M. Fork Statement of Teaching Philosophy and Goals

As a scientist, I strive to understand how the world works by critically examining data and changing my conceptual models to incorporate new findings when appropriate. In my teaching, I help students to use the same dynamic approach to learning. Whether students enroll in one of my courses because of a deep interest in the subject or simply to fulfill a requirement, I teach in a way that both aids their understanding of the subject matter and catalyzes **learning and practice of skills that are useful in and beyond the discipline**. My goals are for students I teach and mentor to: 1) critically evaluate information and ideas and 2) connect new information to existing knowledge in order to better understand the ecosystems around them. Further, I work in collaboration with students to build an effective, respectful, and inclusive learning environment.

It is important for students to learn the facts and concepts that underlie scientific understanding, and by designing lessons that help them **place newly learned concepts and facts into the scaffold of their existing knowledge**, I help them build a lasting understanding. In a peer-reviewed teaching activity I co-authored (Ficken, Fork, and Fuller 2015), we used a flipped-classroom strategy in which students learn how differences in temperature and precipitation drive elevational vegetation patterns in the Sierra Nevada Mountains. In class, they work together with peers to apply basic concepts to a new landscape, the Florida Scrub, where the same drivers generate a different pattern. By applying concepts to new ecosystems and situations, students deepen their knowledge by confronting it with and incorporating new information.

It is also important for students to be able to **think critically** about and apply the basic knowledge they learn. In 2017, I designed and taught a course in which students learned about uncertainty in climate science and strategies for effectively communicating science to skeptics. Later in the semester, students applied this knowledge by writing a policy brief in which they summarized a process with climate relevance (e.g., international trading of liquid petroleum gas, coastal development), including discussion of uncertainties in the science, and outlined policy recommendations. The effort and thought that students put into their analyses exceeded my expectations; I believe this was, in part, because they had the freedom to apply the basic concepts to a new issue of their choosing. The students' work enriched the course by adding topics and ideas beyond what I included in the syllabus.

I encourage students to take responsibility for and maintain an active role in their own learning. In my classes, I use teaching strategies I learned while earning Duke's Certificate in College Teaching to **encourage metacognition and engagement with the process of learning.** For example, anonymous notecards on which students write one thing they learned and one point that remains unclear encourage student to reflect on their learning while helping me in identify concepts I should clarify during the next meeting. In the classroom, I facilitate an atmosphere in which students of all backgrounds and identities can feel comfortable, included, and supported by **collaboratively defining and discussing the norms and rules that will govern our classroom**. Recognizing that diversity may include differences in preparation for college and responsibilities outside of school, I also aim to increase inclusion by being flexible to the diverse needs of individual students.

I am prepared to contribute to the teaching of introductory ecology and environmental science courses as well as advising students on capstone and directed research projects. I would also look forward to developing courses in areas such as urban ecology and ecohydrology. In particular, I hope to develop a course that trains students to manage, analyze, and interpret large, complex datasets such as those generated by government agencies and/or environmental sensor networks. This course will help students further develop **quantitative skills and data literacy, transferable skills** that they can apply to a range of questions and datasets. In addition, I look forward to creating **educational opportunities outside the classroom**, by mentoring undergraduate students as they complete independent research projects and facilitating student participation in off-campus research, outreach, and conferences. As a faculty member, I look forward to using inclusive, collaborative practices that help students build deep, lasting understanding and transferable skills.