Introduction

My journey as an educator began in my sophomore year of undergraduate studies when I worked as a mathematics tutor. This role provided me with valuable one-on-one interaction with students, allowing me to help them overcome specific academic challenges. It also enhanced my ability to connect with students individually, allowing me to recognize and adapt to their unique learning styles. Since then, I have served as a teaching assistant at Cornell for five semesters across four different Electrical and Computer Engineering (ECE) courses ranging from sophomore-level to graduate-level classes. In my most recent teaching assignment in 2024, I taught a graduate-level digital communications course, handling one-third of lecture sessions. These experiences have cemented my enthusiasm for a future in academia where my passion for teaching can thrive, alongside my research efforts. I am particularly interested in teaching signal processing, digital communications, probability and random processes, classical and quantum information theory, optimal transport theory, statistical inference, and Bayesian estimation.

Teaching Philosophy

At the heart of my teaching approach is the belief that new knowledge is most effectively assimilated when presented as a natural extension of existing knowledge. I strive to demonstrate how concepts build on prior ideas and help students recognize patterns and make connections across different topics. This interconnected approach is especially useful in engineering, where a few core concepts arise several times in different guises. I also believe that a thorough treatment of these core concepts is preferable to a swift one that leaves time to discuss exotic variations. A student who has mastered the core ideas is well-equipped for practice or research and can learn the variations at a later time. Most students find it difficult, however, to deepen their understanding of core ideas on their own.

To make complex topics accessible, I often rely on transitions between high-level explanations and technical details. Often, technical lemmas and formulas can be hard to parse, so I have found it crucial to help students intuitively understand the qualitative behavior underlying the mathematical formalism. This approach builds students' comprehension, empowering them to tackle complex problems with a deeper insight.

In the core and foundational ECE courses that I have taught, I have used them as an opportunity to foster a broader intellectual curiosity and prepare students to navigate the various subfields within ECE, especially when they are undecided on their focus area. I do not hesitate in connecting course material to advanced topics where appropriate, foreshadowing material from future courses without overwhelming students. I embrace the philosophy that true mastery of a subject involves the ability to simplify complex ideas—"If you can't explain it simply, you don't understand it well enough." With this approach, I help the students take ownership of their learning, exploring details beyond the scope of the course. This is crucial since many students have difficulty seeing past the details of the subject on their own. Only when the instructor stimulates curiosity and helps the students see the broader relevance of their studies will these students develop a deep understanding of it, remember it, and be able to apply it in new contexts.

Preparation is another cornerstone of my teaching philosophy. I carefully structure each lecture to ensure a logical flow of ideas, ensuring that each concept seamlessly leads into the next. This reduces the cognitive load on students by minimizing interruptions in the flow of thought. I simulate the mindset of a novice learner by anticipating prerequisite knowledge. This attention to coherence and clarity makes learning smoother and more engaging for students.

Enthusiasm is another key element of effective teaching. My experience has shown that students are as enthusiastic about learning as their instructor is about teaching. As an instructor, I strive to create an environment where learning feels like a shared journey rather than a one-sided transmission of knowledge. When presenting a topic, I often adopt the perspective of someone encountering it for the first time, deliberately modeling curiosity, moments of reflection, and exploring initial (sometimes flawed) approaches to solving a problem. Demonstrating how to address the shortcomings of initial attempts and ultimately arrive at the correct solution helps simulate the authentic thought process of tackling a problem for the first time. This approach allows students to see learning as a dynamic and exploratory process. I invite students to engage actively, positioning us as co-explorers navigating the subject together. This collaborative atmosphere fosters a sense of intellectual partnership, where questions, insights, and challenges are welcomed as integral to the learning process. At the same time, I recognize the importance of balancing this collaborative dynamic with the intellectual authority of the instructor. Establishing this balance reassures students that they are learning from a knowledgeable guide, while maintaining an open, exploratory atmosphere encourages active engagement.

Looking ahead, I am excited to bring my commitment to an academic role, where I can continue to grow as a teacher and mentor, contributing to the intellectual and professional growth of the next generation of engineers.