

Teaching Statement

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“*What is mathematics?*” is a question I always begin my undergraduate first-day class with. While some students may hold positive perceptions of mathematics; biases, negative images, and misconceptions remain common among undergraduates. These misconceptions include beliefs such as “Mathematics is a hard, challenging, and boring subject”, “It is solely about finding and using formulas”, “the study of numbers”. “It’s just a required course for my program”, or “It’s only about solving problems.”

My teaching philosophy is rooted in raising awareness about the importance of mathematics, highlighting the valuable skills acquired through its study, and dispelling stereotypes and misconceptions. My approach centers on inspiring and motivating students to engage in activities such as estimation, verification, interpretation, articulation of results, and the ability to connect with others’ ideas. Moreover, sharing my passion for the subject and witnessing the transformation of students’ answers to the question “What is mathematics?” into more positive perspectives has shaped me into the educator I am today.

I view teaching as a comprehensive process that extends well beyond the confines of the classroom. It encompasses a spectrum of elements, including preparation, practical experience, motivation, and a guiding educational philosophy. These factors collectively shape a student’s perspective on the subject matter, both within and outside the classroom. In my perspective, teaching represents a crucial phase in the journey of learning and character development, one that should be adapted to align with the current advantages and requirements of the contemporary world. I enthusiastically share my passion for mathematics, illustrating its wide-ranging implications and real-world relevance, fostering an environment where learning becomes an exciting journey of exploration and discovery.

THE TETRAIDRON PHILOSOPHY

My teaching philosophy is a student-centered approach built on four key pillars: Insight, Inspiration, Inclusion, and Innovation. These pillars emphasize the student as the central figure in the learning process, moving away from traditional lecturing and teaching methods to create a more engaging, personalized, and effective educational experience.

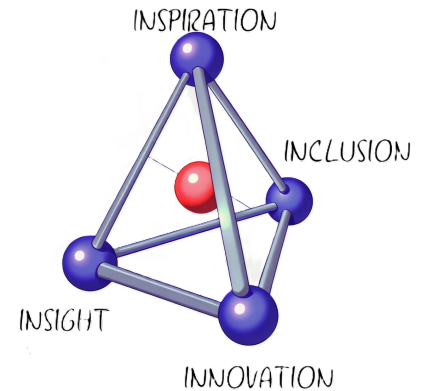
- **Insight** involves reflective teaching that adapts to each student needs. I use real-world examples to make concepts relatable and spark curiosity, encouraging students to explore beyond the classroom, as well as visualization and interactive activities that produce hands-on learning.

- **Inspiration** adopts a constructivist approach, encouraging students to build their knowledge through inquiry and problem-based learning techniques. Providing positive feedback and encouragement helps to motivate students and foster a growth mindset, where challenges are viewed as opportunities for learning and improvement.

- **Inclusion** creates a supporting and welcoming learning environment. I establish a robust support system to recognize and address barriers and challenges that students may face. By implementing assistive technology and tailoring teaching experiences, I strive to ensure equitable access to opportunities for all students.

- **Innovation** prioritizes differentiated teaching strategies and integrates technology to address diverse learning needs. I employ a variety of teaching practices and assessment methods that aim to engage students in reflective and interactive classroom experiences that promote continuous learning and innovation.

These pillars are interconnected to create a holistic learning environment where students are actively engaged, supported, and challenged to reach their full potential. I perceive *Active learning* as a central player in this approach, involving students directly in the learning process through methods like group problem-solving, hands-on activities, and interactive discussions. For example, in my classes, students might work together to solve complex problems, engage in simulations, or use technology to explore abstract concepts visually and discover by themselves. These strategies have proven effective in enhancing comprehension, retention, and critical thinking skills.



By focusing on these principles and integrating active learning techniques, I aim to foster a classroom atmosphere that not only encourages intellectual curiosity and personal growth but also leads to a deep, enduring understanding of the material.

TEACHING MATHEMATICS OUTSIDE THE CLASSROOM

Teaching mathematics outside the classroom is a significant aspect of my educational philosophy. I believe that the quality of assignments, well-crafted questions, and detailed solution sets, coupled with constructive feedback, holds more value than a mere grading scheme. This approach not only helps students solve problems but also deepens their understanding of mathematical concepts. Accessibility to students is a cornerstone of my teaching approach. I use technology to record lectures, share comprehensive notes, and stream classes, ensuring that learning is accessible to all. I'm dedicated to providing ample office hours, establishing open communication channels for students to voice concerns, request extensions, or seek extra help. Furthermore, I make sure to acquaint students with additional resources offered by the institution to enhance their mathematical skills.

Beyond regular class hours, I facilitate supplementary programs, such as review sessions and collaborative problem-solving activities. Collaboration with colleagues, teaching assistants, and other departments is integral to addressing student struggles effectively. By coordinating multi-section courses at different levels, taking the lead on organizing material, notes, assignments between colleagues and teaching assistants has proven to be fundamental to the success of students. This collaborative effort underscores the message that students are not alone in their challenges and that seeking help is a commendable step toward success. In essence, teaching mathematics beyond the classroom enriches the educational experience, nurtures student growth, and cultivates a supportive learning environment.

TECHNOLOGY IN MATHEMATICS: BENEFITS AND CHALLENGES

I also find that the incorporation of technology into mathematics education brings both significant advantages and potential challenges. I encourage students to view technology as a powerful tool for achieving a deeper understanding, rather than a shortcut to academic success. By integrating computational and graphing software, as well as artificial intelligence, into the learning process, I've witnessed how these tools can enhance the educational experience for the new generation of students. I've designed and implemented technology-based activities that provide valuable platforms for practicing and refining problem-solving skills, offering immediate, constructive feedback. As mathematics, teaching, and students evolve, it is crucial to embrace technology in a responsible manner—leveraging its benefits while fostering critical thinking, creativity, and ethical use.