

Electrical and Computer Engineering 250 / Computer Science 250

Computer Architecture

Meeting Time & Location

TuTh 1:25 – 2:40PM, CIEMAS -- Schiciano Auditorium

Faculty

Professor Benjamin Lee (benjamin.c.lee@duke.edu)

Office: Hudson 210

Graduate Teaching Assistants

Heather Duschl (heather.duschl@duke.edu)

Mohamed Ibrahim (mohamed.s.ibrahim@duke.edu)

Yuxuan Li (lyuxuan@cs.duke.edu)

Undergraduate Teaching Assistants

The final list of undergraduate TAs is being finalized.

We expect 14-15 UTAs, who will lead recitations and hold office hours.

Webpage

http://people.duke.edu/~bcl15/class/class_ece250spr14.html

Synopsis

Computer structure, machine language, instruction execution, addressing techniques, and digital representation of data. Computer systems organization, logic design, microprogramming, and interpreters. Symbolic coding and assembly systems. Prerequisite: Computer Science 201 or consent of instructor.

Text

(1) Patterson and Hennessy. *Computer Organization and Design: The Hardware/Software Interface*, 4th edition, Morgan-Kaufmann. (2) Kernighan and Ritchie. *The C Programming Language*, 2nd edition (optional)

Assignments and Grading

This course will require readings from the textbook, problem sets, programming assignments, and one multi-part project. Grades are assigned based on homework (50%), midterm-1 (12.5%), midterm-2 (12.5%), and final (25%).

Homework is assigned throughout the semester. You are expected to complete the homework individually unless otherwise stated. However, you may discuss topics covered in the class. There will be two midterms and a cumulative final exam.

Deadlines will be enforced except under extreme circumstances. Late submissions incur a 10% penalty when <24 hours late, incur a 20% penalty when 24-48 hours late, and receive no credit when >48 hours late. Students should consider turning in something not quite done on time rather than turning in something after the deadline. *Start assignments and projects early!*

Academic Policy

University policy, as codified by the Duke Undergraduate Honor Code, will be strictly enforced with zero tolerance for cheating and/or plagiarism. If a student is suspected of academic dishonesty (e.g., cheating on an exam, copying code, collaborating inappropriately on an assignment), faculty are required to report the matter to the Office of Student Conduct. A student found responsible for academic dishonesty faces formal disciplinary action, which may include suspension. A student twice suspended automatically faces a minimum 5-year separation from Duke University.

Week	Topic	Reading
Jan 13	Introduction; C Programming	Chapter 1
Jan 20	Data Representations; Memory	Chapter 1
Jan 27	Instruction Sets and Assembly Programming	Chapter 2
Feb 3	MIPS Assembly Language; Procedure Calls	Chapter 2
Feb 10	Procedure Calls; Recursion	Chapter 2
Feb 17	Boolean Algebra; Logic Gates Midterm 1	Appendix C
Feb 24	ALU and Storage Elements; Finite State Machines	Appendix C
Mar 3	Datapath and Control	Chapter 4.1 – 4.4
Mar 10	Spring Break	
Mar 17	Datapath and Control; Memory Hierarchy	Chapter 4.1 – 4.4; Chapter 5
Mar 24	Cache Memory	Chapter 5
Mar 31	Cache Memory Midterm 2	Chapter 5
Apr 7	Main Memory; Exceptions and Interrupts	Chapter 5
Apr 14	Virtual Memory; I/O	Chapter 6
Apr 23	Pipelining; Multi-core processors	Chapter 4.5 – end Chapter 7