Any successful mathematical life consists of both teaching and research. From as early as high school, I have enjoyed presenting and conveying mathematics to other people in the simplest, most transparent way. I believe that teaching is not only about delivering instructions. It should, through a conscious attempt, lead students to productive learning and self-education. I have made my attempts toward such goals since my very first class, which always resulted in excellent teaching evaluations.
My math teaching experiences include:

1. Being a teaching assistant (TA) or course assistant (CA) in and outside Stanford University.
2. Mentoring first-time Stanford math TAs to help improve their teaching skills.
3. Instructing high school students in Olympiad mathematics.

Teaching Assistant (TA) and Courst Assistant (CA)

I have been a TA for the following classes in and outside Stanford University:

- Linear Algebra and Differential Calculus of Several Variables (Math 51) in Stanford.
- Calculus (Math 42) ACE (Additional Calculus for Engineers) in Stanford.
- Minimal Surfaces: Old and New, as part of Summer School on Geometric Analysis in Fields Institute for Research in Mathematical Sciences.

As a math TA in Stanford, I lead two sections (each with 20-30 students) that complement lectures and enforce students' understanding by presenting pratice problems. We also hold office hours and grade exams. Only the best TAs are selected to lead an ACE section in Stanford. The ACE program is to enhance diversity among engineering students, who are more devoted and demanding. Compared to a normal section, an ACE section contains fewer students (less than 10) but takes twice the time. We focus on more solid understanding and applications of the theory. As a TA for the Summer School on Geometric Analysis in Fields Institute, I help graduate students in different areas of mathematics solve practice problems in the most advanced minimal surface theory and related topics.
Course assistants (CA) hold office hours and grade homework and exams. I have also been a CA for courses at Stanford:

- Math 113, Linear Algebra and Matrix Theory.
- Math 20, Integral Calculus.
- Math 172, Lebesgue Integration and Fourier Analysis.
- Math 114, Applied Matrix Theory.
- Ph.D. qualifying exam preparation in Algebra.

My teaching style was formed over years of conscious effort and may be highlighted by the following features.

1. I believe that the core of teaching is caring. This is not only about memorizing students' names or holding office hours at a convenient time. A good teacher should know every student's strength and weakness in their study and guide each of them in a unique way. To that end, I have always tried to be accessible and I always reach out to students for their specific needs.

   > *"I cannot say enough good things about Chao, both in terms of teaching and personality. He was the highlight of this course– always professional, approachable, and clear. I could not have made it through the course without his time, his reassurance, and his willingness to help."*

2. I emphasize the conceptual interlink between different materials throughout the course. In addition to effective illustration by diagrams and pictures, I always carefully select examples and practice problems that best contextualize such connections. This provides intuition behind each concept and gives students a broader view of mathematics.

   > *"Although the course itself does not follow a linear narrative arc, Chao really helped connect a lot of those dots across different concepts (or even different classes!). This really helped make the material we were learning a lot more interesting and meaningful for me, besides also helping elucidate key concepts."*

3. I value the simplicity and systematicity of presentation. Clear presentations require deep understanding of the material, and conscise ways of showing them. Towards this goal, I always consciously prepare my wording and writing of a lecture, making them clearly approachable and notable.

   > *"Chao's methodology to solving problems was always very clear and systematic. The work was easy to understand and the writing was the most legible of all TAs/professors (I've tried a majority of them)."*

4. I keep my sections organized and prepared. An experienced teacher is able to control the classroom- to distribute the limited time of a lecture masterly into concept clarification, problem solving, group work, question discussion, etc. I am able to organize my class neatly and efficiently, and keep my lecture concentrated on the most essential materials.

   > *"Chao was extremely adept at leading section. He knew when a discussion was going off track and how to bring it back to the topic at hand. Once again, he did a great job of answering questions in a manner that not only provided a complete answer, but also made the content easier to understand."*

TA mentor

TA mentors in Stanford help first-time TAs lead sections more effectively. Only a handful of experienced TAs are selected to be mentors. As a TA mentor, I attend my mentees' lectures and provide them my observations of the instructor and the audience. We then discuss possible improvement based on the mentees' teaching style. I have been selected as a TA mentor since my third year, and have seen significant improvement of my mentees' teaching quality.

Math Olympiads Instruction

From high school I have been involved in math Olympiads. I have done several part-time jobs lecturing on math Olympiads. In contrast to regular teaching, working with math Olympiad students is more of a communication of ideas and techniques. Thus it requires a much deeper understanding of the material and significantly more preparation. Among my students there are IMO medalists and Ph.D. students in math.