

COMPUTER ARCHITECTURE AND ORGANIZATION

Course Code	20EC4501D	Year	III	Semester	I
Course Category	PE-I	Branch	ECE	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	-
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes

After successful completion of the course, the student will be able to

CO1	Understand the basic functional units of a computer system and its organization. L2
CO2	Apply appropriate instructions for processing various types of computer operations. L3
CO3	Apply various types of organizations on registers L3
CO4	Analyze memory hierarchy, I/O communication and pipelining. L4

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1:Low)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3					2	2							
CO2	2					2	2			1			2	1
CO3	2					2	2			1			2	1
CO4		2				2	2			1			2	1

Syllabus

UNIT NO.	Contents	Mapped COs
I	Register Transfer and Micro-Operations: Register Transfer Language, Register Transfer, memory Transfers, Bus construction with Multiplexers, Arithmetic Micro-operations, Logic Micro-operations, Shift Micro-operations, Arithmetic Logic Shift Unit.	CO1,CO2
II	Basic Computer Organization: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input- Output and Interrupt.	CO1,CO2
III	Central Processing Unit: General registers Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control	CO1,CO3
IV	Computer Arithmetic: Introduction, Addition and Subtraction, Booth Multiplication Algorithm. Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associative Memory, Cache Memory, Virtual Memory.	CO1,CO2 CO4
V	Input-Output Organization: Peripheral Devices, Input-output Interface, Asynchronous Data Transfer, Priority Interrupt, Direct Memory Access (DMA), Input-Output Processor. Pipeline and Parallel Processing: Parallel processing, Pipelining, Arithmetic pipeline, Instruction pipeline	CO1,CO4

Learning Resources
Text Books
1. Morris M. Mano - Computer System Architecture, 3 rd Ed., 1992, Pearson. 2. William Stallings - Computer Organization and Architecture, 8 th Ed., 2010, PHI.
Reference Books
1. Carl Hamachar, Vranesic - Computer Organization, 2002, McGraw Hill.
e- Resources and other Digital Material
1. https://nptel.ac.in/courses/106/106/106106092/