Teaching Statement

Engineering Motivation

The successful engineer has to be many things at once: they have to consider both the big picture and the little picture, they have to be the designer, the fabricator, and the project manager. The successful engineer needs to learn by doing, but also think ahead and assess risks. Empowering the engineering student to be become the successful engineer can be delicate task, but as any engineer could tell you, worth the journey.

Distinct from most other disciplines, an education in engineering is a training in "how to think" as opposed to "what to think," with most learning goals predicated on challenging the student to think outside the box. As an educator in engineering, I strive to employ teaching methods that foster this development of thinking.

Teaching Philosophy

My ultimate goal for the students I teach is to encourage development of their critical thinking skills to be able to look at the bigger picture of a system and for them to be able to think precisely about small decisions to be made in the system. In an upper-level engineering design class, the ideal mode for this goal is to lead the students through a design project relevant to the course topic. In introductory courses this is less feasible, so it's best to write homework questions that are predicated on plausible, real-world scenarios.

Additionally, working collaboratively with peers is the cornerstone of soft skills required for success in engineering and group work will be woven into course activities. Emphasis will be placed on encouraging the student to develop skills to be able to discuss what is working and what is not working, and developing a solution within a group environment.

Assessment

In introductory level engineering courses traditional exam methods are appropriate. However for upper level courses group design projects or presentations are more applicable.

A core tenet of my teaching philosophy is to not assign mandatory problem-set style homework. The traditional engineering curriculum is built around assigning and grading problem-set style homework, with these grades substantiating the formative part of the students' grades, in tandem with traditional exams. I don't believe it is effective or even constructive to grade students based on their first attempt to learn new material. It scares students away from the discipline and promotes rigid thinking around finding an objective best solution, where in real world engineering this typically does not exist. My preferred method is to provide optional problem-sets with solutions, and then go over them in class at the appropriate time. Additionally, using this approach enables students to move through the material at their own pace.

Mentoring

Mentoring is perhaps the most critical yet frequently overlooked aspect of any educator's role in a student's life. Frequently, interacting with a college instructor is a student's only exposure to a fully developed engineer and can be critical for not only student retention, but the student's ideation of their future career path.

Engineering Ethics

Ethical concerns about technological development and engineering are real and wellfounded. I intend to incorporate discussions and reflections about engineering ethics in the classes I teach as we cover related topics. It is my hope in doing so that I am able to instill a sense of social responsibility and thoughtfulness in the students that they are able to take with them after graduation into their successful engineering careers.

Creating an Inclusive Teaching Environment

Creating an inclusive teaching environment is critical for the success of every student in the classroom. As an instructor I am empowered to make reasonable accommodations for students that request it, and to show up to class everyday as my whole self, setting an example for students.