CS 250
Spring 2015 SYLLABUS

Instructor
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Graduate Teaching Assistants
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Purpose
This course covers a broad overview of digital computers, including basics, assembly language, processors, memory, input/output, and advanced topics. The course comprises both lecture-format classes to examine course topics and laboratory hands-on experience with digital circuits and assembly language programming.

Grading Policy
Your grade is based on homework problems, in-class quizzes, in-class exams, a final exam, and laboratory problems and programming projects. A grade will be computed as follows:

9%  Homework problems
1%  Quizzes
40%  Examinations (10% each midterm and 20% final)
50%  Laboratory problems and programming projects

Late Policy
There is no partial credit for late assignments, and this applies particularly to any lab assignments that are designated as “must be completed during lab”. However, each student will have 3 late days for the semester that can be applied to any project or spread among up to three projects. The only other exceptions will be for emergencies, such situations requiring instructor consultation and approval.

Textbook

Tentative Schedule (15 weeks)
1. Introduction; below the program; information representation; number systems; characteristics of a computing platform; uses of abstraction.
2. Fundamentals of Boolean logic; the nature of digital devices; gates, truth tables, logic equations, combinatorial logic; clocks; memory elements; sequential circuits and finite state machines.
3. Performance: measurement; speed variation among computer subsystems; Amdahl’s Law
4. Instructions: the control flow model of computation; instruction representation; operand addressing; instruction types; computer arithmetic; instruction sets.
5. Processors: data paths; pipelined execution; vertical and horizontal microcode, endian storage order.
6. Assembly languages; programming paradigm; symbolic assemblers.
7. Memory and storage: technologies and basic organization.
8. Memory and storage: physical memories; access paradigm; physical memory addressing, caches and caching.
9. Memory and storage: virtual memory technologies; virtual addressing.
10. Input / Output: concepts and terminology; relative speeds; buses and bus architectures.
11. Input / Output: programmed and interrupt-driven I/O; a programmers; view of devices; I/O and buffering.
12. Performance enhancement: parallelism; data pipelining; multicore; multiprocessing.
13. Power and energy considerations.
15. Instructor-selected topics.

Changes for Emergencies

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. If an emergency occurs, you can consult the Purdue web page (http://www.purdue.edu) as well as the class web page on Blackboard for information.