[Syllabus] Computer Architecture (2024-Fall)

[2024 Fall] Computer Architecture

Course Information

Course	Computer Architecture	Department	Computer Science and Engineering
Office Hours	TBA	Course No. and Class	20493-02
Hours	3.0	Academic Credit	3.0
Professor	Yoon, Myung Kuk	Office	Jinseonmi-Gwan, 213
Telephone	(82)-2-3277-3819	E-Mail	myungkuk.yoon at ewha.ac.kr
Value of Competence	Pursuit of Knowledge(80), Creative Convergence(20)	Keyword	CPU Design, Memory Design, System I/O
Class Time	(Wed) 17:00 ~ 18:15 (Fri) 17:00 ~ 18:15		

Course Description

In this class, students will learn about the basic concepts of computer architecture, including Instruction Set Architecture (ISA), CPU processor design, and memory hierarchy. To improve understanding, students will do several programming assignments that are partially related to the computer architecture concepts.

* The primary syllabus used for this course is from the website rather than the traditional school system. Consequently, any significant updates or changes will be made exclusively to the web syllabus.

Prerequisites

1. A prior digital logic design course is recommended.
2. Basic knowledge of the C/C++ programming language is required.

Course Format

Lecture	Discussion/Presentation	Experiment/Practicum	Field Study	Other
90%	0%	10%	0%	0%

Course Objectives

In this class, students will be introduced to:

1. Instruction Set Architecture (ISA)
2. Arithmetic (Addition, Subtraction, Multiplication, etc.)
3. CPU Processor Design (Pipeline, Instruction-Level Parallelism, etc.)
4. Memory Hierarchy (Memory Technology, Cache, etc.)
5. Parallel Processor Design (SISD, MIMD, SIMD, SPMD, and Vector)
6. And more topics if time permits

Evaluation System

Evaluation: Relative + Absolute

Midterm Exam	Final Exam	Quizzes	Presentations	Projects	Assignment	Participation	Other
30%	30%	0%	0%	0%	40%	0%	0%

Explain of evaluation system
1. About 35% of students: A (Including A+/A/A-)
2. About 45% of students: B (Including B+/B/B-)
3. About 20% of students: C and below

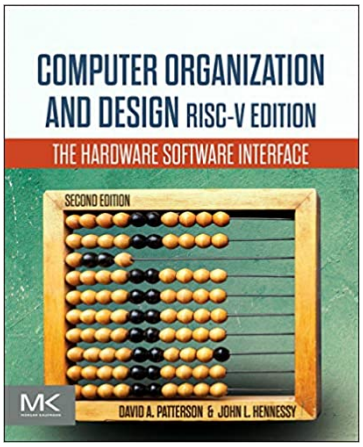
Further details regarding the letter grade and attendance
1. If your total score does not exceed 30%, you will get an "F" regardless of the percentage above.
2. If you are absent more than five times, you will get an "F."
3. If you are late twice, you are considered absent once.
4. The course is specifically designed for sophomore students; hence, absences related to job positions or interviews cannot be accepted as excuses.
5. Complete your assignments and exams independently. Any instances of plagiarism, whether from fellow students or online sources, will result in an automatic 'F' in this course, regardless of your current standing.

Required Materials

Computer Organization and Design RISC-V Edition: The Hardware Software Interface

David A. Patterson and John L. Hennessy

Edition: Second (2E)



ISBN-13: 978-0128203316

ISBN-10: 0128203315

Supplementary Materials

NONE

Optional Additional Readings

NONE

Course Contents

Week	Date	Topics & Materials	Assignement & Quiz & Etc.
Week #01	2024-09-04 (Wed)	CH #00: Introduction of Computer Architecture Class	
	2024-09-06 (Fri)	CH #01: Computer Abstractions and Technology	
Week #02	2024-09-11 (Wed)		
	2024-09-13 (Fri)	EXTRA: Linux and Build System	
Week #03	2024-09-18 (Wed)	NO CLASS (Thanksgiving)	
	2024-09-20 (Fri)	CH #02: Instructions: Language of the Computer	
Week #04	2024-09-25 (Wed)		
	2024-09-27 (Fri)		
Week #05	2024-10-02 (Wed)		
	2024-10-04 (Fri)		
Week #06	2024-10-09 (Wed)	NO CLASS (Hangul Procalmation Day)	
	2024-10-11 (Fri)	CH #03: Arithmetic for Computers	

Week #07	2024-10-16 (Wed)		
	2024-10-18 (Fri)		
Week #08	2024-10-23 (Wed)	CH #04: The RISC-V Processor	
	2024-10-25 (Fri)		
	2024-10-26 (Sat)	Midterm Exam	
Week #09	2024-10-30 (Wed)	CH #04: The RISC-V Processor	
	2024-11-01 (Fri)		
Week #10	2024-11-06 (Wed)		
	2024-11-08 (Fri)		
Week #11	2024-11-13 (Wed)		
	2024-11-15 (Fri)		
Week #12	2024-11-20 (Wed)	CH #05: Large and Fast: Exploiting Memory Hierarchy	
	2024-11-22 (Fri)		
Week #13	2024-11-27 (Wed)		
	2024-11-29 (Fri)		
Week #14	2024-12-04 (Wed)		
	2024-12-06 (Fri)	CH #06: Parallel Processors from Client to Cloud	
Week #15	2024-12-11 (Wed)		
	2024-12-13 (Fri)	Class Summary	
	2024-12-14 (Sat)	FINAL EXAM	
Week #16	2024-12-18 (Wed)	NO CLASS	
	2024-12-20 (Fri)	Final Exam Review (Nonmandatory)	

Course Policies

For laboratory courses, all students are required to complete lab safety training.

Special Accommodations

According to the University regulation #57, students with disabilities can request special accommodation related to attendance, lectures, assignments, and/or tests by contacting the course professor at the beginning of semester. Based on the nature of the students' requests, students can receive support for such accommodations from the course professor and/or from the Support Center for Students with Disabilities (SCSD).

Extra Information

The contents of this syllabus are not final—they may be updated.