

Teaching Statement

Siddharth Chandak

Ph.D. Candidate, Electrical Engineering, Stanford University

My interest in teaching has been a central part of my academic path. Throughout my undergraduate and doctoral studies, I actively sought opportunities to serve as a Teaching Assistant (TA), supporting courses ranging from introductory *Calculus* to advanced topics such as *Game Theory* and *Linear Dynamical Systems*. These efforts led to my appointment as the head TA for *Information Science and Engineering*, a course taken by approximately 300 undergraduate students at Stanford University every year. For my contributions to the course, I received Stanford's **Centennial Teaching Assistant Award**, and I will serve as its instructor for the course in the coming winter quarter. Experiences with both introductory and advanced courses have given me insight into how students at different stages learn and how to tailor instruction to support them effectively. Across these roles, regardless of the scope or focus of the course, my principle has been to continually refine my teaching and course design through regular student feedback.

Head TA and Instructor for *Information Science and Engineering*: The course introduces undergraduate students at Stanford to the fundamentals behind modern information and communication systems, including concepts such as compression, error correction, and frequency-domain representation of signals. I served as the head TA for this course in Spring 2024 and 2025. In addition to managing the logistical challenges that arise in a class of this size, my primary focus was revamping the weekly coding assignments and quizzes based on the feedback from previous years. I identified the difficulties students commonly encountered and worked with the TA team to address them. Another major change I implemented was inviting the TA team to share regular feedback on student progress through weekly meetings. These efforts together led to a notable reduction in negative feedback about the assignments.

I am currently preparing for the winter quarter, when I will serve as the instructor for the course. I am redesigning the lectures to include more visualizations and practical examples, and to strengthen the connection between the lecture material and the coding assignments. Through these efforts, I hope that students will develop a better intuition for the theory and algorithms that underlie these systems.

Course Design: Beyond teaching, I am also interested in understanding how courses can be designed more effectively. One of my earliest projects, conducted with Prof. Manjunath, involved a detailed survey of students and faculty at IIT Bombay. The survey examined factors influencing student experience, including mode of instruction, evaluation structure, and feedback practices. Based on the results, we identified the differing perspectives of students and teachers and proposed changes to improve the overall experience.

Mentorship: I have been fortunate to have exceptional mentors throughout my academic path, which has made me appreciate how central mentorship is to our profession. I have carried this forward by mentoring an undergraduate student currently at IISc Bangalore. I helped identify suitable research problems aligned with his interest in optimization and reinforcement learning. Our work has led to a submission to IEEE ICC 2026, and we are preparing a manuscript for the SIAM Journal on Control and Optimization.

Plans for Teaching: I am interested in teaching a broad range of courses, including probability at various levels, communication systems, optimization, online learning, and game theory. I also wish to introduce a course on stochastic approximation that presents both the foundational theory, and its use as a tool for analyzing and designing iterative algorithms. In addition, I am interested in curriculum design for the era of Large Language Models (LLMs), and in developing approaches that ensure students continue to engage deeply with the material, while also incorporating LLMs as tools to support learning.