Teaching Statement
Mike Limarzi

For as long as I can remember, I have had a passion for mathematics. In grade school, math was more fun than work to me. As my studies advanced and math became more difficult, the challenge only made it more enjoyable. Math was no longer a trivial calculation but rather an in-depth study requiring dedication and ingenuity. This passion and enthusiasm, and my desire to share it, have guided my admiration of the subject and fueled my desire to become a teacher.

Teaching Philosophy
Throughout my teaching career, I have had the opportunity to interact with students at all stages of life, from grade school to college and post-degree, both in classroom and one-on-one settings. The insights I gained into how students learn have helped make me the teacher that I am.

In my experience, the three biggest obstacles to learning are a student’s belief that math is boring, math is impossible, or math is irrelevant. Therefore, my teaching philosophy is threefold.

Make math interesting. In order for a student to succeed in a subject, that subject must engage him or her. Mathematics is too often taught as a cold, distant science with an endless list of formulas and seemingly no connection between topics. I bring excitement and a storyline to my classes, using energy and enthusiasm to teach ideas while guiding students along a path where each new concept a natural consequence of the previous and a natural precursor to the following.

Make math possible. Even I have to admit that math is not always easy. But when presented in the right way, math is not the Leviathan that it is often made out to be. By learning theorems well, calculating examples that illustrate concepts, and studying difficult cases that need special attention, students can tackle any problem. I remind my students that while a problem may be long, they have all the tools needed to solve it.

Make math relevant. Perhaps the most difficult challenge to overcome is that of student apathy toward the subject. On more than one occasion, I have had a student raise a hand in class to ask, “When will I ever need this?” not believing that what he or she is learning will be of any use beyond the course final. To respond, I stress that mathematics does have a profound impact our daily lives. While everyone agrees math does have a practical purpose, students will often point to the more tedious calculations as proof of math’s irrelevance. And while it’s true that they may never need to row-reduce a matrix again, the ability to think rationally, to clearly organize ideas, and to accurately apply concepts are traits that will always have a practical application.

But perhaps more importantly, mathematics is beautiful. A well-constructed proof, a simple trick to solve a problem, this is the beauty of mathematics. While there is no practical application of the Mona Lisa or Michelangelo's David, no one would detract from the worth of these masterpieces. In the same way, mathematics can be viewed as an art form, a majestic work worthy of admiration. If the student sees math as not only a means to an end but an end in itself, they develop respect and admiration for the subject.

Teaching Style
My goal in my classroom is to have a lively, open, and educational environment. On the first day of class, I emphasize class participation. Students are often reticent in asking questions, perhaps afraid of disrupting class, or afraid that their teacher, or worse, their peers, will view them as stupid. I stress that questions are an important
part of the learning process. As the teacher, it is especially critical to know when the students are not understanding, so I can try explaining the topic in a different way.

A related concept is a willingness to answer questions, even if incorrectly. I remind my students that it is okay to be wrong sometimes. Being wrong is a natural part of learning, and while one shouldn’t encourage making the same mistakes over and over, many times the best way to learn the right answer is by saying the wrong one.

Class participation is only possible if the teacher is approachable. If the professor seems indifferent to the plight of the student, he or she will not ask questions and as a result will struggle throughout the course. It is my job to be inviting, ensuring that the student knows I am available to help with any problem he or she may have.

Finally, I think the best way for students to learn math is to do math. Proving theorems in class is an important aspect of learning, but doing math for oneself is also an irreplaceable part of the learning process. This means assigning homework that is relevant and instructive, but also means working out examples in class, showing problem-solving techniques, and making mistakes, getting stuck, and trying different strategies. This combination of the theoretical and the practical brings a mathematical concept to light.

**Teaching Experience/Accolades**

As a graduate student, I have been fortunate enough to TA a variety of courses, allowing me to interact with students at a personal level. I have also had the privilege of developing college-level summer courses for Pre-Calculus and Calculus II, which helped me understand the intricacies of course development and the detail needed for a thorough, smooth-running course.

Johns Hopkins also has an innovative online program where courses are held online in real-time, and are accessible from around the world. I not only taught these courses but was also the sole developer of the Calculus II online course curriculum and slides, which are still used.

In the summer of 2009, I taught the Math Immersion course for Baltimore City, a program that trains potential high school math teachers, meeting eight hours a day for two weeks. I was responsible for design and implementation of the curriculum, which spanned a wide array of topics, from geometry to calculus to number theory to probability and statistics. This experience stressed to me the importance of both theoretical understanding and practical application.

I was the sole recipient of the 2007 William Kelso Morrill Award for Excellence in Mathematics, a prize awarded to the teacher’s assistant in the Johns Hopkins Mathematics Department who best exemplifies the traits of love of teaching, love of mathematics, and concern for the student.

Also, at Johns Hopkins students rate their TA’s at the end of the semester on various criteria on a scale from 1 to 5, with 5 being the highest. I have averaged above 4.5 in all categories for each class I have TA’ed. In addition to the ratings, students are encouraged to leave comments. Here are two I feel epitomize my teaching style:

-“I think Mike's genuine enthusiasm for mathematics have been inspiring in that I felt like I had a TA who knew what he was doing. His self-deprecating humor also made Mike likable and approachable.”
- “Mike made class fun but easy to learn the material at the same time.”

As these comments show, it is my goal to always make a course interesting and entertaining, but at the same time educational and insightful.