



Syllabus for EECS253: Computer Architecture and Design

Fall 2021

Instructor: Hyeran Jeon

Designation: Computer Architecture and Design

Catalog Description: Explores computer architecture that includes detailed design and analysis of modern computer systems, processor instruction set architecture, and memory hierarchy. Covers advanced topics of microarchitecture, instruction-level parallelism, multicore/multiprocessor, data/thread-level parallelism, and accelerator architecture.

Text Books and Other Required Materials:

- (recommended) John L. Hennessy & David A. Patterson, "Computer Architecture: A Quantitative Approach," Morgan Kaufmann, 6th edition (ISBN: 9780128119051)
- (recommended) Michel Dubois, Murali Annavaram, and Per Stenstrom, "Parallel Computer Organization and Design," Cambridge University Press, 1st edition (ISBN: 978-0521886758)

Course Objectives/ Student Learning Outcomes: Upon successful completion of this course, students will be able to:

1. have an overall understanding of computing systems from architectural and organizational point of view.
2. have an in-depth understanding of modern processor instruction-set architecture and micro-architecture, as well as memory organization.
3. understand advanced topics such as instruction-level and thread-level parallelism, and multicore/multiprocessor/clustered systems.

Program Learning

Outcomes:

Prerequisites by Topic: Undergraduate-level computer architecture knowledge is required.

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

Designation:	Computer Architecture and Design 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 Static pipelines Dynamic pipelines Branch prediction Precise executions Memory architecture Cache architecture Multiprocessors, multicores, and clusters Graphics processing unit Accelerators Warehouse-scale Systems
Class/laboratory Schedule:	Lecture: W/F: 1:30 PM ~ 2:45 PM. Labs: Thu: 1:30 PM ~ 4:20 PM.
Midterm/Final Exam Schedule:	Midterm: Class time on 10/29 Final : 11:30 AM ~ 2:30 PM on 12/11
Course Calendar:	
Professional Component:	
Assessment/Grading Policy:	Homework : 15% Midterm : 25% Final : 25% Project : 20% Paper Presentation/Summary : 15%
Coordinator:	Hyeran Jeon
Contact Information:	Email: hjeon7@ucmerced.edu
Office Hours:	W: 3:00 PM - 4:00 PM or by appointment