

Teaching Philosophy & Portfolio

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1. APPROACHES TO TEACHING AND MENTORING

My time at UIW has been transformative. I have learned a myriad of techniques for serving a broad spectrum of students, mostly centered around the idea that active learning is the most impactful way of developing the student's confidence and accelerating their learning of the material.

1.1. **My philosophy.** Drawing upon my love for the outdoors and my experiences in becoming an Eagle Scout, I view teaching like building a fire. There are three main types of fires one can build:

- Lean-to
- Log cabin
- Teepee

Each fire has its pros and cons, serves a different purpose, but is ultimately reaching the same goal: to ignite a passion in all who sit around it. When teaching, I provide the tinder, kindling and fuel, but the ways in which they are combined and prepared depends on many factors.

I actively advocate for the adoption of innovative teaching techniques, especially active learning and discussions during the lecture period. Humor eases tensions, but actively guiding students in their own discovery of the material, having them discuss with their peers and getting them to be comfortable in participating is the best way to make the most effective use of the time in class. Depending on the students and the course, I approach my teaching as follows:

- **Lean-to:** I serve as a main support for the students. They lean on me for help and guidance when they are struggling. Such students are typically first-year students and require more support before being fully exposed to the full breadth of a subject. There is a fair amount of one-on-one interaction in class with the student when space and time permits. Students are provided tremendous structure in lecture so that they learn impactful strategies for taking notes and actively listening for information.
- **Log cabin:** I serve to build important scaffolding around the students' learning experience. The interlocking pieces of the course serve to contribute to a robust experience by giving the students a clear picture of my expectations and the goals of the course. Students are given more independence and learn to rely on each other. I standby, making sure the passion for learning is ignited. Such a structure is suitable for 2nd and 3rd year students who have developed some level of persistent knowledge and seek to sharpen their skills through active learning modules, peer study groups and class presentations.
- **Teepee:** I serve as a conscientious guide. This is the most intensive teaching style. It is here where a modified Moore method is employed and students lead the discussion and I stand back as a careful moderator. This sort of fire offers the most rewards, but the greatest pitfalls. The tinder is lit, the kindling burns and a student's passion for learning may be ignited. But such fires burn hot and quick and require much fuel.

This is where I continue to motivate the students, help them by providing in-class hints and show them various techniques for working through a problem. This sort of approach to teaching is most suitable for motivated and prepared students, typically in their 4th or final year of their schooling.

1.2. **Empowering through active learning.** Depending on the course level, the students enrolled and the material to be covered, certain active learning methods can be employed.

- **Lean-to:** Lecture notes are provided before class in the form of L^AT_EX Beamer Handouts, but with a catch: key terms, wording and graphics are hidden until lecture. It is then where students fill in the blanks and develop the necessary hand-to-brain connections for later recalling the material in the homework or in-class exercises. At various times in the lecture, students are asked to reflect on the material, offer an opinion on what is coming next or what the implications are for a particular concept in the greater context of the section. After some discussion on possible ideas, I ask students to form pairs (or triples), giving them the task of discussing their opinions and thoughts on the presented material.

At the end of such a lecture, students are then asked to complete a One-Minute Paper on the material, by expressing their clearest and muddiest thoughts on a particular topic or more generally about the lecture. Such feedback gives me much to reflect on and a way of then guiding the next lecture from the beginning, so as to reinforce what many understood and to clear up what many still misunderstand.

- **Log cabin:** Lecture is problem-based and students are asked to read the text before class with the intention of coming to lecture with questions. Such an approach works best in a course on differential equations, linear algebra or set theory (where many students see proofs for the first time). These courses tend to be more abstract, so I do not take away too much of the scaffolding. Rather, I replace the L^AT_EX Beamer Handouts with notes in my own voice, filling in what the book has left out and recalling key points from the class discussion and "Think-Pair-Share" exercises. This reinforces the student's responsibility to come prepared and to also learn to be an active contributor in their own learning and that of those around them.
- **Teepee:** Lecture is almost entirely driven by the students. They are in the driver's seat, but still in training (does anyone remember the driving instructor having their own brake pedal? I do! Coolest thing ever, and *necessary*). I serve as the driving instructor and ask them to get us from point A to point B without crashing the car. And, as with a real fire or car, one must tend to it, add fuel and help the students keep it going. Intensive class discussions are moderated by me, guided when necessary and ultimately serve to strengthen the student's confidence and knowledge of the subject. As with a teepee structure, students are leaning on each other to remain upright. Careful and thoughtful implementation of a modified Moore method is more work on the front end for the instructor, but serves to have a lasting impact on the student's retention and understanding of the material, because they are actively engaged in the learning process and with their peers.

Ultimately, my goal as an instructor is to ignite a passion for learning, regardless of whether or not the student is majoring in mathematics or taking a general education course. The best analogy I ever read on learning mathematics came from a general mathematics education textbook that I used for a Mathematics for Humanities course at UMaine: Jamie learns the exact routes necessary to get to the grocery store, the gym and school. On the other hand,

Indigo wanders the town, getting a sense of where everything is. Indigo has a broader sense of the mathematical city and can, with a little effort, make connections more quickly than Jamie. This is what I want to do for my students: help them develop the skills—from the very beginning—that allow them to navigate the mathematical world on their own.

1.3. Students with special needs. My own personal experiences have helped me to better understand and empathize with a broad range of students. I am particularly (and perhaps, in a way, uniquely) aware of the many mental and physical health issues that many students experience each semester. I have a rather benign (perhaps even bland) medical history, except for wonderful sleep-disordered breathing. What is particularly interesting about this, however, are the ways sleep-disordered breathing manifests itself. Someone may seem chronically fatigued, constantly distracted, forgetful or have a myriad of other medical ailments as a result of poor sleep (including, but not limited to mild symptoms of pre-diabetes, anxiety, ADHD, dyslexia, dysgraphia and other cognitive impairments). Students suffering from various medical problems experience all or some of the aforementioned symptoms and such symptoms get in the way of learning, if not properly managed or accommodated.

I make a point to let students know that my door is always open if they need to discuss any necessary learning accommodations. In the class-room, I try to reduce the overall anxiety of the class by always pausing not just for questions, but to break the tension with a little math humor. I try to rephrase important statements for students with auditory-processing disabilities. When I post notes for a course, they are usually typed using special fonts for those with dyslexia (simply a font with a heavier base). It is perhaps impossible to accommodate every disability, but I can make an effort to understand each student's unique situation when such a situation is brought to my attention, because my own experiences have shown me how learning under poor health can be incredibly difficult.

2. SELECTED TEACHING EVALUATIONS

- Spring 2018, Instructor, Calculus I (Average numerical rating by students: 4.59/5.0)
 - 1) He was very entertaining when teaching us new subjects. his methods are efficient and I feel no change is needed regarding teaching methods. I've had to retake almost every math course because teachers weren't very thorough about making sure the concept was portrayed clearly.. this is not the case with mr Niemeyer. Great teaching!
 - 2) He would break the energy in class and talk about something random which helped me personally because it helped wake me up a little bit.
- Fall 2017, Instructor, Precalculus (Average numerical rating by students: 4.47/5.0)
 - 1) The teaching and knowledge I gained from this course was exceptional. Not only did my instructor teach us how to do the problems, but he explained why we are doing them too. He would do this by showing an example on the board, solving it out and then providing a proof that explained each step. It is exciting to be in a class where I am not just doing problems for no reason, but now I am doing them and understanding how this will apply to life outside of the classroom. Dr. Niemeyer also made sure everyone knew what was going on while in the classroom, and would not move on to the next question until everyone understood it, or he would tell them to go to office hours. He is always willing to help people out and that helped me tremendously in the class!

2) The instructor utilized piazza in this course which was extremely helpful with homework and it increased communication in our class.

3) Instructor engages class with example questions, not simply just working through and giving answer. Instructor was readily inviting and available outside of class.

4) He would give plenty of tips for studying, would explain how to read the math text book, and would properly explain everything well. He made sure everyone understood the content and would always do many example problems

5) He made sure that you fully understood how to work the problem and that we are capable of working out the problem by hand instead of relying on a computing device. He also explained and provided proof to why some equations are worked out or why that function serves that purpose.

6) He allowed us to use Piazza to reach out to other students with questions we may have to understand the material when we needed help. He was also there to assist us and guide us down the correct path to solve a problem. He was also there for every student wanting them to understand the material before he moved on with the lecture.

7) Always available, no matter what. Stressed every class to come talk to him, and talking to him was very easy. Humor and teaching style made the course somewhat painless disregarding the material, and even then the material was always served in a way that was

- Spring 2016, Instructor, The Nature and Language of Mathematics (Average numerical rating by students: 4.3/5.0)

1) Homework was absolutely helpful in preparing for the exams and for the class. I took notes while doing homework so that I could reference them later.

2) I was absolutely terrified of this class and was sure I was going to fail. I feel much better now.

3) This class has definitely put an emphasis on logic over both common sense and emotion and helped me to perceive logic in a new way.

4) The instructor did a good job meeting the goal of the course which was to educate college students on the basic math principles. He did this through a pace determined by class performance and attention to the needs of the students.

5) Great course. Professor is one of the best I've had here. Always made sure everyone knew material and wouldn't stop teaching same material until we all understood.

- Fall 2016, Instructor, An Introduction to Real Analysis

1) I truly enjoyed this class. I feel like I actually learned a lot and was encouraged to ask questions when I didn't understand. This has been the best classroom environment I have ever experienced. Rob is one of the only professors that I felt treated me truly as equal to male students in the class. It is uncommon that I feel this way in a math class, and it absolutely made me more comfortable in the class and confident in my ability to learn Real Analysis. If I could take another class with this professor, I would do so in a heartbeat. The heavy work load ensured I kept thinking about the material on a daily basis, which I absolutely benefited from. Thank you for a great semester.

- Fall 2012, Instructor, Mathematics from a Historical Perspective (Average numerical rating by students: 4.2/5.0)

1) I was very impressed with how much Dr. Niemeyer engaged with the class. It was obvious it was very important to him that everyone understood the lectures. He was also very approachable outside the class and willing to assist a student's progress in any way he could. I enjoyed the class much more having Dr. Niemeyer as the professor than I would have with any of the other professors I have encountered.

2) Dr. Niemeyer was a great professor. He went through the course material very effectively and answered all questions well. His office hours really helped me solidify the factual knowledge he taught. Overall great course and instructor.

3) Dr. Niemeyer is a fantastic teacher and is clearly passionate about mathematics. He cares about his students and their success. Definitely an amazing teacher, and one of my favorites!

- Spring 2013, Instructor, Applied Ordinary Differential Equations (Average numerical rating by students: 4.5/5.0)

1) Extremely helpful and understanding; exceeds expectation. Interjects enough non-sequitur into lectures to keep class paying attention without detracting too much from course material.

2) Dr. Niemeyer was an excellent teacher. I learned so much more about differential equations than I could have last semester with another professor.

- Spring 2014, Instructor, Applied Linear Algebra (Average numerical rating by students: 3.6/5.0 — the average for two sections)

1) Makes students feel very comfortable in lecture and office hours. Has a calm personality that comes out in his teaching. Great instructor.

2) Robert Niemeyer show interest in his students and does what he can to help them succeed. He makes himself available for office hours throughout the week and is easily approachable.

3) I came into Linear Algebra after not having taken a math class in over 5 years (last I took was calc II in 2008). Since then, I've worked and been in academia myself, but I knew nothing of Lin. Alg. Prof Niemeyer made the class understandable and I truly learned quite a bit. I went from knowing nothing to having a strong A in the class, mainly because of the professor. Yes, I did my homework and visited him in office hours, but he was always able to explain things well enough so I could understand. If I could make one suggestion, more examples. Other than that, thank you.

4) He is a wonderful teacher who strives to be understood by all student not only the majority. He is flexible and adapts his teaching style for the students. He doesn't make the class easier instead he tries to make students reach further than they normally would. I enjoyed this class very much and hope to take another class taught by him if I have time in my schedule.

6) He is very professional and engage with the students. He is willing to help make sure everybody gets the material as well as having a good time with it. He prepares well his classes and goes with theories using examples. He agrees on searching other sources and make sure sources have reliable information. He is very open to office hours or any type of help he can provide. Overall, he is a good teacher.

7) Dr. Niemeyer was always well prepared. He actively sought our feedback in order to improve his teaching. He sometimes used directed comments and questions to encourage participation.