Teaching the math – practice from the classroom
Enseigner les maths – des exercices tirés de la classe
(Org: **Mihai Albiou** (Lakehead University), **Ana Duff** (Ontario Tech University) and/et **Kseniya Garaschuk**)

TREFOR BAZETT AND ASMITA SODHI, University of Victoria
Reflections on teaching limits and the Intermediate Value Theorem in a Two-Cohort Model in Calculus

In 2016, our department split the typical Calculus 1 course offering into two separate courses: one for students who have had some previous experience with calculus (such as a high school class), and one for students who have not. The hope was that students would feel more comfortable in a class with peers of the same experience level, and with an instructor tailoring the course to that level of experience. Both of these courses have the same learning objectives, and are viewed equivalently when it comes to pre-requisites. This brings up some interesting pedagogical considerations, as we need to guide two groups of students from very different starting points to the same end point, in equal amounts of time. The two of us are typically the coordinators for these calculus courses in the fall term. We'll share some context of our respective course demographics, and demonstrate how we design lessons on limits and the Intermediate Value Theorem for each cohort.

SA'DIYYA HENDRICKSON, University of Toronto
Twinning Is Winning! A Building-Block Approach to Teaching Taylor Polynomials

Taylor polynomials are powerful mathematical tools, but for students encountering them for the first time, their construction can feel mysterious. Where did that formula come from? Why does it work?

During this presentation, I'll share how I introduce Taylor polynomials to first-year engineering calculus students through a lively mathematical journey that begins with a practical motivation: the value of simpler functions for modelling and making sense of real-world phenomena. From there, we explore why polynomials make such appealing candidates for constructing a function's "twin" that can be used to approximate it when an estimate is sufficient. Drawing on familiar mathematical building blocks, students investigate the anatomy of polynomials and uncover some surprising connections hiding in plain sight. Rather than presenting the Taylor polynomial formula at the outset, we work toward its construction as a purposeful outcome of logical thinking and mathematical exploration.

I'll take you behind the scenes of this instructional approach, sharing how playful storytelling and exploration can lead students toward the rigorous mathematical reasoning behind the construction of Taylor polynomials, while reflecting on the strategic pedagogical choices and trade-offs involved in making room for this kind of lesson within a packed curriculum and limited lecture time.

CINEA JENKINS, University of Colorado Boulder
Student Driven Research Projects in the Calculus Sequence

In this talk, I will discuss creating student driven research projects in Calculus classes. As an undergraduate student, I struggled with projects in math classes because it felt like high- stakes busy work; my grade relied solely on the final product of a project that didn't interest me. When tasked with creating research projects for my own Calculus 2 and Calculus 3 students for a Research Symposium, I prioritized creating research projects around students' interests and that rewarded students' effort on the project. Students picked the topic as long as it related to Calculus 2 or 3 and decided on actionable goals for the project. These actionable goals were the basis of the grade for their final product. The grade for the whole project was spread out over a series of check-in meetings, the final product, and a post- reflection. During these check-in meetings, students could re-evaluate and update these actionable goals. In this way, students were directly involved in not only designing a project that genuinely interested them, but in how that project would be graded. I will share the execution of these research projects, the student reception, and perceived successes and shortcomings.

ALLYSA LUMLEY, York University

Once Upon a Sequence: Using Narrative and Pop Culture to Face the "Final Boss" of Taylor Series

Infinite series are notoriously tough to teach because students usually see sequences, power series, and Taylor series as a disjointed checklist rather than one big story. In this talk, I want to break down the choices I made to change that by turning the whole unit into a cohesive narrative. To meet students where they are emotionally, I deliberately brought in pop culture references they actually get, and I leaned into a classic student fear: trigonometric functions. By treating trig as the "villain" of our story arc, we built up a fun sense of dramatic tension that naturally made students want to figure out polynomial approximations. I'll share why I chose this narrative style over traditional setups, how it helped flip student anxiety into genuine excitement, and the real highs and lows of trying it out in my classroom.

ARTHUR QIU, Toronto

VANESSA RADZIMSKI, University of the Fraser Valley

MARIA SISKAKI, UCLA