

JRI SIDDHARTHA INSTITUTE OF TECHNOLOGY
KANURU, VIJAYAWADA
II B.Tech – I Sem CSE (AI&ML)
Computer Organization

Course Code	20ES1306	Year	II	Semester	I
Course Category	Engineering Sciences	Branch	CSE (AI&ML)	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Digital Logic Design
Continuous Internal Evaluation:	30	Semester End Examination:	70	Total Marks:	100

Course Outcomes		
Upon 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

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Syllabus		
Unit No.	Contents	Mapped CO
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,CO3
II	Basic Computer Organization: Computer Registers, Instruction codes, Timing and Control, Instruction Cycle, Memory- Reference Instructions, Input- Output and Interrupt.	CO1,CO2,CO3
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. 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/106105163		
2. https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/		
3. https://www.udemy.com/course/introduction-to-computer-organization/		