

Teaching Statement

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The driving force behind my teaching is a desire to share the richness of mathematics by helping students understand the deep connections that run through all fields of mathematics, and developing the inquisitive nature that necessary in studying math. My goal is that students, in addition to acquiring competency in a specific course, feel more confident in their future mathematical encounters whether it be in future courses, in their careers, or simply those instances where mathematics appears unexpectedly throughout our lives. The most rewarding moments of teaching come when a student exclaims “oh, I get it.” They have not only grasped a key concept, but in that moment of clarity seen something beautiful.

The most effective way to learn mathematics is to be part of a learning community. Facilitation of such a community is one of my goals as an instructor, making sure students feel comfortable asking questions during and outside of lectures. At the beginning of each semester I emphasize that our classroom is an inclusive space and read aloud the University’s Non-Discrimination Policy as well as a Trans-Inclusive Statement, both of which are placed in the course syllabus in a first step to making sure students of various backgrounds feel seen and acknowledged. When presenting problems for students to practice during class I use this important time to traverse the room and engage directly with individuals and small groups of students. Particularly, I encourage collaborative group work during and outside of class to ensure that all are involved in the learning process.

For every student that asks a question aloud there are several more who also have the same question whether they know it or not, so every question that goes unheard is a small tragedy. Every class I teach I set up and moderate a forum used for course and homework discussion, students will respond to each other, bringing in and sharing their own perspectives on the material. To provide space for all questions that would go unasked, during each lecture I collect index cards that serve two purposes: Firstly, I ask everyone to answer a lighthearted prompt or poll and report the results of the class-wide icebreaker in the next class to foster a sense of community. Secondly, and most importantly, these cards are used to ask me questions a student may not feel comfortable voicing aloud during class. This provides an immediate outlet that removes barriers to important questions, and the voicing of personal concerns. In course evaluations several students responded that this tool made the class more interesting and fun.

Math at its core is about problem solving and I strive to make sure that the students acquire problem solving skills from class. When presenting problems to the class I approach the problem as if I were seeing it for the first time, making sure to be deliberate in voicing questions that the problem raises, showing them that a solution to one question is often ob-

tained after answering smaller, unasked questions. When presented with an overly contrived “real-life example” I do not hide the fact that the problem is not very realistic, but I ask the students to think critically about what assumptions are being made and what changes they would make. For example, students are quick to point out there is a problem with a model that predicts population growth when our initial population is a single fish. This leads to a natural and student-led lead into an exploration of more complicated models. Additionally I always provide time during lecture for students to tackle problems in groups. If there is room I will have students work on the board in groups, in a hybrid calculus course I taught, requiring board work made the students much more likely to interact and discuss.

At NC State I have filled the role of recitation leader several times, and have been instructor of record for four classes, one of which was a flipped/hybrid style class, and the most recent of which was asynchronous and completely online. I have interacted with class sizes with as few as 20 students and was recognized in NC State’s Thank a Teacher Program by a student in a class of 200 students. From these positions I have been able to advise students who were interested in pursuing math further, of these one was a non-traditional undergraduate student who is currently in a PhD program.

I have served as a committee member for the NC State Math department’s GIST (Graduate Instructor Support & Tools) program which helps to organize resources and workshops for graduate instructors who may be teaching for the very first time, or might want to improve their teaching. As part of GIST I helped facilitate teaching observations where instructors could agree to have interested graduate students sit in on their class, take notes on their teaching, and have a discussion about their teaching style, preferences, and experience afterward. I have also participated as mentor in the NC State’s math department program Undergrads Union Grads which partners undergraduate math majors with graduate mentors who provide guidance and advice while they are working towards their degree. I have helped undergraduates pick their courses for the following semester, brought to their attention summer opportunities in math, and I’ve been able to provide advice and help to a student switching their math major to an education major.

Additionally, in continuing to develop my teaching techniques I have participated in teaching workshops and am working towards completing the Teaching and Communication Certificate offered by NC State, a certificate program that requires 100 hours of approved activities and the development of a professional portfolio.

I have experience mentoring undergraduates from co-leading a remote summer REU (Research Experiences for Undergrads) on geometrical methods in computer vision with my PhD advisor Irina Kogan. I supervised a group of four undergraduates and providing conversational mini-lessons, research guidance, and advice for applying to graduate schools. Currently we are in the process of organizing our results in a paper with the intention of submitting it to an undergraduate journal.

While my class evaluations scored below the department mean in the first class I taught (I scored 3.6 in the “overall excellent course” category with an 87% response rate compared to a department mean of 4.1), I was able to incorporate the feedback in the second class I instructed and as a result scored well above the department mean (a score of 4.6 with

an 82% response rate compared to a department mean of 4.0). Students have consistently noted my enthusiasm in the classroom, the high level of respect I treat students with, and my reception to questions in and out of the classroom. I have since incorporated midterm course evaluations in classes so that I can respond to issues students may be having and make changes to aspects of the class that are not working well for students.

Non-University teaching experience has included teaching a 3-week course with over 100 hours of class time called "Paradoxes and Infinities" through the Johns Hopkins Center for Talented Youth program. While there were suggested topics there were no pre-designed lesson plans and I had complete freedom in developing the curriculum for the class. I taught foundations of set theory through the physical explorations of shapes made of construction paper and used readings ranging from Lewis Carroll to Jorge Borges to illustrate and introduce topics before approaching them mathematically.

Through my diverse teaching history I have had the opportunity to explore a varied range of teaching and am interested in using my experience to design interesting courses that could serve as a gateway for undergraduate research.