TEACHING STATEMENT

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As a mathematician, I believe that teaching, communicating, and sharing knowledge are some of my most important responsibilities, and, personally, I find them to be some of the most enjoyable and rewarding parts of my work. My commitment to teaching in particular is demonstrated by my extensive teaching record in graduate school: I served as a Graduate Student Instructor (GSI) in eight of the past ten semesters and three of the past five summer sessions, in the capacity of both a teaching assistant and an instructor, and I have also been active in mentoring undergraduates. I was honored to receive an Outstanding Graduate Student Instructor Award for 2011-2012 from the UC Berkeley Graduate Division.

Experience. Berkeley Math GSIs usually work as teaching assistants, and I have been a TA for many of the core math courses. However, I also have significant experience instructing my own classes, which I have done six times, covering three distinct courses. GSIs have the opportunity to work as instructors in the summer sessions, including for upper-division courses. In the summers, I taught Linear Algebra & Differential Equations two times and Abstract Algebra once. The Mathematics Department also appoints one GSI each semester to be the instructor for Precalculus. I sought out this role early on in graduate school and served in it three times.

Teaching Precalculus was challenging but also very rewarding. Precalculus is the most basic math course offered at Berkeley, and the students have extremely diverse backgrounds and levels of mathematical preparation. It was a constant balancing act to avoid leaving behind those students who had trouble adding fractions, while also stimulating those who had already taken AP Calculus in high school. This was not made easier by the size of the class: In Fall ’13 I was lecturing to a room of 223 students and overseeing a staff of five GSIs. I learned at least as much as the students did from my time in Precalculus: about the organization and meticulous planning involved in running a large-scale course, and about the empathy needed to connect with the students who struggle most with math. It has been a true joy to watch some of those same Precalculus students go on to major in math and the sciences.

I have very much enjoyed mentoring undergraduates, both in official and unofficial capacities, and I plan to continue taking an active role in mentoring in the future. Many of my former students reach out to me for advice about math courses, internships and research programs, and grad school. In Fall ’14, as part of Berkeley’s Directed Reading Program, I worked with a former student, Derric Chien, who had developed an interested in logic. Over the course of the semester, we read two seminal papers in model theory. The following semester, I continued meeting regularly with Derric as he developed a senior thesis related to the material we had read together. Derric is now PhD student studying model theory at Notre Dame.

Philosophy. The key feature that I strive for in the classroom is clarity. This involves not just preparing well-organized lectures and carefully choosing illuminating examples, but also having the imagination to put myself in the shoes of a student who is encountering the ideas for the first time. I feel it is extremely important to foster a positive, inclusive environment in the classroom. Every student should know that I want them to succeed and should feel comfortable engaging fully in class. I give my lectures with cheerful enthusiasm, I pause frequently to solicit questions, and I make sure to take every question seriously.

I also believe that a lot of important learning happens outside the classroom. My first teaching experiences were as an undergraduate TA for computer science courses at Brown University. The primary component of that job was working one-on-one with students in office hours, and I continue to love holding office hours. Office hours are an environment in which I can give students personalized attention and really engage in dialogue about the material. For many students, this sort of interaction increases their depth of learning dramatically. In addition to encouraging my students to come to office hours, I stress to them the importance of homework and readings. For many students, inexperience reading mathematics, even at the level of a calculus textbook, is a real barrier, and I make sure to discuss reading strategies at the beginning of the course. As a teacher, it is my responsibility to supplement lectures and readings with well-crafted homework assignments that bolster understanding instead of wearing students out, and I put a lot of thought into the problems I assign.
Already in graduate school, I feel that I have become a very effective teacher. This is partially reflected in my teaching evaluations, which I have summarized below. I look forward to new educational experiences in the future, and I hope to grow further as a teacher throughout my career as a mathematician.

**Teaching Evaluations.** The standard course evaluation form at Berkeley asks students to answer two questions numerically on a scale of 1 to 7: “How would you rate the overall effectiveness of this instructor?” and “How would you rate the overall effectiveness of this course?” Over the many sections and courses I have taught at Berkeley, my average score for the first question is 6.32 out of 7, and my average score for the second question is 6.25 out of 7. If we restrict attention to the summer session courses for which I was the sole instructor, these averages are higher: 6.57 and 6.37, respectively.

In addition to giving numerical scores, students are encouraged to write comments on the strengths and weaknesses of the instructor and the course. Here is a selection of excerpts from my evaluations:

- "Alex is one of the best math teachers I've had. He comes prepared with lessons, practice problems, and worksheets, but is willing to adapt the class to what we ask for. He is not only totally willing to answer your questions (so I always feel comfortable asking anything) but is really good at understanding your question and explaining it. He's extremely useful, available, eager, and helpful."
- "Always prepared, and yet always able to improvise too."
- "He explains things clearly and will explain it in a hundred different ways if you need it."
- "Alex is a very enthusiastic helpful GSI! I don't think he has ever been unable (or unwilling) to answer a student's question. He isn't patronizing and in class he's amusing and helpful."
- "This guy is at the top of his game."
- "Despite an odd last name, bright colored shoes, and unique woven sweaters, Alex has been, by far, the best GSI I have had for math. He has done a fantastic job of explaining difficult concepts, and controls the flow of discussion like a smooth orchestra."
- "Helped me love math again."
- "Makes us think of math in new ways and explained a lot of the fundamentals, so that I finally understood why I use the formulas from high school."
- "He cares so much about his students that he puts in all the effort to help each one of us to improve."
- "Alex is incredibly organized and structured when it comes to lecturing. His homework assignments, while challenging, are excellent preparation for the midterms and finals as they really force one to completely understand the main concepts of linear algebra and differential equations. Furthermore, he is very understanding and willing to work with students if they are having any difficulties with the material."
- "He also had a way of answering questions so that no matter how dumb they were he still had a good answer to it and didn't make you feel like you were asking pointless things like I sometimes do."
- "I wish I needed to take more math to graduate just so I could have Alex as a GSI again!"
- "Alex is very organized, caring, understanding, personable, and is a great lecturer. I don't think I would want anything else in an instructor, and I think he did a great job as one."
- "To be honest, I could not say enough wonderful things about Alex. He is my favorite GSI by far and a truly great teacher."
- "One of the most natural teachers I've encountered...I've taken 1A, 1B, 55, 53, 54 at Berkeley, Alex is far and away the most effective GSI I have encountered."
- "Alex is always prepared and his lectures focus on conceptual understanding...Best math teacher I have ever had."