

TEACHING STATEMENT

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Teaching philosophy. Teaching is for me mainly a form of communication, and mathematics allows that in its specific ways. By and large, mathematics is about discipline, rigor of mind, and here is how I would explain, if a student happened to ask me what calculus is about: start with some collected data, transfer into a quantitative problem and use the tools of calculus, if possible, to solve it. At another level, mathematics is discovery of connections between similar objects. Adding two numbers or integrating a function might be closer in their nature than one expects. Trying to convince students of the naturality of concepts they learn is one aspect I have in mind when teaching. Another is to make the new concepts accessible by many examples, develop the techniques for computation and recognize the problems to which they apply. While having my students acquire computational techniques and skills is the very important component of studying at that stage, it is equally relevant to me that they depict a way of thinking in a rigorous and clear manner, open to discovery. It is not too much to assume that they already know what you are going to teach them.

Teaching experience. This fall semester I am teaching at PennState University two sections of Calculus I, a multi-section course with general exams and grading policies, for engineer and science majors. Lectures meet four times a week and this allows me some flexibility in organizing the lectures. Namely, there is more room for class interaction, and often students present solutions on the board or suggest other ways of solving problems.

At University of Notre Dame I did have the opportunity to teach three times first year calculus and be a teaching assistant for freshman and sophomore students in engineering and pre-medical school. I prepared my own lectures and participated in writing exams and quizzes. I also taught a small, individually organized class where I was responsible for lectures, exams, homework assignments and for maintaining a course web page. My teaching assistant duties included working through homework problems, writing or administering quizzes and group activities in tutorial sessions.

Teaching methods. There are at least three features that I think contribute to a good lecture: clarity of presentation, student involvement and a relaxed, friendly atmosphere. In a typical lecture I usually start with a short review of the material covered previous time, and I introduce then the new topic by means of raising a question whose answer we want to figure out

by “the end of the day”. Finding the right context for a problem, possibly with some historical background or anecdote, might give students a good motivation to stay focused for the hour length of the lecture. Many examples, with possible applications pertaining to business, natural or physical sciences accordingly, will illustrate the concept.

It is important to engage students in this process by asking questions, have them solve exercises on their notebooks or on the board, and encourage them to address questions, remarks or comments. Teaching is most effective at a personal level and knowing the students and their range of understanding should determine the manner of presenting the lecture. I find that a relaxed atmosphere during classes engages students better in the flow of the lecture. For instance, if I were to evaluate an integral, I would take the game approach to it: “How can we calculate it? Substitution, parts...? We want to reduce it to something in the table of integration.” etc.

Learning is a very active process, and the best way to know something is by doing it. I like to use class activities to make students go through the steps of solving a problem or understanding a concept. I emphasize in class the role of homework in studying, and I give regularly quizzes similarly to homework problems to motivate students in knowing what they work on. Homework is meant to give students the possibility to verify their understanding of the material covered in class, develop the necessary techniques and prepare for the forthcoming exams. More challenging problems I leave for extra credit. Occasionally, I like to assign Maple tutorials and applications (as plotting a parametrized curve) as homework.

Students tend to appreciate in me the enthusiasm, care, concern for what they learn, patience, fairness, friendliness, sense of humor. “You only need to know what you need to know, to solve the problem”, a student recollects in his evaluation as probably the best advice he has received that year.

I feel confident in instructing undergraduate courses at any level, and I would like to have the opportunity of teaching more advanced courses, as differential geometry or algebraic topology. I enjoy teaching and I look forward to the chances of being in front of students. Teaching is a vocational, rejuvenating, fun experience.