CSE 470 / EE 470 Computer Architecture II

Credits
5.0 (3 hrs lecture, 2 hours meetings)

Lead Instructor
Luis Ceze

Textbook

Course Description

Prerequisites
CSE 351; either CSE 469 or EE 469

CE Major Status
Selected Elective

Course Objectives
Understand how a modern microprocessor works.
Understand how multicores work.
Have a general understanding of GPUs.
Have a general understanding of Warehouse-scale computers.
Appreciate the importance of energy efficiency in computing.

ABET Student Outcome Coverage: This course addresses the following outcomes:
H = high relevance, M = medium relevance, L = low relevance to course.
(1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (H)
(2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors (M)
(6) An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions (M)
(7) An ability to acquire and apply new knowledge as needed, using appropriate learning strategies (L)
**Topics:**
Introduction to architecture and metrics (performance and energy)
The ISA
Pipelining
Branch Prediction
Superscalars/Dynamic Scheduling
Multithreading
Memory Hierarchy (caches, prefetching, virtual memory)
Cache Coherence
Memory Consistency
Overview of GPUs and Warehouse-scale computers
Current trends in computer architectures (e.g., specialization).