

TEACHING STATEMENT

Adam Brown

I am committed to teaching mathematics and supporting a flourishing higher education community. I am fortunate to have a wide range of teaching experience. As a postdoctoral fellow at the Institute of Science and Technology, I created and taught two graduate-level courses on sheaf theory and computational topology. These (online) classes were attended by graduate students and faculty at several institutions, and resulted in a graduate student research project. As a graduate student at the University of Utah, I was the primary instructor for seven classes, varying in topic from Calculus to Discrete Mathematics. The size of my classes ranged from 33 students to 152 students. The range of level and size of these classes gave me the opportunity to implement a variety of teaching styles and techniques. Throughout my teaching I developed and refined methods to facilitate an effective learning experience for my students. This process has been incredibly rewarding, and continues to inspire me to pursue a career in academia.

Teaching mathematics is both a challenging and productive endeavor. It is an exercise in one of the most fundamental of human experiences: the acquisition of knowledge. For me, the process of learning mathematics has been incredibly fascinating and fulfilling. By working with students, I am able to observe the amazing diversity of ways in which people think and learn. Moreover, teaching gives me the opportunity to share my passion for mathematics with my students. I think one of the most powerful things a teacher can do is to help a student discover something which sparks their imagination and curiosity. I set this as my personal goal for each class I teach.

“Professor Brown’s passion for math was almost contagious. It made me almost want to switch to a math major... This was a great professor who taught a course that helped me understand math.” - Intermediate Algebra student feedback

Fluency in mathematics is tremendously valuable in modern society. It is, and has historically been, the language through which scientific knowledge is communicated. I want to help students develop and practice mathematical thinking and communication. With this objective as a guiding principal, I will describe several points of emphasis that anchor my teaching philosophy.

In order to promote a classroom culture which is tolerant of struggle, and instill a growth-mindset in students, I try to emphasize that it is normal to go through periods of confusion and self-doubt. While it is often uncomfortable to experience confusion, it should not cause students to feel hopeless.

“In a subject that more often than not is disliked, Adam approaches his teaching methods with the understanding that mathematics does not come easy to most students. Rather than showcasing his knowledge and ability to do the coursework, he dives deeper into the lecture and teaches versus demonstrates.” - Intermediate Algebra student feedback

I promote a growth-mindset in my students through several methods. First, I look to draw comparisons between mathematics and other areas of students lives which are already growth-oriented, such as athletics and art. In addition to these analogies, I refer to the current state of understanding in cognitive science, which supports the view that mathematical ability is dynamic and changing. Finally, I aim to use the grading scheme of the course to encourage persistence and growth over innate ability. Additionally, I strongly emphasize content motivation in my teaching. Motivation for growth and patience for the process of discovery is critical for persistence and learning. Motivation is very personal, and is best achieved through an approach based on each student's interests and predispositions. To the best of my abilities, I try to get to know each of my students and understand their reasons for taking my class, in order to find ways to speak to their interests.

“Adam’s ability to explain things in many different ways allowed us as the students to see the uses of the calculus in other fields apart from physics. This also allowed students to visualize the problem in a different manner.” -
Calculus student feedback

The ability to learn from the experience of others is very valuable. I aim to help students develop this skill by providing carefully written notes, problems, and projects. Moreover, I regularly follow reading assignments with group discussions. By reading and explaining material to peers, students can begin to practice multiple aspects of mathematics communication. Additionally, through these exercises, I am reinforcing a certain standard of written exposition which I expect from the students. Through a focus on reading and discussion, I am able to flow naturally into active-learning assignments. The opportunity to create original ideas, methods, or applications of mathematical techniques is one of the most exciting parts of learning mathematics. This active-learning emphasizes participation and dialogue between students. My goal with active-learning is to capitalize on the innate creative impulse of each student.

I center my teaching around having students communicate mathematical concepts. By incorporating discussions in each assignment, students develop their ability to effectively collaborate with their peers on technical problems. It is a truly rewarding experience when students are able to work together to explain new and difficult concepts. A key aspect of being able to successfully work together is the ability to express thoughts and opinions through a commonly understood vocabulary. Through emphasis on reading and discussion, I aim to develop this common vocabulary in order to support successful collaborative work between students.

I teach in order to share my fascination with mathematics and to better understand the amazing variety of ways that people learn. I want to share what has been one of the most rewarding experiences of my life: the process of coming to understand abstract and beautiful ideas. My teaching emphasizes growth, motivation, reading comprehension, creativity, and communication. I believe that these points of focus help facilitate a rewarding and effective learning experience for my students.