Teaching Statement

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It is hard to develop a course outline and syllabus that is tailored for the specific needs of all students in each course. Because of this, I try to integrate many different teaching methods in each course. I use homework to work out exercises, proof projects to develop proof theory in the course, computer assignments to build intuition and presentation problems to reinforce all of these.

Standard homework is the primary source for examples. I intend for it to reinforce concepts and theory developed in the class. The types of assignments change based on the course I am teaching. The lower level courses see many exercises and applications while upper level courses see almost entirely proof projects.

I find proof writing to be the cornerstone of our subject matter and should be introduced as early as possible. Students that can follow a logical argument have less trouble with complicated exercises. I realize that proof writing is not an easy task and takes time to develop, so I structure the grades so that students that are not science based majors can still be successful without full mastery of this skill. As the level of the course increases, I require independent proof writing, where as in lower level courses this will be restricted to in class activities such as group work or presentations.

The discussion sections of the Calculus classes are in a computer room, so I employ the use of Maple in some discovery activities. I use Maple as a primary tool for investigating new topics and looking at examples. This helps to create a collection of examples that can be tested when we develop our theory and show the shortcomings when we have incomplete theory. The students have a better understanding with the use of graphing and other visual aids in the coursework. The intuition that a student gains from these exercises is invaluable. As we all know, intuition is a great asset to any mathematician. I do not follow up with computers after we have developed our theory, because I have found students do not see the importance of understand the theory when a machine can do it faster than they can. It seems to reinforce the notion that mathematics is just a process to get a result and not the act of developing the process. Although computers have been a tremendous asset to mathematics, I use this tool with extreme caution.

In courses when I have time and flexibility in the schedule, I like to incorporate presentation problems in the classroom. I ask students to work out problems or proofs on the board and explain them to the rest of the class. Letting students talk through math problems at the board really adds to their understanding, but unfortunately is very time consuming. Thus, time constraints force me to limit the use of presentations more than I would like.