

Teaching Philosophy

Being a math instructor is an extremely fulfilling endeavor, albeit it also an arduous job. The biggest challenge that I have encountered is the affinity for students to feel that they are just unable to learn mathematics, and that it is useless and unnecessary. If students have these adverse feelings towards mathematics, then it is obvious that they may have trouble with understanding the material being taught to them. One component of my responsibility as an instructor is to show students that mathematics is not as tedious as they may think, and is very enjoyable. My goal is to help instill confidence in my students, thus they can believe that they can perform well in class, and as a result actually be successful. It is important that my students understand concepts well rather than just memorize rules. My ideas for aiding students to be successful in learning mathematics is to provide a fun environment conducive to learning. I have a down-to-earth relatable personality and I allow them to express their ideas freely in class, always providing positive feedback.

Through the expression of individual ideas, creativity as well as logical thinking is promoted. It is not sufficient to just come to class and listen to the lecturer to learn mathematics. It takes effort from both the instructor and the student to produce measurable success. I try to emphasize critical thinking and problem solving skills by challenging students to question and provide reasoning for their responses. In my classes I ask the students to interact with me and their fellow colleagues in such a way that they become as active as possible in their own learning process. If it so happens that a student is incorrect in their reasoning, then it is not enough for me to tell them that they are wrong and correct the mistake for them. Rather, it is my job to help the student discover where the mistake lies, and how to avoid similar mistakes in the future. Allowing my students more control over their learning experiences helps facilitate an appreciation for learning. In turn, this allows the students to really learn and comprehend the material.

Teaching Experience

During my graduate career at North Carolina State University, I have been privileged to be the main instructor of the following classes :

- MA 131 - Calculus for Life and Management Sciences; Fall 2010 (62 students), Spring 2011 (34 students), Spring 2012 (32 students), & Fall 2012 (66 students)

- MA 141 - Calculus I for Engineering and Science Majors; Fall 2011 (38 students)

Additionally, I have been a Lecture Assistant (approximately 20-30 students each class) for the following classes where duties included, but were not limited to grading quizzes and exams, weekly problem sessions, office hours, exam review sessions, and providing moral support :

- MA 241 - Calculus II for Engineering and Science Majors; Fall 2008, Spring & Summer 2010
- MA 405 - Introduction to Linear Algebra; Summers 2010 & 2012
- MA 341 - Applied Differential Equations I; Summer 2012

Teaching Style

I have had a variety of students in my classes, ranging from those who enjoy math very much and some who detest it. No one student is alike, thus I believe that teaching strategies have to be adapted to the type of student and the overall class interest. If I have a class full of engineering and physical science majors, I would gear applications towards concepts that they would find interesting and challenging, i.e. electrical circuits and physics applications. In my experience, these type of students enjoy mathematics or have had a good foundation from previous courses, and the basics come easy to them. For this reason, I try to present challenging applications that reinforce the basics they have learned. I have found that some students appreciate the challenge, while others wish I would just stick to the basics. But I believe that some sort of challenge is necessary for effective learning.

While attempting to challenge students who may find the material simple can be difficult, trying to teach students who do not have very strong mathematical backgrounds or who find math unnecessary is an even bigger conflict. I have experienced these types of students mostly in my life science and business majors. I have observed that these students need a different approach to understand the basics of calculus and need a good amount of review of algebra and pre-calculus. To facilitate their learning, I have assembled a series of typed "fill-in the blank" lecture notes that the students can print out and bring to class with them. I found this helped with my Life and Management Sciences classes vey much. Since these classes are heavily applied and involve many word problems, I found that this was a better way to convey information rather than attempting to write every thing out on the board for them to copy. I want

my students to focus on understanding the material and the concepts, rather than trying to write down everything I say. Most of my life science and business majors would rather have their fingers stapled together than have to read a math textbook. Thus, I made my notes concise and to the point, presenting all concepts in a way that is comprehensible for the student. I also provide several examples on each topic and relate them to real world applications that they can find enjoyable. I have made these notes available to other graduate students who are just beginning to engage in the joys of teaching and also to professors at North Carolina State University, who found my notes useful. To combat the issue of these students needing review of algebra and pre-calculus, I would give mini drills in the beginning of class so that those concepts can be practiced and students become more familiar with properties that they should have learned in previous math classes.

In addition to teaching structured classes, I have also been a research mentor for the Research Experience for Undergraduates (REU) program in the math department at North Carolina State University for the summers of 2010 and 2011. With this program, I aided NCSU professors in guiding students in a specific research project. This was a fun and interesting experience. It was very different from my other teaching experiences because there was no actual lesson plan to follow. Research is unpredictable and we only had a few short weeks to learn about a subject and produce some results for the project. Thus, I had to be creative with ideas on how to effectively get the students the background knowledge they needed to get started, in the shortest amount of time possible. Also, I needed to keep them motivated and encourage them to be creative and think outside of the box.

Albeit teaching mathematics to all the different types of students can be a conundrum, I revel in the challenge and it gives me considerable satisfaction. I get the greatest pleasure when I have students comment that my class is the first math class that they have enjoyed or that after this class they can now see some use for math. Even though I know I can't convince every one of my students to become a math major, at the least I hope that I can show them that math can be fun and interesting, and that they can excel at it.