Teaching Philosophy

I view learning as a mutualistic interaction within a dynamic ecosystem. Both teachers and students are involved in a mutually-beneficial transfer of knowledge: teachers provide guidance, support, and expertise to students through the learning process, and students inform teachers how to be more inclusive, effective, and impactful. Like all interactions, learning depends on the environmental context; therefore, it is important to understand how the learning process is affected by the environment and adapt to changing context. In other words, **learning is an ecology.**

CREATING A SUPPORTIVE, ACCESSIBLE, AND ENGAGING LEARNING ENVIRONMENT

I believe that universal design for learning provides the foundation for a positive learning environment. **Students should be engaged in learning**, so I try to make connections to their everyday lives, build a sense of community, and have students develop self-assessment and reflective skills. For students to be engaged in learning, **I am responsible for creating a learning environment that is inclusive and accessible.** It is essential that students are represented and included in the learning process. Engaged and represented students still need the opportunity to demonstrate their learning, so **I provide multiple means of assessment and expression.** I use low-stakes formative assignments, such as reflections, group worksheets, or lecture activities, to see what students are learning and if there are any gaps or misconceptions. Summative assignments, such as term tests, exams, lab reports, and group projects, allow students to show what they have learned and what skills they have developed.

I make every effort as an instructor to construct a supportive and accessible learning environment. I provide a space for students to express their curiosity and uncertainty without anxiety or judgement, which is essential to have a sense of belonging and community in STEM fields. The process of learning can bring about discomfort, but I want places of learning – lecture hall, classroom, laboratory, field course, online environment – to harness this discomfort and channel it towards learning. I know every student can grow and learn, and it is my role to provide a learning environment where this can become a reality.

To achieve this aim of supportive and accessible learning environments, I try to consider every aspect of the learning environment. **I design my lectures to be active and engaging**, with questions during the lecture using Mentimeter and additional activities that work through problems and case studies. I design the activities to make the best use of the physical space available for any activities. I also provide multiple means of engagement during lectures: some students prefer to work on their own, so I allow for group- and individual-based work. I also gather frequent feedback from students by using check-in and check-out questions to monitor student learning. If students are still struggling with a concept, I will revisit a topic so that they feel comfortable with their learning. Students are also able to submit questions anonymously at any point during lectures, so every student gets the support they need. I also record my lectures with captions, which contributes towards accessibility and allows students to continue learning at their own pace.

REFLECTIVE PRACTICES AND METACOGNITION

Reflection and metacognition are essential components of my pedagogy. I use reflections as a way to monitor student learning. I want to know what students learned, how they learned it, and what confusions remain. Not only does this provide me feedback about the efficacy of lecture content and activities, but I see how students will identify different aspects or find different topics exciting. **In a way, reflections demonstrate the diversity of learners and what and how they learn.**

Alongside reflection activities, **I implement metacognitive practices**. I have students document their learning process: what works, what does not work, how to make the learning process more effective, and time management. Documenting the learning process allows students to become more effective learners, and these skills are transferable to any course, job, or profession.

I also engage in my own reflective practices. I reflect on each lecture, lab, and assignment. I ask myself: What worked well? What could be improved? What was most effective? What did I find challenging? I am connected to students in the mutualistic interaction of learning, and I view it as my responsibility to find ways to make a lecture, lab, or assignment more engaging and effective. **I am constantly trying to find ways to adapt my pedagogy in response to changing environments and to meet the needs and intersectional identities of students.**

HOLISTIC ASSESSMENT AND UNGRADING
When I evaluate student learning, I follow the principles of ungrading. I believe the most authentic and valuable assessment to involve self-evaluation by students and to be more of a discussion between teacher and student. **Learning is not just a letter or number on an assignment – learning is a process**.

I evaluate student work and provide feedback to students, but I also bring students into the conversation. I have students reflect on what they did, why they did it, and how they approached each question or assignment. I encourage students to 'think about thinking'. Students still receive a 'grade' at the end of the course, but my ungrading approach emphasizes reflection, metacognition, and embracing that learning is unique to each student.

MENTORING
I am responsible for teaching, training, and mentoring the next generation of scientists. **I know that research experiences are critical for recruiting and retaining undergraduate students**, particularly those from historically-excluded fields. It is therefore my moral and ethical obligation to provide as many opportunities as possible for students to gain these experiences.

I have had the privilege of mentoring three exceptional young scientists on different projects. Elana Maria tested for feedbacks between ecology and evolution in species interactions, where she took the experiment through the entire scientific process and presented the results in a poster presentation. I also mentored Fan Peng Kong and Fathima Amanat on a study in river and stream ecosystems, where both were essential to re-envisioning the analytical approach and interpreting the results. They were also co-authors on the published paper.

EXPANDING THE MUTUALISTIC NETWORK OF LEARNING
Moving forward, I want to build connections with local K12 schools. I have skills and expertise that would complement the knowledge and expertise of K12 biology teachers and get more students directly involved in science. I recognize that standards and initiatives can vary state-by-state and district-by-district, so I will be deliberate and patient to build connections with local educators to learn what would most benefit their students and curriculum. In discussion with local K12 educators, I will design classroom activities and research projects that align with their teaching standards while expanding what science instruction can be. I will also design the research projects to provide opportunities for K12 and undergraduate students to be directly involved in data collection, analysis, and publishing the work. I think this long-term collaboration would help to make STEM more diverse and inclusive by getting more students doing science and seeing themselves as scientists.