

Hannah E. Attard

Teaching Statement

Teaching Philosophy

I teach atmospheric science to be process driven. When students encounter a new problem, I want them to understand how to approach it, solve it, and analyze their answer in the context of the real world. This focus on the process rather than just the numerical answer drives my teaching philosophy. My goal as a professor is for my students to be able to understand and apply multiple concepts to solve problems, put their answers into the context of the real world, and continue to use and apply the concepts outside of class. In the current answers-driven paradigm of teaching math and science, synthesizing course material in this way is difficult, as students often do not think critically about their answers.

Similarly, when I develop a course, I employ backward course design, which inherently puts an emphasis on the process. To employ backward course design, I first determine the learning objectives and goals of the course and then develop the lessons and assignments that will help students achieve those goals.

Mentoring

Similarly to my teaching philosophy, my mentoring philosophy emphasizes the process – be it the process of research or preparing for the job market. Mentorship is a dynamic relationship that is targeted for each individual and evolves throughout the student’s career. Mentoring an undergraduate student in research involves developing a feasible semester- or year-long research project where they learn how to test a hypothesis by creating plots and analyzing data. For a student who does not have a lot of experience coding, a semester-long project may be a case study (e.g., the uncertainty in the forecasts of the Arctic Oscillation in the winter of 2016/2017) so that they have time to learn how to edit code that creates and plots the variables they want to analyze. This allows the student to gain practical research and coding experience, both of which will be helpful for a student who wants to continue onto graduate school or enter the job market.

It is my role as an advisor to discuss with the student their target career goals. Depending on their goals, I will find ways to prepare them for that job – both through classes and discussions with professionals in that job field. One opportunity for students to learn about possible careers is by a meeting with invited seminar speakers. During these meetings, students have the opportunity to learn about the speakers’ career path. I will also use my contacts in the private and academic sector to find a professional that students can speak with directly as another mentor.

Diversity

My teaching and mentoring philosophy naturally encourages a diverse classroom both in diversity of learning styles and for underrepresented groups. During lectures by emphasizing both equations and their physical interpretation I ensure students who prefer to analyze equations are able to use those equations to better understand the real-world atmosphere, while students who prefer conceptual diagrams can use those to better understand the equations. By using mistakes as a learning opportunity, students do not feel marginalized, which allows for students from all backgrounds to feel included. I also

ensure that advisees receive the mentorship they need by recognizing that students will have different needs and my mentorship needs to adapt to those needs.

Conclusions

Although math may be the dreaded aspect of atmospheric science for some, through my teaching and mentorship I aim to mitigate the students' fear and help them to appreciate what we can learn about the atmosphere through mathematics and physics. I constantly work to ensure students focus on the process when approaching problems and are thinking critically to find the answer.