CS 2810 – 002

COMPUTER ORGANIZATION AND ARCHITECTURE

(FALL 2014)

Credit Hours: 3

Course Description: This course uses assembly language to introduce basic concepts of computer organization. Includes number systems, CPU organization, instruction sets, programming in assembly, memory organization, debugging, program design, and documentation. Covers interrupts, vector tables, and disk I/O.

Class Hours: Tuesdays and Thursdays 1:00 PM – 2:15 PM

Instructor: Dr. Reza Kamali

Class Location: CS 502

Office: 520-B Computer Science Building

Office Hours: Monday 2:00-3:00 PM, Tuesday 4:10-5:00PM, Wednesday 11:00AM-12:00PM, and Thursday 4:10PM - 5:00PM, also you can see me by appointment. I have open door policy and you are always welcomed if my office door is open and I am not helping other students.

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Prerequisites: CS 1400

Text Book: Introduction to Computing Systems, from bits & gates to C & beyond
Yale N. Patt & Sanjay J. Patel, Second Edition, McGraw Hill, 2004, ISBN # 0-07-246750-9.

http://www.mhhe.com/patt2

Instructional Objectives:

By the end of this course, the student will be able to

1. Identify the major hardware components in a microcomputer and describe their functions.
2. Identify the major components of a microprocessor and describe their functions.
3. Convert between different numbering systems.
4. Perform binary arithmetic.
5. Explain the difference between assembly language and machine code.
6. Assemble and link an assembly language program.
7. Utilize assembly language instructions to perform data manipulation in registers and in memory.
8. Design structured assembly language programs.
9. Provide appropriate program documentation.
10. Use a debugger to discover logic errors.
11. Utilize the following addressing modes: immediate, direct, indirect, indexed, and register.
12. Learn about the structure and function of computers.
13. Get familiar with the nature and characteristic of the modern-day computers.

Tentative Schedule:

Week	Description	Chapter
1	Introduction to Computer Architecture	Chapter 1
2	Data Types and Operations	Chapter 2
3	Data Types and Operations (Continue)	Chapter 2
4	Digital Logic Structures Combinational Logic Circuits	Chapter 3
5	Digital Logic Structures Sequential Logic Circuits	Chapter 3
6	The von Neumann Model ALU, Memory, I/O	Chapter 4
7	First Midterm Exam (Fall Break)	
8	LC-3 Model LC-3 Edit	Chapter 5 Project #1
9	LC-3 Instruction Simulation	Chapter 5,6 Project #2
10	Assembly Language	Chapter 7 Project #3
11	Basic I/O	Chapter 8 Project #4
12	TRAP Routines Subroutines	Chapter 9 Project #5
13	Second Midterm Exam	
14	Stack (Thanksgiving Holiday)	Chapter 10 Project #6
15	State Machine	Chapter 1-10 Final Project
16	Projects and review	
17	Final Exam	

Accommodation for Disability

If you have any disability that may impair your ability to successfully complete this course, please let the instructor know at the first class meeting. Accommodations are coordinated through the Accessibility Services Department in consultation with the faculty and will require medical and/or psychological documentation.

Project:
You need to choose a research topic about one of the current topics in Computer Architecture or you may define a new application and write your own code for the project. If you choose the research project, It should be under development or published after 2010. You have to submit the report two weeks before the end of classes.

General Notes:
Homework is due one week after they are assigned, which means you have one week to do it. Entering the class, you must turn in your reports. No work will be accepted at the end of the session. The program codes must be attached to your report. Problem formulation and through table must be included

-No late assignment will be accepted.

Attending the class **on time** (exactly at the time your class begins) is part of **attendance & Order**. In emergency cases if you are not able to attend the class, send me email or call my office phone before the beginning of class and I will send you the instruction. There is no make up for the exams or quizzes. No extra instruction will be given to those who are late.

You have to pay attention to the lecture during the class hours. Talking with other students, web surfing, and using cell phones is not permitted in the class hours. You are responsible for all material in the text, class lectures, and supplemental reading assignments. The final exam will be comprehensive.

Grading:

Professionalism	5%
Quiz	10%
Homework and Programming assignments	20%
Midterms	30%
Project	5%
Final Exam	30%

Fees – When you paid your tuition you were assessed a $1.00 *class fee*. This fee is used for printed materials and other expenses associated with providing you associated materials for this class. When you register for one or more Computing and Networking Sciences classes you are assessed a $35.00 *lab access fee*, which is used to pay for a portion of the department's file servers, networking infrastructure, lab computers, overhead projectors, support hardware, presentation software, lab computer software, file server software, associated software, diagnostic/repair tools, hardware and software.

Academic Dishonesty: No academic dishonesty will be tolerated. The penalty for a first offense is an "F" for the assignment and the assignment cannot be redone. A second offense means that you *fail* (forfeit credit) the course and will be reported to the Department Chair and to Student Advising. Below are some definitions of what constitutes academic misconduct taken from the Utah Valley University Catalog 2002-2003. Please read the complete "*Student Rights and Responsibilities*" section in the UVU catalog to be aware of your academic responsibilities.

Cheating: "Cheating is the act of using, attempting to use, or providing others with unauthorized information, materials, or study aids in academic work. Cheating includes, but is

not limited to, passing examination answers to or taking examinations for someone else or preparing or copying others' academic work."

Plagiarism: Plagiarism is theft. The Latin root of the word is ***plagiarius***, which means a manstealer or kidnapper. Anytime you present another person's work as your own–even if that other person is a friend and/or spouse–you have plagiarized. "Plagiarism is the act of appropriating any other person's or group's ideas or work (written, computerized, artistic, etc.) or portions thereof and passing them off as the product of one's own work in any academic exercise or activity."

Fabrication: "Fabrication is the use of invented information or the falsification of research or other findings. The following examples of fabrication include but are not limited to:

Citation of information not taken from the source indicated. They may include the incorrect documentation of secondary source materials. Listing sources in a bibliography not used in the academic exercise. Submission in a paper, thesis, lab report or other academic exercise of falsified, invented, or fictitious data or evidence, or deliberate and knowing concealment or distortion of the true nature, origin, or function of such data or evidence. Submitting as your own any academic exercises, (e.g., written work, printing, sculpture, etc.) prepared totally or in part by another."