

# Statement of Teaching Qualifications and Approach

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In this statement, I list topics that I am qualified to teach, summarize my experience, and describe my approach.

## Course Offerings

My research and dissertation focus on computer architecture, with emphasis on the engineering of the memory hierarchy, multi-processor systems, and cloud server and commercial server architectures. Prior to my graduate studies, I received two separate undergraduate degrees, one in Computer Science and one in Electrical & Computer Engineering. Between undergraduate and graduate work, I held full-time and part-time positions in software development, hardware engineering, and telecommunications infrastructure management.

My background enables me to teach a spectrum of undergraduate level courses both in software and in hardware. I am most qualified to offer courses in computer architecture, operating systems, digital logic design, programming and software development, and parallel programming. At the graduate level, I am most qualified to offer advanced courses in computer architecture, parallel and multi-processor systems, and system design and engineering.

## Teaching Experience

Throughout my graduate and undergraduate career, I served as a teaching assistant for a variety of courses, ranging from a handful of students in small discussion groups to 60+ person lecture halls. In addition to my classroom experience, I delivered tutorials on computer architecture simulation and performance measurement methodology held in conjunction with major computer architecture conferences.

At Carnegie Mellon, I was a teaching assistant for CS operating systems and ECE embedded systems courses; I prepared and taught project labs and delivered guest lectures. At the graduate level, both at CMU and at EPFL, I served as the lead teaching assistant for Masters and PhD level computer architecture and multi-processor architecture courses; my responsibilities included delivering guest lectures and guiding semester-long student research projects. Several of the student projects I oversaw resulted in research contributions and publications.

## Teaching Approach

I believe that material is best absorbed via an active interaction between the class and the teacher. I therefore adopt a relaxed atmosphere where students can interrupt at any time to ask for clarification, share relevant experiences, and challenge the material. Furthermore, I find that I can best gauge how well students are following the lecture by receiving unsolicited questions. While this approach is best for small classes, I have taken large-lecture courses where professors were successful in actively engaging students, leading to a very positive experience that I try to emulate. I find that the first lecture I present sets the tone for the rest; I therefore strive to initially set up an environment where students feel comfortable and are encouraged to ask unsolicited questions, not only when further clarification is needed, but also when the material is understood and the students seek deeper insight.

I believe strongly in the reinforcement of theoretical knowledge through projects. For undergraduates, projects ensure that students gain intuition of the practical aspects of the discipline. For graduate students, projects can additionally provide starting points for research. On multiple occasions, several years after having supervised their labs and course projects, I have spoken to my students regarding their experiences. Based on these conversations, I am certain that having project experience greatly strengthens the knowledge and retention of the material.

I find great value in having students work in groups. I encourage students to actively work together and to leverage the group's diversity and dynamics rather than to simply partition the work. Most real-world projects require teamwork; explaining one's ideas to others, asking for help, developing leadership, working with people of different skill levels, and innumerable other collaboration skills are invaluable for both industry and academia. In the end, I find that the outcome of group work is of higher quality than work done in isolation and I find that working on coursework in groups is, in itself, a valuable educational experience.

For a teaching reference, please contact Prof. Babak Falsafi ([babak.falsafi@epfl.ch](mailto:babak.falsafi@epfl.ch)).