

## Teaching Statement

Teaching is a spectrum that runs from describing fundamental material to an undergraduate audience through explaining research to colleagues. I approach both situations by asking the questions: Who is in the audience and what do they already know about the topic? Why is the topic of interest to them and what messages do I want them to remember from the discussion? I then look for ways to convey my enthusiasm for a topic to the audience. Thinking about these questions improves my own understanding of the subject and guides me as I develop as a teacher. Although I do not have much classroom experience, I aspire to be enthusiastic, open to new ideas, and well organized, both within each lecture and in the flow of one class into the next; these are qualities common to all of my favorite teachers.

A good lecture follows a clear path from revision of concepts covered previously to the introduction of new ideas. Because not everyone learns in the same way, it is important to incorporate different teaching methods within each lecture. For example, many students are nervous asking questions in class but can come up with excellent questions when given a few minutes to write them down or discuss them with their peers before asking the instructor. In addition, the average college student has an attention span far shorter than the typical class length, so it is important to break up the lecture, by incorporating group discussions, problem solving time or just a few minutes to think, into each class.

In Earth science, where the real world can be far from most theory, it is important to incorporate labs and field work along with typical homework assignments. While homework builds on what is covered in class, leading the students from straightforward applications of concepts to developing extensions, lab and field work highlight the difficulties that students are likely to encounter when applying their knowledge to real world problems. When working as the teaching assistant for field camp at the Colorado School of Mines, I saw how important it was to the students to see the theory they had learned in class applied in real-world situations. They found it motivating and discovered how much more than just the theory learned in class they had to be proficient at to be successful in the field. For example, many students were surprised at being asked to mark and survey every piece of metal in the vicinity of a magnetic experiment, but in processing the data realized how important a task that was.

Since I find teaching to be a rewarding learning experience, I would be happy to teach almost any class, whether it lies directly within my specialization or not. At the undergraduate level, my preference would be to start with a class in which I felt I knew the material quite well, such as an introductory class in general geophysics or seismology. By starting with material that I am very comfortable with I would hope to be able to focus on the presentation of material and improving my own teaching style rather than on learning and organizing the material in my own mind.

At the graduate level, I see courses as introductions to fields of research. As such, the students should help direct the course by choosing projects or even topics I (or they) would cover in class. In this way the instructor becomes more of a guide. In advising research, which should be an important component of a graduate level class, I think it is important to give enough guidance that the student feels they are making progress towards a defined research goal, while still giving enough freedom to learn to choose ones own path. Although I feel I am far from mastering the art of finding tractable and interesting problems it is that skill that is most important to help students develop.