

**2IT07: COMPUTER ORGANIZATION
CREDITS – 3 (LTP:2,1,0)**

Course Objective:

To have a widespread awareness of computer architecture, memory hierarchy, communicating with standard I/O interface, pipelining techniques and to develop assembly level program.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory		Practical		
			ESE	CE	ESE	CE		
2	1	0	3	30	20	20	30	100

Course Contents:

Unit No.	Topics	Teaching Hours
1	Data Representation and Micro Operation : Basic computer data types, Complements, Fixed point representation, Floating point representation, Register Transfer language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-Operations, Logic Micro-Operations, Shift Micro-Operations, Arithmetic logical shift unit.	04
2	Introduction to computer organization: Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt.	04
3	Assembly Level Programming of Basic Computer: Introduction, Machine Language, Assembly Language, assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.	04
4	Micro programmed Control: Control Memory, Address sequencing, Micro program Example, design of control Unit.	03
5	Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC), Complex Instruction Set Computer (CISC).	03
6	Pipeline: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline.	04
7	Computer Arithmetic: Introduction, Addition and subtraction, Multiplication Algorithms (Booth Multiplication Algorithm), Division Algorithms, Floating Point Arithmetic operations, Decimal Arithmetic Unit.	04
8	Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Overview of Cache Memory and Virtual Memory.	04
Total		30

BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]

List of References:

1. M. Morris Mano, “*Computer System Architecture*”, Third Edition, Pearson.
2. Andrew S. Tanenbaum and Todd Austin, “*Structured Computer Organization*”, Sixth Edition, PHI.
3. M. Murdocca & V. Heuring, “*Computer Architecture & Organization*”, WILEY.
4. John Hayes, “*Computer Architecture and Organization*”, Third Edition, McGraw Hill.
5. Hamacher, “*Computer Organization*”, Fifth Edition, McGraw Hill.

Course Outcomes (COs):

At the end of this course students will be able to ...

1. Categorize various data representations and illustrate how arithmetic and logical operations are performed by computers.
2. Evaluate the performance of CPU, memory and I/O operations.
3. Analyze the functional units of the processor such as the register file and arithmetic logical unit.
4. Develop an assembly language program for the microprocessor system.
5. Analyze the working of pipelining mechanism.
6. Express working of memory and its hierarchy in computer system.