

CS510: Computer Architecture

Instructor: Prof. Soontae Kim

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Course Web: Embedded Computing Lab <http://ecl.kaist.ac.kr>

Office hours: right after class or via prior appointments

TA: 홍석인, 이종민, 이예빈

Classroom: Classroom#1

Class hours: T/R 4:00 ~ 4:15PM

Course description: The class will review fundamental structures in modern microprocessor and computer system architecture design. Topics include performance metric, memory system design, pipelining, exploiting instructional-level parallelism and its limits, multiprocessors, thread-level parallelism, and storage.

Prerequisite: undergraduate computer architecture course, "Computer Organization & Design" by Patterson and Hennessy is preferred as the text of your undergraduate course. However, I will review pipelining and memory basics for you.

Textbook: Computer Architecture: A Quantitative Approach, 4th Edition, John L. Hennessy and David A. Patterson, Morgan Kaufmann Publishers

Grading:

Exam1: 25%

Exam2: 25%

Homework: 20%

- Five homework assignments

Project: 20%

- Make a team of at most three students. You have two options for projects. One is to select topics not covered in class and submit a review report. The other is to select experimental topics. You choose specific issues such as caches, pipeline, ILP, power, reliability, etc and perform experiments using simulators and other tools. I will give more credits to experimental projects.

Attendance 10%

- 1 point penalty from the second nonattendance and two late attendances are equal to 1 nonattendance
- You have to let me know when you will miss classes due to emergency situation and submit evidence documents.

Cheating: All forms of cheating are not allowed. Examples include the followings but not limited to.

- Do not copy solutions obtained from Internet, etc.
- Do not copy other students' solutions. Discussion is OK but you should not discuss about detailed solutions.
- Cheater will be given zero point and those who allow cheating will be given 50% of their earned points.

*Subject to change

Week	Date	Topic	Reading (textbook)	Assignments
1	2/8	Introduction to class		
	2/10	Chapter1. fundamentals of computer design	Ch1.1~1.6	
2	2/15	Review-pipelining#1	Ch1.7~1.10, appendix A	
	2/17	Review-pipelining#2	Appendix A	HW#1
3	2/22	Review-pipelining#3	Appendix A	
	2/23	Review-pipelining#4	Appendix A	
4	3/1	No class	삼일절	
	3/3	Review-memory#1	Appendix C	
5	3/8	Review-memory#2	Appendix C	HW#2
	3/10	Review-memory#3	Appendix C	
6	3/15	Instruction-level parallelism#1	Ch2.1~2.3	
	3/17	Instruction-level parallelism#2	Ch2.4~2.5	HW#3
7	3/22	Instruction-level parallelism#3	Ch2.6~2.8	
	3/24	Instruction-level parallelism#4	Ch2.9~2.10	
8	3/29	Midterm exam		
	3/31	Midterm exam		
9	4/5	Limits of ILP#1	Ch3.1~3.3	
	4/7	Limits of ILP#2	Ch3.4~3.5	Submit project proposal
10	4/12	Multiprocessors#1	Ch4.1~4.2	
	4/14	Multiprocessors#2	Ch4.3~4.4	HW#4
11	4/19	Multiprocessors#3	Ch4.5~4.6.	
	4/21	Multiprocessors#4	Ch4.7~4.8	
12	4/26	Memory#1	Ch5.1~5.2	
	4/28	Memory#2	Ch4.3~5.4	HW#5
13	5/3	Memory#3	Ch5.5~5.6	
	5/5	No class	어린이날	
14	5/10	No class	석가탄신일	
	5/12	Storage	Ch6.1~6.4	
15	5/17	Final project presentation#1		
	5/19	Final project presentation#2		
16	5/24	Final exam		
	5/26	Final exam		Submit project reports