UNIVERSITY OF CALIFORNIA
UCMERCED

Syllabus for CSE031-01: Computer Organization

Fall 2018
Instructor: Chi Yan Leung

Designation:	Computer Organization
Catalog Description:	Provides students with an overview of the diverse field of computer science and engineering. Also provides an in-depth analysis of several key inventions in the field that have been instrumental in advancing CSE and driving worldwide technical growth.
Text Books and Other Required Materials:	• Computer Organization and Design from zyBooks 1. Sign in or create an account at learn.zybooks.com 2. Enter zyBook code: UCMERCEDCSE031LeungFall2018 3. Click 'Subscribe' Each student MUST subscribe his/her own copy with UC Merced email address. Participation grade will be partly evaluated based on the activities within the subscription account. • C Programming Language, 2/E by Brian W. Kernighan and Dennis Ritchie (ISBN 13: 978 0131103627)
Course Objectives/ Student Learning Outcomes:	Students will learn all the big ideas underpinning the design of modern computers starting from binary numbers representing integers, floating points, data structures and even program code. They will be exposed to C programming language and how each high level construct translates to intermediate language called Assembly before finally getting down to machine language that modern computers executes. Exact steps required for execution instructions in the CPU will be detailed along with the necessary devices starting from CMOS transistors to gate-level logic using Finite State Machines. Students will be able to: 1. Describe how data is represented in computer memory. 2. Demonstrate how fundamental high-level programming constructs are implemented at the machine-language level. 3. Write assembly language program that can input, process and output results. 4. Demonstrate an understanding of basic computer architecture 5. Describe how data are represented in the computer, including floating point numbers and arrays. 6. Describe how synchronous digital systems are created using Digital Logic Gates.
Program Learning Outcomes:	This course relates to the following program learning outcomes: An ability to apply knowledge of computing and mathematics appropriate to the discipline; An ability to analyze a problem and identify the computing requirements appropriate for its solution; An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs, and use current techniques, skill, and tools necessary for computing practice.

An ability to apply mathematical foundations, algorithmic principles, and computer science theory to the modeling and design of computer based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices

Prerequisites by Topic:

Course Policies:

Computers are NOT needed for tests or for any in-lecture activities. Please do not bring laptops or mobile gaming devices to lecture unless for note-taking purposes. It is not necessary for you to have your own computer for this course, as all computing resources necessary will be provided in the lab. Lab assignments are designed to be completed within the designated weekly lab sessions. However, if you do not complete a particular assignment during normal lab hours, you may use any Open Access lab to complete your work.

For LAB assignments, you may work together with other students if you wish or when assignment asks for explicit collaboration. Giving each other help in finding bugs and in understanding the assignment is encouraged. It is permissible to allow other students to see small portions of your code on-screen during lab, but you may not allow them to copy directly. In general, the deadline for submission for a LAB will be ONE WEEK after it is posted; however, you will be given a grace period of ONE day after deadline to complete your submission without penalty. To ensure that your assignments are graded, you MUST show/demo your programs to your TA or instructor within a week after the submission deadline, and we will ask you questions related to your work. You can do so during lab hours or office hours of your TA or instructor. ANY SUBMITTED LAB ASSIGNMENTS WITHOUT DEMO WILL RECEIVE A ZERO AS THE FINAL SCORE.

For Projects, each student must write their program as an individual or in pairs. You may talk with other students about general approaches to the problem, but you may not allow others to see your code, nor may you ask to see another student's code. Projects will follow the same submission procedure as lab assignments. You MUST demo your programs to your instructor at an appointed time.

You may, of course, seek assistance from your TAs and instructor for all the assignments. There are also tutors available from PALS.

Academic Dishonesty Statement:

a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.
b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.
c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the

	course and University disciplinary action.
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	• Number systems and math: binary, hex, octal • C, I/O, structs, pointers, memory management • Pointer arithmetic, arrays, C strings • Debugging with GDB • Compiling / Linking • MIPS assembly language • Machine Organization • Memory Allocation and Management • CPU Design
Class/laboratory Schedule:	Lecture: MW 9:00-10:15am, SSB170: Labs:See schedule for time and locations
Midterm/Final Exam Schedule:	This schedule is subject to change, but is tentatively set as follows: Midterm #1 : September 26, 2018 (in class) Midterm #2 : November 7, 2018 (in class) Final : December 11, 2018 (SSB 170)
Course Calendar:	
Professional Component:	
Assessment/Grading Policy:	• 30% Midterms • 15% Final • 12% Participation • 10% Homework • 13% Project • 20% Lab
Coordinator:	Chi Yan (Daniel) Leung
Contact Information:	Email: cleung3@ucmerced.edu I will try to answer your emails within 48 hours. However, I may not answer email after 5:00 p.m. or on weekends. Please plan accordingly.
Office Hours:	T/R: 10:00am-12:00pm (AOA 126) W: 3:00 - 4:00pm (AOA 126) or by appointment