**Teaching Statement**

Growing up in a rural town with two liberal arts colleges instilled in me an early respect of the role knowledge plays in enhancing our appreciation of our surroundings. I see studies in the earth and environmental sciences in particular, as a path to deeper connections with our community and environment. I hope to share my enthusiasm with everyone who takes a course with me, but recognize that some of my students will not continue on to become earth scientists, or even pursue careers in science. Major, minor or just there to fulfill a science requirement, all students will engage in our democracy and make decisions about environmental issues, necessitating a basic understanding of scientific knowledge and how it is evaluated. Accordingly, my teaching philosophy is grounded in the idea that a course should not only cover content, but also seek to improve students’ abilities to **access** and **interpret scientific information**, **interrogate ideas** and **communicate on multiple levels.** 

As evidenced by the myriad instances of misrepresented science in the news and on political stages, one of the biggest obstacles to informed decision-making is **understanding and synthesizing** scientific data and conclusions. I teach my students to approach scientific content using a scaffolded approach that applies lecture topics and builds skills to **access sequential levels of understanding**. We focus on identifying concepts, defining jargon, reading figures and following the structure of an argument by tracing conclusions back through data and methods to the hypotheses. This approach requires students to think about how hypotheses are tested, arguments are built, and how to identify conclusions that don’t line up with the data. These are valuable skills for scientists, and also anyone interested in (**de)constructing an argument**.

After students achieve a basic understanding of a topic in the first weeks of a course, the next step is to deepen their understanding by giving them space to ask pointed questions, **challenge the material** and identify new lines of inquiry. To facilitate these goals, I ask students to engage reading assignments via “reading responses” before class, requiring them to identify difficult topics and answer questions to evaluate their mastery. I then begin group discussions with a review of challenging topics or ask more advanced students to share their understanding. These discussions allow us to interrogate ideas and give students the space to be skeptical scientists, enhancing their **sense of membership** in the scientific community and encouraging participation by **increasing their confidence** with the material. When students work cooperatively in this way I can make a formative assessment of their progress to identify areas of mastery and topics that need additional time during the instructional period.

A significant shortcoming in the scientific community is the shortage of individuals who are respected researchers *and* effective communicators. I see no reason for this disconnect and my expectation for myself and for my students is that we **engage in a partnership** to break down complex topics in a way that is faithful to the science and allows for inclusion of all interested groups. I model this in my lectures and clearly explain the **premium I place on written and oral communication** in summative course assessments. From lab reports to mock research proposals, final papers and posters, I work with my students to edit drafts and use peer review to **refine their writing**. I ask students to lead discussions of papers, assessing their understanding by observing their approach to and mastery of applying concepts from lecture. We have seen through the example of climate change that arrival at a consensus is not sufficient if it is not communicated successfully and I believe it is our duty to make our work available to all interested stakeholders.

I find the earth sciences to be **incredibly accessible** in that experiences with the environment are not limited to a privileged few and there are many **diverse stakeholders**. Some of my students may not have exposure to local geologic features but they may have seen variations in the stone used in buildings, the excavation of subway tunnels or the effects of runoff on a local river. A student may identify a mountain range or environment from home that represents a terrain unfamiliar to their classmates but typifies a course concept. Personal connections to science abound, and because I appreciate and draw on the diversity present in my classes it provides a wealth of opportunities for **student inclusion and growth**.

Both at Macalester and Columbia I have worked with students as a teaching assistant, writing assistant, lab instructor, seminar leader and lecturer. In addition to formal classroom and lab teaching, I feel strongly about enhancing student learning through **research mentoring**. At Columbia I have been a mentor for four undergraduate research assistants, including one student for whom I was the primary advisor via the NSF Research Experience for Undergraduates program. All four researchers were female undergraduates, including one whose commitment to climate science is strengthened by her identity as an indigenous Polynesian from Hawai’i. All of my mentees continue to be involved in research and I am proud to be part of a group working to **identify and fix leaks in the STEM pipeline**, particularly in underrepresented groups.

I enjoy **involving students in my research** is because it gives me the opportunity to invest in, and follow, their learning arc over many semesters. I find that building these working relationships encourages **student buy-in** and improves outcomes. One of the many advantages of small, liberal arts schools is that there are so many more opportunities to involve undergraduates in research. STEM research shows that one of the biggest reasons students leave the sciences is because they do not feel that they are included in the community. Involving students in research is a straightforward way to help students to **see themselves as scientists**.

Research into teaching and learning continues to reveal new insights into classroom dynamics and the effective design of assignments, and I look forward to **building on my skills** with “SCHOOL NAME’S” “TEACHING AND LEARNING CENTER”. One skill which cannot be acquired, but is essential, is a **contagious passion** for the material that drives student curiosity and persistence. My goal is to inspire students to pursue their own fascinations with the subject. Years later, some students may not remember exactly how a paleoclimatic proxy works, but they will recall how exciting it was to use scientific techniques as detective’s tools to unravel Earth’s mysteries. That lasting enthusiasm is invaluable in **stimulating respect** and **appreciation** for science and my ability to share my passion for science is a valuable resource.

In every course my core motivation is to support students as they learn and practice critical reading, data interrogation, collaborative work and effective communication. These skills are among the most valuable in a scientist’s toolbox and have comprehensive implications for everyday life. Our political and social structures work best when citizens are able to engage them, ask questions, identify shortcomings and cogently advocate for improvement. My expectation is that students who take my courses come away with ability to speak confidently and intelligently about the subject material, but as a committed educator I see it as my responsibility to equip students with skills that will be valuable regardless of their career or academic trajectory. I believe my teaching reifies that goal and reflects my commitment to education as a vital part of life, rather than as a pursuit of the elite.