CS 341 Computer Architecture and Organization

Fall 2023

Lectures: Tue./Thu. 7:00 - 8:15 pm in University Hall Y02-2120
Labs: Tue./Thu. 5:30 - 6:45pm, 8:30 - 9:45pm in M03-0732
Instructor: Hefei Qiu
Email: hefei.qiu001@umb.edu
Office Hours: Tue./Thu. 4:30 - 5:30 pm in M-03-106

Student Outcomes:
Students successfully completing this course will:
- Understand the Intel processor architecture and some basic instruction sets.
- Be able to write simple C library functions in i386 assembly language.
- Be able to produce an optimized gate level hardware logic schematic from a truth table and/or a Boolean algebra expression with as many as 4 inputs including "don't care" combinations.

Books:
- Professional Assembly Language, Richard Blum, Wrox/Wiley, ISBN 978-0-7645-7901-1, Author's errata

- Digital Principles, 3rd Ed., Roger Tokheim, McGraw Hill

- Excerpts from The Personal Computer from the Inside Out, Sargent and Shoemaker available on Blackboard course webpage

Topics:
- Introduction to Embedded Systems
- Intel Architecture Overview, including processor, memory, stack etc.
- Assembly Language Programming
- Programming I/O devices, programmable interrupt controller, interval timer, cache memory
- Digital circuits

Attendance:
In general, attendance will not be taken. If you miss a class, it is your responsibility to find out what has been covered. Occasionally, it might be taken which serves the purpose of establishing a true class list and for the instructor to get to know all of you a bit better.

Grading:
Grades are determined based on Arduino lab assignments (20%), Tutor virtual machine projects (30%) and examinations (50%). There will be 9-10 lab assignments on programming the Arduino Single Board Computer in the lab. Each lab assignment is expected to be completed at the end of the lab session with the write-up to be turned in at the next one. There will be 5 virtual machine projects that students do remotely. These will be C and/or assembly language projects on the tutor virtual machines. They will be assigned 1 to 2 weeks before they are due. No late machine projects will be accepted after posting the solutions.

There will be 3 in-class exams: Exam I, Exam II and the final exam. Exam scores will be scaled up if the class average is below a C-. The overall exam score will be computed based on the best 2 out of 3 exam scores. Students will get an F grade for the course if they miss 2 exams. There will be no make-up exams.

Letter grades for the course will be determined according to the following chart:

>92	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
< 60	F

I do NOT give Incompletes. If you have a serious issue, please schedule an appointment with me to discuss it.
Please note: No courses required by the CS major, minor, or certificate program may be taken pass/fail.

Student Conduct:
Students are required to adhere to the University Policy on Academic Standards and Cheating, to the University Statement on Plagiarism and the Documentation of Written Work, and to the Code of StudentConduct which is can be found online at: https://www.umb.edu/campus-life/dean-of-students/student-conduct-process/

Accommodations for Disabilities:

Section 504 of the Americans with Disabilities Act of 1990 offers guidelines for curriculum modifications and adaptations for students with documented disabilities. If applicable, students may obtain adaptation recommendations from the Ross Center for Disability Services CC-UL-211, by phone: 617-287-7430 or byemail: ross.center@umb.edu. The student must present these recommendations and discuss them with eachprofessor within a reasonable period, preferably by the end of Drop/Add period.