CSE548 Winter 2008 - Computer Systems Architecture

Instructor: Luis Ceze, luisceze@cs, CSE 540. Office Hours: Mon, 3-4pm, or by appointment.

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Meetings: Discussions MW, 10:30-11:50, EEB 042 (stay alert for room change)
Project meetings, CSE540.

Course Material: We'll use papers and the book by John Hennessy and David Patterson, "Computer Architecture, A Quantitative Approach", 4th edition. The 4th edition of the H&P was heavily reorganized to focus more on multiprocessors.

Reading: For each meeting, there will be assigned reading to be done *before* class. We'll also provide optional reading in case you want to read more about the topic.

Class Philosophy: Let's make the class as interactive as possible, given that we are not a large group. I'll present slides on the topic and expect you to participate asking critical questions and making pertinent comments. The class will live or die based on the quality of our discussions.

Project: A very important component of the class will be the project. We will provide a list of project suggestions and resources to get you thinking, but you are free to come up with anything that is suitable for the class in scope and size. The project can be done individually or in groups of 2. We'll meet individually at least twice, once to discuss the proposal and once to discuss the progress. The required deliverables are a 1-page proposal, a report (in a conference paper style) and a presentation at the end of the quarter.

Writing Assignments: We'll have short (1-page) writing assignments that will either summarize readings or present your opinion on design decisions/comparisons of real systems.

Grading: 50% Project (proposal, report, presentation), 20% writing assignments, 10% problem sets (or midterm), 20% take-home exam. (subject to change)

***Tentative* High-level Topic Structure:**

•metrics, pressing issues in computer architecture, major advances
•modern micro-processor architectures (ILP, OoO, VLIW)
•memory systems (hierarchy review, tolerating latency, virtual memory)
•vector processors (CRAY-1), SIMD extensions (Altivec, SSE)
•multiprocessors (shared memory, cache coherence, consistency, synchronization)
•virtual machines (binary translation)
•virtualization
•power
•massively parallel systems