My *teaching philosophy* centers on the ability to ask meaningful questions, which I believe is the most valuable skill a student can develop. I encourage students to embrace the scientific method: formulating hypotheses, identifying the information needed to evaluate them, and determining whether the answer already exists in the literature. When it does not, I guide them in identifying the data, methods, and analytical tools to investigate the problem, so that they become independent in searching for, validating, and applying new knowledge. I have put this philosophy into practice as the *instructor of record* for Renewable Energy Systems (ES 105) at the University of California, Santa Barbara (UCSB), a course with 123 students, as a *teaching assistant* for 5 courses, and as a *mentor* to one postdoctoral fellow, 3 graduate students, and 5 undergraduate students.

Teaching Experience

During my postdoctoral appointment at UCSB, I served as the instructor of record for *ES 105 Renewable Energy Systems* in Spring 2024. This senior-level course, offered through the Environmental Studies Program and cross-listed for engineering students, enrolled 123 students. I coordinated two teaching assistants who supported grading and led discussion sections. The course introduced students to renewable energy technologies, system efficiency, resource assessment, and the economic and environmental tradeoffs of low-carbon electricity systems. I incorporated current events and emerging developments in energy systems, such as extreme weather impacts on the grid, to connect academic concepts to real-world challenges, and I regularly collected student feedback to refine the course materials. Student evaluations consistently highlighted both the accessibility of the course and the value of connecting technical concepts to contemporary energy challenges, with ratings above 4.5/5 in areas such as advancing understanding, fairness, and creating a positive learning environment.

As part of the *GridPath-India* project, I designed the models and instructional materials for hands-on training workshops in three Indian states: Rajasthan, Madhya Pradesh, and Tamil Nadu. The workshops taught local analysts and planners to use this open-source power system planning platform in their own institutions. Designing for participants with widely varying technical backgrounds sharpened my ability to scaffold material so that everyone could leave with something usable, regardless of their starting point. I also built an illustrative laptop-scale Jupyter notebook that runs reduced state-level GridPath models with an open-source solver, so that participants could work with a realistic planning model on their own hardware rather than on a cluster.

At the University of New Mexico (UNM), where I earned my PhD in the Department of Electrical and Computer Engineering (ECE), I served as a teaching assistant for multiple undergraduate courses: *ECE 203 & 213 Circuit Analysis I & II*, *ENG 302 Fundamentals of Engineering: Electronic Circuits*, *ECE 314 Signals and Systems*, and *ECE 331 Data Structures and Algorithms*. I also guest lectured on unsupervised dimensionality reduction methods in *ECE 417 Advanced Machine Learning* for Prof. Martínez-Ramón. Through these experiences, I fostered a collaborative learning environment where students felt comfortable engaging with complex technical material, asking questions, and building confidence in their problem-solving abilities.

Course Design and Assessment

I aim to design courses that encourage multiple forms of student engagement by integrating lecture-based instruction, hands-on activities, and project-based learning. When teaching foundational material, I use an incremental learning approach, with regular low-stakes quizzes and in-class exercises that help students retain concepts, reduce the pressure associated with high-stakes exams, and reward attendance, participation, and engagement with the course material in both synchronous and asynchronous formats. For open-ended problems that benefit from multiple interpretations, I incorporate collaborative, project-based assignments that begin with students formulating the question before they answer it. These projects develop technical problem-solving skills, experience with shared workflows and version-control tools (*Google Docs*, *GitHub*), and the ability to communicate technical ideas clearly. While I set clear expectations and grading rubrics from the first day, I deliberately incorporate multiple forms of assessment so students with different strengths can demonstrate their understanding. This reflects my commitment to teaching and designing courses where students of different backgrounds and preparation levels can all succeed.

I also address the growing role of artificial intelligence (AI) in students' learning environments. I frame AI as

a resource that can support brainstorming, coding, and improving clarity in writing, while emphasizing that it should not replace students' own reasoning, originality, or responsibility for their work. I teach students to use AI critically by cross-checking claims against academic literature and technical documentation, verifying citations and data sources, testing for robustness in computational outputs, and being transparent about when and how they used AI. In my teaching, I use AI to refine course design and generate alternative explanations, modeling its use as a *supportive tool* rather than a substitute for understanding.

Mentoring

As a first-generation college student, I understand the uncertainty that can accompany navigating unfamiliar academic systems. Over the past several years, I have mentored first-generation students through the *EUREKA! Program* at UCSB, helping students identify research opportunities, internships, and professional pathways aligned with their interests and goals. I enjoy sharing my research, collaborating with students on projects, and supporting the development of the technical and professional skills they need to pursue their interests after graduation.

When I mentor graduate students advised by Prof. Deshmukh at CETlab, my goal is to help them develop clear research questions and communicate their ideas effectively, particularly in preparation for colloquia, oral exams, and dissertation defenses. At the same time, I aim to build their confidence and highlight their achievements to help counter feelings of impostor syndrome. I also trained a postdoctoral scholar to use *GridPath-India*. He went on to lead a resource adequacy study, now in the final stages of preparation. This progression from guided onboarding to research independence reflects how I hope to develop members of my own group. I view students' growing confidence, research independence, and achievement of professional goals as key indicators of growth. Additionally, I regularly organize informal lunches and group activities to foster community and peer support among graduate students in the lab.

During the internships I supervise, I encourage students to complete a small research project that helps them develop new skills, typically in data acquisition, programming, data analysis, or visualization. I define a project within their reach but beyond their comfort zone, starting by discussing students' backgrounds, interests, and prior experience. For example, I mentored a student who created a Python workflow to process time series data from 311 wind sites and 566 solar sites, enabling the identification of seasonal and spatial patterns and the quantification of uncertainties. The student presented these results at the *SACNAS National Diversity in STEM Conference*. In another project, a student designed and built a circuit board to process solar radiation measurements, using a USB connection to power the device and transmit data to a computer. These projects strengthened students' technical skills and helped them learn to structure open-ended problems, identify relevant information, iterate on their ideas, and communicate their findings clearly.

Future Teaching

My teaching interests are interdisciplinary, focusing on power systems, optimization, machine learning, and data analysis. My graduate training in electrical engineering, computer science, probability and statistics, and environmental science has prepared me to teach across disciplines and connect technical concepts to broader societal and environmental challenges. I am ready to teach core undergraduate courses in electrical engineering, including circuits, signals and systems, power systems, and programming. I would also contribute to the electric power engineering curriculum at both the undergraduate and graduate levels, where my ES 105 experience with renewable energy technologies, resource assessment, and the economic and environmental tradeoffs of low-carbon systems transfers directly. I am particularly enthusiastic about teaching introductory courses, where I can motivate and mentor students early in their academic journey. I also look forward to developing a new graduate course, *Low-Carbon Power Systems Planning and Operations*, that covers probabilistic forecasting, stochastic optimization, and decision-making under uncertainty in modern electricity grids and connects my research directly to the curriculum.