

Alejandro Santacruz Hidalgo

Teaching Statement

It is my experience that many students share a similar mindset about mathematics: it is a hard subject, only accessible for geniuses or very bright students. Mathematics is useless in "real life" unless one wants to become a scientist, and even then, it is better to avoid it as much as possible. That mathematics is boring and uninteresting and pointless abstraction. My teaching philosophy stands on trying to change this view of mathematics, trying to see mathematics as worth doing, beautiful, and greatly rewarding. I believe that improving the student's views on mathematics is a key part of the learning process, and even for students who choose to not pursue STEM, the tools developed by mathematics such as critical thinking and problem solving are important in all aspects of life.

My views on teaching mathematics have been defined by years of experience as a student, teaching assistant, and instructor. These different roles have helped me develop several distinct skills needed to listen and impart lectures, prepare assignments, presentations, and exams, lead one-on-one and group tutorials, and design questions and exams. I truly believe that mathematics is one of humanity's greatest creations, an art and science all in one. Therefore, I have been in constant seek of opportunities to share this passion with as many people as possible and aid the students in their personal and professional formation.

- **Teaching math in the classroom:** I have tried different methods to increase engagement in the class. One particularly good result was while teaching differential equations at the National University of Colombia. There, I asked volunteers to solve practice questions each week and explain them to the audience. The students liked to receive constant feedback, and me as an instructor, could see the problems that were common and how to address them in future lectures. Based on the student's feedback, it was a big improvement in their experience, over other courses based only on lectures.

During my PhD studies at Western University, I pursued the Western certificate in university teaching and learning. It was shown to me, that a student centered process to learning usually works best. While some of the tools for active learning are challenging to incorporate to math lectures, it has been a priority of mine of incorporating any technique that I can to achieve better engagement.

- **Teaching math outside the classroom:** I have seen that the learning process is not only restricted to the lecture themselves. As a student, I felt that the most learning that I made was while trying to explain practice questions to a group of classmates, in those spaces, we could learn from our common mistakes, or see which gaps our proofs had, or which gap was overlooked. Therefore, as an instructor I try to give interesting practice questions for the students. I also try to encourage group work so they too can learn while working with other people and finally, as a teaching assistant, I find that individual and detailed feedback is crucial for the students to correct any mistake or gap in the understanding of the material. This year I am teaching introductory calculus at Western University and I have offered various avenues for students to seek assistance, such as office hours, online resources, and peer study groups. I believe in the importance of mentorship and providing personalized guidance to help each student reach their

full potential.

In conclusion, my teaching philosophy revolves around transforming the way students perceive mathematics. I strive to make mathematics accessible, enjoyable, and applicable to their lives. At every academic activity, I always try to communicate my passion for mathematics and make justice to the the subject. I am very privileged in having had truly remarkable mathematics professors in my academic life; some of them were brilliant in the history and philosophy of math, some of them in the technical aspects of math, and some of them were wonderful on both. I have learned a lot from those mentors and I believe that it is my job to do the best for my students at every opportunity, and by fostering a positive learning experience, I aim to inspire students to embrace the beauty and power of mathematics, ultimately helping them succeed in their academic and professional pursuits.