

# Joshua Miller

[jmiller208@gsu.edu](mailto:jmiller208@gsu.edu) | 281-798-3878

## TEACHING STATEMENT

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My first teaching experience was as a Master's student at Sam Houston State University (SHSU) where I was tasked with teaching Pre-Calculus Algebra and Mathematics for Managerial Decision Making, and I continued to grow as an instructor during my years of teaching at Kansas State University (KSU) where I was able to teach College Algebra, Plane Trigonometry, and Calculus as both a recitation instructor and lecturer. After my time at KSU ended I was able to continue the joy of teaching at Georgia State University where I have had the opportunity to teach a myriad of courses from Quantitative Reasoning to Calculus II and Discrete Mathematics.

I have a joy for teaching, both for imparting knowledge onto students, and finding ways to improve my methods of teaching so I am able to reach everyone regardless of learning style. During my time at SHSU, KSU, and GSU I have had the opportunity to teach in a variety of modalities that has allowed me to gain experience in three different areas.

### 1.1 My Philosophy on Classroom Teaching

My teaching philosophy revolves around the following ideas, preparedness, flexibility, active learning, use of technology, and feedback.

**Preparedness:** I strive to prepare my lectures in a way that engages my students by weaving a clear map of how each topic we discuss is related and builds upon one another. The way I accomplish this is by asking leading questions that still makes the student think, but also say what I want them to. This gives the student a sense of accomplishment at getting the "right answer," while still maintaining control of the lecture. Another aspect of preparing is having the ability to address any mathematical deficiency a class might have from previous courses so I strive to have an ever involving list of materials that students can access at the leisure through the Learning Management System, but I can also rely on as needed during lectures and recitations.

**Flexibility:** One of the most difficult part of teaching is making sure the students are fully comprehending the material that is being covered, especially when student engagement and motivation is low. For me, this is where my flexibility takes place. When faced with this dilemma, I try to tackle the problem in two ways. First, I arrive early to class; this allows for more student-teacher interaction without the strict student-teacher hierarchy. This simple change allows some students to be more comfortable asking questions or for help. Plus, even in the chance that there are no questions it provides a means to connect with your students because each one has a story and sometimes talking about topics besides math is all it takes to motivate them.

I strive to make my classes enjoyable to everyone that attends by being the bridge between mathematics and the programs my students are studying. For many students I might be their last math course or simply a gatekeeper to beginning their core classes, and I do not want to approach teaching as simply feeding them answers or steps to solving a problem. I want to demystify math for them by showing them how the material we are covering shows up in their field of study or how thinking critically can help them better prepare for later classes and life.

**Active Learning:** One of my main goals with teaching mathematics is for the students to engage in active learning practices rather than memorization to learn new concepts. Throughout lectures and recitations I encourage discussions and student inputs on what steps we should take to approach a problem since it allows them the freedom to make choices on how to apply material learned in class but still have enough feedback from the professor make sure they are on a correct path. Another aspect of active learning that I

like to employ is for students during office hours to take lead in solving exercises since it encourages them to showcase their thought process on a problem, since in an one-on-one setting the professor is able to get a better grasp of any misunderstandings the student may have. However, in the instance there are other students present, it allows them to share their experiences and discuss objectives or concepts that they already understood. It is through the active discussion of the concepts and ideas that the students are able to solidify a solid understanding of the material instead of repeating a step-by-step process or memorization.

**Use of Technology:** A growing trend in my classes is to employ different types of technology to help display concepts we are discussing in a visual manner, typically through the use of a graphing software. This allows students, especially in courses like calculus to better visualize the process of finding the derivative using its limit definition, or see how a graph behaves instead of presenting a series of formulas and calculations. Besides technology use in the classroom, another use I like to employ is through services like Discord where students are able to ask and answer questions about homework and material, but in a manner that they do not feel singled out like raising a hand in class. These areas allow some degree of anonymity for students to ask questions, be themselves, and in turn that positivity and confidence that they gain online translates to better confidence in the classroom and on assignments.

**Feedback:** I believe that feedback is necessary to grow as an instructor and good feedback from students is a great reward for any instructor. Feedback from my students typically comes in the form of teaching evaluations, and my teaching evaluations are consistently positive. Apart from the typical teaching evaluations, I also ask my students to either email me or post on an ongoing discussion thread (if an online course) if there is ever anything that they feel that I can change or do better as an instructor to ensure that my students are receiving the best education from me that I can give them.

I am continually growing and evolving as both a teacher and a mathematician. My ongoing drive and passion to this profession and mathematics have always been a driving factor in how I shape my life. Through my experience as an educator, courses I have taken, and research I have done I am prepared and excited to teach.

## 1.2 Teaching Styles

**Recitation and Lecture:** When I first went to KSU, the teaching dynamic that I had grown accustomed to at SHSU changed as I was used to teaching smaller courses; at KSU I taught a recitation to a larger group of students, which allowed me to better hone speaking ability and board work since I was now in larger classroom. While working as a recitation instructor I had the opportunity to teach students without the burden of being the first person to show them new material. This was crucial in being able to help students that were lagging because I had the opportunity to try different approaches to the same topic and all that I needed to do was match notation. It was while teaching recitations that I was able to start experimenting with different styles of teaching. For me, I noticed that I had most of my student interaction from the students in the front row and those centered behind them, making a “T” shape. It is nice to have a significant portion of your students interacting with you, but I wanted more and the classrooms at KSU helped with that. Since most classrooms that I taught in had boards on three sides, I was able to constantly rotate through the boards which created a new “T” every time I moved, and this created an atmosphere where most of the students were comfortable to ask questions and answer them.

As I transitioned from KSU to GSU, my teaching style had to adapt to the new environment that featured larger rooms and fewer boards, but added the benefit of several monitors and projectors through out the room. While I was not able to move around as much, I was able to utilize the technology to make it easier to present theorems, definitions, and problems in a manner that everyone was able to read and reference while using the board space to show examples and work problems. Lastly, depending on the course I have had the ability to use extra board space that I may have to have student work problems at the board and in some cases explain their process and help on another work through new and old mathematical concepts.

**Online:** While at GSU I was able to teach a variety of synchronous online courses. During this time, I have had to use a variety of technological means to interact with my students ranging from Zoom for recitation or office hours to Canvas to administer homework and exams. I have had to create, manage, and run several iCollege courses or pages for Plane Trigonometry, Calculus, and Quantitative Reasoning which included making online quizzes/exams, uploading/recording videos, and running discussion posts. Teaching online has its difficulties, but I have been able to circumvent this by providing an abundance of ways for the student to learn. I strive to have a several videos available in a variety of means, from WebEx to YouTube, as well as lecture slides that correspond to the videos and separate lecture notes and worksheets that I scan for them to read at their leisure or fill out during our class meeting.

Throughout these courses I have learned and adapted many different principles that I routinely apply throughout my teaching practice.

## **Teaching Experience**

### **Sam Houston State University**

1. MATH 1314 - Pre-Calculus Algebra: SP16 (1 Section)
2. MATH 1324 - Math for Managerial Decision Making: F15 (1 Section), SP16 (1 Section)

### **Kansas State University**

1. MATH 100 - College Algebra: SU17 (1 Section), SP18 (3 Sections), FA20 (3 Sections)
2. MATH 100 - Studio College Algebra: F17 (2 Sections)
3. MATH 150 - Plane Trigonometry: SP17 (2 Sections), F19 (1 Sections), SP20 (1 Section), SU20 (1 Section), SP21 (2 Sections)
4. MATH 205 - General Calculus 1: SU18 (1 Section), SU19 (1 Section), F19 (1 Section), SP20 (1 Section)
5. MATH 220 - Calculus 1: F16 (1 Section)

### **Georgia State University**

1. MATH 1001 - Quantitative Reasoning: F21 (4 Sections), SP22 (4 Sections), SP23 (1 Section)
2. MATH 1113 - Precalculus: F21 (4 Sections)
3. MATH 1401 - Elementary Statistics: SU22 (1 Section)
4. MATH 2211 - Calculus 1: SP23 (6 Sections)
5. MATH 2212 - Calculus 2: F22 (7 Sections)
6. MATH 2420 - Discrete Mathematics: F22 (1 Section)
7. MATH 2641 - Linear Algebra: SU22 (1 Section)