

Branch: B.Sc.(IT)	Semester-III
Subject Code: 3104	Lecture: 04 Credit: 04
Course Opted	Core Course - 10
Subject Title	COMPUTER ORGANISATION AND ARCHITECTURE

Course Objectives:

- To give a basic understanding of concepts and structure of computers.
- To understand the organization of Cache memory and memory management hardware.
- To study the working of different interrupts & Mapping Techniques.
- To study register organization.
- To understand the different addressing modes.
- To demonstrate the working of central processing unit and RISC and CISC Architecture.

Course Outcomes:

- To describe basic structure of the computer system.
- To demonstrate the arithmetic algorithms for solving ALU operations.
- To demonstrate the memory mapping techniques.
- To Identify various types of buses, interrupts and I/O operations in a computer system
- Learn the concepts of parallel processing, pipelining and inter-processor communication.
- Exemplify the I/O and memory organization.

Modules	Sr. No.	Topic and Details	No. of Lectures Assigned	Marks Weightage %
UNIT - I	1	Basic Structure of computers: Basic organization of computer, Intel 8086 Architecture, Basic Measures of Computer Performance, CPU: Registers, Computer Function: Instruction Cycle, Interrupts, Interconnection Structures, Bus Interconnection, Peripheral Component Interconnection (PCI).	10	20
UNIT - II	2	Memory Organization: Classifications of primary and secondary memories. Types of RAM (SRAM, DRAM, SDRAM, DDR, SSD) and ROM, Characteristics of memory, Memory hierarchy: cost and performance measurement.	6	10
	3	Cache Memory: Principles, Elements of cache design (Size, Mapping, Replacement, Write policies, Block size) Virtual Memory Concept.	6	10
UNIT - III	4	Input/Output: External devices, I/O Modules, Programmed I/O, Interrupted-Driven I/O, Direct Memory Access.	9	20
	5	Central Processing Unit: Instruction sets: Instruction characteristics, Types of operands, Types of operations on operands, addressing modes of 8086 processor, Processor Organization, Register organization.	9	20

UNIT - IV	6	RISC: Instruction Execution, RISC Characteristics, and RISC Pipelining, RISC Vs. CISC, Reduced Instruction Set Computers (RISCs), Introduction to CISC. CISC Characteristics	5	10
	7	Parallel organization: Multiple processor organizations (SISD, SIMD, MISD and MIMD)	5	10
TOTAL			50	100

Text Books:

1. William Stallings, Computer Organization and Architecture: Designing for Performance, Pearson Publication, 10th Edition, 2013
2. John P. Hayes, Computer Architecture and Organization, McGraw-Hill, 1988
3. Douglas V. Hall, "Microprocessor and Interfacing", Tata McGraw-Hill 2nd Edition
4. Barry B. Brey, "The Intel Microprocessors 8086/8088...", PHI, 4th Edition

Reference Books:

1. Andrew S. Tanenbaum Structured Computer Organization, Pearson, Sixth Edition
2. Morris Mano. Computer System Architecture Pearson Publication, 3rd Edition, 2007
3. Kai Hwang, Faye Alaye Briggs. Computer architecture and parallel processing, McGraw-Hill
4. P. Pal Chaudhuri. Computer Organization and Design Prentice Hall India, 2004
5. Dr. M. Usha, T.S. Shrikant. Computer System Architecture and Organization Wiley India, 2014.