Statement on Teaching

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I deeply value teaching and wish to convey my enthusiasm for Computer Science in general and experimental systems in particular to all of my students. Unlike topics that are grounded in absolute truths with mathematical proofs, systems topics emphasize simple and practical solutions that depend on the student's understanding of the system constraints. For example, the preferred operating system scheduling policy depends on the unique requirements of a particular system; whether it is a personal digital assistant, a desktop or a server. Students need to understand the context within which a particular technique was preferrable.

In a fast-moving and technologically sensitive area, I relish the challenge of maintaining the vitality of curricula using constant updates and drawing on state-of-the-art examples from topical research domains. I wish to strike a balance between describing fundamental concepts while introducing variants that are more appropriate for contemporary hardware. For example, over the past few years first simultaneous multithreading and then multicore architectures have become ubiquitous; making multi-threading an indispensable concept. I adapted the operating systems course to slowly increase its focus on threading issues, more than was adapted by the course text book (*Operating System Concepts*, Silberschatz, Galvin and Gagne).

At Notre Dame, I redesigned the core graduate and undergraduate *Operating Systems* course. I developed a new graduate and undergraduate course in *Computer Networks*. Based on my own research interests, I also developed a new advanced graduate course in *Distributed storage* as well as graduate/undergraduate courses in *Multimedia Systems* and *Networked Sensor Systems*. Since our department is small, student enrollment requires that these specialized courses be offered every three years or so. My courses are project oriented with a significant course project. Some students who can commit to significant time and effort beyond the course have widened the scope of their course projects into research publications. Two course projects led to publications and two other projects had formed the basis for continuing dissertation research.

All my course materials, including the lecture slides and audio/video of the lectures are publicly available at `http://www.chandrabrown.org/surendar/teach/`. Videos of the lectures are also available in YouTube, Google Video, podcasts and iTunes U. Next, I briefly summarize the core undergraduate course that I taught at Notre Dame.

Junior level core Operating Systems

Operating systems manage system resources such as the CPU, memory and storage. Each of these subsystems uses variants of the same fundamental techniques. In order to make these similarities and differences clear, I organize my course around five different modules: *Process Management*, *Process Synchronization*, *Memory Management*, *Storage Management* as well as a module that focuses on understanding the interplay between these various concepts, especially in the context

of servers, desktops, laptops and PDAs. Student understanding of each module is evaluated using a quiz, homework assignment, homework project and a module exam as well as a final exam.

Educational Experimental Systems Lab

It is important for students to have a reasonable familiarity with the hardware and software systems that they will encounter in industry if they are to be employable upon graduation. At Notre Dame, I built, administered and managed the educational experimental systems lab which consisted of six desktops (provided by the department), a dual and quad processor Itanium2 servers (valued at $40K and $80K each and provided by HP Teaching initiative) as well as laptops (provided by a HP mobility grant). Students enjoyed full freedom to install and modify any software on these machines. I was also the site PI for Planetlab, a world-wide research infrastructure. I used these resources extensively for my course projects.