Teaching Statement

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Graduate school has provided me with experience teaching several classes, and more importantly, a wide variety of students. Having been the recipient of superb teaching throughout my schooling, I have always considered the quality instruction of students an important facet of my duties as a graduate student, as well as my education.

My first teaching experience was as a recitation instructor for a first semester calculus course. I was immediately struck with not only the students’ varied ability, but also their varied levels of effort. Of course, these variables are often correlated, and developing a discussion that benefits all involved can be difficult. I encourage those students that feel comfortable with the material to present problems on the board. By asking frequent questions during the presentation, I allow the presenter to give clarifying details deepening not only the class’ understanding, but also the presenter’s.

This experience proved useful in teaching my first course in which I was the instructor of record, intermediate algebra. Intermediate algebra is a deficiency course required for those students that do not pass the exam to enter college algebra. As such, many of the students enrolled see math as the enemy, and me as its ambassador. Providing motivation for understanding the material was not difficult, since everyone in the class was required to go on to college algebra upon completion. I found that daily quizzes helped me keep a sharp eye on the pulse of the class. This simple action provided not only an attendance record, but also a means to learn the students by name. I feel that once the students develop this connection with their instructor, they are more likely to attend classes and office hours. For my efforts in teaching this course, I was given Honorable Mention for Outstanding Teaching by a GTA by the mathematics department.

I have also had the pleasure of teaching a course in contemporary mathematics, a course intended for students in the humanities. The purpose of the course is to give applications of mathematics that the student can honestly use and/or appreciate. Since this was the last math course many of the students had to take, motivation of the material was difficult at times. However, the application-driven subject matter kept the students interested. The course gave me a chance to teach subject matter that I had never presented before, such as applications of elementary graph theory, basic probability and statistics. I most enjoyed covering the algorithms in the graph theory section for scheduling and finding minimal cost spanning trees. Their intuitive and ‘greedy’ nature showed the class that the abstraction mathematics provides is intuitive and insightful.

Teaching classes for more advanced undergraduates such as differential equations or linear algebra has also been very rewarding. The students in each class were strong, allowing me to adapt the planned materials and challenge them accordingly. Some of the material on linear systems in the differential equations course proved challenging to cover, as it is customary for students at UNL to take differential equations before linear algebra. Several students complimented me on my efforts in explaining this material in class, in extra review sessions, and during office hours. We also used computer packages such as MATLAB and Maple in both classes to give the students an idea of both the strengths and limitations of a numerical approach.
During the summer of 2006, I was selected to be a mentor for the six-week long IMMERSE program at the University of Nebraska–Lincoln, a mini-course aimed at bright students from four year colleges who will be attending graduate school in the fall. The material of the minicourse was designed so that the students could read and understand selected papers from algebra and analysis. This gave me my first formal opportunity to mentor future graduate students in mathematics. When discussing a problem with students, I would often lead them to ask related questions that deepened their understanding of the original problem. In the future, I hope to call upon this experience to mentor advanced undergraduate and graduate students in classes and individual projects.

When teaching a mathematics course, I feel it is important to determine the character of the classroom for every lecture. Its personality can change daily, even mid-lecture, and proper adjustments can make the students feel comfortable and not afraid to ask questions. Learning the stimuli to which the students will react can take a couple of weeks, but I feel that this effort is well worth it. Talking to students individually is a great way to learn what they are having problems with.

Working with students one at a time is certainly my favorite aspect of teaching; tailoring the discussion to the strengths of the student allows one to better address his or her weaknesses. My office hours are the primary method my students have used to get personal help. Throughout my graduate career, I have also served in the math resource center, a free tutoring service to all students in mathematics courses at or below second semester calculus. In order to accommodate everyone in the class, I often adjust my schedule for students that have obligations during the scheduled times.

Conveying ideas in a precise way is an important part of mathematics. In all the courses I teach, I ask students to present homework problems and answer questions on their presentation from the class. The students get noticeably better at performing this task throughout the semester, and as a result, so does their understanding of the material. During the contemporary mathematics course, I gave journal assignments in which the students were to explain in their own words some of the results we discussed in class. In one assignment, I had the students find a statistic listed in the newspaper or online, and research where that statistic came from, the polling method, the margin of error, and a brief discussion of any possible biases. The students became noticeably better at writing about mathematics throughout the course of the year.

I hope that by taking my class, a student has gained not only the skillset advertised, but also the critical thinking and communication skills that are important in mathematical education at any level. My lectures are designed to fulfill both of these goals. I hope that devoting my time and energy to my students will stimulate them to work harder, so that they can apply the knowledge gained in interesting ways to difficult problems throughout their academic and professional careers.