

Prasad.V. Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

Computer Organization and Architecture

Course Code	19IT3401	Year	II	Semester	II
Course Category	PC	Branch	IT	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Fund. Digital System Design
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	Understand the functionality of central processing unit.	
CO2	Illustrate the processing of instructions.	
CO3	Summarize various types of Memories.	
CO4	Outline different Input/output data transfer methods.	

Course Content

UNIT-1	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.	CO2
UNIT-2	Basic Computer Organization: Instruction codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input- Output and Interrupt.	CO2
UNIT-3	Central Processing Unit: General registers Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer	CO1

	and Manipulation, Program Control.	
UNIT-4	Computer Arithmetic: Introduction, Addition and Subtraction, Booth Multiplication Algorithm. Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associative Memory, Cache Memory, Virtual Memory.	CO1, CO3
UNIT-5	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,CO2,CO4
Learning Resources		
Text Books		
1. Computer System Architecture, Morris M. Mano, Third Edition, 1992, Pearson.		
References		
1. Computer Organization and Architecture, William Stallings, Eighth Edition, 2010, PHI.		
2. Computer Organization, Carl Hamachar, Vranesic, 2002, McGraw Hill.		
e- Resources and other Digital Material		
1. https://nptel.ac.in/courses/106/106/106106092/		