

# Teaching Statement

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I love teaching. I started teaching when I was in High School preparing students for the Mathematical Olympiad (something I continue doing), and I liked it a lot. I wasn't very good at first, but over the years I got better and better. By the time I was a graduate student at Dartmouth, many professors there knew me as a student who was a confident, happy teacher. At Dartmouth I took a teaching seminar in the Summer of 2008 which was very useful. I learned how to deal with a diverse student population, how to organize group sessions, how to talk clearly and at a reasonable pace, etc. I was lucky to go to a grad school that cared so much about preparing their grad students to be great teachers. When I graduated from Dartmouth, I got hired at Swarthmore, where my teaching experience has increased considerably. Now I know I can handle teaching three quality classes and still have time for research. I've learned how to create my own classes (something Swarthmore has allowed me to do three times) and how to manage my time efficiently. Overall, I have been very lucky to be at great places where I could improve my teaching.

In the university classroom, my main strength is patience and a positive attitude. I think my enthusiasm for the subject helps make the students feel at ease and encourages them to participate in class. I have been very successful with having students participate in class at both Dartmouth and Swarthmore. Teaching younger students (such as those from the Math Olympiad) has helped me become very patient with students and allows me to answer their questions in a friendly manner. Many of my students point out that they were very grateful for having me be easily available outside of class. I also had one student at Dartmouth nominate me for a teaching award.

At Swarthmore College I have taught Calculus 2 (covers series, sequences and integration), Linear Algebra, Honors Linear Algebra, Algebraic Number Theory and Introduction to Number Theory. At Dartmouth College I taught a Calculus class and a Probability class. I also was a TA for Differential Equations, Vector Calculus and Calculus. I have tried different types of teaching styles in my classes. With Calculus and Linear Algebra I alternated between lectures and group work sessions. In small classes (such as Intro to Number Theory and Algebraic Number Theory), I had the students present problems in class often. Between my experience at Swarthmore and Dartmouth I feel confident I can teach any undergraduate mathematics class. I can also teach graduate level classes in number theory, algebra, analysis and combinatorics.

My teaching philosophy has been heavily influenced by the Mathematical Olympiad, an international competition between high school students. As a junior in high school, I was invited to participate. After a few four-hour training sessions, I was hooked on the beauty of mathematics. The competition showed me a side of mathematics I had not encountered in high school. I learned that mathematics was not just about computing sums, products, derivatives and integrals; it was about solving difficult problems with creativity. The notion that mathematics is about ideas drives my teaching style. Whenever I teach a class I try to

showcase the key ideas in a subject, I then view the idea from several angles, trying to make the picture clearer. Something my students enjoy in my classes is that I often motivate the mathematical ideas with a brief history of the mathematicians behind the ideas.

Besides teaching at Swarthmore and Dartmouth, I have prepared students from the state of Chihuahua for the Mexican Mathematical Olympiad every year since 2002. My students have gone on to win 3 bronze medals in the International Mathematical Olympiad, 1 gold, 1 silver and 2 bronze medals in the Ibero-American Mathematical Olympiad, and several gold medals in the Mexican Mathematical Olympiad (including two this year). Teaching for the Mathematical Olympiad has shown me how to be clear in my presentations, and has shown me how to encourage students that do not believe in themselves. I think this shows my capacity to mentor students in independent projects. My love for Olympiad style problem solving has extended to having extracurricular problem-solving sessions at Dartmouth College and now at Swarthmore College.

In the Mathematical Olympiad, I was able to learn from enthusiastic volunteer teachers and then I was able to teach talented young students. But I am not only interested in teaching the students that already love mathematics; I am interested in teaching everybody. This is the reason I have volunteered in different teaching projects. For example, I was part part of the Montshire-Dartmouth-Rivendell Science Outreach Program in which a group of graduate students gave hands-on science classes to elementary school students making science exciting, relevant and approachable to the students. I was also part of Operation Achievement at Southwestern University, where my role was to tutor a Mexican girl that did not know much of the English language. She was in sixth grade and I helped her learn mathematics and English. I have participated in other teaching projects which I detail in my curriculum vitae.

I enjoy teaching very much. I feel comfortable speaking in public, and I feel joy when I notice students understand something new. As my curriculum vitae shows, I have participated in many programs and organized events with the purpose of teaching young students. I will continue to pursue projects of this sort in my career as a Mathematics professor.