

TEACHING STATEMENT

JESSE FRANKLIN - UNIVERSITY OF VERMONT

At UVM, I have been instructor of record every semester during all five years of my program, except for during the first Fall semester of the pandemic, when there were temporary organizational changes so that I was a teaching assistant. I have taught “Applications of Finite Math,” a terminal combinatorics class for students who will not take calculus, “Precalculus” an algebra class to prepare for a first course in calculus, and “Fundamentals of Calculus,” a first calculus class for non-math majors, the last of these very frequently. I also worked as a teaching assistant for the Undergraduate Summer School of the Park City Mathematics Institute, a program of the Institute for Advanced Study in the summer of 2022.

Instruction is one of the most delightful aspects of mathematics, and the highest honor. It is my intention to always include some form of teaching in my work as a mathematician. This teaching statement will explain my experience of teaching mathematics and how I am equipped to teach higher level classes and students who are further along in their journey with mathematics in the next phase of my career. Though it has not always been a smooth or easy experience learning to teach math, I have found a way to bring my values into the classroom and to create an effective and positive learning environment. As a graduate student, even as instructor of record, I have never had complete autonomy with the policy of my classes, so I have learned to compromise between department policy and what I consider to be important in a way that both the math department and my students have given me consistent positive feedback on. I am eager to continue honing my craft.

There are two major practices which I have learned achieve an effective class, regardless of the level. First, I love to interact with my students during the course of a class by asking lots of questions, to give them time to work on problems themselves and with their peers every day, and finally to offer longer collaborative exercises as much as possible. In a 2022 teaching evaluation, Professor J. Michael Wilson described my “Fundamentals of Calculus” class by saying “I am sure that Newton, Leibniz, and many of their colleagues would not have objected to it. Lots of activity, especially for a class so early in the morning. He spoke and wrote clearly, had everything well organized, and he had good rapport with the students.” Everyone loves to learn, so the classroom should be a place where we can all share that pleasure. A student from my “Applications of Finite Math” class during the spring of 2021 said the following. “Despite math not being my focus of study I found that Jesse was so enthusiastic about what he was teaching that it made me more interested in the topic, as well as feeling more immersed in what was going on in class.”

Importantly, I try to extend this theme of engagement with students during class periods to opening up a variety of ways for students to engage with math during a course. This means being able to explain topics a variety of ways, offering additional resources and flexible support for students during class and in office hours. A student from my class in Fall 2022 said, “The instructor explained every subject thoroughly and was the most inviting teacher to students asking questions. Nothing was left unanswered and I really appreciate his thoroughness.” Some other student comments include: “The office hours were well set up and very helpful,” “Things were explained in a clear and easy to understand way,” and “[I] did a very good job explaining complex topics in understandable and relatable ways.”

My next practice is informed by my belief that there are no math emergencies, so we need not create a stressful, performance-based experience of the subject and instead can emphasize growth. In particular, a math teacher is not a police officer for the classroom, nor a cloistered priest guarding some arcane secret. In some of my “Applications of Finite Math” classes, instead of giving exams, the course was based on several long projects such as mock financial planning around mortgage payments on students’ dream homes. One student remarked of this course,

“I found that the course was organized in a way that made sense and facilitated conceptualization of each new chapter. I really appreciated the way that homework assignments and projects carried the most weight in our grade, as we had ample time to complete them and reach out for help during office hours if necessary. Professor Franklin was delightful to learn from, as he expressed a passion for the work and exhibited skillful delivery of concepts such that students were capable of learning and understanding the material. He encouraged student feedback and collaboration in a way that fostered a uniquely empowering and enriching learning environment. I personally entered the course generally averse to mathematics, but I left with a newfound appreciation for it both aesthetically and practically in large part due to his enthusiasm. On a more personal note, I struggled with attending most of my classes in the later half of the semester following a traumatic event, but this course was structured such that I was still capable of succeeding under these unfortunate circumstances as long as I put in the work outside of class, which I really appreciated.”

A student from “Fundamentals of Calculus” in 2022 said, “Jesse is extremely organized and prepared for every lecture, he provides examples and answers questions promptly and thoroughly. A lot of content was covered, and with his emphasis on growth rather than grades it holds his students accountable.” This class had a more traditional structure around exams, but another student remarked, “I liked the set up of the class. The homework, quizzes, and exam aspect were made to be doable but still challenging.” The attitude of this review makes me feel that I encourage a mindset that enables students to rise to the challenges they face when learning, math or anything else. Furthermore, my own first Real Analysis course as an undergrad involved projects in the form of difficult proofs that we could work on and improve over time with our instructor, so I am confident this practice extends very naturally to classes at all levels of math.

I have been fortunate enough to work with some of the finest students of mathematics in the world during the Undergraduate Summer School at the Park City Mathematics Institute, where I assisted Professor Christelle Vincent with her course on cryptography. Over the course of these few weeks I supervised students on a range of homework involving everything from elementary number theory problems to implementation of cryptographic algorithms including programs students could execute on quantum computers. With this experience I have a well-rounded understanding of how to engage with students at many different levels of engagement with math from non-majors to prestigious summer-school attendees, and am prepared to teach cryptography classes.

To conclude, I would like to elaborate somewhat on why I take teaching so seriously. I believe that the true job of a mathematician is the promotion of peace, in the following sense. A very crude metaphysical interpretation is that math is just thinking. We cannot create a perfect circle for example, so we are obliged to imagine such things, but this is actually a feature since then we can attain the perfect accuracy of math. The practice of thinking makes the practitioner a better thinker, and when the subject of thought is math we get better at understanding the ideas of others and at communicating precisely and effectively. We can share our love for learning math by contributing to our community with research that increases the body of human knowledge and we can promote the idea that pursuit of thought for its own sake, or doing math, builds a global community of better communicators who have no need for war.