Syllabus for CSE140-01: Computer Architecture

Fall 2018
Instructor: Chi Yan Leung

Designation:	Computer Architecture
Catalog Description:	This course covers basic concepts and recent developments of computer architecture, using the MIPS process as a primary example.
Text Books and Other Required Materials:	1. Sign in or create an account at learn.zybooks.com 2. Enter zyBook code: UCMERCEDCSE140LeungFall2018 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.
Course Objectives/ Student Learning Outcomes:	Students will learn the arithmetics and components of a modern computer. Students will start from a basic single cycle CPU. Then move to pipelined instruction-level parallelism (ILP). How branch prediction and speculation are used to keep the pipeline full as basis for modern ideas. Then modern architectures features for parallelization at different levels: instruction, thread, process and task. Students will be able to: Understand basics of computer architecture elements for in-order execution Design different architecture features to improve performance for in-order computers Understand out of order execution and speculative execution semantics Differentiate RISC vs CISC architectures and tradeoffs Understand modern architecture optimizations for parallelization
Program Learning Outcomes:	
Prerequisites by Topic:	CSE 31: Computer Organization
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.

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	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:	Instruction set architecture MIPS Assembly language Computer arithmetic Performance Datapath and control Design Caches and virtual memory Peripherals : input/output Instruction and data level parallelism Multiprocessors Graphics processing unit
Class/laboratory Schedule:	Lecture: T/R: 1:30-2:45pm SSB 130; Labs: Please see class schedule for time and locaton
Midterm/Final Exam Schedule:	Midterms: September 26, November 15 (in class) Final : December 14 (SSB 130)
Course Calendar:	
Professional Component:	
Assessment/Grading Policy:	15% Lab/HW 30% Projects 10% Participation 20% Midterms 25% Final
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