# Teaching Statement
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I center my approach to teaching around the belief that understanding in mathematics is marked by, and most effectively achieved by, developing mathematical intuition. In particular, I always teach with an example heavy style and encourage students to practice with exercises between lectures, thereby providing them with the material needed to build their intuitions. Additionally, I strongly believe that anyone is capable of building a robust mathematical intuition if given sufficient time. In order to offer students the time and resources they need to develop their intuition, I practice a policy of open flexibility and generous availability.

**Example Focused Teaching.**
I imagine mathematical intuition to be a sort of muscle memory, akin to the reflexes of an athlete, musician, or craftsman, which is similarly developed through experience and practice. More concretely, I consider mathematical intuition to be familiarity with a wealth of diverse and thoroughly understood examples, as well as proficiency with the tools and techniques relevant to those examples. I think that developing such intuition is the rewarding part of learning mathematics, and that it abates many of the frustrations commonly associated with the subject. I have found that students without a developed intuition often struggle to begin solving novel problems because they lack the awareness of which results and techniques could be useful. However, once a student develops an intuition, they become able to fluently recall the general results of the subject, able to adapt known techniques to new circumstances, and able to produce illustrative examples of their own. I think that many people who have come to dislike mathematics likely did so in response to a learning environment which did not foster intuition, and therefore only presented them with opaque tasks and memorization. In contrast, I prioritize using examples to illustrate new concepts and reinforce theoretical facts. In particular, I like to introduce topics with exploratory examples, pointing out an interesting phenomenon to motivate the general statements of definitions and theorems. I find this helps give a connecting plot line to my lectures which makes them more than a list of facts. Equally as important are (counter)examples which clearly outline the boundary between concepts, and help pre-empt common misconceptions. In this vein, I take pride in my ability to create examples while lecturing which are tailored to answering student questions.

**Flexibility and Availability.**
My policy of open flexibility ensures students feel welcome and is intended to provide each student with the resources they require. I make it clear to my classes that I always encourage questions, and I am also open to suggestions for improving the course. These suggestions have ranged from simple things such as posting lecture notes before the lecture, to feedback on exam structure. More mundanely, I practice a flexible blackboard lecture style in which I am happy to detour to answer questions or address requests for additional explanation. I also find that blackboard lectures move at a pace students can follow while taking their own notes, allowing them to consider the material and ask more insightful questions during the lecture. This is a style I mimic when teaching online as well, where I share my screen and write using a tablet.

Further, I think that many students who otherwise may succeed in mathematics are discouraged by the pacing of university courses. While the scheduling of the semester cannot be ignored, I recognize that students may need additional instruction time and resources in order to succeed

in their studies. To offer this to them, I clearly communicate to my classes that, in addition to regularly scheduled lectures and office hours, I am always happy to schedule meetings with students in person or online at times which are convenient for them. I also use my policy of availability to assist my example based teaching. I encourage students to engage with exercises on their own time by letting them know they are always welcome to bring their attempts to a meeting for feedback.

**Teaching Experience.**
I have experience teaching the following courses at the University of Ottawa.

- MAT 1302 Mathematical Methods II (Linear Algebra). *Fall 2022.*
- MAT 1330 Calculus for Life Sciences. *Fall 2022.*
- MAT 1341 Introduction to Linear Algebra. *Spring/Summer 2021.*

As well, I have six years of lecturing experience as a graduate teaching assistant, acquired over the course of my masters and doctorate at the university of Ottawa. During that time I taught discussion groups for the following courses.

- MAT 1300 Mathematical Methods I (Calculus)
- MAT 1302 Mathematical Methods II (Linear Algebra)
- MAT 1320 Calculus I
- MAT 1322 Calculus II
- MAT 1327 Intensive Calculus for Life Sciences
- MAT 1341 Introduction to Linear Algebra
- MAT 1348 Discrete Mathematics for Computing
- MAT 1362 Mathematical Reasoning and Proofs

Additionally, I won a "Teaching Assistant of the Year" award from the University of Ottawa in 2018.

I am comfortable teaching undergraduate mathematics courses in any subject, and as an algebraist I am particularly suited to teaching abstract algebra courses such as Linear Algebra, Group Theory, Ring Theory, Galois Theory, Algebraic Geometry, etc.

While I do not have experience teaching at the graduate level, this is something I am eager for the opportunity to learn. I have enjoyed all of my teaching experience, even more so when teaching algebra, and therefore I am confident that I would enjoy and succeed at teaching graduate algebra as well.

**Selected Student Feedback.**
Below are selected quotes from anonymous student feedback I have received which I feel demonstrate my overall effectiveness as a teacher, as well as students' positive reception of my policies of example based teaching, flexibility, and availability. The original reports these quotes were taken from can be found on my website.

**MAT 1341 Introduction to Linear Algebra,** *Spring/Summer 2021.*

- "Professor Ruether is an excellent professor. He has clear command of the subject matter, engaging, and is able to effectively communicate the abstract concepts clearly. Professor Ruether truly cares about his students, and wants to put them in the best position possible to succeed. For example, he was available on weekends or late at night to address questions."
- "I'd like to start off by highlighting that I had a neutral stance on MAT 1341 at the beginning of the term. Over the course of the term, the professor has articulated complex topics clearly, provided good examples, and shows passion to assist students outside of class. I've enjoyed this class and taken a liking to the topics explored, thank you."
- "I was very scared to take this course because of its reputation, and Prof. Ruether seriously saved the day. I cannot say enough good things about his teaching style, his clear passion for helping others learn, and his willingness to help us succeed in this difficult subject."

- "I think the course was very well conveyed by the professor and I think he did an excellent job with teaching the required material and slowing down/ setting aside extra time to tackle the more difficult topics. overall was great a experience."
- "Ruether was enthusiastic, and he explained the concepts so as to appeal to our intuition (i.e. the content was presented such that natural questions were answered when they arose). As opposed to just regurgitating the textbook content, he explained the practical motivations for the things we were learning. I don't think anybody ever felt belittled for asking a question. Going through the examples, DGDs, and other recommended problems was conducive to doing well on the evaluations."
- "The professor was excellent! I love the way he built up a concept for a couple of classes and then out of nowhere blew our mind with a connection that would tie all the concepts together. This really made me enjoy the class. He also made some jokes here and there to light up the mood. He was also really good at explaining why concept works as they do and their utility in the real world. Overall I would love to take other classes with this prof. He is in my top three favorite prof for sure."
- "This is literally the best prof I have ever had in my entire life. I took a big brake from school and had not done any maths in prob 4 years. Prof Cameron's lecture are simply amazing. He is always available to answer questions and he genuinely cares about you passing your class. HIGHLY HIGHLY RECOMMEND. I doubt I'll ever get a better prof than him" *(From www.ratemyprofessors.com)*

**MAT 1348 Discrete Mathematics for Computing,** *Winter 2020.*

- "Very attentive when teaching and understands when students do not seem to understand the concepts."
- "Sometimes people are just naturally good teachers and he is one of them. Just everything about how he teaches is great. He provides examples that make the material more understandable. The way he talks and explains things is very easy to understand as well."
- "Good TA, makes me understand the theory learnt in class, and usually efficient with time. Always available to answer students' questions."
- "The TA effectively walks the class through example problems with clearly described solutions that help us better understand the course material."