

## Teaching Statement

At small liberal arts institutions, professors have unique opportunities for close student-faculty interaction and individualized mentoring of students. I see the role of a professor in this setting as both a geology teacher and a scientist mentor, and these roles should emphasize and cultivate science literacy, advanced problem solving, and clear communication in all interactions.

Science literacy, the ability to critically assess a range of scientific ideas, reason scientifically, and engage in discussion about scientific topics, is an essential component of the liberal arts mission. All undergraduates should achieve this, and introductory geology courses or geology-based freshman seminars are perfect settings to teach non-science majors an understanding of earth science processes and how we impact the Earth. Emphasizing science literacy both creates informed citizens and is an engaging part of the undergraduate experience because it unlocks a better understanding of the world and how to approach problems scientifically. To cultivate this important ability in my time as a teaching assistant in an introductory oceanography course at Penn State University, I incorporated current events in earth sciences into my lectures, and encouraged students to ask questions about science news. Making discussion of science-related current events a regular part of coursework helps students feel comfortable with analyzing scientific topics and sets a precedent for informed scientific conversation that can serve students outside of the classroom. For geology majors, my expectation of science literacy also includes comprehension and analysis of peer-reviewed scientific literature, which I will regularly incorporate into advanced courses. At the end of their studies, geology majors should not only be able to participate in discussions on a range of earth science topics, but they should be leaders in these discussions.

Effective communication is another core principle of strong liberal arts colleges, because written and oral communication is essential for gaining employment, conveying work results to a broader audience, and generally being an active citizen. Emphasis on clear, accurate communication also helps encourage clarity of thought and quantitative analyses; clear communication is a synthesis of geologic understanding, integrated thinking, and writing or speaking techniques. My courses will all include regular writing practice with peer review and my regular feedback. Writing assignments will be graded not only on scientific content, but on clear, concise writing. As the graduate writing tutor for the Penn State College of Earth and Mineral Sciences (and as a writing tutor in the Allegheny College Learning Commons during undergraduate work), I have learned a lot about addressing writing anxiety, encouraging self-editing, and emphasizing gradual writing improvement over the course of a semester. Because of the small class sizes at a liberal arts school, professors are fortunate to be able to work individually with students; I firmly believe that all students have the potential to communicate clearly, especially given enough individual attention and with enough opportunity to practice.

In addition to encouraging science literacy and clear communication, geology courses are especially suited for developing advanced problem-solving skills that synthesize multiple datasets and integrate across different scales. Geoscience uniquely spans many spatial and temporal scales and draws from many other scientific disciplines to understand how the Earth works, such that students must think multi-dimensionally to truly tackle geologic problems. These integrated thinking skills are especially important in a liberal arts setting, because multi-dimensional thinking readily translates to advanced problem solving in other disciplines. In my courses, I will implement class projects that synthesize an understanding of geology concepts, independent field data collection, and integration of external data sources to encourage

multidimensional problem solving and ultimately provide a rewarding, exciting learning opportunity for students.

Overall, I think it is an integration of these angles – process-based and quantitative course content, project-based learning, emphasis on clear communication, and a focus on societally relevant topics and science literacy – that will create an engaging learning environment. Geology is a dynamic field that has on-going, direct societal relevance, and I will strive to teach in a style that reflects the importance of this exciting scientific field.