

Branch Name:	Computer Engineering / Information Technology
Program Code:	ET404 / ET407
Course Title:	Computer Organization and Architecture
Course Code:	2ET4040405
Pre-requisite Course:	Knowledge Of Basic Electronics and Microprocessor

Course Objectives:

1. Describe the organization of a computer system in terms of its main components.
2. Discuss the basic concepts and structure of computers.
3. Identify various parts of a system memory hierarchy.
4. Understand concepts of register transfer logic and arithmetic operations.
5. Explain different types of addressing modes, memory organization and I/O Organization.
6. Learn the different types of data transfer modes and techniques.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	-	-	3	60	40	-	-	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	Computer Architecture & Register- Transfer and Micro- operations 1.1 Register - Transfer-Language, Register Transfer, Bus Transfer and Memory Transfer 1.2 Arithmetic Micro- Operations- Addition, Subtraction, Complements, Negation, Increment and Decrement	10	25
2	Basic Computer Organization 2.1 Instruction codes 2.2 Computer Registers-AC or Accumulator 2.3 Data Register or DR, the AR or Address Register 2.4 program Reference counter (PC) 2.5 Memory Data Register (MDR), Index register, Memory Buffer Register 2.6 Instruction Cycle 2.7 Memory Instructions 2.8 Input-Output and Interrupt 2.9 Addressing Modes	11	25
3	Input/output Organization 3.1 Peripheral Devices 3.2 Input-Output Interface 3.3 Asynchronous Data Transfer- Strobe Control and Handshaking 3.4 Modes of Data Transfer 3.5 Direct Memory Access (DMA) 3.6 Input-Output Processor (IOP) 3.7 CPU-IOP Communication	11	25

4	Memory Organization 4.1 Memory Hierarchy, 4.2Memory Classification, 4.3Main Memory (RAM), Types of ROM, Auxiliary Memory,Cache Memory, Virtual Memory	10	25
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Text Books: Computer System Architecture by M. Morris Mano (Pearson Education India)

Reference Books: Computer Architecture and Organization by Ghoshal, Subrata (Pearson Education India)

List of Open-Source Software/learning website:

1. <http://www.ddegjust.ac.in/studymaterial/msc-cs/ms-07.pdf>
2. <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/>
3. http://www.srmuniv.ac.in/downloads/computer_architecture.pdf

Course Learning Outcomes (CLO):

1. Understand the theory and architecture of central processing unit.
2. Analyze some of the design issues in terms of speed, technology, cost, performance.
3. Understand the functional units of CPU processor with applying the theory concepts.
4. Understand the architecture and functionality of central processing unit.
5. Exemplify in a better way the I/O and memory organization.
6. Describe addressing modes, instruction formats and program control statements.

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	L		L										H		
CLO2	M	M		L										M		
CLO3	H	H		M										H		
CLO4	H	M		M										H		
CLO5	H	M		L										H		
CLO6	H	M		L										M		

H: High, M: Medium, L: Low