COMP 122/L: Computer Arch. and Assembly Language
Fall 2017

Instructor: Kyle Dewey (kyle.dewey@csun.edu)
Course Web Page: https://kyledewey.github.io/comp122-fall17
Piazza Web Page: https://piazza.com/csun/fall2017/comp122l

Office: JD4427, Extension 4316 (not yet connected)

Course Description (from the catalog)
Introduction to computer architecture, assembly language programming system software and computer applications. Number systems and data representation. Internal organization of a computer. Primitive instructions and operations. Assembly language.

Learning Objectives
A successful student will learn basic assembly programming skills, understand the fundamentals of digital logic design, and understand the interface between the two. The ARMv4 instruction set will be used for assembly, though the concepts are broadly applicable. In particular, successful students will be able to:

- Describe how modern computers represent numbers, and interconvert between different numeric representations
- Perform common operations over computer-represented numbers, and design circuits which perform these operations
- Write programs in ARM assembly, including conditionals, loops, arrays, and functions
- Design and simplify combinatorial circuits with Boolean algebra and Karnaugh maps
- Design sequential circuits, including those implementing finite state machines
- Design a simplistic processor implementing a restricted assembly language
- Understand, from a high-level, the design of a high-level processor
- ...among many others

Textbook
No textbook is required. If you'd like a textbook for further study, two decent supplemental textbooks are:

- Computer Organization and Design: The Hardware/Software Interface (David A. Patterson and John L. Hennessy); any edition from the past several years
- Computer Systems Organization and Architecture (John D. Carpinelli)

Grading
You will receive a **single combined grade** for the lecture and lab. Your grade is based on the following components:

Lab Assignments	30%
Lab Midterm Exam	15%
Lecture Midterm Exam	15%
Lab Final Exam	20%
Lecture Final Exam	20%

There will be a new lab assignment roughly once a week. The exact number of lab assignments has not been set, as this will depend somewhat on how the class progresses. Lab assignments are submitted through Canvas (https://canvas.csun.edu/). In the event that there is a problem with Canvas, you may email your assignment to me (kyle.dewey@csun.edu), though this should be considered a last resort.

Plus/minus grading is used, according to the scale below. The left column shows the minimal score necessary to receive the grade in the right column. The highest letter grade possible given the score is chosen; e.g., if you receive an 88.2, you'd receive a 'B+' for the course, which corresponds to being >= 86.5.

If your score is >=...	...you will receive...
96.5	A+
92.5	A
89.5	A-
86.5	B+
82.5	B
79.5	B-
76.5	C+
72.5	C
69.5	C-
66.5	D+
62.5	D

If your score is >=...	...you will receive...
59.5	D-
0	F

Collaboration for Lab Assignments
All students are required to submit their own individual work. For lab assignments (and **only** lab assignments), students may discuss among each other, as long as they don't share actual solutions (this forbids digitally sharing code). That is, you **cannot** simply copy someone else's solution. The only stipulation is that **if you do discuss with someone else, say so in your submission.** This is not for punitive reasons; this is only so I get a sense of who is working with who. My intention with this policy is to enable collaborative learning, as opposed to simply sharing a solution.

Plagiarism and Academic Honesty
While collaboration is allowed on lab assignments, you are responsible for all of your own work. You may **not** take code from online sources and submit it as your own. No discussion whatsoever is allowed during exams, except with the instructor. Any violations can result in a failing grade for the assignment, or potentially failing the course for egregious cases. A report will also be made to the Dean of Academic Affairs. Students who repeatedly violate this policy across multiple courses may be suspended or even expelled.

Attendance
In the first week of class, I will take attendance. If you miss both sessions in the first week, you must drop the class, as per University policy (http://catalog.csun.edu/policies/attendance-class-attendance/). After the first week I will not take attendance, though you are strongly encouraged to attend for help with the lab assignments.

Communication
Generally, Piazza is the best place to ask any questions you have related to the class. Piazza allows for anonymous posting, and everyone gets to see posted questions and answers. Piazza also allows for students to answer each other's questions, meaning you can get a faster response on Piazza than if only the instructor was answering questions. If your question contains part of your solution, then be sure to post privately. Alternatively, you can also email me directly (kyle.dewey@csun.edu). Note that while I usually am able to respond within 24 hours, this is not guaranteed.

Late Policy / Exam Scheduling
Late assignments will only be accepted if prior arrangements have been made or there is some sort of legitimate emergency (at my discretion). If you must be absent from an exam, contact me ASAP to see if alternative accommodations can be made.

Class Schedule and List of Topics (Subject to Change)

Week	Dates	Topics
1	8/29 8/31	Number representation
2	9/5 9/7	Floating point, operations on binary values
3	9/12 9/14	ARM assembly: introduction and arithmetic
4	9/19 9/21	ARM assembly: conditionals and memory operations
5	9/26 9/28	ARM assembly: loops and arrays
6	10/3 10/5	ARM assembly: functions
7	10/10 10/12	More ARM assembly; review
8	10/17 10/19	**10/17 Lab Midterm Exam,** **10/19 Lecture Midterm Exam**
9	10/24 10/26	Boolean logic and introductory combinatorial circuits
10	10/31 11/2	Simplifying circuits with Boolean algebra and K-maps
11	11/7 11/9	Sequential circuits
12	11/14 11/16	Finite state machines
13	11/21 ~~11/23~~	Processor control units, 11/23 Thanksgiving (no class/lab)
14	11/28 11/30	More processor control units and advanced processors
15	12/5 12/7	More processor control units and advanced processors, **12/7 Lab Final Exam**
16	12/12	**12/12 Final Lecture Exam 8:00 AM - 10:00 AM, JD 2214**