Michael H. Ostertag

**TEACHING STATEMENT**

My teaching philosophy is simple: create a positive, motivating space for students to develop into well-rounded engineers. This fabled engineer is a triple threat with a solid theoretical understanding of basic principles, real-world knowledge of implementation and realistic approximations, and the interpersonal skills to express their ideas to everyone from grandparents to Nobel Laureates. I believe it is critical to a student’s development to integrate these aspects with one another.

Fundamental electrical engineering theory can be difficult for students to conceptualize, especially early in their engineering education when basic concepts may not have obvious links to the real world. When I took my first circuits course with Dr. Edward Brown, I asked him, “I understand how to calculate capacitance and that a capacitor can store charge, but how would I use it?” His explanation of how the electrons can be gathered slowly in sensing applications in the form of a low-pass filter or donated quickly to help regulate a current flow helped pique my interest in the topic in what I might have otherwise cast aside as theoretical and not immediately useful. It is important for me as a teacher to connect core concepts from my classroom to applications in real life and to concepts other courses.

In addition to pure knowledge, I seek to help students develop their problem solving processes. I believe it is always useful for a professor to work through problems at the front of the class, reasoning out loud the decisions that they make and the assumptions that they take. After working through several problems, I like to give students examples that grow in complexity, allowing them to work as individuals or in small groups. By immediately applying what is still fresh in their minds, it gives the knowledge a chance to grab a deeper hold, and by working in small groups, students get a chance to understand the concepts even better and to practice their technical communication skills.

To further combine theory, application, and problem solving, I plan to structure homework problems as small projects, combining a motivating industrial problem, theoretical computation, implementation either algebraically or in a basic programming environment, and a short written report. The initial homework will have detailed instructions and steps to help guide the students, but as the course progresses, the detail of the instructions decreases. By presenting material on the board, providing an accessible textbook, encouraging in-class collaboration, and presenting relatable problems in the homework, I hope to help address the varied learning styles of students.

I feel that students learn best when they feel that the professor wants to be there. When Dr. Edward Brown walked into the classroom, you knew what to expect: a cheerful and energetic “Good morning, good morning, good morning,” asking the class “How are you doing today?” reminding us that learning circuits is for their “academic edification,” and telling us to prepare for the interesting material of the day. His positive energy, clear instruction, worked through examples, and ability to draw questions and comments out of the class have stuck with me throughout my education, and I aim to emulate these traits in my own classroom.