I grew up loving to be outside learning about the natural world. Some of my earliest and fondest memories are of my dad taking me to explore tidal pool communities and telling me the story of how the bristles on a Douglas Fir cone came from the mouse that tried to hide there during a fire. Since then, however, ocean acidification and coastal pollution have decimated diversity in the tidal pools and Rocky Mountain Douglas Fir forests are at risk from extreme fires even that mouse could not escape. My passion for the outdoors also transformed into a purpose – investigate the consequences of climate change and pass that knowledge onto others.

As a climate change scientist, I want students in the classes I teach to understand the links and relationships between the actions of humans and the consequences in nature. As a plant ecophysiologist, I want students to understand how topics and theories in ecology connect across different biological scales and across different disciplines. To meet these goals, I employ a variety of active learning and inclusive teaching techniques and engage students through lectures, labs, and field/greenhouse experiments. I also place a strong emphasis on research learning for undergraduates through mentorship on research projects outside of class. In the rest of this document, I further outline the course content, teaching techniques, and mentorship strategy that I use in my teaching.

As a researcher, my strengths are in plant ecology, plant physiology, climate change ecology, and Bayesian modeling and I am confident in teaching all four areas as well as in teaching broad biology coursework. Students can expect to receive hands-on experience with methodology and theory in the field, the greenhouse, and the computer lab to supplement their assigned readings from textbooks and primary literature. For example, students in my Forest Ecology lab spend the first seven weeks collecting data in the field in small groups before spending the second half of the course analyzing the data using statistical software. In the Plant Ecophysiology course I intend to teach, I will have students conduct individual research projects over the course of the semester that they will then present to the rest of the class during the last week of the course.

In addition to biological theory and methodology, I also strongly believe that students should be taught skills pertaining to becoming a good scientist. My classes always include readings from the primary literature to supplement what they learn from the textbook and from lecture and I explicitly teach students how to read and write primary literature in one of my classes (see attached sample syllabus). I incorporate some amount of statistics into all my lab and field classes and intend to explicitly teach hierarchical Bayesian modeling in a graduate-level class designed as a workshop where students bring their own data to model over the duration of the course. This class would be designed after a course that I gave several guest lectures for in my time as a graduate student. I use open source platforms such as *R*, *JAGS*, and *OpenBUGS* so that it is easily accessible to students and so that students gain skills that they can take with them anywhere, not just to places with expensive software licenses.

Students in my classes will find themselves taking lectures that may be a significant change of pace from what they are used to. I employ active learning techniques in all

my classes, so students spend a good amount of what is traditionally lecture time interacting with their classmates in group discussions and other guided activities. For example, the Plant Ecophysiology course I am designing incorporates think-pair-shares, group brainstorming, and jigsaw discussions in lecture and more intensive paired and small-group activities in the discussion section. In applied courses such as the Forest Ecology lab I teach, students must spend the first part of each lab/field exercise discussing with their group how to best design their methodology to meet the goals of the assignment. This requires them to apply concepts and theory that they learned in lecture and from their reading in a group setting where they must simultaneously integrate the ideas and opinions of their peers.

Active learning and inclusive teaching are important parts of my curriculum because they are evidence-based teaching techniques that have been demonstrated to improve overall student outcomes while also reducing the differences in performance between disadvantaged students and their classmates. In addition to the active learning techniques I described above, I also employ and intend to train my graduate student instructors to employ inclusive teaching techniques that help promote participation from all students regardless of background. For example, in my Forest Ecology lab, I assign a different group member each week to be the speaker for the group when we come back together at the end of each of lab to discuss observations and insights as a class. This helps prevent any one student from dominating discussion and participation and encourages students that normally do not participate in group discussions to have their voices heard.

Finally, I believe strongly that any ecology curriculum should include a strong applied research component through one-on-one mentoring. In graduate school I actively recruited undergraduates through the Undergraduate Research Opportunities Program and the Doris Duke Conservation Scholars Program to participate in research in independent projects or as part of larger projects that I lead. Many of the students I have mentored worked on 10-week long independent projects that I designed for them that they then presented at a poster symposium in their respective organizations. As a faculty member I plan to continue to mentor undergraduates and encourage my graduate students to do the same.

In sum, I believe in teaching a well-rounded ecology curriculum that requires students to gain skills in statistical analysis and scientific writing in addition to their mastery of the course content. Students in my classes will achieve these goals by participating in evidence-based learning activities designed to increase overall performance while reducing disparities between disadvantaged students and their classmates. Finally, I believe that undergraduates in ecology should receive experience in field research as part of their curriculum. My hope is that by accomplishing these objectives I will have helped train a new cohort of ecologists and climate scientists that are prepared to meet the challenges of a changing natural world.