When I prepare to teach a class, I try to think of a few overarching ideas that are the main points of a particular subject, and I make these the course goals. I take some time to describe these goals during the first lecture, and then try to tie in each lesson or section of material to this framework. I find this to be successful, and I have often had comments from students about how they “liked my approach,” or that I made the subject “interesting.” I have used active learning techniques such as breaking into small groups for student discovery type problem sets in several courses, and I think that when properly facilitated this works quite well. I do think, however, that a thoughtfully prepared and engaging lecture is the best way to share a lot of information relatively quickly. The following is a list of a few key approaches that make my teaching successful.

Main goals. I first identify one or two major concepts that are the fundamental reason to study a course subject. Making these clear at the outset puts the students on the same page about the course direction. I also like to begin each lecture with a brief description of what I will be talking about that day, and how it relates to these main course goals. For example, in a survey of calculus course, I like to remark that non-linear problems are bad because they are hard, linear problems are good because they are easy, and calculus is the subject that carefully studies when it is reasonable to approximate a given non-linear problem by a linear one. Students have commented that they find this clearly defined direction appealing.

Organization. Students perform better when they clearly understand the course expectations. I spend time on my course schedule and make every effort to adhere to it as much as possible. I like the students to have a kind of “road map” of the entire semester that they can use to plan their study time. While it may take some extra time at the beginning of a semester, I feel this not only makes the class less stressful for the students, but also less stressful for me. I have had positive feedback about this from quite a number of students, both in end of term surveys and in direct comments or emails.

Time for the students. I find that students are much more willing to work hard for the class when I am willing to work hard for them. I set office hours that are accommodating to the majority, and am available at other times for those who have schedule conflicts. I encourage them to take advantage of one on one time during which they can ask questions that they might not feel as comfortable asking in a large group setting. I have an open door policy, and lots and lots of patience. I have had several instances of students who were struggling, but then began regularly attending office hours and dramatically improved their grades.

Date: September 5, 2018.
I have now been a teaching assistant for seven semesters, and a graduate student instructor of record for five semesters. I have had these responsibilities for multi-variable calculus, differential equations, differential calculus of one variable, and survey of calculus courses. I was fortunate enough to be an assistant for a course which was a virtual classroom format. I had approximately twenty five students in my room, and another 50 at remote locations on a live video feed. This had its own challenges, but was a good experience with an alternative format to the typical classroom setting. I have taught students with a wide range of backgrounds including engineering disciplines, the sciences, architecture, and business, among others. I have worked hard to adapt my language and examples to cater to the majority population of the particular class. I have also worked for many semesters as a tutor in a school sponsored lab.

I have received high scores in the end of term student surveys, and I pay careful attention to the comments that are made. I received the following average scores (1−5) over five semesters of teaching. Instructors respect for students, 4.85, overall effectiveness, 4.74, enthusiasm, 4.85, presenting, 4.77, and motivation, 4.51 respectively. The median scores for the college of science were approximately 4.3. I have made a number of positive adjustments in subsequent semesters based on this feedback. I have also enjoyed and been grateful for the occasional personal email thanking me for a great semester experience. These always make an impact.

Technology. In Summer 2018, I helped in piloting a new program for online courses for undergraduates. I was an instructor of record for four sections of multivariable calculus, one of which was distance learning and used video recordings of all lectures to learn course concepts. In Fall 2013, I was a TA for a multivariable calculus course which had one section of on campus students and three sections of distance learning students. This utilized virtual classroom technology for live interaction with students via screens and live audio feeds.

Student Comments. “... I simply wanted to thank you for teaching an amazing Calculus I class this past semester. You instructed well, and paid attention to the needs of your students. I especially appreciate your patience in clarifying the course material during the numerous office hours I had spent with you...” Amamhechukwu Nnodum

“Professor McCullough has a true passion for math and teaching. He takes his time to explain the course material and sometimes will take 20 minutes to go through a problem because he explains it very well. I think he is an awesome professor and should teach Calc 3 next fall semester so I can take his class again.” CIOS response

“He is very enthusiastic about his work. If you got to his officer hours he's more than willing to walk you through step by step. He finds ways to connect the subject matter to real world applications and engages the class in a fun intellectual way.” CIOS response

“Very very good calculus teacher. He understands the material very well and is great at helping confused students.” CIOS response

“Andrew’s lecturing style is fantastic! He obviously has a deep understanding of the course material and is very good at explaining the concepts in a useful way. I feel like the notes I have for this course will be a valuable resource in future classes.” CIOS response

“Passion for the subject being taught - it showed.” CIOS response

“Mr. McCullough is great! ...He’s really passionate about the subject, explains it well and is readily available for help. He’s also really really friendly and willing to help... He even helped me with my Statics homework... Super motivational guy, I hope he teaches Diff Eq as well so I can learn from him next semester too.” CIOS response