Teaching Philosophy

I believe that great teachers are uniquely distinguished across disciplines by three characteristics: *enthusiasm*, *high standards* and *availability*. As I embark on the next stage of my mathematical teaching career, I plan to embody each of these characteristics and incorporate them into the classroom.

Enthusiasm for teaching, as well as passion for the subject, are essential traits for any teacher to exhibit. When preparing to teach, I intentionally work to create a narrative and highlight pieces that I genuinely find interesting. If an instructor can find something beautiful, intriguing, or stimulating in each lecture, the students will feel this energy and will be more open to engaging. Since some students may enter a class holding strong aversions towards math, I believe that enthusiasm is an especially important trait for a math instructor to possess.

Exceptional teachers have ***high standards***, both personally and for their students. The teachers I respect have demanded the best from me. This doesn't mean creating an impossible exam. It is instead a delicate balance of knowing what challenges students can handle, pushing them to go a little further, and providing encouragement along the way. When designing assignments for students, I keep this approach in mind. Communicating your expectations to students is especially important when teaching them to do something they might not expect, such as being asked to write about their mathematical reasoning. Students may sometimes be tempted to gloss over details. However, if they are aware of what their instructor expects, they will begin to question every equality, think logically and analytically, and develop their own mathematical voice.

It is equally important for an instructor to set high personal standards. I take time to thoroughly prepare lecture notes in order to communicate concepts clearly and provide enlightening examples. When marking assignments, I provide as much constructive feedback as possible. In order for students to learn how to speak, reason, and write mathematically, receiving feedback is very important. As an instructor, I am also committed to improving my skills, by trying new activities in the classroom and by seeking and responding to feedback from students and colleagues.

Since students' abilities and motivation levels vary greatly, I try to make myself ***available*** to students in a variety of ways. This starts with getting to know my students. I work to learn students' names and try to be as approachable as possible. I invite students to meet with me during office hours or by appointment, actively answer emails, and create an online environment where students can ask questions and communicate with each other. I also strive to create a dynamic atmosphere in the classroom where students can engage with the material and feel safe asking questions. I work to create a dialogue by having students pair up to think about questions and volunteer to share their answers with the class. This gives students time to reflect and helps to underline important concepts. I also try to accommodate different styles of learning by illustrating concepts in different ways and by collecting informal feedback from students a few times throughout the semester. This helps to address their concerns and allows me to modify my teaching to enhance students' learning. When students know their instructor cares and is committed to helping them learn, it can make all the difference.

As an instructor, I thoroughly enjoy interacting with students and guiding their learning. For each student, I hope to foster in them the ability to think critically and communicate ideas in a logical and orderly way. As I move forward in my teaching career, I will strive to keep my guiding principles in mind and actively work to create an atmosphere where students can flourish.

Teaching Strategies

Class Participation

In order to keep students engaged with a lecture, I encourage class participation in multiple ways. I review important material from the previous lecture at the beginning of class by asking volunteers to summarize specific concepts, definitions, or theorems. Also, when writing a new definition or theorem on the board, I ask for volunteers to recall what specific symbols mean and to say in their own words what the theorem says. This gives the class more of a chance to digest and internalize new material before moving on. I also like to reserve time during lectures to have students pair up to complete examples.

Frequent Assignments/ Practice Problems:

Even if a student actively participates during class time, I believe that a great deal of math can only be learned by doing. In order to encourage students to put in the necessary time at home, I assign frequent assignments and quizzes. For example, in my second year differential equations class, I created weekly online assignments using WeBWorK. Students had unlimited attempts to obtain correct answers and the assignments were worth a small percentage of the course grade. I also created short weekly quizzes, where I gave students a list of potential quiz questions the week before, in order to help direct their study. In the end-of-course feedback, students responded very positively to the weekly quizzes and the online system. They said that it helped them keep up with the material, and that the unlimited attempts and potential quiz questions reduced stress. I also motivate students to complete recommended practice problems by letting them know that one practice problem will appear on their midterm/exam.

Developing Mathematical Writing Skills:

I believe that one of the most important objectives a course in mathematics can have is to develop students' mathematical writing skills. This is important for math majors and non-math majors alike, since it trains them to think logically and pay close attention to detail. I ask these types of writing-based questions on assignments, so that students can receive constructive feedback. For example, in my second-year differential equations course, I assigned weekly writing assignments where students could practice their mathematical thinking and writing skills. Receiving feedback allowed my students to reflect on the quality of their writing, and I saw noticeable improvements throughout the semester.

Use of Technology:

In the classroom, I prefer to teach using the chalkboard. I supplement chalkboard lectures with slides when the layout of the room allows. However, since not all classrooms have a chalkboard or whiteboard, I have experience using various other technologies such as document projectors, Smartboards, and my personal tablet. For each course and tutorial I teach, I create a course webpage where I post lecture material and helpful links. For tutorials, I have also created online course comment boxes, where students can anonymously ask questions. This has worked particularly well for large courses. In my second year differential equations course, I created an online discussion forum. Students in the class responded positively to the discussion forum and course website on the formal end-of-course feedback. I am interested in learning about new online technologies and using them to enrich my teaching and to support my students in their learning.