
SYLLABUS

Date/ Revision April 2017

Faculty Engineering

Approval

SUBJECT : COMPUTER ARCHITECTURE 1

1. Identification of Subject:

Name of Subject : COMPUTER ARCHITECTURE 1
Code of Subject :
SKS / ECTS :
Semester : Semester 3
Study Program : B-CSE
Lecturer :

2. Competency

The goal of the course is to teach the design and operation of a digital computer, which student will learn how to make a computer work. In this case they will learn how to completely design a correct single processor computer, including processor data path, processor control, memory systems, and Input/Output.

3. Description of Subject:

The subject matter covered in the course includes technology trends and their implications, performance measurement, instruction sets, computer arithmetic, design and control of a data path, pipelining, memory hierarchies, input and output, and brief introduction to multiprocessors.

4. Learning Approach

Approach : Combination of Expository - inquiry and collaborative
Method : Discussion, question answer, sample problem, group work
Software : Digital Designer (<http://www.digitalcircuitdesign.com>)
Student Task : Home work, presentation
Media : LCD projector, Teaching Aids (components), Simulation SW, film.

5. Evaluation

a) Absence maximum	: 25%
b) Participation and Quiz	: 5 points
c) Projects	: 25 points
d) Final Examination	: 60 points
Total	: 100 points

6. Contents/ Topics of Lecturing:

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	INTRODUCTION <ul style="list-style-type: none"> Structured Computer Organization Milestones In Computer Architecture The Computer Zoo 	1	
2	COMPUTER SYSTEMS <ul style="list-style-type: none"> Processors Primary Memory Secondary Memory Input/Output 	2	
4	THE DIGITAL LOGIC LEVEL <ul style="list-style-type: none"> Gates And Boolean Algebra Basic Digital Logic Circuits Memory Cpu Chips And Buses Example Cpu Chips Example Buses Interfacing 	3	
5	THE MICROARCHITECTURE LEVEL <ul style="list-style-type: none"> An Example Microarchitecture An Example Isa: Ijvm An Example Implementation Design Of The Microarchitecture Level Improving Performance Examples Of The Microarchitecture Level Comparison Of The I7, Omap4430, And Atmega168 	4	
6-7	THE INSTRUCTION SET <ul style="list-style-type: none"> Overview Of The Isa Level Data Types Instruction Formats Addressing Instruction Types Flow Of Control A Detailed Example: The Towers Of Hanoi The Ia-64 Architecture And The Itanium 2 	5	
8	Mid Term Break		
9-10	THE OPERATING SYSTEM <ul style="list-style-type: none"> Virtual Memory Hardware Virtualization Osm-Level I/O Instructions Osm-Level Instructions For Parallel Processing Example Operating Systems 	6	

11-12	THE ASSEMBLY LANGUAGE LEVEL <ul style="list-style-type: none"> • Introduction To Assembly Language • Macros • The Assembly Process • Linking And Loading 	7	
13-14	PARALLEL COMPUTER ARCHITECTURES <ul style="list-style-type: none"> • On-Chip Paralellism • Coprocessors • Shared-Memory Multiprocessors • Message-Passing Multicomputers • Grid Computing 	8	
15	Final Examination		

7. Book Reference:

- a) **Main Text Book:** *“Digital Design and Computer Architecture- ARM Edition*, **Author:** David Money Harris and Sarah L. Harris, **Publisher:** Morgan Kaufmann, 2007, ISBN 10: 0-12-370497-9