

# STATEMENT OF TEACHING PHILOSOPHY

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**Background:** I have a true passion for teaching and am seeking a position at a college with a strong emphasis on education. I have a wide array of experience from the University of Arizona and University of Oslo, which includes teaching a variety of introductory courses through the calculus level, and facilitating recitation sessions in differential equations, discrete mathematics, and introductory theoretical mathematical analysis. I have experience working with a diverse population of students with varying mathematical interests and backgrounds, including international and minority students, mathematics and science majors, secondary mathematics teachers, and students outside the field of mathematics. In the Summer of 2010, I taught in a program called New Start which assists students in making a smooth transition from high school to college. Most of the students in this program are first generation minority students from low income backgrounds. In addition to teaching mathematics in this program, I worked closely with instructors and undergraduates from other departments. We arranged field trips within campus as well as an academic conference in which students gave presentations and were encouraged to offer feedback. In my class, I was assigned an undergraduate tutor who gave students supplementary assistance under my guidance. This experience has helped shape my teaching philosophy, and in Fall 2009, I was recognized with the Outstanding Graduate Teaching Assistant Award from the Department of Mathematics at the University of Arizona.

**Motivation/Goal:** During my high school years and as an undergraduate, I was lucky to have some amazing teachers who really inspired me to learn mathematics. Likewise, I strive to inspire my students and to convey my passion for mathematics. I try to emphasize the applications of mathematics and its foundation for other disciplines in science. My overall goal is to motivate the students to be curious about mathematics. I want to help them realize that mathematics is a tool that can be used to approach both important scientific questions and everyday situations.

**Methods:** In my teaching, I use a combination of traditional lectures and in-class activities, both in groups and individually. When I teach, my emphasis is on understanding and deriving formulas rather than memorizing. I feel a classroom environment should be vibrant and engaging, with plenty of active student participation. I encourage high student involvement, and incorporate discussions whenever possible, continuously asking questions that stimulate higher thinking. In a typical class period, I will introduce a theoretical concept or formula and work through examples on the board to show the students how to apply the material. But knowing that it is not enough for students to merely watch the instructor, I immediately assign more problems for the students to work out. Then I will ask students to share their results on the board, enabling me to observe their thought processes in action and offering further instruction when necessary. I observed that students are more motivated when they actually get to show their own work openly in class.

I believe group work and individualized instruction are both essential to the learning process. Every week, students are given worksheets to do in class, during which I walk around offering any needed assistance. A group discussion may follow. By collaborating with each other, the students practice explaining mathematical concepts to each other, which are an efficient and motivating way of learning. Often, the collaboration extends outside the classroom as students study together for upcoming tests and assignments.

It is important that the teacher is approachable and time-giving. I encourage my students to visit me during office hours, where they can receive help on homework or extra assistance

on material we covered in class. Very often, I spend office hours giving students problems they can work on under my supervision. The students will typically solve the problems on the board and I will guide them when they need help, asking leading questions or giving hints.

The most important role of an instructor is to teach the students how to learn. This approach includes guiding the students in the right direction when they are stuck on a problem and motivating them to take responsibility for their own learning. Instead of giving them all the answers, the instructor should guide them toward figuring out solutions themselves. I feel it is important to teach students to be independent, confident, and self sufficient. In the future, I would like to incorporate more worksheets when appropriate, which will guide the students through certain proofs and mathematical concepts. For example, when introducing the derivative of exponential functions in my calculus class, I gave the students a worksheet that guided them through the process. I found that the students attained confidence from figuring out the solution themselves instead of having me present it to them.

**Technology in Teaching:** In my calculus classes, I use the online grading system WeBAssign. In addition, I have integrated the usage of Maple as a tool for an introductory analysis course, and in most of the courses I have taught, the students are using a graphing calculator. Each course I teach also has its own webpage, where I post assignments and information about the course.

**Evaluations/Goals:** Over the years of teaching mathematics, I have learned the importance of identifying challenging materials. I discovered that what is easy for me is not necessarily easy for the students, and have since learned to give extra attention where needed. For example, the first time I was teaching college algebra, I discovered that many of my students had problems with the concept of piecewise-defined functions. I realized that I needed to teach this section differently, more thoroughly, and present more examples.

Student evaluations have served to enhance my teaching approach. By listening to student feedback, I have been making adjustments to my teaching methods. For instance, I have learned that students wanted more worksheets and problem solving in class. This has led me to modify my approach from being mostly frontal teaching to more interactive and hands-on. My goal is to always improve and grow in all aspects of instruction, to be reflective in my approach, to always be mindful of the diverse learning styles of my students and to employ adjustments and strategies accordingly. In the future, I would like to be involved with curriculum development and to construct my own courses.

**Undergraduate research project:** I have had the experience of being a mentor for a group of undergraduates working on a research project in a mathematical modeling course and I would like to continue doing research with undergraduates. Please see my research statement for a description of this project and further ideas.