

Statement of Teaching Philosophy

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Mathematics is resplendent and artful; it is a powerful, elegant subject and underpins every branch of science. While I have many priorities as a mathematics instructor, I strive in every lesson and lecture to spark interest by demonstrating the beauty of the pure as well as the fundamental usefulness of the applied. In addition to facilitating interest, it is imperative that my students walk away from the course having learned the material presented and not having flash memorized lessons for exams. As such, I endeavor to clear as many roadblocks from learning as possible and guide students with a positive and encouraging personality.

Introductory Mathematics Classes

An introductory college math course typically carries a certain anxiety based stigma for incoming freshmen. I combat this problem by showing my excitement and enthusiasm for every module. When students see how much I truly love coming to class every day and elucidating the secrets of factoring, logarithms, or systems of equations, they start to stress less over the variables and become more open to asking questions and seeking help when they need it.

Further, I find it vital that students, especially incoming freshmen, leave my class on day one with an immediate support network. My math class becomes a family and we chant every day “we are a family, we succeed together.” While many students initially feel silly chanting this at the beginning of every lecture, they come to understand that we mean it when we say it, and it bonds our class as we embark on our math journey. Additionally I encourage students, even in large lecture halls, to sit somewhere new and talk to someone new every day. Nascent study groups and friends emerge from my lectures, not just roots of polynomials. Recently a college algebra student told me that they had no clue who was in their other classes and on the occasion they would recognize someone’s face, they would keep walking. Whenever they ran across someone from algebra, however, they always knew their name and would smile and wave or say hey.

I believe that building an open welcoming community within the mathematics classroom is imperative to success. Creating our math family each semester helps students stay positive and enables them to ask any level of question. I love when other students in the classroom are comfortable enough to answer when someone asks a question. Especially at the college algebra and pre-calculus levels, math can be a challenge for everyone. I ensure that my students never shy away from the challenge and we succeed together.

Upper Level Mathematics Courses

When it comes to upper level courses, I continue to express enthusiasm and present all topics with high energy and encourage students to interrupt me with any and all questions. Admittedly, it is difficult to engage with large stadium lecture halls on topics like business calculus. However, there’s always a way to foster interest and understanding with every lecture. With business calculus in particular, most students are accounting majors. At some point, accounting students learn something called “the rule of 72”. This rule says that if an investment is made with return at r percent per time period, then the time it takes for the investment to double is approximately $72/r$. This rule is often given in accounting classes without any explanation. However, I demonstrate to them that this approximation comes from a Taylor series approximation for $\ln(1 + r)$. Now students have seen both an application for Taylor series and additionally have an explanation for a common accounting trick.

For proof based courses, particularly introductory proof based courses, I believe that it is of the highest importance to enable students to develop the taste and skill set for rigor. In addition to understanding the material at hand, students must also be held to a high standard in proof writing. Incorporating rigor into classes can be frustrating for some, however I will teach my students that each exercise is like a puzzle that they must

solve with the tool box that I have given them. With encouragement and positive constructive feedback, students begin to feel the joy and excitement that comes from each proof.

Facilitating Diversity in Mathematics

I have had the great fortune of working with two programs which specifically assist minorities and first generation students in their transition from high school to college. The first of these is called the “South Carolina Assisting Minorities Program” (SCAMP). While working with SCAMP at the College of Charleston, I provided supplemental instruction and individual tutoring to student members of the program enrolled in college algebra, pre-calculus, and calculus I. At the University of Florida, I have been a four time instructor for the “Achievements in Mainstreaming” (AIM) program in college algebra and pre-calculus. The AIM program also targets other students who are at risk for not completing college based on their background. AIM classes meet five days a week and move at a slower and more detailed pace.

I have never had the pleasure of working with a more motivated group of students than those that I have encountered in these programs. The work I have done with SCAMP and AIM has been the most rewarding experience in teaching that I have ever had and it continues to be the prime motivation for me to continue teaching. Students who enter these programs are eager to learn; the challenge for the instructor is keeping them motivated and engaged as these topics commonly considered review from high school are far from easy for the students. Success comes from facilitating a community within the classroom where students are a family and may freely ask questions about the material and college life in general. Given the lack of diversity within mathematics, particularly women and women of color, we as mathematics educators must strive to keep these students engaged and as eager to learn after four years as they are on day one.

Student Reviews

One metric for the success of my teaching philosophies comes in the form of student reviews. From fall semester 2014 through spring semester 2018 at the University of Florida, I have a total of 313 student evaluations. Students are instructed to answer several different questions about the instructor on a scale of 1 to 5, with 1 being the worst and 5 being the best. One particular datum requested is the “overall rating of the instructor.” Here I present my overall average for all courses taught, the average of the course average for all courses I have taught, the department average for the semesters I have taught, and the college average for all instructors in the College of Liberal Arts and Sciences for the semesters I have taught.

My average	Course average	Dept. Average	College average
4.50	4.23	4.22	4.27

Students are also encourage to leave comments about the course and instructor while completing their reviews. I believe the following comment left by a calculus I student demonstrates the community I strive to foster within the classroom:

“Mr. Smith made us feel as though we were all in a team effort to help one another out and create a positive environment to help us learn the material much more thoroughly and help others around us do the same. His dry humor kept students engaged and his deep understanding of calculus was also very helpful. He would take the time to really breakdown the meaning behind certain steps and how to get an answer and where it came from. Probably one of the best teachers I have ever had.”

Summarily, I believe that building a welcoming community within the classroom is a key element for success in mathematics courses. Equally important, we as mathematics educators must engage students through enthusiasm and encouragement. My goals for each class go beyond the classroom; I strive to ensure that my students not only have the mathematical tools for success but also have the support network needed for their college experience.