EXPERIENCES WITH TEACHING, MENTORSHIP, AND LEADERSHIP

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All of my teaching ability comes from the many amazing teachers and mentors I have been privileged to learn from as a student. I believe it is important to be flexible with my teaching style depending on what resonates best with my students, and I have seen brilliant examples of a wide range of styles used extremely effectively. The one throughline that connects every effective teacher, though, is an infectious enthusiasm — one that I also share. I get excited by all areas of mathematics, and I love showing students the hidden connections between what they are learning and what they already know. This builds their mathematical understanding on a solid foundation, which helps convince them that they can indeed learn this new thing, however inaccessible it may seem at first.

While I am obviously still honing my skills, I am fortunate to have been presented with many wonderful opportunities to grow as a teacher and mentor in my nine years in a university setting. Even as a graduate student, I have experience with everything required to instruct a full course, mentor students, and serve as a leader in the department. Below I briefly discuss the most impactful of my experiences, what I have learned from each, and how they have prepared me for the relevant facets of the job as an academic.

Teaching

Teaching Assistant. In my final two years as an undergraduate (2019–2021) and all five years as a graduate student (2021–2026), I have worked as a TA in the math department teaching both lower-division (e.g., calculus, linear algebra) and upper-division (e.g., probability, optimization) courses. I have learned how to get students engaged in small groups, give helpful feedback, create a more casual atmosphere in discussion, and identify the root of students' confusion in office hours. The wide range of courses I have TA'd has given me practice engaging with students in many different ways. Discussions in most lower-division courses are structured around students working on practice worksheets in small groups, which has taught me to ask better leading questions when students are stuck. Upper-division discussions are more flexible, and most students seem to prefer a mix of conceptual review and practice exercises. This has allowed me to develop my own lecture style while still giving students a chance to get their hands dirty with example problems. I consistently receive high praise from my students with more than 95% agreeing with the statement "I would recommend this TA"; detailed student evaluations and comments are available on my website, but here are two of my favorites:

- "Nick was an incredibly supportive and patient Instructional Assistant, and his dedication to helping students succeed made a huge difference in my learning experience. His ability to break down complex concepts, answer questions thoroughly, and take his time with each problem created a welcoming and encouraging environment. I always felt comfortable asking for clarification, knowing that he genuinely wanted us to understand the material. His enthusiasm and willingness to adapt his explanations to fit different learning styles made the course much more manageable. I truly appreciate his efforts, and I'm grateful for the positive impact he had on my learning this quarter."

- "Nick's discussion sections and office hours are super engaging. He explains the course concepts in an easily digestible way and answers our questions with just the right amount of complexity. I really appreciate the effort he puts into helping us learn!"

On the basis of my evaluations from both my students and instructors, I was selected to be a Lead TA after just one year of teaching at UCSD.

Lead Teaching Assistant. For two years (2022–2024), I was selected to be a Lead TA for various lower-division courses (e.g., calculus, linear algebra) that were taught in extremely large lectures of over 1000 students. As a Lead TA, my responsibilities were to plan and write worksheets for discussions for the entire course each week, coordinate and proctor exams, communicate course expectations to all course TAs, and otherwise assist the instructor with any miscellaneous administrative work (e.g., granting homework extensions). During this time, my ability to foster an active learning environment improved dramatically. I learned how to structure discussion sections to make them naturally engaging, and in particular the importance of writing practice exercises that students will *want* to discuss with their classmates (e.g., coming up with interesting counterexamples for statements that "sound" true at first). I quickly discovered just how difficult it is to design an engaging, comprehensive, and insightful worksheet, but I really enjoyed having dedicated time to hone this skill. That skill and practice has also allowed me to contribute high-quality problems for exams, both as a Lead TA and more recently for upper-division courses. The two years as a Lead TA also taught me more about *executing* a course than all of my other experience combined. While I have never lectured a course myself, I have done everything else involved in running a successful course, and I learned a lot about the value of establishing clear expectations and flexible policies that allow each student to succeed without requiring herculean efforts from the course staff. In my time since, I have often been asked by my course instructors about the best way to handle various aspects of course logistics, and they rely on my experiences as a Lead TA to know what works well.

Mentorship

I have had the chance to work closely with and mentor two students during my time at UCSD: Jun Linwu, an undergraduate (at the time) with whom I collaborated to build a Python LOT library and showcase it in a paper, and Sophia Wang, a graduate student whom I mentored as she was getting started in our research group. I enjoyed taking on a new kind of teaching role through this mentorship, and I discovered how different it is from my other teaching roles. In my years as a TA, I have gotten better at identifying students' different learning styles, so I was surprised by how much more subtle this is when working with someone much more closely. It took me some time to understand how to give each of them helpful feedback and guidance, but as I got to know each of them and their working styles better, we developed a lovely working relationship. I am excited for more opportunities like this to develop as a mentor in my role as a postdoc.

Leadership

In addition to my leadership role as a Lead TA, I have served on the executive board of UCSD's Mathematics Graduate Student Council for three years (2023–2026). In my two years as Chair of the organization (2024–2026), I have been responsible for overseeing all of our activities, such as our mentorship program, social events, and yearly survey. I also sit on the math department's graduate affairs committee, advising and providing feedback to departmental faculty and staff on all aspects of the graduate program. For example, in 2023, we spearheaded an effort to illuminate ways in which our program's qualifying exam system was outdated, and this resulted in substantial updates to the requirements for new students moving forward. Through this process, I learned how to listen to feedback and balance different desires while still making progress, a skill which I imagine will serve me well as I take on more service responsibility in a department.