

Teaching Philosophy

I firmly believe that our natural curiosity is a precious trait that we all should continually nurture and encourage. This, in fact, is what fuels my enthusiasm about physics research, physics education and long-term goal of working in an environment allowing for close interactions with students of any discipline and background. Whether the students are non-science majors looking for an introduction to physics (or astronomy) or aspiring physicists with very specific interests in a particular sub-field, I am eager to work with them to provide support and guidance both in and out of the classroom so that they may progress towards achieving their own short and long-term goals. Ultimately, with any student interaction, I hope to encourage this curiosity and excitement for the natural world.

I believe that the primary components to building a successful and positive learning environment, on all levels, relate to the consistency and dynamic adaptability of the instructor and mentor. I like using the scientific method as a consistent fundamental building block for teaching and discussing any concept for anyone looking to learn. Establishing this process early provides a mechanism of stability on which students can rely and apply to any situation. To encourage student engagement, I use examples from everyday life to provide a connection between the concept and the student. I take these associations a step further by actively involving the students with questions requiring that they think critically then discuss and explain their reasoning. After receiving input from students with differing ideas, I promote further discussion that converges on a solid explanation for the topic at hand. This approach reinforces the scientific process, students to think critically about the principles at hand and provides the instructor with real time feedback about where the students are with the relevant concepts; all while promoting their natural curiosity in a supportive and engaging environment. I am constantly learning and developing my approach to teaching based on continual feedback from students, discussions with experienced educators supplemented with what I have found to work well for me over the many years of being a student. Furthermore, I allow every student, with whom I have the privilege to interact, to guide the development of my approach in order to maximize the students' benefits – from undergraduates in large introductory lectures or one on one subject specific discussions, to undergraduates and graduate students in my research group with whom I work and train.

The main goal I have for any course (from a general service course to advanced topics, independent studies or directed research) is to discuss the subject matter in such a way to promote general problem solving skills and critical thinking. Teaching independent critical thinking (coupled with the material, of course) tremendously aids in developing the essential tools and professional skill sets required for anyone to succeed, develop a true understanding of the material and continually feed the natural curiosity that exists in us all that ultimately drives our long-term interest.

As I continue to interact with students on a variety of levels (non-science majors to Physics graduate students), my excitement and enthusiasm towards the role of educator and mentor grows. I am very much looking forward to working in an environment that allows me to share my excitement for Physics with a general audience as well as those that are specializing in Physics and related fields. A comment that I frequently receive from students in my courses is that my excitement for Physics really helps them become engaged in the class, even if they found the subject to be difficult or if it is not their primary area of interest. Similarly, Physics majors in the *Intermediate Physics Lab* and *Modern Physics* courses have mentioned that because of the course, my positive attitude and my interactions with them throughout the semester, they are eager to continue working in Physics beyond their bachelor's degree. Moreover, they have said that it was specifically these classes and our interactions that have significantly contributed to their positive attitude and desire to continue with Physics. Knowing that I am contributing to the enrichment of these young people's education and development further fuels my enthusiasm for teaching and mentoring students as they progress towards their long-term goals.