

Teaching Statement

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In this statement I discuss my teaching philosophy, outline my teaching experiences, and list the courses I plan to teach.

Teaching Philosophy

The goal of any instructor is to help the students gain a deep understanding of the material being taught. Reaching this goal depends upon the instructor gaining the active participation of the students. I believe the best way to achieve active participation of students is to foster interest in them through engaging lectures that highlight the practical implications of the subject matter and its ties back to first principles. When the students are engaged they become active learners, participating in class discussions and assignments. Tying practical examples together with first principles helps students develop a “big picture” view of connections within the material, and a deeper understanding of the material.

The implementation of my teaching philosophy first requires engaging lectures. The best way to create engaging lectures is to divide them between prepared slides covering the basic principles of the material, whiteboard examples showing the practical implications of those principles through real world scenarios, and question driven discussion to engage and test the understanding of the students. In particular fostering discussion by interspersing questions into the prepared slides and examples is essential to engage students in learning. A second important piece is the creation of homework assignments that build from basic problems illustrating first principles up to challenging problems. These should be coupled with reading assignments that illustrate the practical applications of those principles.

Teaching Experience

During my graduate studies I served as a teaching assistant (TA) for several undergraduate and graduate courses. Some highlights among these courses include: (1) undergraduate *digital logic design*; (2) undergraduate *senior design project*; (3) undergraduate *computer architecture*; and (4) graduate *microcomputer hardware and software*. As TA in these courses I developed and graded homework assignments, assisted in the development and grading of exams, developed and graded class projects and labs, and held discussion sessions, review sessions, office hours, and lab hours. Recently, I requested and received the opportunity to guest lecture twice for the undergraduate *computer architecture* course. I found this experience to be exhilarating, one particular in-class discussion sparking my interest in a possible new research direction.

In addition to my work as a TA, I developed training lectures in the Verilog hardware design language and the TRIPS hardware design methodology. I presented these training lectures to the TRIPS hardware development team and, during the TRIPS prototype implementation, held regular office hours to answer questions and solve problems. The feedback I received on the lectures was very good, and several on the hardware design team remarked on their appreciation of my instruction. I also served as an informal mentor for several undergraduate and incoming graduate students of the TRIPS team. In this role I helped researchers get up to speed on the TRIPS design and methodology.

Teaching Interest

Given my background in computer engineering, I am most qualified to instruct a range of related courses at the graduate and undergraduate level including, computer architecture and microarchitecture, computer organization, VLSI, and logic design. As the need arises, I am willing to teach introductory courses in programming languages and operating systems. Additionally, I have a strong interest in developing an introductory graduate course on interconnection networks and I would enjoy teaching graduate seminar courses covering advanced topics in computer architecture and interconnection networks.

Please contact Dr. Stephen W. Keckler for a reference on my teaching. See attached list of references for contact information.