

Teaching Statement
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My philosophy

Whenever asked a question, students in our education systems are expected to answer without vacillation, discouraging students from coming up with alternate or creative answers. Also, these student may hesitate to ask questions or admit they don't know how to solve certain problems due to the intimidation of "being wrong". My teaching style centralizes in addressing these issues by creating a safe environment where students feel comfortable asking questions, making mistakes, and thinking through their answers.

Keeping students motivated

My first time working as a teacher was for the high school math olympiad, an extra-curricular activity in which students participate mainly to have fun. These students were repeatedly told they were talented and smart, giving many of them the confidence they needed to strife towards reaching their goals, even if that included making some mistakes and failing to solve hard problems. From that experience, I mistakenly thought that teaching would always be this easy.

Outside of that environment, many college students have been told throughout their lives that "math is not for everyone" or "they are not math people", so an important aspect of teaching college level mathematics is to provide the students with the motivation a high school math olympian usually has. My main method to achieve this is to solve problems with them as a team. This reminds them that they are always welcome to contribute in math, and it encourages them to try new ideas, brainstorm, and make mistakes without being shamed. Another tool I rely on is letting the students know that even I can, and will, make mistakes. In my experience, this drastically increases participation by letting them know that they will not be judged.

"He is absolutely brilliant and does not take himself super seriously which makes him terrific."

Student Reviews, Spring 2021

Multiple resources

The amount of material in a single semester can be overwhelming, and study guides have proven useful in both preparing the students and making them confident that they know the material that has been taught so far. I also provide detailed answers for such guides before the corresponding examination so that students can verify their answers.

Teacher availability outside of the classroom is also essential, so I try to reserve at least two hours per week to have 1-on-1 sessions with students struggling with specific topics. This not only allows them to ask me highly specific questions and have tangential discussions too

long to have in the classroom, but also generates additional material in the form of notes or drawings I can potentially [share](#) later with the other students.

“Sergio is a champ and really took advantage of being online to use graphing software to really help me understand what the physical meanings of equations and concepts are. Also he made great reviews for every assignment for extra practice.”

“The lectures for this course were fantastic. Topics were well explained and the notes especially were incredibly detailed. Also, the thorough [sic] guide solutions were so helpful during exam and quiz prep.”

Student Reviews, Spring 2021

Diverse learning

Classrooms are full of students with diverse backgrounds and different sets of skills and knowledge. In order to use this in their favor, I always try to explain every concept in multiple ways. Often one student will understand a hard theorem with a nice drawing while another student will capture the idea better with a formula written on the board.

A feature of this method I personally enjoy is that students sometimes understand concepts from a perspective I wasn't aware of. By sharing those perspectives, they teach me a lot, making the classroom interaction more personal and symmetric.

Part of the role of a teacher is to find alternate ways to present the class material. For example, I have brought a curtain rod to class in order to explain the concepts of angular momentum and 3D curl, or once I thought of [a way of explaining bounds of integration](#) while cutting some fish. With the goal of creating diverse and accessible material, I began working on a [video course](#) based on our textbook “What is Differential Geometry?”.

“The way he explained the topics and followed up with examples was one of the main reasons I was able to digest so much complex theories of this class.”

Student Reviews, Spring 2021

Conclusion

The main takeaway I expect my students to leave my class with is being comfortable with uncertainty. This skill is crucial in most aspects of life, and being able to shamelessly say “I don't know” opens one up to learn new things and adapt to new environments.