CS 238: Assembly Language Programming, Spring 2018

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Preferred Method of Contact:	In person during office hours, or email
Office Hours:	Mon & Wednesday 11:00 -1:00 pm
Classroom; Days/Time:	226 JB; MW 9:30—10:45 PM
Prerequisites:	CS 211

General University Policies
Some general university policies pertaining to all syllabi can be found at:
https://webs.wichita.edu/?u=ofdss&p=/students/syllabusinformation/

Academic Honesty
Students are responsible for knowing and following the Student Code of Conduct http://webs.wichita.edu/inaudit/ch8_05.htm and the Student Academic Honesty policy http://webs.wichita.edu/inaudit/ch2_17.htm.

Each student is expected to work independently on ALL home assignments, exams and quizzes. Any sharing/copying of solutions with any other person/website, whether intentional or unintentional, will be considered to be a violation of the rules and subject to a penalty to be determined by the instructor. The penalty may range from a mild warning to an F in the course with a written record in the student's departmental file.

Course Description
An introduction to basic concepts of computer organization and operation. Studies machine and assembly language programming concepts that illustrate basic principles and techniques. Laboratory exercises given for experience using personal computers.

Definition of a Credit Hour
Success in this 3 credit hour course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction and preparation/studying or course related activities for a total of 135 hours.

Measurable Student Learning Outcomes
After passing this course, students will be able to:
1) Recognize a computer's instruction set and relate it with the processor hardware.
2) Manipulate digital data in binary systems.
3) Analyze problems and design solutions in well-structured assembly language programs.
4) Write and debug assembly language code.
5) Comment the code.
6) Integrate assembly language programs with high-level language programs, such as in C.

Required Texts
ARM Assembly Language - An Introduction (2nd Edition), by John R. Gibson. LULU.com publishers, ISBN: 978-1447717157.

Class Protocol

This course expects students to be already able to program well in at least one high-level language. Students are not taught basic concepts of programming in this course; rather they are expected to have already mastered those concepts and are taught how to now apply the concepts in the realm of assembly programming. Thus, students not yet proficient in programming should NOT take this course.

Grading Scale

WSU uses a +/- grading scale for final grades and to calculate grade point averages.
The letter grades and the corresponding grade points are as follow:

A: 4.00 denotes excellent performance
A-: 3.70
B+:3.30
B: 3.00 denotes good performance
B-: 2.70
C+: 2.30
C: 2.00 denotes satisfactory performance
C-: 1.70
D+:1.30
D: 1.00 denotes unsatisfactory performance
D-: 0.70
F: 0.00 denotes failing performance

Grading Policy

Your letter grade will be based on the following components:

Home Work:	20%
Exam I	15%
Exam II	15%
Exam III	20%
Exam IV	30%

Your final course grade will be approximately based on the following:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93	90	87	83	80	77	73	70	67	63	60	50

Assignments

Home assignments, and their due dates, will be announced in class, and posted on the course's Blackboard page. Late assignments will not be accepted without strong reason. Assignments with approximate content are as follows:

Assignment 1: Number Systems; covers Outcome 2.
Assignment 2: Fixed-length digital representations; covers Outcome 2.
Assignment 3: Software installation and first assembly program; covers Outcomes 1 and 5.
Assignment 4: Branching and high-level control constructs; covers Outcomes 1 and 3.
Assignment 5: Array manipulation; covers Outcomes 3, 4, and 5.
Assignment 6: Subprograms; covers Outcomes 3, 4, and 5.
Assignment 7: Bit manipulation; covers Outcomes 3, 4, and 5.
Assignment 8: High-level language interface; covers Outcome 6.

Missed Exams

Since all exams will be held during class times, make-ups will not be given unless written proof of inability to attend is presented and approved by the instructor, usually in advance.

Academic Dates

- January 17, 2018: First day of class
- March 30, 2018: Last day to withdraw from course with W ("withdrawn")
- May 3, 2018: Last day of class
- May 3, 2018: Final Exam
- May 5 - 10, 2018: Final exam week. For this course there is no final on the final week.

Tentative Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1		Binary and Hexadecimal number systems
2		Signed and unsigned representations
3		Registers, Memory, and Data declarations
4		Simple instructions and operands
5		Branches and implementing high-level control structures in assembly
6		In-class problem solving by instructor
7		Exam I
8		Hardware Stack and associated operations
9		Subprograms
10		Parameter passing by value and reference
11		Interfacing assembly and high-level programs
12		Advanced operands
13		Advanced instructions
14		In-class problem solving by instructor
15		Exam IV