

Jack Sampson

Teaching Statement

Philosophy

Knowing that I have been useful—that my advice or actions enabled someone to do something they were not otherwise able to accomplish, qualitatively eased the difficulty of their task, or made the passage of their time more enjoyable—is highly rewarding for me. Although there are many ways to assist others, teaching classes provides an opportunity to act as an interactive resource for many people at once, and thus the opportunity to more directly help more people over the course of a career than is likely from any less structured format.

The ability to affect many students at once means that teaching a class is not only an opportunity, but also a serious responsibility. In serving the students, I believe an instructor has four key duties. First, the instructor must respect both the students and the course material. If the instructor is not visibly invested in teaching the class, then there is no justification for demanding reciprocal investments on the part of the students. Second, an instructor must provide evidence for the importance of the key topics covered in the class. It is not enough to declare a topic important by fiat or solely for the mercenary pursuit of class credit. Third, the instructor must be transparent in both expectations and evaluations. One should test what one values and value what one tests, make course expectations clear well in advance, and clearly document the reasoning behind all evaluations. Fourth, an instructor must be both responsive and flexible. Feedback needs to be provided in a timely fashion, so that mistakes in students' understanding can be corrected, not merely recorded. Conversely, the instructor must allow for feedback *from* the class both sufficiently early and sufficiently often to adapt instruction to the needs of the current group of students and the current environment.

Experience

My work as a teaching assistant offered many learning opportunities, arising both from the students I was teaching and the colleagues with whom I was working. Over the course of several terms, my interactions with hundreds of students operating at diverse levels of subject mastery helped expand my understanding of the process of CS education beyond my own student experiences and preferences for learning styles. Acting as a teaching assistant for two classes at different schools that covered similar material, (CS 61C and CSE 141) has made me more aware of how different constraints in term length and class ordering can influence the presentation of subjects within a particular topic area. Working in several different classes provided an opportunity to work with many different fellow teaching assistants from diverse backgrounds. This has included colleagues actively involved in CS education research who have continued to be extremely valuable sounding boards for discussions about all aspects of teaching. I have found that our most valuable resources for learning how to be a more effective educator are our peers, not only in our own narrow disciplines, but also among those who study pedagogy directly.

The demands placed on a teaching assistant are different than the duties of an instructor, but they are related. In my discussion sections, I endeavored to show the value of key topics through the use of real world examples and by discussing how these concepts would reappear in future classes. When students populated labs late into the night I showed respect for the time and effort of the students by making myself available to answer questions long after my required hours were over. I saw that classes ran most smoothly when tests and quizzes were graded on the day they were given, solutions were presented alongside grades, and the grading rubric was open to inquiry. My experiences as a teaching assistant have also made me a strong proponent of project-based work. Project courses often feature the most demanding requests we make of students' time and energy, but are also the most capable vehicle for providing opportunities for highly tangible accomplishments, such as playable games or working processors.

Most recently, I was a co-instructor for a graduate level project class on smart phone processor design (CSE 291). The role of the instructor in a graduate class, especially one that is exploratory in nature, is quite different than leading a large undergraduate class. I guided a small set of students through a body of related work and then helped them to select and refine their own research projects. In this regard, the class bore many similarities to mentoring in a research group. For those newer students who may be less familiar with open-ended research projects, this can be a challenging environment in which to maneuver. In future classes of a similar nature, I will focus on further individualizing the amount of scaffolding provided to the experience levels of each of the students enrolled.

I look forward to leading classes in computer architecture and in digital design, at both the graduate and undergraduate levels, or machine structures or data structures at the undergraduate level. Additionally, I want to work with other faculty to ensure that consideration of power- and energy-efficiency in both software and hardware are part of the standard curriculum, and touched on in classes dealing with all layers of the application stack. With the increasingly mobile nature of computing and the rise of dark silicon, power and energy efficiency are concerns that should be thoroughly considered at both graduate and undergraduate levels.