

## TEACHING PHILOSOPHY STATEMENT

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Mathematics is often considered a very abstract science that has nothing to do with real life problems and goals. I do not agree with this assessment. As a teacher it is my goal to change that opinion. Mathematical objects come into existence not because it is a fun way to spend the time for some scientists; there is always a reason. One of the key aspects of teaching in my opinion is to convey not only theorems and formulas but also the ideas behind mathematical statements.

In the course of my study at Brown University I taught several lectures in one undergraduate and one graduate class, and held sections for these courses. The class that set a high standard of teaching for me was “Modeling the World with Mathematics” taught by my advisor, David Mumford. It is a mathematics course offered to students not majoring in mathematics. After I had looked at the syllabus I was very skeptical about the class: it included topics such as differentiation, integration, Fourier series and solving heat equation. And this is all for students who did not have an extensive mathematical training! But after attending couple of classes I realized that there is always a way to explain ideas without involving complicated formulas and long theorem statements. One can always show the intuition and the setup, sometimes involving the history of the creation of the concept, computer simulations, visual aids, handouts, and much more. And it does not only apply to undergraduates taking a class, but also to graduate students taking topics courses in their field of research. Having my advisors example in mind I always strive to approach teaching by looking at what students know, what needs to be explained and by building a bridge that would connect those two points – where the students are, and where they need to go.

While at Brown University I had an amazing opportunity to improve my teaching. I was a tutor for three and a half years at the Mathematical Resource Center (MRC). This is the place where undergraduates come for help with their homework on a range of topics from Intro Calculus to ODEs and Abstract Algebra. I have been helping students with different math experiences. Some of them had trouble differentiating polynomials, some had questions beyond the scope of the course – they wanted to learn more about the subject. I was able to find individual approaches not only to different questions they might had, but also to different students with various degrees of math background and different learning styles. It was very rewarding to see students coming to the MRC and choosing me in particular to help them with their problems. I was very happy to see how they performed in midterm and final exams, feeling that I helped someone not necessarily to choose math as their major, but to make their experience in mathematics positive and learn something in the class.

Another way that helped me in my professional development was participation in the Sheridan Center for Teaching and Learning in Higher Education offered at

Brown University. The Sheridan Center is an organization at Brown University devoted to the improvement of the quality of teaching. After completing the Sheridan Center Program I was able to conduct individual teaching consultations. They consisted of a one hour section being videotaped and then I, with another consultant, met with the observee and we would review her/his performance and give recommendations on improvement of ones teaching skills. That gave me great insight on different styles of teaching since I was able to attend a lot of diverse sections, lectures, labs, and workshops observing instructors from Brown University and the Rhode Island School of Design. That was an invaluable experience to participate in this program, it made me aware of the challenge that is teaching.

One of the ideas that I have learned at the Sheridan Center and which I constantly try to implement is that it is important to engage students in discussion, ask questions about what they do not understand, make them feel comfortable with the instructor, so they would not be afraid of sounding unintelligent. I think it is vital to have a certain atmosphere in the classroom to allow that kind of interaction between students and an instructor. One method I sometimes use to increase interaction is to ask very easy, simple questions while I present something at the board, and interleave it with some harder ones. The other major component of successful teaching is to look for feedback: are students following, are students falling asleep, do they look lost or bored because I am presenting the material too slow or too fast?

I am looking forward to gaining more experience and improving my teaching practices. While teaching, the instructor does not only learn a topic he teaches from a different point of view, but also improves her/his teaching style, constantly drawing lessons for oneself after giving a lesson.

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