

Teaching Statement

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I have been a graduate teaching assistant at PURDUE UNIVERSITY during 2006-2010 and an instructor in UNIVERSITY OF MINNESOTA since 2014. I am fortunate to have a wide variety of teaching experiences. My current teaching philosophy has three aspects:

- I want students to have a good understanding of the concepts and develop their skills towards further study in mathematics or other disciplines.
- Encouraging and fostering creative and innovative thinking are also very important. I always motivate students to speak out their minds and assemble without fear.
- Involving my students in more active forms of learning is also my goal. For example, they make their own time plans, test their progresses and reflect on errors and successes.

I started teaching mathematics from my undergraduate years at TIANJIN UNIVERSITY in China. I served as an assistant coach for the Olympiad in Informatics. I mainly taught the recitation on discrete mathematics and algorithms. During two years, I faced many creative and critical questions from very smart students. It was challenging and stimulated me to think more and prepare better before each class. I also gained my first experience on how to organize, encourage and lead a discussion from the recitation.

In the Fall 2006 semester, I entered the Ph.D program in the DEPARTMENT OF MATHEMATICS at PURDUE UNIVERSITY. I received professional teaching training during my first three semesters. The training program consisted of several workshops dealing with all aspects of college teaching, covering such topics as “how to conduct a recitation”, “how to handle discipline problems in class” and “how to design course materials”. I was also enrolled in a course on classroom communications.

My first assignment was being a grader for undergraduate level ordinary differential equations course. Besides the record of scores, I also kept my own statistics on classification of errors. This was very helpful for the instructors to know the weak points of their students and then improve the teaching.

The first course I taught was Multivariable Calculus and I continued to teach it for two semesters. This course was mandatory for undergraduate students in COLLEGE OF ENGINEERING. The course syllabus covered topics ranging from

vectors and vector-valued functions in \mathbb{R}^2 and \mathbb{R}^3 , equations of lines, planes and quadric surfaces, integrals of vector functions, multivariable chain rule and implicit differentiation and directional derivative. According to the statistics of the homework and quizzes, I found that the hard parts for students to understand were classification of quadric surfaces and implicit differentiation. Therefore, I managed this course such that more time spent on showing the visual examples of the quadric surfaces and offering different problems on implicit differentiation. Students also asked question after classes and discussed problems via emails. I tried my best to reply to students as soon as possible so that they could catch up before the homework deadline or exam.

In the Fall 2014 semester, I teach “Calculus I” (Math1271), which is a required course of the Bachelor program in COLLEGE OF SCIENCE AND ENGINEERING at UNIVERSITY OF MINNESOTA. I have the pleasure of teaching seven sections, comprised of over 200 students. I am the primary instructor of my sections and develop my own lectures, quizzes, classroom activities and exams. There are an overwhelming number of excellent educational resources available online. From this semester, I start to use the the interactive examples from the Wolfram Demonstrations Project to help students to understand the basic ideas of calculus. It provides us a new way to guide the student to not only learn math but also rediscover it.

Communication also links the instructor and students. I always create as many opportunities as possible for the students to interact and discuss in class. I believe it is very important to provide a comfortable environment for students to ask questions. One of my principles is to convince the students that there are no stupid questions. Also, when guiding a group discussion, I always raise questions to students aiming to point out what they did wrong rather than reveal the correct answer.

After becoming a research assistant, I still continue my role as a teacher by serving in the Math Help room. I am also involved in seminars devoted to introducing basic knowledge on PDE, regularization and iterative methods for inverse problems to the beginning graduate students in our research group. In addition to sharing the enthusiasm and excitement about my research, I also get much inspiration by preparing the materials and discussing with them. Moreover, I have given many presentations in conference and seminars. These activities improve significantly my skills in teaching and explaining.

I hope to continue teaching mathematics, and what’s more important, I would like to inspire students to appreciate the art of mathematics.