

Teaching Statement

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Of the many reasons I am attracted to a career in academia is the possibility of being amongst young minds and their fresh ideas. As a teacher I hope to impart them the skills necessary to apply themselves productively to the engineering endeavors they choose in the future.

In the discipline of Electrical and Computer Engineering teaching a subject must equip students to delve deeper, advance their knowledge of the subject fairly independently, and be able to keep pace with its latest developments. The ever expanding knowledge in the field and the near impossibility of predicting what the future holds, makes designing a course very difficult. Covering the entire gamut from fundamentals to the very latest may end up being an overkill for a typical student at any level. A sound foundation in fundamentals has kept me in good stead and I will lay emphasis on the same when teaching. I think a clear exposition of fundamental concepts and tools relevant to the subject will hold the student in good stead in the future.

In my experience there is no better way for a student to grasp concepts in engineering than solve lots of problems. Solving problems helps elucidate the important concepts and helps the student to become an expert at using the various tools and tricks needed to master the subject. Any course I design will give the students ample exposure to problems of varying difficulty via homeworks, submissions of which will form a significant part of the final grade. There will also be regular quizzes, especially at the undergraduate level, to keep a check on students and ensure that they do not lag behind the instruction in the class. I believe in fairly easy quizzes and difficult homeworks. This allows a willing student to get a good grasp of the subject without fearing for lack of ample time.

A project will form another aspect of any course I design. It will allow groups of students to apply what they have learned to tackling problems that are more advanced and will in the process give them a sneak peek into the latest developments in the field. For example, it could involve developing an application that applies the concepts learned, reproducing results found in prior published research or maybe even solving a research problem. Students will also be encouraged to use the opportunity to apply learnings to a different field of study or application not covered by the course.

One of the biggest challenges of teaching a class is to cater to the needs of individual students that constitute it. I am very willing to help individual students who may have difficulty coping with the requirements of a course, for example, by giving them more practice homeworks, say starting with lots of very elementary confidence building problems, and also more number of quizzes so that they get ample chances to learn the subject matter at a more relaxed pace.

Last but not the least, I believe student participation makes a lecture an even more enriching experience for the entire class. Participation, be it in the form of questions during a lecture, keen observations or end of class short student presentations, will be encouraged. I am willing to incentivize such participation, say by considering it when awarding the final grades or maybe by waiving a few homework problems for participating students.

I am comfortable teaching subjects that are part of a typical Electrical Engineering curriculum. Specifically, my area of expertise is that of communications and signal processing, especially the field of wireless communications and networking. My exposure to communication and information theory combined with my experience with real world systems puts me in a unique position to design courses that mix theory and practice and give students the head start they need to contribute to the know-how of the future.

I do expect my teaching methods to change with time and experience. To an extent, teaching a class is also a controlled experiment, the results of which must be factored into classes taken in the future.