

Teaching Philosophy

Incoming students often think of an engineering education as learning specific tools and knowledge to perform technical tasks. By the time they graduate, I hope they understand that in addition to developing their base of technical knowledge, undergraduate education is about gaining the confidence to problem solve and continually learn throughout their career. In recent years, my teaching philosophy has evolved into two ideals to help realize this: **clarity** and **respect**.

Clarity refers not only to how I convey information and ideas, but also to a clarity of expectations for the student. In the fall freshman circuits course EET 105 we accommodate 4-yr Bachelor's and 2-yr Associate's degree engineering students, and this leads to a variety of student preparedness. I have learned to start with very fundamental techniques, including the basic use of their calculator and a consistent way to work problems on the board, to start developing clear common engineering nomenclature and techniques. As they struggle with understanding core concepts, any confusion in how an equation or quantity is presented will often cause unnecessary frustration and distraction, so I continually work to improve my clarity and consistency in these early courses. In addition, by having the students occasionally work problems on the board and present to the class, the communication clarity is reinforced through their actions. Beyond the clarity of presenting material, being clear with student expectations is also critical. An unclear assignment or Canvas page can truly cause distress among students, distracting from the learning objective. In upper-level courses, including a writing intensive junior course (EET 212W) my assignments tend to focus more on the professional expectations of a report than on the technical content. Therefore, I structure design assignments and the term research project so that not only rubrics provide expectations, but also multiple submission steps and drafts to help guide them to the final work product. The EET 212W term research project, which has them choose and investigate a topic and parse a peer reviewed article, is often initially overwhelming, but simply providing a clear approach and tailored guidance along the way helps students to get started and gain confidence. I am always surprised by the quality of the final presentation and paper for this assignment, and I think it has been one of my most successful attempts at pushing students towards the continual learning mindset.

Respect refers to respecting the student as an individual, catering to their learning needs and understanding personal struggles that come with the college experience. Our EMET students come from a variety of socio-economic backgrounds, but they are often very pragmatic and driven. It is important for me to develop a rapport with my students early-on so that they see the learning environment as a conversation and something they control. Once they see that I will truly answer their questions, take suggestions, and adapt to their personal emergencies without judgement and respect, which is not always easy, it helps with their confidence. Regarding respecting them as learners, the lab portion of courses provides an opportunity to clearly see that students will digest the concepts in a variety of ways, ranging from trusting the math, listening to my explanations, seeing a clear visual aid, or tinkering with wires and taking hands-on measurements. Observing students gain understanding during these different educational activities acts as a continual reminder to use variety in the presentation of materials to address a variety of learning preferences. In addition, emphasizing relevance by tying the subjects directly to examples of where it is used in the workplace, helps to engage students. In EET 275, a course on programmable robotic controllers, keeping the equipment updated and creating assignments related to practical engineering problems they will encounter takes a lot of preparation and work. I believe the students do recognize and appreciate this effort from faculty, because it shows that we respect their goals and time.

There are many approaches to teaching and learning activities, and I have enjoyed trying a variety of techniques and developing my personal style to help students on their path. These ideals of clarity and respect are not specific techniques, but for me they are guiding principles for my approach and attitude.