

# TEACHING STATEMENT

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## INTRODUCTION

My passion for teaching is driven by my sheer love of math and of the teaching process. Enlightening enthusiastic young minds is one of the most enjoyable and rewarding experiences I can imagine. I am currently in my third year as a PostDoc at Rutgers University, where I have had the opportunity to teach a variety of mathematics courses. While here I also had the great pleasure and honor of being a 2008-2009 Fellow in Project NExT, the national professional development program organized by the MAA. Participating in this program has been a highly stimulating and enriching experience that has exposed me to many new ideas and made me a part of a wonderful community of mathematicians and educators. I also have four years of teaching assistant experience and some full instructor experience from my years as a graduate student at the University of Pennsylvania, where I had the opportunity to work with many different courses ranging from the non-major class “Ideas in Mathematics” to beginning graduate level classes. I was also honored with the *Good Teaching Award* for one of my semesters there as a Calculus TA. In addition to teaching math, I also have experience teaching English abroad in both El Salvador and China.

## TEACHING PHILOSOPHY

In this section, I list a few principles that I consider to be most fundamental to my teaching philosophy.

*Teach the “why”, not just the “how to”.* All too often students go through math classes only knowing how to “plug and chug,” without really understanding what they are doing or why it works. Although it is important to be able to apply the formulas from math, it is equally important to understand where they come from.

Of course it is not reasonable to expect first year calculus students to be able to prove the big theorems but it is possible to make them understand the key ideas behind the theorems. This is something I try to stress when I teach a new concept. If they have a good understanding of where the ideas come from, they will be much more likely to retain the information and to be able to apply it to real world problems.

The importance of a good math education goes far beyond learning how to use formulas. A math education also teaches the important skills of analytic reasoning and mathematical thinking. These skills do not just come from being able to plug numbers into formulas. They come with the process of understanding the math behind the equations and how that math lends itself to the applications.

*Keep it simple and down-to-earth.* Often math classes muddy the waters with unnecessary abstraction or by not making it clear how everything relates. I always try to keep things simple and constantly bring everything back to the basic ideas. One of my students paid me a great compliment in an email he sent me after the first summer Calculus course I taught. He said, “I liked your teaching style; simple and to the point...and also insistent on fundamental understanding.” Other students have commented on my student evaluations: “Instructor was easy to understand...” “He explains things really well.” “The professor presented the material very well and gave good examples.... Prof. Hoelscher is a very good professor.” “Very descriptive about concepts ... very clear in explanations ... liked the examples.” “He makes students understand very clearly during lecture.”

*Be enthusiastic and energetic.* I am very passionate about math and I enjoy sharing my enthusiasm with my students. A recurring theme on my student evaluations is how my interest and energy contribute to the students’ own enjoyment of the course. Here are just a few of the comments I have received over the years on this subject: “The professor was very animated and interested.” “The professor tries very, very hard to generate interest which is very helpful.” “He has shown great enthusiasm for the course material.... This is the best class I’ve had in calculus.” “Corey likes and is good at teaching. He is very enthusiastic about the class.” “He was always excited...” “The instructor was very enthusiastic about the material, and presented it in an intuitive way.” “I like the professor’s teaching style and his enthusiasm for teaching.” “He lectured with lots of energy.... One of the best math classes I’ve had at Rutgers.” Comments like these fill me with great pride and inspiration.

*Continually strive to improve and incorporate new ideas into teaching.* One of the advantages of being a Project NExT fellow, is learning about different approaches to teaching. I have brought many of the concepts I have learned into the classroom with great success, and I am always on the look-out for new ideas, techniques, and inspiration.

For example, I have incorporated discovery learning into my weekly calculus recitation workshops by giving the students problems that build on what they know and start them thinking about the upcoming material. I was also introduced to the online homework system WebWork through Project NExT, and I am now using it for my linear algebra class. If it is successful in my course it may become a permanent component of linear algebra at Rutgers.

I hope to remain closely engaged in the mathematics education community, through Project NExT and beyond, so that I always stay in touch with the latest issues, methods and technology in the field.

*Versatility is important.* I have taught a variety of different courses and each situation calls for its own set of teaching methods and styles. There are many aspects of a course that can be varied, from the use of technology, to the type of homework given, to the use of class time for lecture, group work or student presentations. What is best for a freshman in calculus is not best for a senior math major in an upper level course. I always try to remain versatile and draw on a wide array of techniques, and choose those that best suit a given course and its students. Indeed, even my experiences teaching English abroad

gave me tools that I regularly draw on, such as ways to make the classroom a fun place, to motivate students and to boost class participation.

*Be available to the students.* I always try to give my students ample opportunities to ask questions and get one-on-one help. For example, in addition to office hours, which are usually popular among my students, I always make a point to be available after class for questions. This is often the best time for the students to ask questions, since everything is fresh in their heads and that is when they are most interested in the answers to their questions. My students have commented on my evaluations: “He was ... very generous of his time after class, in his office hours and exam review sessions. This was very helpful.” “[T]he instructor was very eager to engage and discuss material. He really wanted us to learn.” “[H]e was very helpful during his office hours and took the time to make sure that you understood any problems or questions that arose.”

*Organization cannot be underestimated.* Although organization can be easily overlooked it is the glue that keeps a course together. For each class I teach I make a webpage that clearly lays out the course policies, so that the students know from the beginning what is expected from them and what they can expect from me. I also make sure to post homework on time, keep the students informed about announcements, and grade papers in a timely manner. I feel that small things like this go a long way. One student even commented on my evaluation, “I like how organized everything is....”

*Technology in the classroom.* There are many useful technologies available that can contribute significantly to a student’s learning. In my years of teaching I have enjoyed making use of online homework, Maple projects, web demonstration applets and other tools. I am also the product of technology in the classroom myself. In my own high school math classes we made extensive use of graphing calculators and Geometer’s Sketchpad, so I have directly seen how these kinds of tools can contribute to learning. Whenever it is appropriate, I try to incorporate technologies that I think will enhance the students’ understanding of the material.

## CONCLUSION

I am a passionate teacher who thrives on the love of math and of the teaching process. I have a broad set of experiences that I draw on as I continually strive to be the best I can be. For me, teaching is one of the most rewarding experiences I can imagine.

I end with some of the voices that I am proud to have inspired. Here are some comments my students have made about me on my evaluations. “Corey is a very good teacher and very positive.” “...Corey is one of the best math professors I’ve had at Rutgers. He was very helpful.” “Great professor! Clear, good lecturer, helpful reviews.” “The class was taught really well. Corey was an awesome professor.” “I liked the teacher, Corey. Extremely understandable and made the course easier.” “He explains perfectly.” “Great teacher!!!” “I’m so happy that Corey was teaching this class...” “I like the professor’s teaching style and his enthusiasm for teaching.... Mr. Hoelscher is an amazing teacher.”