

## Emily M. Boudreaux - Teaching Statement

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The last ten years of my life have been spent, in various forms, in academia; however, before that, I spent much of my time working as a technical director and producer at a community theater in my home town. The theater I worked at, Encore Stage & Studio, was essentially an educational theater. That is to say that a significant portion of their mandate was to educate children in the skills needed for them to pursue a career in theater if they wanted. I started working as a stage hand at Encore as a child and eventually, as I grew to adulthood, began to work as a mentor and teacher for new kids coming into the program. One of the most impactful things I learned during that time was the importance of **adaptive teaching**. Since I have left the theater, completed my undergraduate education, and eventually began to assume teaching responsibilities in graduate school I have found that those same lessons I learned back at Encore are just as, if not more, important in academic teaching as they were in theatrical teaching.

Adaptive teaching is neither a novel nor a particularly complex philosophy; however, it is one which, at its core, requires careful thought given to each learning opportunity. Two students whom I served as a co-research adviser for in 2022 and 2023 serve as illustrative examples here. Both of these students were Dartmouth undergrads, the first student was in her first year at Dartmouth, while the second was in her second year. Both of these students ended up working on very similar, computer programming heavy, projects. Despite these projects sharing significant overlap in methodology and research question the act of mentoring these two students could not have been more different. The first student did not have programming experience and so a significant portion of my role was to act as a guide into that world. That ultimately looked like helping her learn to explore the data she was given using the tools of data analysis but took the specific form of detailed workbooks on programming languages and tools. In contrast, the second student had experience programming and therefore did not need the same level of guidance for that portion of the work; rather, with her I took the role of a conversationalist with whom she could bounce ideas off of. She already had the tools to develop concepts and procedures and I provided, where needed, a sieve for those ideas. This variation in teaching and mentoring style for different students depending on their background, interests, and goals forms the basis of what I have called adaptive teaching.

Student mentorship is perhaps the most obvious application of this style of teaching, due to the one-on-one nature of those environments; and in fact, I strongly believe that effective and adaptive mentorship is one of the most important elements which can lead to a student achieving their goals. However, as educators at a university level, we do not spend the majority of our face-time with mentees or research students; rather, we spend it with students in formal class settings. **Adaptive teaching is no less important in these settings** than in a mentor/mentee setting but it can be significantly more challenging.

The primary challenge facing adaptive teaching in a class setting is one of logistics, it is far easier to meet one research student where they are at than it is to meet 15 students all at different points of interest, background, and goals. This logistical challenge does necessitate some trade-offs; for example, it would be unfeasible to create custom work packets tailored to every student in a class. However, a class setting also provides opportunities to foster

**student-lead adaptive learning** in ways which are impossible in other settings.

I served as a teaching assistant for Astronomy 15 (A15) over the summer of 2023 and it was during this class when I both developed an understanding of what this kind of teaching means and had the realization that I wanted to apply this adaptive teaching throughout my career. In A15 my primary obligation was to hold office hours for students where I would review questions on the homework with students and assist them in studying for exams. I had a number of students who had different comfort levels with the material come to my office hours every week and I quickly realized that one of the best ways to help all of these students to learn was to encourage them to assist each other. Students who felt more comfortable were more easily able to identify weaker points in their grasp of the material than they otherwise might have been. Conversely, students who were less comfortable often had an easier time conveying their challenges to other students in the class than to me simply because those other students were closer to the material.

From the description I just provided of what TAing for A15 was it might sound like it was an effortless assignment; however, the exact opposite is true. This style of teaching first requires understanding students comfort and then leaning on that understanding to create a safe space where they feel comfortable exploring and playing in act of learning. Moreover, these safe learning spaces can look different for different students and have to be tailored for not just one student but the group dynamic as a whole. In A15 I helped foster in three primary ways: (a) *treating every question with equal respect and time*, (b) *accommodating students when they wanted to ask me, and not the group, a question*, (c) *where appropriate encouraging students to answer other students questions before I answered them*. Over the course of that term I saw not only great progress in my students grasp of the material but a noticeable increase in their comfort with not knowing things and their willingness to asks their peers.

There is a near infinite set of actions which could be folded into what I have called adaptive teaching (e.g. offering more office hours at times which are focused on student availability, providing assessment opportunities greater than the traditional homework + exam duo) but the principal remains the same. **Recognizing that students have different needs therefore not limiting teaching to only fit one need.** I believe this philosophy has worked very well for the students whom I have had the pleasure of teaching these last five years and I hope that I can continue to successfully apply it to instruction for the rest of my career.