

My teaching philosophy has its roots in a discrete structures course taught by a very memorable professor named John Burke. We were working on the topic of countability, and the various sizes of infinity, and then he did THE proof, the one that made me want to be a mathematician. It was the proof that the rational numbers are countable. I remember thinking “wow, what an idea, how could anyone come up with that.” I decided right then and there what I wanted to do with my life. After that class, I asked Dr. Burke what I had to do to become a mathematician, to which he told me with an odd smile on his face that math might not be for everyone. Years later I realized what he really meant, and why he was smiling. People should follow their passions, and if math wasn’t really my passion, then math wasn’t really for me.

Whether it is working with my undergraduate researchers, giving a math club talk, or in the classroom; I spend my time trying to create a passion. I try to motivate students care about the material. For me, this starts with showing them that I care about them. I practice a few techniques to get this across to my students: learning their names; talking to them about their majors, and trying to find out about their lives, their jobs and their intents. I’ve found that they learn better from me if they see me as a person. It is all part of creating an active learning environment in my classrooms.

In my classroom, I emphasize open dialog about the mathematics. For me, mathematics is about developing the ability to think creatively, logically, and with an open mind. I try to convince my students that math is more like a muscle that needs a workout, than a fact that needs to be learned. I try to bring that out by making my classroom about discussions, and not about problems. Let them understand first the idea; not the terminology, but the primary mathematical concepts. Once they know what a theorem or a problem is trying to say, we can then go through the process of adding mathematical notation and rigor to these ideas. I normally run a flipped classroom model that is focused on my students *doing* and *explaining* mathematics. A good example of this in my calculus classes. I have my students read about the Mean Value Theorem prior to coming to class; then they immediately break into groups and explain the concept in their own words to their peers. We then come together and discuss how the definition supports the ideas they came up with. As coordinator for **Transitions to Mathematics**, I worked to develop materials for a flipped classroom model which focuses on having students learn proof writing skills primarily by working in small group, with the instructors playing more of a facilitator role.

Mathematics is an amazing, exciting, and sometimes even frustrating subject. It is beautiful concepts wrapped in technical details. It is years of intuition and work boiled down to two pages. It is a collision of arts and sciences. And this makes it a challenging thing to teach. My philosophy on teaching is about taking all of that beauty, and all of that depth, and guiding my students to discover mathematics for themselves.