-appointed to the Department of Biology and the Faculty of Education. His areas of research are evolutionary game theory and secondary math curriculum. He has done curriculum writing with the Ontario Ministry of Education and as preparation for this, he taught two semesters in high school. His current idea is that the secondary math curriculum needs a lot of courageous and imaginative work.</p>	
5:20 – 5:35	BREAK	
5:35 – 5:55	<p>Fundamental CS Things + First-Year Assessments</p> <p>There is a common misconception among our first-year students that PRINTING from a function is equivalent to RETURNING from a function. Indeed, many students feel that if a result is not printed then it has not been calculated. Accordingly, these students not only fail their first assignments, but receive a mark of ZERO!</p> <p>We will discuss the mapping abstraction and how we can tie programming exercise to the math curriculum to reinforce the notion of a function as something that takes input and returns output. Our goal will be to design a worksheet that can lead students to implementing function composition.</p>	<p>Calculus Readiness Assessment + First-Year Calculus Term Tests</p> <p>The CRA is a pre-calculus test for new undergraduate students. The test is administered at the beginning of a calculus course and helps students to identify the strengths and weaknesses in their mathematics background. Versions of the CRA are widely used at universities across Canada.</p> <p>High school mathematics teachers may peruse the first term-test for each first-year calculus course at UTM. This session provides a great opportunity to explore the expectations that shape university assessment. In turn, high school teachers are encouraged to share with university instructors' information about the high school assessments.</p>
5:55 – 6:10	BREAK	
6:10 – 6:55	<p>CS Working Group</p> <p>Based on the Day 1 Brainstorming, the CS group will break into smaller groups to develop portions of the document.</p>	<p>Math Working Group</p> <p>Based on the Day 1 Brainstorming, the Math group will break into smaller groups to develop portions of the document.</p>
6:55 – 7:25	<p style="text-align: center;">Working Group Summary Here, we will present a snapshot of all the work done in the working groups.</p>	
7:25 – 7:30	Closing Remarks	