

TEACHING STATEMENT

FARAMARZ VAFAEE

I teach mathematics because I believe that aptitude in mathematics is a powerful and relevant skill. I teach to help students discover their hidden talents and value qualities that will make them stand apart from everybody else. In my diverse teaching experiences at the undergraduate and graduate levels, I have always had these common objectives: to establish constructive student attitudes about mathematics, to foster a desire to ask mathematics questions, and to prepare future mathematicians.

To achieve these goals I always make a comprehensive plan for the semester based on the feedback I have received from my students' evaluations in previous semesters. Moreover, I obtain feedback throughout the semester by requesting that students write a one-minute paper explaining the material they have learned and stating any questions they have that remain unanswered. This allows me to modify my semester plan as needed, adapting it to the needs of my students.

I believe the first few lectures are crucial to establish the standards in class. I have found that my enthusiasm and energy as a teacher really inspires students. In undergraduate classes, my students often have the prior impression that math consists of a pool of problems that all can be solved once they know the right algorithmic method. I challenge that mindset by assigning a few challenging questions for homework instead of a large number of routine ones. This technique not only motivates students to make an effort to learn fundamental concepts but also prepares them for the final exam.

My approach is to develop a friendly atmosphere in which students are engaged in the class and unafraid to participate in its development. With help from articles and discussions with my colleagues at our weekly Student Teaching Seminar, I have incorporated several active learning methods into my classroom. Doing so has greatly increased students' willingness to interact with me and each other.

I start my lectures by reviewing discussions from the previous class. I then introduce a new topic, present a few straightforward examples, and then give the students handouts with more challenging problems to work on. I ask them to work in groups because I have personally observed that group work increases the amount students learn and boosts their retention of the material. For instance, when I teach the chain rule in my Calculus I classes, I use the following example as the first task in the handout

$$\frac{d}{dx} \left[4 \tan \sqrt{x} \cos \left(\frac{2}{x} \right) \right].$$

The beauty of this example is that it forces students to combine their prior knowledge with new concepts, showing them that the chain rule is not an isolated technique. By walking around the classroom, I can pay attention to the discussions in different groups and encourage those not actively participating by kindly asking them to explain their own approaches to the problem. When the students get a chance to explain their thought process, they will be better able to understand their own thinking and learning strategies. Later, when I do a few of the handout problems on the board, students' familiarity with the problems allows me to present solutions at a faster pace, opening up the ability to cover more material.

Teaching as a sole instructor of Calculus I, I have had the opportunity to develop my own syllabus and write my own exams. Deciding how to pace the course material and incorporate technology such as WeBWroK has greatly furthered my understanding of the importance of the administrative aspects of teaching. Students greatly desire a well-organized and structured lesson plan, as evidenced by their appreciation for my adherence to the syllabus. One student wrote on the end-of-semester evaluation, "He strictly followed the syllabus which was a good thing in my opinion; no curve balls".

I cannot possibly give the students a complete education by focusing only on teaching techniques. I must also focus on the students as individuals. In meeting with them one-on-one during office hours, I can detect and fill gaps in their prior knowledge. Moreover, the unique opportunity office hours provide has been an extremely valuable part of my teaching experience, one essential to creating good relations with my students.

Acting as a recitation instructor in a graduate level Algebraic Topology class with Prof. Hedden added a mentoring component to my teaching experience. My role was to be an approachable resource for the younger students. Each week we discussed the topics covered in lecture. I prepared concrete examples that would provide the students with an accessible perspective on the material. Occasionally, I filled in for Prof. Hedden if he was absent. In addition, I talked with the students outside class and tried to function as another rung in the ladder from first-year graduate student to advanced academic. This experience was extremely valuable for me. The questions asked of me were often unexpected and sometimes quite deep. I felt that I came away from each session better able to think on my feet - a skill which is essential to my style of teaching. I also valued the opportunity to get to know the younger students in my department, with many of whom I still continue to have enlightening mathematical discussions.

As my love for math has deepened throughout my graduate education, so has my interest in sharing my mathematical knowledge with others. I have spent considerable effort learning and implementing new ideas for instruction, and I am enthusiastic to take my teaching to a higher level. I look forward to continuing to strive to awaken interest and foster understanding in my students. But even more than that, I am excited to learn as much from them as they can from me.