

Electrical and Computer Engineering, Computer Science 250 Computer Architecture

Faculty

Professor Benjamin Lee (benjamin.c.lee@duke.edu)
Office Hours: TuTh 4:00-5:00PM, Hudson 210

Lectures

TuTh 11:45 – 1:00PM
CIEMAS – Schiciano Auditorium

Recitations

W 3:05-4:20PM, 4:40-5:55PM, 6:15-7:30PM

Graduate Teaching Assistants

Alfredo Velasco (alfredo.velasco@duke.edu)
Pengfei Zheng (pengfei.zheng@duke.edu)

Undergraduate Teaching Assistants

24 UTAs will lead recitations, hold office hours, and grade.

Webpage

http://people.duke.edu/~bcl15/class/class_ece250fall15.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*, 5th 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 digital logic design. Grades are assigned based on homework (50%), midterm-1 (12.5%), midterm-2 (12.5%), and final (25%). You are expected to complete the homework individually unless otherwise stated. However, you may discuss topics covered in the class. Late homework 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.

Academic Integrity

The discussion of ideas and design strategies is an integral part of the learning experience. However, cheating and plagiarism is not. Practically, you violate academic integrity when

- (1) you obtain solutions and code from others, or
- (2) you provide solutions and code to others.

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), the instructor will 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
Aug 24	Module 1: Course Introduction and Overview -- Introduction	Chapter 1
	Module 2: Instruction Sets and Assembly Programming -- C Programming	Chapter 2
Aug 31	-- From C to Binary	
Sep 7	-- Assembly Programming	
Sep 14	Module 3: Digital Logic Design -- Sequential Logic, Finite State Machines	Appendix B
Sep 21	Module 4: Processor Design -- Datapath, Control, Exceptions / Interrupts / Syscalls	Chapter 4.1 – 4.4
Sep 28	Midterm 1	
Oct 5	Module 5: Memory -- Caches	Chapter 5
Oct 12	-- Caches Fall Break	
Oct 19	-- Main Memory	
Oct 26	-- Virtual Memory Module 6: I/O	Appendix A.8
Nov 2	Midterm 2	
Nov 9	Module 7: Pipelined Cores	Chapter 4.5 – end
Nov 16	Module 8: Multi-core	Chapter 6
Nov 23	Thanksgiving	
Nov 30	Survey – Modern Processors Review for Final Exam	