CSE 320
Computer Organization and Architecture
Fall Semester 2017

Course Description

Boolean algebra and digital logic. Combinational and sequential circuits. Representations of data and instructions. Architecture and major components of computer systems. Assembly language programming and interfacing to high level languages. Assembler and linker processing.

Course Objectives

This course will introduce students to the interface between the hardware and software of modern computing systems by studying the ISA (instruction set architecture) of a typical microprocessor. Students will learn about:

a) the design of combinational and sequential circuits,
b) the representation of and operations on basic data types,
c) the architecture and organization of digital computing systems,
d) the process of translating and executing a computer program.

The primary vehicles to achieve these objectives are the study of general concepts and the study of a specific computing system which illustrates these concepts. Students will write C and assembly language programs in a Linux environment.

Instructor

M. McCullen
2142 Engineering
517-355-2354
Office hours:
Tu/Th 2:30-3:30 PM
mccullen@cse.msu.edu
and by appointment

Graduate Teaching Assistants

A. Gonzales (gonza647@msu.edu)
T. Le (letam@msu.edu)

Course Website

Information related to the course is available at:

http://www.cse.msu.edu/~cse320/

Textbook

(Harris and Harris; Morgan Kaufmann Publishers, 2015; ISBN 978-0-12-800056-4)

Lecture Sessions

The lecture sessions will be conducted in 1345 EB (Tu/Th 12:40-2:00 PM). Regular attendance at lecture is critical to your success in this course.
Course Grades

Your course grade will be based on the sum of the points you earn in the following categories:

- Examinations (60% of total course points)
- Computer Projects (40% of total course points)

To be eligible to earn a non-zero grade in the course, you must receive at least 50% of the total points available for the examinations and at least 50% of the total points available for the computer projects.

The following table gives the scale for course grades:

- 4.0  90% of points available
- 3.5  85% of points available
- 3.0  80% of points available
- 2.5  75% of points available
- 2.0  70% of points available
- 1.5  65% of points available
- 1.0  60% of points available

The scale will be adjusted at the end of the semester, if necessary.

Examinations

Two midterm examinations and a final examination will be conducted during the semester, and will constitute 60% of the total course points.

- Midterm Exam #1 (18%)  Tuesday, 10/10 (during lecture)
- Midterm Exam #2 (18%)  Tuesday, 11/14 (during lecture)
- Final Exam (24%)        Thursday, 12/14 (12:45 - 2:45 PM)

Make-ups for examinations will be arranged if your absence is caused by documented illness or personal emergency. A written explanation (including supporting documentation) must be submitted to the instructor; if appropriate, an alternative to the examination will be arranged. Whenever possible, make-up arrangements must be completed in advance.

Computer Projects

A series of computer projects will be assigned during the semester and will constitute 40% of the total course points. These projects will include the design, implementation and testing of assignment solutions using C and assembly language.

To be eligible for full credit, a solution to a computer project must conform to the specifications stated on the handout for that assignment. Solutions that conform to some, but not all, of the specifications will be eligible for partial credit.

To be eligible for any credit, a solution to a computer project must be submitted for grading by the deadline stated on the assignment handout. Solutions which are submitted after the deadline will not be accepted.

If you are unable to complete a computer project by the specified due date due to illness or personal emergency, contact the instructor. If appropriate, the assignment due date will be extended.
**Academic Integrity**

The Department of Computer Science and Engineering expects all students to adhere to General Student Regulation 1.00, Protection of Scholarship and Grades, which states:

The principles of truth and honesty are fundamental to the educational process and the academic integrity of the University; therefore, no student shall:

1.01 claim or submit the academic work of another as one's own.

1.02 procure, provide, accept or use any materials containing questions or answers to any examination or assignment without proper authorization.

1.03 complete or attempt to complete any assignment or examination for another individual without proper authorization.

1.04 allow any examination or assignment to be completed for oneself, in part or in total, by another without proper authorization.

1.05 alter, tamper with, appropriate, destroy or otherwise interfere with the research, resources, or other academic work of another person.

1.06 fabricate or falsify data or results

To summarize: anything which you submit for grading must be your own work.

For the computer projects, you are encouraged to discuss the specifications and problem-solving strategies with the instructor, the Teaching Assistants, and other students from the class. However, once you begin implementing your solution, you must work individually.

Under no circumstances should you share a project solution with another student. Each project solution is electronically compared to all other solutions to identify similar solutions. Students who submit solutions which are essentially identical will receive a penalty grade, such as a score of zero for that assignment or a grade of zero in the course.

Additional information is available at:

[https://msu.edu/~ombud/academic-integrity/index.html](https://msu.edu/~ombud/academic-integrity/index.html)

**Notes**

Any extenuating circumstances which impact on your participation in the course should be discussed with your instructor as soon as those circumstances are known (such as absences due to illness or religious observances).

All students are expected to be responsible users of the computer system provided for this course. Account usage guidelines published by the Department of Computer Science and Engineering are posted under:

[http://www.cse.msu.edu/Facility/Policies/AUP.php](http://www.cse.msu.edu/Facility/Policies/AUP.php)

Commercialization of lecture notes and course materials is not permitted in this course.
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<th>Topics and associated readings</th>
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<td>09/07</td>
<td>Combinational circuits (Harris, 2.1-2.9)</td>
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<td>Microarchitecture (Harris, 7.1-7.3)</td>
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<td>Memory systems (Harris, 8.1-8.3)</td>
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