

Teaching Statement

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Over the past several years, I have been involved in teaching mathematics to students with a wide range of academic backgrounds, enthusiasm, and confidence levels. My teaching experiences have included: being the head lecturer for a freshmen calculus class of 300 students, organizing and lecturing for a course on Mathematical Logic for junior and seniors in mathematics and computer science, and working as a volunteer teaching pre-algebra to inmates at San Quentin State Prison. Any one of these teaching experiences might be labeled as unconventional for a graduate student, but I been fortunate to have had all of these plus many others.

As a mathematician, when I meet a new person and tell them what I do I am often met with the response “I hated math in school.” As a teacher I have the difficult challenge of converting a room full of students many of whom had previous bad experiences in math, into a collection of people who can reflect positively on their mathematical education. I have developed a philosophy of teaching to addresses this challenge; the following statements characterize some key points of my approach.

- 1. Students are motivated by interesting questions.** I believe that a large part of student’s negative feelings about mathematics are a result of being asked boring questions. I work to choose examples and problems that relate to the world that surrounds us. I have found that incorporating fun and interesting examples from physics, biology, economics, and even everyday life into my lectures, homework sets, and exams helps my students see connections between the abstractions they are learning and the world in which they live. This realization of the omnipresence of mathematics motivates them to learn more and explore further connections with their own subjects of interest.
- 2. Teaching is a cooperative experience.** First, this refers to interactions between the student and the teacher. I have noticed that most students expect the classroom experience with their instructor to be a monologue: limited to being instructed to by their professor and leaving students afraid to ask questions in class or attend office hours to discuss the class. By making my lectures more interactive and letting the students feel open to ask questions I have worked to empower my students to be a part of their own learning experience rather than passive participants.

Second, I feel that peer interaction is an important part of the learning experience. In my own mathematical research I enjoy working and interacting with others; accordingly I give my students the opportunity to enjoy similar experiences. To this end, I supplement my teaching with projects the students can work on in groups, while still testing them on an individual basis to ensure accountability. I also encourage my students to discuss their work with others, as I have found that the process of explaining challenges one to deepen their own understanding.
- 3. Every student can learn.** It seems to be popular for instructors to blame poor test scores on the lack of an essential ability or desire by their students: I have found this characterization of students to be incorrect. It is true that many students start classes like calculus without enthusiasm, but I have found that this is typically due to a fear of failure. Once given appropriate questions and encouragement I have been impressed by how a taste of success has changed many of my students from “unmotivated” to extremely successful. The key here is that in order for students to learn they must overcome their lack of confidence. By displaying encouragement and reasonable expectations, I show my students that I am aware of their abilities and fears and have found that this helps them build the confidence they need to be successful.