Computer Systems Organization

Prof. Kai Hwang, EEB 212, Email: kaihwang@usc.edu
Office Hour: Mon. Wed. 3 – 4 pm, Tu. 2 - 4 pm

Morning Lecture Session: Lec. 30587R Mon. Wed. 10 – 11:15 am, GFS 101
Afternoon / DEN Lecture Session: Lec. 30591R / 014-30595R Mon. Wed. 2 – 3:15 pm, OHE 136
Lab Session: Dis.30589R Friday 9:00 - 9:50 am, THH 116 by TA: Maryam Soltan, soltan@usc.edu
Lab Session: Dis.30593R/015-30594R Fri. 1:00 – 1:50 pm, OHE 132 by TA: Wei-Jen Hsu, weijenhs@usc.edu

Course Description: This course covers the design of instructions, processor, memory hierarchy, I/O, and interconnect of modern computer systems. The lectures are taught by Prof. Hwang, covering the design principles of instruction set, CPU, digital arithmetic, cache, memory, and I/O subsystems and their hardware and software interfaces. The Lab sessions are taught by TAs, covering lab assignments using CAD and simulation tools. Both lectures and lab sessions are required by all students enrolled.

Prerequisite: EE 102L (Digital Circuits) and EE 357 (Organization of Computer Systems) or equivalent courses

Course Syllabus: (30 Lectures except 3 holidays, 75 minutes each)
1. Computer Abstraction and Technology (Chap.1 in 1 lecture)
2. Machine Instructions and Hardware/Software Support (Chap. 2 in 3 lectures)
3. Digital Computer Arithmetic (Chap.3 in 3 lectures)
4. Performance Issues and Benchmarks (Chap. 4 in 1 lectures)
5. The Processor (CPU) Design (Chap.5 in 4 lectures)
6. Mid-Term Exam on March 8, 2006 (Wed 2 - 4 pm) (Room to be announced)
7. Pipelining and Performance Enhancement ( Chap.6 in 4 lectures)
8. Cache Design and Memory Hierarchy (Chap.7 in 4 lecture)
9. Storage, Networks, and Peripherals (Chapter 8 in 3 lectures)
10. Multiprocessors, Clusters, and Grids ( Chap.9 and handout material in 2 lectures)
11. Final Exam on May 3, 2006, 8 – 10 am (2 hours)


Grading Policy and Class Regulations:

1. Check the class web site: http://den.usc.edu/ frequently about class handout, announcements, and grades. Even webcast lectures are available, you should attend all live lectures in class room except remote DEN students.
2. Contact the TA first on all questions related to homework and grading records. Check with Prof. Hwang only on lecture material and on things the TA cannot handle directly.
3. Homework 15%, Class attendance: 5%, Mid-term Exam 25%, Lab Projects 25%, Final Exam 30%
4. Homework must be done individually and collected at the beginning of class on the due day. Lab projects are done by teams to be assigned by TA. No late homework or late lab design reports will be accepted.
5. No makeup exams will be given in all exams missed. If you miss the mid-term exam, you should drop the class. If you miss the final exam, you will not earn the credit in this semester.
6. Cheating caught in homework, lab reports, and all exams will receive a failing grade.
7. Class attendance will be recorded: No penalty for the first two misses, 1% penalty for missing 3 lectures, 3% for missing 4 lectures, and 5% for missing 5 or more lectures.