

STATEMENT OF TEACHING PHILOSOPHY

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When I first began my career as a graduate student, I was not sure what to expect in my role as instructor. Like all students, I have had my share of good teachers, and I tried to take the things I liked from each. What did they do to focus me; to convince me to be my best? In each of my classes, what made me want to attend class on a daily basis?

The majority of my experiences as an instructor have come from “Quantitative Reasoning and Mathematical Skills” (QRMS), a liberal arts mathematics course, which fulfills the math requirement at the University of Colorado. Although we are required to meet certain guidelines, instructors have the freedom to develop their own curriculum. I have taught probability, game theory, linear and exponential modeling, statistics, financial management, introductory number theory, and mathematics in music and art to a very wide range of students who usually have just one thing in common – a loathing and fear of math. Due to the demands and stresses placed upon the instructor, it is considered customary to teach this course once or twice before moving on to “easier” (for the teacher) courses. To the contrary, I will be teaching my seventh and eighth sections of QRMS this spring, and I am looking forward to them more than ever. The experience and variety the course offers far outweighs the drawbacks associated with the non-typical course outline, and the students I encounter make each day interesting.

The biggest obstacle we face as mathematics instructors is an anxiety about math. Almost exclusively, and particularly in QRMS, my students begin the class with a hostile attitude towards mathematics, which is a result of poor mathematical experiences in their formative years. Therefore, I feel that a relaxed and open atmosphere is essential to ensuring the success of a mathematics student. To this end, it is important that I get to know my students and learn about their outside interests. This also allows me to introduce outside examples which might make mathematics more interesting or relevant to my classroom. Once we’ve worked together to establish a comfort level, it’s far easier to overcome the negative attitudes students possess concerning math.

Students in traditional mathematics courses have a tendency to “tune out” the professor, obviously taking away from their ability to learn the covered material. To counteract this disposition, I will do whatever it takes to get (and keep) my students’ attention. Students need to learn that math is an active way of thinking as opposed to rote memorization, and classroom participation is vital in this regard. Question-and-answer sessions, group discussions, out-of-class workshops, field work and technology labs are all methods I have found effective in keeping the curriculum fresh and interesting.

In all levels of undergraduate mathematics, courses consist of students with a wide range of abilities. Our natural inclination as instructors is to “teach to the middle”, and hoping that the stragglers can catch up. Doing so, however, neglects the responsibility we have towards the best students, who are either forced into taking a course to meet a requirement, or are looking for an “easy A”. In my experience, the

greatest strides in mastering my own course material came when I was teaching it to others; therefore, one of my goals as an instructor is to enlist the assistance of my brighter students in reaching out towards the class as a whole. Challenging these students, with alternative projects and activities if necessary, gives them a sense of purpose and responsibility that is necessary in establishing an active classroom environment.

I have also found the introduction of technology into the classroom to be an effective way to convey course material. One of the most rewarding courses I have worked with, "Calculus with Computer Applications", required each student to have, and use daily, a graphing calculator. The course itself was geared towards using these devices to explore traditional calculus concepts, such as limits and derivatives, from a numerical standpoint, and students learned how to write algorithms to implement Newton's Method, Euler's Method, and the like. By seeing these abstract concepts used in practice, students were able to get a better grasp on the material itself. On other occasions, I have introduced basic *Mathematica* projects to achieve the same effect. In either case, my students learned effective problem-solving techniques that they would not have otherwise experienced.

The one thing that I find the most stimulating about the teaching profession is that, for each student in my classroom, there is an optimal teaching style best suited for him or her. Connecting with, collaborating with, and ultimately challenging each student to be their best is what makes teaching worthwhile for me. In the end, if I can look back at my classroom and believe that every student looked forward to coming to class each day and learning, and if I know that I was always available for them, then I can be satisfied with a job well-done. I might not be able to make all of my students appreciate mathematics in the same way as I do, but my responsibility should be to make sure that all of my students have the opportunity.