Lectures

TuTh 11:45 – 1:00PM Biological Sciences 111

Faculty

Professor Benjamin Lee (benjamin.c.lee@duke.edu) Office Hours: TuTh 2:00-3:00PM, Hudson 210

Recitations W 1:25PM-2:40PM, 3:05-4:20PM, 4:40PM-5:55PM

Graduate Teaching Assistants

Yuhao Li (yuhao.li@duke.edu) Atefeh Mehrabi (atefeh.mehrabi@duke.edu) Parker Trofatter (kenneth.trofatter@duke.edu)

Undergraduate Teaching Assistants

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

Webpage

http://people.duke.edu/~bcl15/class/class_ece250spr18.html See Sakai for homework assignments, lecture slides

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%), final (20%), recitations (5%). 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 Community Standard, 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 | Торіс | Reading |
|--------|-------------------------------------------------------|-------------------|
| Jan 8 | Module 1: Course Introduction and Overview | Chapter 1 |
| Jan 15 | Introduction | |
| | Medule 2. Instruction Sate and Assembly Drogramming | Chanter 2 |
| | C Programming | Chapter 2 |
| | | |
| Jan 22 | From C to Binary | |
| Jan 29 | Assembly Programming | |
| Feb 5 | Module 3: Digital Logic Design | Appendix B |
| | Sequential Logic, Finite State Machines | |
| Feb 12 | Module 4: Processor Design | Chapter 4.1 – 4.4 |
| | Datapath, Control, Exceptions / Interrupts / Syscalls | |
| Feb 19 | Midterm 1 (Feb 22) | |
| Feb 26 | Module 5: Memory | Chapter 5 |
| | Caches | |
| Mar 5 | Caches | |
| | Main Memory | |
| Mar 12 | Spring Break | |
| Mar 19 | Main Memory | |
| | Virtual Memory | |
| Mar 26 | <u>Module 6</u> : I/O | Appendix A.8 |
| | Midterm 2 (Mar 27) | |
| Apr 2 | Module 7: Pipelined Cores | Chapter 4.5 – end |
| Apr 9 | Module 8: Multi-core | Chapter 6 |
| Apr 16 | Survey – Modern Processors | |
| Apr 23 | Review for Final Exam | |
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