CIS 310 Computer Organization & Assembly Language , 4 credits
Summer 1, 2021

Prof. D. H. Yoon
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Virtual Office Hours by ZOOM: M & W 10:00 -11:00am
Course Meeting Times and Format(s): Video Lectures will be posted weekly and the corresponding PDF lecture file will be posted by 11:00am on Mondays and Weds on CANVAS.

Course Description: The architecture of computer systems and associated software. Topics include digital logic circuits, computer interfacing, interrupt systems, input/output systems, memory systems, assemblers, assembly language programming, and computer networks. (4 credits)

Program Goals: **http://umdearborn.edu/cecs/CIS/data/programs/CIS%20Flyer.pdf**

Course Objectives:

Understanding the translation of assembly language into machine language

The student will be able to analyze and formulate interrupts and exceptions
- The student will be able to analyze and synthesize combinational and sequential circuits using low-level flip-flops and high-level registers, encoders, decoders, and multiplexers
- The student will be able to describe arrays and linked lists in terms of address registers
- The student will be able to describe micro-operations and timing controls
- The student will be able to describe the interaction between CPU and memory at the register level
- The student will be able to describe the machine representations of the primitive data types *char*, *int*, and *float*
- The student will be able to reduce a circuit

Required Materials and/or Technology:

Kip R. Irvine, Assembly Language for X86 Processors, 7th ed (lst half of the semester)

M. Mano, *Computer System Architecture, 3rd ed,* 1993 (2nd half of the semester)

Assignment and Grading Distribution:

3 Exams	(100 points each)	300
6 programs	(100 points each)	600

Tentative Course Outline:

TOPICS	(from Irvine's book) (Website: www.asmirvine.com)
Chap. 1	Introduction, Number Systems, ASC II, Boolean Operations
Chap. 2	X86 Organization
Chap. 3	X86 Assembly Language Programming Fundamentals
Chap. 4	Data Transfers
	Exam 1
Chap. 5	Procedures: stacks, Summing arrays
Chap.6	Conditional Processing
Chap. 7	Integer Arithmetic
Chap. 8	Advanced Procedures
	(from Mano's book)
Chap. 1	Digital Logic Circuits
Chap. 2	Integrated Circuits and Digital Functions
	Exam 2
Chap.4	Register Transfer and Micro Instructions
Chap.5	Computer Organization & Design
	(Exam 3)

University Attendance Policy:

A student is expected to attend every class and laboratory for which he or she has registered. Each instructor may make known to the student his or her policy with respect to absences in the course. It is the student's responsibility to be aware of this policy. The instructor makes the final decision to excuse or not to excuse an absence. An instructor is entitled to give a failing grade (E) for excessive absences or an Unofficial Drop (UE) for a student who stops attending class at

some point during the semester.

Academic Integrity Policy:

The University of Michigan-Dearborn values academic honesty and integrity. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth by the Code of Academic Conduct (http://umdearborn.edu/697817/), as well as policies established by each college. Cheating, collusion, misconduct, fabrication, and plagiarism are considered serious offenses and violations can result in penalties up to and including expulsion from the University.

Disability Statement:

The University will make reasonable accommodations for persons with documented disabilities. Students need to register with Counseling & Disability Services (DS) every semester they are enrolled. DS is located in 2157 UC (http://www.umd.umich.edu/cs_disability/). To be assured of having services when they are needed, students should register no later than the end of the add/drop deadline of each term. If you have a disability that necessitates an accommodation or adjustment to the academic requirements stated in this syllabus, you must register with DS as described above and notify your professor.

Safety: [Unnecessary for online courses]

All students are encouraged to program 911 and UM-Dearborn's University Police phone number (313) 593-5333 into personal cell phones. In case of emergency, first dial 911 and then if the situation allows call University Police.

The Emergency Alert Notification (EAN) system is the official process for notifying the campus community for emergency events. All students are strongly encouraged to register in the campus EAN, for communications during an emergency. The following link includes information on registering as well as safety and emergency procedures information: http://umdearborn.edu/emergencyalert/.

If you hear a fire alarm, class will be immediately suspended, and you must evacuate the building by using the nearest exit. Please proceed outdoors to the assembly area and away from the building. Do not use elevators. It is highly recommended that you do not head to your vehicle or leave campus since it is necessary to account for all persons and to ensure that first responders can access the campus.

If the class is notified of a shelter-in-place requirement for a tornado warning or severe weather warning, your instructor will suspend class and shelter the class in the lowest level of this building away from windows and doors.

If notified of an active threat (shooter) you will Run (get out), Hide (find a safe place to stay) or Fight (with anything available). Your response will be dictated by the specific circumstances of

the encounter.