UNIVERSITY OF CALIFORNIA
UCMERCED

Syllabus for CSE031-01: Computer Organization and Assembly Language

Spring 2016
Instructor: Kelvin Lwin

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, Fifth Edition: The Hardware/Software Interface by Patterson and Hennessy (ISBN-13: 978-0124077263) • 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:	
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 • Machine Organization • Memory Allocation and Management • CPU Design
Class/laboratory Schedule:	Lecture: MW 5:30 - 6:45 p.m Room: CoB 105
Midterm/Final Exam Schedule:	Midterm : March 17 (in Lab) Final : May 12 3:00-6:00pm CoB 105
Course Calendar:	
Professional Component:	
Assessment/Grading Policy:	

	• 20% Midterm • 30% Final • 5% Participation • 20% Homework/Project • 25% Lab
Coordinator:	Kelvin Lwin
Contact Information:	Office: CoB 370 Email: klwin@ucmerced.edu
Office Hours:	MW 1:15-3:15pm @ CoB 370