Teaching Philosophy Statement

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My teaching philosophy is rooted in the kind of educator I once searched for. Growing up in rigid, exam-focused classrooms, I often encountered teaching that discouraged inquiry and saw ambition as overreach. Mentorship was scarce, and I had to rely on self-direction, endurance, and the quiet conviction that I belonged in science. Today, I strive to be the teacher I once needed, particularly for students from underrepresented, under-resourced, or non-traditional backgrounds. I aim to build environments where students feel seen, supported, and equipped from the outset.

I view teaching as a reciprocal process: I bring structure, clarity, and mentorship; students bring curiosity, voice, and untapped potential. This perspective took shape early in my career when I taught bioinformatics, research methods to ~850 students from Tier 2 and Tier 3 Indian universities who had limited exposure to scientific research. I designed short-term research projects, skill-building sessions, and writing workshops, and mentored 12 one-on-one student sessions. Two of these students are currently pursuing graduate programs here at the United States. That formative experience reinforced my commitment to expanding access and helping students see science as both reachable and relevant. In my teaching, I draw on my interdisciplinary background in human toxicology, oral microbiome science, and computational biology. I have taught coding, statistics, and research design to undergraduate and graduate students using real-world datasets and published case studies. I center instruction around core concepts and real-world relevance before introducing syntax or equations. My courses feature exploratory learning: live coding in R or Python, hypothesis-building from omics datasets, and collaborative interpretation of microbiome profiles. This approach helps students engage with both the tools and the reasoning behind them.

I differentiate instruction to meet varying levels of quantitative preparation. For beginners, I use analogies, visuals, and scaffolded practice. For advanced students, I introduce model extensions, like time-varying survival models or interaction terms, and provide peer mentoring opportunities. In a redesigned regression module, I incorporated toxicology and oral health data that students found socially and scientifically meaningful. One student noted, “It finally made sense because it was not just math, it meant something.” I assess learning through layered, concept-first evaluations that integrate interpretation, coding, and reflection. These include low-stakes diagnostics, applied analysis tasks, and open-ended projects where students critique flawed methods, replicate study workflows, or design their own. This balance of formative and summative elements reinforces not just how to apply techniques, but when and why to use them.

As a first-generation graduate student from a lower-middle-class joint family in South India, I understand how social and cultural barriers can affect learning. These experiences inform my inclusive pedagogy, which involves normalizing uncertainty, diversifying examples across global and public health contexts, and scaffolding participation to ensure all students contribute meaningfully. I emphasize formative feedback, structured peer interaction, and transparent expectations to promote growth and reduce anxiety. Mentorship is central to how I teach. I have helped students craft research proposals, apply to graduate programs, and navigate unfamiliar academic environments. One of my most memorable moments was mentoring a 12th-grade student who, after a short project with me, was selected as one of the two students for the cohort (2021-2025) from the entire of India for a biotechnology program in South Korea, an outcome she had not previously imagined. Whether through coursework or one-on-one guidance, I support students in redefining what success can mean for them.

I continuously refine my teaching using student feedback, structured reflection, and pedagogical training. I hold a practitioner-level certification through the Teaching-as-Research program and have developed peer-led coding labs, modular project assignments, and interdisciplinary workshops. In one redesign, students reported feeling “in control” of their learning, a sentiment that now informs how I incorporate autonomy and agency into course design. At an interdisciplinary program, I see my role extending beyond individual classrooms to shaping curricula that connect research, data literacy, and inclusive pedagogy. I am particularly interested in contributing to interdisciplinary offerings, such as public health data science, systems microbiology, or translational toxicology, through method-focused courses, research-based seminars, and collaborative, cross-listed modules. I view curriculum design as a way to bridge biological insight, computational tools, and societal relevance in a cohesive, forward-looking framework.

Overall, I want students to graduate with more than disciplinary knowledge. They should leave with critical thinking skills, intellectual confidence, and the ability to engage with real-world challenges. I hope to be remembered not just for teaching well, but for showing students that they could lead, question, and shape their paths. My classroom is not only a space for learning, but it is also a space for mentorship, reflection, and transformation.