King Mongkut's University of Technology Thonburi

Department of Computer Engineering

Course Syllabus

Subject	CPE 223
	Computer Architecture
Credit	3 (2-2-6)
Lecturer	Asst.Prof. Rajchawit Sarochawikasit
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Teaching Assistant	OMAR YUSOH
Building	CPE1115
Schedule	Wed 13.30 – 17.20 (Lecture Based / Problem Session)

Course Description

Processor technology, input and output, memory hierarchy, interleaved memory, bus, cache, pipelined architectures, and computer arithmetic. Machine instructions, assembly language programming, microprocessor design and physical control. Communication and control of heterogeneous processors (on-chip, PCI, USB, CAN), communication and control of homogeneous processors (multi-core, cluster, GPU), introduction to specialized processors (vector, DSP). Experiments on microcomputer, microprocessor and microcontroller interfacing with physical devices.

Course Outcome

Understand the concept of computer architecture, able to design and evaluate a simple processor on emulator.

Grade Distribution

Midterm Exam	30%
Final Exam	30%
Quiz	10%
Mini-project	10%
Assignment/Lab	20%

Grading criteria

Relative to the class peer performance. Usually a total score below 35% results in an F grade.

Textbook

1. **Computer Organization and Embedded System** by Carl Hamacher, Zvonko Vranesic, Safwat Zaky, and Naraig Manjikian, McGraw Hill.
2. **Computer Organization and Design** by David A. Patterson and John L Hennessy, Morgan Kaufmann.

Week #	Topic	Problem Session
1	Introduction to Computer Architecture	No
2	Instructions Sequencing	Yes
3	Assembly Language	Yes
4	Hardware Description Language	Yes
	--- Exam 1 ---	
5	IO Organization	No
6	Arithmetic for Computers	Yes
7	Processing Unit	Yes
8	Pipelining	Yes
	--- Exam 2 ---	
9	Memory Subsystem Design	No
10	Cache Memory	Yes
11	Virtual Memory	Yes
12	High Performance Computer Architecture	No
(13)	<Mini-Project Presentation>	
	--- Exam 3 ---	