CALIFORNIA STATE UNIVERSITY
FULLERTON

Course Syllabus for CPSC 240: Computer Organization and Assembly Language (Spring 2023)

Department of Computer Science, College of Engineering and Computer Science

Course	Place	Time	Final Examination
CPSC 240-05/06	CS 104	Tue. & Thu., 2:00 pm-3:50 pm	Th., May 18, 1:00-2:50 pm, CS104

INSTRUCTOR:

Dr. Yitsen Ku.
E-mail: joshuaku@fullerton.edu (best way to reach me)
If you have any problems with this course, please do not hesitate to contact me as soon as possible. I want the entire class to do well and for that I am willing to help as much as possible.

Class Location:
Room: CS 104
Time: Tu/Th 2:00 PM ~ 3:50 PM

Office hours:

(Tentative) Thursday from 4:00 pm - 5:15 pm
01/23 ~ 5/12 Office hours will be in person at PLS-267.
The office hours of the final exam week are by appointment only.

Student Technical support: (657) 278-8888

IMPORTANT DATES:

January 21: First day of school class (January 24: First day of CPSC-240-05/06 class)
March 27 – April 2: Spring Recess – No class
May 12: Last day of class
May 15 – May 19: Final exam week

CSUF's Academic Calendar is posted online at Academic Calendar - California State University Fullerton - Acalog ACMS™

RESPONSE TIME:

The instructor responds to email questions, and online assignments usually within 48 hours except on weekends and holidays.

TECHNICAL PROFICIENCY: Students are expected to:

- Be intimately familiar with their development platform of choice and be able to write and debug code in C/C++/Java at a level of proficiency that corresponds to the prerequisites of the course
- Have ongoing reliable access to a computer with Internet connectivity for regular course lectures, assignments, exams, quizzes, and other assessed work
- Maintain and access very often the CSUF student email account
- Utilize other software applications as course requirements dictate
- Utilize Canvas to access course materials and complete assignments

COURSE DESCRIPTION:

Digital logic and architecture of a computer system, machine level representation of data, memory system organization, structure of low-level computer languages. Machine, assembly, and macro language programming. Principles of assembler operation, input-output programming, 2 hours lecture, 2 hours lab per week)

COURSE GOAL AND OBJECTIVES:

Know the components of the X86 (core i-series) processor including purpose of each component.
Know the runtime structure of memory.
Be able to design, implement, execute, and debug a significant (non-trivial) application.
Know how to integrate C, C++, and X86 all in one application.
Become skilled in the use of the gdb tool for removing run-time errors from programs
Know how to use the C library of function from within X86 modules.
Know the two's complement system.
Know the IEEE-754 number system.
Know the CCC paradigm of parameter passing
Be able to identify parts within the run-time stack.

REQUIRED TEXTBOOK:

x86-64 Assembly Language Programming with Ubuntu by Jorgensen.
At the time this is being written the book is in version 1.1.44.
Download a copy of the book here: http://www.egr.unlv.edu/~ed/assembly64.pdf

The author updates this book every few months. Check back occasionally to see if a newer version is available. The textbook is extensive and contains many details. It is simply impossible to cover the entire book. We will do as much as possible in our 15 weeks.

PLATFORM AND SOFTWARE:

The required platform for programming in this course is a Bash shell with access to the Debian repository of software. Here are the choices for a conforming platform.

1. **Tuffix.** This is the software used in the data structures course (CPSC 131). It uses the Debian repository and a Bash shell.
2. A Linux distro of your choice. Make sure it is a descendant of Debian such as MX Linux, Ubuntu, Mint, Xubuntu, Kali, Lubuntu, and several others. If you know how to install a Linux distro then choose this one.
3. Windows Subsystem for Linux (WSL). Windows already has the Bash shell built in. When you go to use it for the first time, you will be asked to choose the distro. Be sure to choose one that is a descendant of Debian. Red Hat is not a descendant of Debian

LATE POLICY:

Any assignments or project reports submitted late will only receive 70% or lower of the maximum score.
Any quiz or exam submitted after the deadline will be considered a make-up quiz or exam.

PROCEDURE FOR SUBMITTING WORK:

Unless otherwise requested, all assignments and project reports should be saved and submitted to Canvas in pdf format. Submissions by email will not be graded. If you have any submission questions, please let your instructor know.

GRADING STANDARDS AND CRITERIA

Final grades are computed by first finding the average score in each category described below:

- Assignments 40%
- Quizzes 30%
- Final Exam 15%
- Projects + reports 15%

The program count for 50% and the report counts for 50% of the total project grade. Final projects are grated in such a way that the best final project gets 100 points, and other final projects are grated as a percentage relative to the best final project.

Each student's weighted numerical average into letter grade, shown next.

Grading Scale

A: 94-100	**A-:** 90-93.99	**B+:** 87-89.99	**B:** 84-86.99	**B-:** 80-83.99	**C+:** 77-79.99
C: 74-76.99	**C-:** 70-73.99	**D+:** 67-69.99	**D:** 64-66.99	**D-:** 60-63.99	**F:** Below 60

Extra Credit Policy

Extra credit is not available. Please do not ask for extra credit.

ACADEMIC DISHONESTY POLICY

Cheating, plagiarism, and all forms of academic dishonesty are expressly forbidden in this class. Academic dishonesty includes such things as cheating, inventing false information or citations, plagiarism, and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show possession of a level of knowledge or skill, which he/she in fact does not possess. Cheating is defined as the act of obtaining or attempting to obtain credit for work using any dishonest, deceptive, fraudulent, or unauthorized means. Examples of cheating include but are not limited to using notes or aids or help of other students on tests and examinations in ways other than those expressly permitted by the instructor, plagiarism as defined below, tampering with grading procedure, and collaborating with others on any assignment where such collaboration is expressly forbidden by the instructor. Plagiarism is defined as the act of taking the specific substance of another and offering it as one's own without giving credit to the source (e.g., copying another person's program). When sources are used, acknowledgment of the original author or source must be made following standard scholarly practice. **You are not allowed to use any material from any website that provides solutions to the assessed work for a fee or free of charge. Instructors will use software to detect similarity and plagiarism.**

By submitting work for evaluation, the student acknowledges that he/she has adhered to the spirit of the university's academic honesty policy and that his/her submission is an original work done by the student unless otherwise directed to work in groups. It is the student's responsibility to be aware of and follow the spirit of CSU Fullerton's academic honesty policy found at http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20300.021.pdf . Failure to follow the spirit of the academic honesty policy will result in a severely negative evaluation of the work in question. Each offense will be reported to the Department Chair and the Dean of Students office, Student Conduct. A first offence will result in a zero score on the offending assignment. A subsequent offence will result in an F in the course.

Collaboration: Collaboration is not allowed on any exam. You may work on projects in groups of **up to two,** but you must make your own submission which includes all group members' names. You may work freely with your fellow group members, but must limit the input you get from sources outside your group:

- You may help each other understand the assignment and brainstorm general solutions, but each group must develop and submit their own distinct work.
- You may give each other technical support, for instance troubleshooting, installing the compiler or logging in to Canvas.
- You must separate to develop your own detailed solution to the problem, and type in your own source code and project report.
- Given these requirements, any submissions with identical excerpts, or excerpts that are identical up to superficial rearrangements, will be considered highly suspect of plagiarism.

POLICY ON RETENTION OF STUDENT WORK

Work is submitted through the Canvas course website and shall be retained on the course website for a reasonable time after the semester is completed (see UPS 320.005).

ATTENDANCE POLICY

Administrative drops: Any student who misses the first class meeting may be dropped from the class, unless they contact the instructor or Computer Science department within 24 hours.

Religious Holidays: If you will miss a class or an exam due to observance of a religious holiday, please notify the instructor by email (joshuaku@fullerton.edu) in the first week of class.

Attendance: Participation in lectures is mandatory, and students must be present in person to take the quizzes and exams. Students are responsible for all course materials and announcements, whether they are present.

Drop Policy: The last day to drop the course is April 21 (see detailed calendar).

UNIVERSITY INFORMATION

Canvas

As a registered student you are enrolled both in Canvas and TITANium. We will be using only Canvas. Problems? Contact the student help desk at (657) 278-8888 or email StudentITHelpDesk@fullerton.edu.

ADA Accommodations for Students with Special Needs

Students requesting accommodations shall inform their instructors during the first week of classes about any disability or special needs that may require specific arrangements/accommodations related to attending class sessions, completing course assignments, writing papers or quizzes, tests, or examinations.

Please inform the instructor during the first week of classes about any disability or special needs that you may have that may require specific arrangements related to attending class sessions, carrying out class assignments, or writing papers or examinations. Any student who, because of a disability, may require special arrangements in order to meet course requirements must contact the instructor and the Office of Disability Support Services as soon as possible to make the necessary arrangements. The instructor may request verification of need from the Dean of Students Office. Students are encouraged to contact the Office of Disability Support Services within the first week of the semester to best ensure that the appropriate accommodations are implemented in a timely fashion. The Office of Disability Support Services' website is http://www.fullerton.edu/DSS/ . They can be reached by phone at 657-278-3117, TDD at 657-278-2786, or email at dsservices@fullerton.edu . Their office is located in University Hall, room 101. The instructor may request verification of need from the Dean of Students Office.

Ms. Lindsay O'Neill in the Pollak Library <jloneill@Exchange.FULLERTON.EDU> will be able to answer technical questions about accessibility of specific library-provided resources.

Software for Students

Did you know you can get FREE and low-cost software for being an active CSUF student? Software can be requested from the CSUF Student Technology Services website.

Development Tool Resources

Students interested in using Microsoft® development tools may request a Microsoft Azure account at https://azureforeducation.microsoft.com/devtools (former Dreamspark). A student may, at no monetary cost, download full featured versions of Microsoft Visual Studio. Students interested in using Apple® development tools can freely download Xcode through the App Store application bundled with OS X. Students may download Xcode directly from https://developer.apple.com/xcode/ . A Debian-based GNU/Linux OS virtual machine ready for students use and Debian-style installation scripts at https://gamble.ecs.fullerton.edu/resources/ .

A CentOS-based shell server is available through secure shell (ssh) and secure file transfer protocol (sftp). The hostname is titanv.ecs.fullerton.edu. If your email address is malcolm@csu.fullerton.edu, then your username is malcolm. If you are using a command-line ssh client, then your command to connect to ecs.fullerton.edu will be "ssh malcolm@titanv.ecs.fullerton.edu". Your password is the same password as your CSUF Portal password.

Please consider adopting a package management system for your personal computer to facilitate adding, updating, and removing the various software development tools you may wish to use.

- Apple OS X
  - MacPorts http://www.macports.org/
  - Fink http://www.finkproject.org/
  - Homebrew http://brew.sh/
- Microsoft Windows
  - Chocolatey NuGet https://chocolatey.org/
  - Cygwin http://www.cygwin.com/
  - Npackd https://npackd.appspot.com/
- GNU/Linux OS
  - dpkg https://www.debian.org/doc/manuals/debian-faq/ch-pkgtools.en.html
  - rpm http://fedoranews.org/alex/tutorial/rpm/

Emergency Contact:
For your own safety and the safety of others, each student is expected to read and understand the guidelines published here. In an effort to keep our campus community informed and to comply with the California State Education Code, Chapter 16, of the Donahue Higher Education Act, Section 67380; the California State University, Fullerton Police Department prepares the California Campus Safety Plan annually. The plan can be found on the University Police website under the Jeanne Clery-Crime Prevention tab or by clicking on this link. Should an emergency occur, follow the instructions given to you by faculty, staff, and public safety officials, or contact the University Police at (657) 278-3333. An emergency information recording is available by calling the Campus Operation and Emergency Closure line at 657-278-4444.

Library Support:
The Pollak Library has many services to offer students. Assistance available for online students includes online instruction guidelines available on the library website.

University Learning Center:
The goal of the University Learning Center is to provide all CSUF students with academic support in an inviting and contemporary environment. The staff of the University Learning Center is carefully selected and trained to assist students with their academic assignments, general study skills, and computer user needs. The ULC is located in the Pollack Library North, 2nd Floor. The services that the ULC provide to CSUF students include an open computer lab, tutoring, workshops, online tutoring, and collaborative learning. The online tutoring option allows students to submit their paper for constructive feedback. More information can be found on the University Learning Center website.

Writing Center:
The Writing Center offers all registered CSUF students the opportunity to receive writing assistance. The Writing Center is located in MH 45, the basement of McCarthy Hall, on the campus of California State University, Fullerton; 657-278-3650. More information can be found on the Writing Center webpage.

Graduate Student Support: The University's central office for graduate education, the Office of Graduate Studies provides services and support to students and potential students. The Graduate Student Success Center (GSSC) provides academic tutoring and coaching to graduate students. More information can be found on the Graduate Studies Office webpage and Graduate Student Success Center webpage.

RECORDING & TRANSCRIPTION OF CLASS CONTENT

Recording class content is governed by UPS 330.230, http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20330.230.pdf . The instructor permits class content to be recorded or transcribed by students when mandated to do so by the Americans with Disabilities Act or by other federal or state laws. Any recording of class content is for private use and study and shall not be made publicly accessible without the written consent of the instructor and students in the class.

COURSE RULES & CLASSROOM MANAGEMENT

Unless an agreement or accommodation is reached between the student and the instructor, these rules must be followed.

- Attendance at all regularly scheduled lectures is mandatory.
- The student is responsible to be aware of any course announcements including changes to due dates and requirements.
- Third party work (code, artwork, etc.) may not be used in student work without prior instructor consent. Failure to gain and document instructor consent will be construed as willful academic dishonesty.
- When a third party's work is incorporated into student work after gaining instructor consent, failure to fully document the work's origin, copyright and license will be construed as willful academic dishonesty.

RECORDING & TRANSCRIPTION OF CLASS CONTENT

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Essentially, this means that you may record classes, but you may not display them publicly.
(Do not put it on Facebook or You Tube)

TENTATIVE CLASS OUTLINE

We have fifteen weeks in this semester deducting the quiz, there are less than 14 weeks of teaching. The professor hopes to cover many of the concepts in the textbook. The following outline gives an overview of the subjects we will study this semester. **(Note:** The following schedule is a tentative schedule for lectures and lab assignments. This Syllabus is subject to change; and will be announced in advance if they occur.)

Week	Dates	Lecture Topics	Assignment/Lab
1	1/24, 1/26	Chapter 1, 2	
2	1/31, 2/2	Chapter 3, 4	Assignment 01
3	2/7, 2/9	Chapter 5, 6	Assignment 02
4	2/14, 2/16	Chapter 7	Assignment 03
5	2/21, 2/23	Chapter 7	Assignment 04
6	2/28, 3/2	Chapter 7, 8	**Quiz 1**
7	3/7, 3/9	Chapter 7, 8	Assignment 05
8	3/14, 3/16	Chapter 7, 13	Assignment 06
9	3/21, 3/23	Chapter 7, 13	**Quiz 2**
10	**3/28, 3/30**	**Spring Recess - NO CLASSES**	
11	4/4, 4/6	Chapter 9	Assignment 07
12	4/11, 4/13	Chapter 11	Assignment 08
13	4/18, 4/20	Chapter 11	Assignment 09
14	4/25, 4/27	Chapter 12	**Quiz 3**
15	5/2, 5/4	Chapter 12	
16	5/9, 5/11	Chapter 13	**Final Project**
17	5/18	Th., May 18, 1:00-2:50 pm, CS104	Final Exam