

## Teaching Statement

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### Experience

My first true experience with formal teaching came in 1994 as a Peace Corps Volunteer in Namibia, a country in Southern Africa. I was responsible for preparing my students to take comprehensive exams in both Physical Science and Mathematics at what would be the 10th grade level in the US. These exams covered a wide range of material, including concepts completely beyond the experience of the majority of my students, most of whom had never left their region of birth. Perhaps the greatest barrier was a disconnect between the course topics and my student's perception of the application of these topics in their own future. In my two years in Namibia, I worked hard to bring the concepts of math and science from the textbooks into the realm of the applicable. Several of my students were lucky enough to win the regional science fair competition and were awarded a trip to the capital city to participate in the national science fair. Their experiment was based on the beer brewing process, and focused on understanding the process and the measurement and improvement of fermentation rates and qualities.

My most recent teaching experience comes as a postdoc at the University of Washington. I am currently teaching an upper division Numerical Analysis course, and will have the opportunity to once again teach an introductory PDE course, in which many returning graduate students enroll. While this has been a highly rewarding experience, many of the basic teaching skills I had already acquired while a TA at Colorado State. In talking with other postdocs and TA's, I've come to realize that the title 'Teaching Assistant' is perhaps a misnomer at Colorado State. As a TA I lectured at least 3 to 4 days a week from 1998 to 2004, to audiences ranging from 10 to 250 students, and was given increasing freedom in the classroom. I taught differential equations for a total of 4 semesters, where I was responsible for all aspects - including course topics, daily lectures, exams and final grade assignment. One semester I taught the honors section of this course, which had previously been limited to faculty instruction. I also taught introductory math courses (College Algebra, Trigonometry and Math for Social Scientists) and various Calculus courses (both traditional and biology based), all which help build my teaching confidence. I have also become increasingly active in using software such as Maple and/or Matlab as I teach, which I found difficult when I first struggled with basic course management.

### Philosophy

I believe that students should not only learn the mechanics of mathematical methods, but should also be given motivation that leads to these methods. This might include math history, a physical insight, or sometimes just an amusing anecdote. I let my students see that math can be both fun and functional, and in doing so I am able to pass along some of my passion for the subject.

I attempt to structure my lessons as follows: I first motivate the theory, then develop it, and finally provide examples and applications. Many topics in an undergraduate's math study can be illustrated with coherent and concrete examples. I discourage memorization, and prefer to reward conceptual understanding when possible. I've found that this seems to help students develop intuition, which can then be applied to other areas.

I also believe in collaborative and interactive learning. My most successful classes are ones in which students are actively involved. I try to create and maintain a friendly and respectful

environment, while encouraging students to work together to express and share ideas. My students seem to enjoy this environment. I am able to share the role of educator with them, and I often become the student.

Technology can be a powerful tool in understanding mathematics. Computer visualization provides simple demonstrations of otherwise difficult concepts, and computer packages eliminate the burden of tedious calculation. I use computer demonstrations and labs to reinforce theory, aid interpretation and build intuition. I attempt to minimize the frustration of learning software by providing templates in focused lab sessions. I believe that one of the most beneficial skills acquired by my students is their introduction to and awareness of these resources. Their willingness to utilize these resources in other courses speaks to an awareness of the potential of these tools.

I think that the learning of math dictates that much of this learning occur outside of the classroom. Problem solving is a learned skill, one requiring much practice, and my homework assignments reflect this. But I also recognize that confusion and frustration can quickly lead to learning disengagement. My office hours allow students to ask questions in a safe environment, and I happily meet with students outside of scheduled hours, if possible.

When I work with my students, I interact with them as the adults that they are. They have difficulties and concerns independent of my course. I try to be flexible and understanding to their problems, but I also hold them accountable for their actions and decisions.

I believe that my teaching style and philosophy will continue to grow and improve based on criticism and feedback from students and peers. My teaching evaluations, which are consistently higher than average, continue to improve. I received the math 'Outstanding Teaching Assistant of the Year' award in spring 2003, which is given by the faculty in recognition of teaching ability, dedication and effort.