

CSE/EEE 230 – Computer Organization and Assembly Language

Fall 2013, August 22nd – December 6th

Arizona State University
Ira A. Fulton Schools of Engineering
School of Computing, Informatics, and Decision Systems Engineering

Instructor: Dr. Ryan Meuth, rmeuth@asu.edu, 480-727-6389

Office Location: BYENG 480

Office Hours:

Mondays, 9am – 12pm

Tuesdays and Thursdays, 1:30pm – 4pm

Or by appointment.

Course Description:

Register-level computer organization. Instruction set architecture. Assembly language. Processor organization and design. Memory organization. IO programming, Exception/interrupt handling.

Pre-requisites:

CSE 120 or EEE 120: Digital Design Fundamentals

CSE100 or CSE110: Principles of Programming

Textbook:

David A. Patterson and John L. Hennessey, “Computer Organization and Design - The Hardware Software Interface”, Morgan Kaufmann, 4th edition.

Course Objectives:

Students who complete this course will be able to:

1. Understand MIPS assembly language and write assembly language programs, including function calls.
2. Understand the data representation (2's complement, single and double precision floating point) inside the processor, and perform arithmetic operations on them.
3. Understand the working of a single-cycle, and pipelined processor, including basic schemes of hazard detection and avoidance.
4. Understand the rationale behind memory organization and know how caches operate.
5. Demonstrate an introductory knowledge of multi-processors and multi-core architectures.

Assessment and Grading:

Your performance will be assessed by assignments, programming projects, quizzes, a Mid-Term Exam and a Final Exam. Their weights are:

Assignments and Projects	40%
Quizzes	20%
Mid-Term	18%
Final Exam	22%
Total	100%

The final letter grade is decided according to the percentage points obtained as follows:

A-, A, A+	90-92, 93-95, 96-100%
B-, B, B+	80-82, 83-85, 86-89%
C, C+	70-75, 76-79%
D	60-69%
E	less than 60%

The grade of "I" (incomplete) can be given ONLY when a student, who is doing otherwise acceptable work (passing grade), is unable to complete a part of work (e.g., the final exam) because of documented illness or other conditions beyond the student's control. In the latter case, the student must discuss with the instructor and complete an application form from the department before the part of work is due or as soon as the circumstances are known. Please see ASU grading policies at:

<http://students.asu.edu/grades-grading-policies>

Extra Credit and Alternative Activity

Missing a graded activity will be given zero credit. In-class exercises and quizzes may not be made up. No extra credit-activities will be given to any individual. Extra credit-activities may be given to the entire class. An alternative to the assignment and exam may be arranged if a student misses the activity and the absence is caused by documented illness or personal emergency that made the completion/attending impossible. A written explanation (including supporting documentation) must be submitted to the instructor before the part of work is due or as soon as the circumstances are known.

Grading Appeals

Any inquires or appeals on grades of homework, projects, or tests must be done in writing by completing the "Grade Inquiry Form" within a week from the day the assignment was returned or comments were published on-line. State the problem and the rationale for any change in grade in your appeal.

Cooperation

You are encouraged to cooperate in study group on preparing assignments, projects, tests and exams where permitted. However, anything that you turn in must be your own work: You must write up your own solution with your own understanding. If you use an idea that is found in a book or from other sources, or that was developed by someone else or jointly with some group, make sure you acknowledge the source and/or the names of the persons in the write-up for each problem.

The instructor and the TA will **CAREFULLY** check any possible proliferation or plagiarism. We will use the document/program comparison tools like MOSS (Measure Of Software 4 Similarity) to check any assignment that you submitted for grading. The Ira A. Fulton School of Engineering and the Department of Computer Science and Engineering expect all students to adhere to ASU's policy on Academic Dishonesty. These policies can be found in the Code of Student Conduct:

http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm

ALL cases of cheating or plagiarism will be handed to the Dean's office. Penalties include a failing grade in the class, a note on your official transcript that shows you were punished for cheating, suspension, expulsion and revocation of already awarded degrees.

Student Code of Conduct:

<https://eoss.asu.edu/dos/srr/codeofconduct>

Schedule and Major Topics Covered in the Course (Tentative):

(Grayed out dates indicate No classes due to University Holidays or Finals week)

(Red dates indicate exam dates)

Week #	Tuesday	Thursday	Topic
1		8/22/2013	Introduction
2	8/27/2013	8/29/2013	Computer Performance
3	9/3/2013	9/5/2013	MIPS Language I
4	9/10/2013	9/12/2013	MIPS Language II
5	9/17/2013	9/19/2013	MIPS Language III
6	9/24/2013	9/26/2013	MIPS Language IV
7	10/1/2013	10/3/2013	Arithmetic
8	10/8/2013	10/10/2013	Mid-Term Review / Exam
9	10/15/2013	10/17/2013	Single Cycle Processor
10	10/22/2013	10/24/2013	Pipelined Processor I
11	10/29/2013	10/31/2013	Pipelined Processor II
12	11/5/2013	11/7/2013	Memory Organization I
13	11/12/2013	11/14/2013	Memory Organization II
14	11/19/2013	11/21/2013	I/O
15	11/26/2013	11/28/2013	Multi-Core I
16	12/3/2013	12/5/2013	Multi-Core II
17	12/10/2013	12/12/2013	Final Exam 12/12/2013, 7:30am - 9:20am.