

Teaching Philosophy

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Mathematics is elegant, powerful, and often surprising. As a professor, I make it a priority to share these perceptions and create enthusiasm for mathematics. At the same time, it is of the utmost importance that my students master the material covered in the course. This means that students should both gain a conceptual understanding of the subject matter, as well as learn how to actually *do* the mathematics involved, whether it be evaluating integrals in a calculus class or writing proofs in a more advanced course. It is my responsibility to give students every possible opportunity to accomplish this learning.

The goal of enlightening students to the beauty of mathematics is intimately related to that of ensuring they learn the material. As every student and teacher knows, it is much easier to learn when the subject fascinates you. Conversely, the most prevalent force keeping students from enjoying mathematics is a lack of understanding of the subject. These two goals can work at cross purposes however; clear explanations can make the subject tedious, while too much enthusiasm can obscure important details. Over the years I have had the luck to learn from some extremely talented teachers and they all had one thing in common: they were able to explain concepts clearly and precisely, while at the same time engaging their students and creating excitement for the subject. It is this balance, above all else, that I strive to achieve every time I teach. The key to excellence in teaching is just this - balance. This can be applied to all aspects of teaching.

In class, I try to strike a balance between providing clear explanations and engaging the students to participate in the lesson. While it can sometimes be a struggle to get students involved, there is no better feeling as a teacher than when every topic you planned for the day comes as an answer to students' questions. I encourage students to speak up in class, even to interrupt me with questions (no hand-raising necessary). When students claim to not have questions, I interrupt my own explanations with questions for them. Not only does this discussion style of lecture keep students active (and awake) during class, but it demonstrates the dynamic and lively nature of mathematics. As for the lecture itself, I work hard to come up with explanations that are intuitive and which even non-mathematically inclined students can relate to. By illustrating "what's really going on here," and "a good way to think of this," I demonstrate that mathematics really is more than dry equations and calculation. I try to point out connections between a new concept and ones we have already learned. For example, instead of just giving the formula for the average value of a function, I start with the formula for average velocity of a function, which the students already know. From there, we get to apply the Fundamental Theorem of Calculus and the formula for average value pops out. This is by no means a proof that the formula works, but

it definitely helps students remember the formula, as well as reinforce earlier concepts (and their importance).

The explanations themselves also call for balance. While I would never make a concept intentionally difficult to understand, there are times when it is important for the students to struggle through complicated material. Sometimes it is best to simply tell the students the answer, and other times it is better investigate the problem together until we find the answer. So much of mathematics is about problem solving, and it is a mistake to not model that in the lectures. Additionally, it is of no benefit to the students to make the difficult material seem too easy - they need to see where the difficulty is so that they can practice and master it. This must be done while simultaneously holding the students' interest and not frustrating them beyond hope.

This holds true of assigned work as well. Problems for homework, quizzes, group work and exams all need, to varying extents, to strike a balance between ease and challenge. If problems are too difficult, students will give up. Too easy and they might not even try, or at the very least miss an opportunity to learn something new. I make it a point to write new quizzes and exams (when possible) each semester so I can create questions that push the students just enough.

Of course there is more to teaching than lecturing and assigning problems, and in these other areas balance is also a worthy goal. In office hours, I am always happy to help students who ask for it, but the amount I help can differ from student to student. When I see a student get frustrated, I will work through the entire problem to show how easy it can be. Other times I'll leave much of the work for the student to do alone. For the brighter student, I will even give challenge problems. The assigned work and my availability for help goes a far way in keeping students motivated throughout the semester, but some need even more encouragement. When I see a student struggling I make it a point to reach out to them and get them back on track, while still giving the student enough space to make their own decisions.

Finding the right balance in all aspects of teaching is the key to being an excellent educator. It is not always easy. The perfect balance changes from course to course, section to section, even student to student. Doing it well is something that comes with experience, and I am getting better at it all the time. It is one of the things that makes teaching such an enjoyable and fulfilling career. Not only do I get to share some of humanities most beautiful and powerful intellectual achievements with a new audience each semester, I am challenged each time to reevaluate the best way to do so. I can think of no better way to enjoy mathematics than this.

Teaching Highlights:

- Over six and a half years teaching experience at the University of Connecticut and Coastal Carolina University, teaching 31 sections of 13 different courses including:
 - Basic Algebra
 - Problem Solving
 - Trigonometry
 - Basic Concepts in Contemporary Mathematics
 - Introductory Calculus I, II, III
 - Calculus I, II
 - Discrete Mathematics for Middle School Teachers
 - Multivariable Calculus
 - Applied Linear Algebra
 - Math Proofs and Problem Solving
- Taught for a diversity enrichment summer program, 2005 and 2006.
- Supervised the Putnam Competition (including study sessions) at Coastal, 2009 and 2010.
- Experience incorporating technology (WebAssign, Mathematica, Blackboard, course websites).
- Average teaching evaluations score of 9.4 out of 10 over 5 years at UConn (complete scores and student comments available upon request).
- Contributed to UConn's undergraduate math club (2 talks and a panel discussion).
- Member of UConn department's TA Network to mentor incoming teaching assistants.
- Presented at both department and university wide TA training (UConn).
- Received Louis J. DeLuca Memorial Award for Outstanding Teaching Assistant, 2007.
- Received University of Connecticut Outstanding Graduate Teaching Award, 2009.