I believe that learning is an active, unending, humbling journey, in which one discovers not only new ideas or subjects, but also little more about oneself. My teaching philosophy is framed by three pillars which I believe will help my students in the classroom, and also grow and succeed as individuals. The three ideals to which I hold myself and hope to show my students are: excellent communication, honest reflection, and determined perseverance. Through these principles I hope not only to open students up to a whole new side of mathematics, but also help students develop tools to be successful in my class and beyond. I believe it is my duty to help students think critically and creatively. I strive to further their intellectual and personal abilities in hopes of helping them find endeavors which excites them, which motivates them, and for which they are passionate about.

One immutable characteristic of mathematics is that it is first and foremost a means of communication. This begins with how students perceive me and how they interact with me as an instructor. Teaching is substantially more than simply disseminating one’s knowledge. Learning is an experience, and how students experience a class can greatly effect their learning. Regardless of the course I am teaching, from College Algebra, to Calculus III, to the occasional Real Analysis class I always show up a few minutes early, notes in hand, and write relevant announcements on the board (i.e. corresponding section of the book, quiz and exam dates, common problems I have seen etc.). I want my students to see, and more importantly believe, I am investing my time in this class, and that I expect them to do the same. In keeping with this, I usually will have learned all of my students names by the end of the second week of classes. Not only does this reaffirm my investment to this class, but also my investment to each and every student as an individual. I found this investment to be an excellent way to foster an engaged classroom. In addition, numerous students have asked me to write letters of recommendation for them, citing that out of all their professor they feel like I know them best.

Communicating the beauty of mathematics is important to me. I do this through presenting historical context, relatable examples, or, on occasion, a “good” math joke. For instance, in my College Algebra course, when lecturing about roots of polynomials, I have discussed the intense public mathematics competition occurring the in 16 century, parlaying this into telling them about Niels Abel and the unsolvability of the quintic polynomials and beyond to the ideas of a group. Mathematics is far more than memorizing what the quadratic formula is. Mathematics can be as striking and beautiful as Kilmt’s *The Woman in Gold*, as captivating and compelling as a Rowling’s *Harry Potter*, and as frustrating and demanding as, well, mathematics! I strive to show all of my students these, and many more, sides of mathematics.

Moreover, I try to help my students become better communicators. Writing mathematics is an excellent way to improve clarity and conciseness in one’s writing in all disciplines. To this end I assign weekly written assignments in addition to using WebAssign, an online education aide and homework generator. Furthermore, I post solutions to these written assignments, as well as the exams and quizzes, to show students examples of communicating with mathematics.

I believe reflection to be an important, and often under appreciated, aspect in the learning process. I find this to be especially true in mathematics. We are always moving on to the next problem, the next theorem. It is only until we take a few quiet moments and take a look back from where we started do we truly realize how far we have actually come. Reflection is crucial to growth, whether it be as an instructor, as a student, or as a person. My own reflection helped improve my teaching of my College Algebra class from one year to the next. The first time I taught this course it was well received, but upon closer inspection of my course evaluations I realized I could make improvements: by posting assignments
or solutions more promptly, responding to e-mails more quickly, and being more aware of leaving my frustrations with research outside the classroom. I was fortunate to be able to teach the same College Algebra course the next autumn quarter, and really focused on communicating well with all of my students: establishing dedicated hours each day to respond to student e-mails, sending frequent course announcements through e-mail, and always posting assignments or solutions the night after submission. Additionally, I set aside five minutes before class to settle myself and turn my attention and intention from researching to teaching. The second class was so successful that I won both our department teaching award and the Natural Science and Mathematics teaching award. Correspondingly, I intend to encourage my students to incorporate more reflection into classes, beyond simply discussing how to prepare for upcoming exams and exam strategies.

The third and final pillar framing my teaching philosophy is perseverance. If there is anything I have learned from my time in graduate school it is that perseverance is the linchpin to being successful in mathematics, as well as in life. Mathematics is hard. Unfortunately, there seems to be this binary viewpoint of either you’re a “math person” or you’re not. I want to show students that “getting mathematics” is the sum of many smaller struggles and triumphs, and is not the product of winning some cosmic lottery. To this end, I often share my struggles and set back in my own mathematics career: from being denied permission to take AP Calculus in high school, to sharing that most of my attempts at solving my current research problem simply fail. That it is the willingness to try again, to try something different, to persevere that solves a problem. Furthermore, I always write a range additional homework question and I often include an “Interesting” section on my written assignments with problems that are a bit more challenging, but also more intriguing than a standard application of a technique we learned in class. For example, in my College Algebra class I have asked my students to think about the Monty Hall problem; in my Calculus III class to investigate, with the help of Wolfram Alpha, an infinite series representation of $\frac{1}{\pi}$ due to Ramanujan.

All things considered, I believe teaching mathematics is the medium by which I try to help all of my students grow as individuals, and to help push them beyond what they have imagined for themselves. My goal is to show students that math is far more than simple arithmetic and memorizing formulas, that mathematics can be beautiful. I strive to empower my students with the belief in themselves, that through communication, reflection, and perseverance they can overcome so much more than they first thought possible. I hope to leave my students as one of my College Algebra students felt. “Drew’s passion for math showed all the time during class, and his sense of humor and how he integrated it into his lesson made math more bearable, and I think I learned more, just because I wanted to and it was more interesting than other math classes I’ve taken.”