

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Science (Information Technology)
B.Sc. (IT)

- **Sem.** : 1
- **Subject Code** : 05BS0103
- **Subject** : Computer Organization and Architecture
- **Course Objectives :**
 1. To understand basic organization of digital computer.
 2. To understand various digital circuits and components.
 3. To understand basics of CPU.
 4. To understand basics of IO.
 5. To understand basics of Memory.
- **Prerequisites** : Basics of Computer

Unit No	Topics Covered	No of lectures required
1	Digital Logic: Computer Architecture, Digital Computers, Logic Gates, Numeric Methods, Numeric Conversion, Boolean Algebra, Binary Addition, Binary Subtraction, Signed/Unsigned Numbers, Complements of Binary Numbers.	12
2	Digital Components Design: Map Simplification, Combinational Circuits, Flip-Flops and Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers, Shift Registers, Binary Counters.	10
3	Computer Organization: Computer Registers, Bus System, Instruction Set, Timing and Control, Instruction Cycle, Memory Reference and Interrupt.	10
4	Central Processing Unit: General Register Organization, Stack Organization, Instruction Cycle and Formats, Addressing Modes, DMA.	08

FACULTY OF COMPUTER APPLICATIONS
Bachelor of Science (Information Technology)
B.Sc. (IT)

5	Memory and Storage System: Concept of Primary & Secondary Memory, RAM and ROM with types, Main and Cache Memory, Input – Output Interface, Asynchronous Data Transfer, Modes of Transfer and Secondary Storage Devices.	10
----------	---	-----------

Course Outcomes:

1. Students will be able to learn the organization of a computer system in terms of its main components.
2. Students will be able to understand the digital representation of data and differentiate between number systems and codes.
3. Students will be able to design laws of Boolean Algebra and their usage and understand functions of logic gates.
4. Students will be able to learn the concept of sequential logic and combinational circuit.
5. Students will be able to determine the concept of system memory hierarchy.

Course Outcomes – Program Outcomes Mapping Table:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L		H							
CO2		M	M	M	H					
CO3					H			H		
CO4	M				M	H			M	
CO5										M

Text Book:

1. "Computer System Architecture", M. Morris Mano, Pearson Publication, ThirdEdition

Reference Books:

1. "Computer System Architecture", John. P. Hayes, McGraw Hill Education, ThirdEdition.

FACULTY OF COMPUTER APPLICATIONS**Bachelor of Science (Information Technology)**
B.Sc. (IT)

2. "Computer Architecture and parallel processing", Hwang K. Briggs, McGraw Hill Education, First Edition.
3. "Computer Organization and Architecture", Ikvinderpal Singh, Baljinder Singh, **Khanna Publishers**, First Edition.
4. "Fundamentals of Digital Circuits", A. Anand Kumar, PHI Publishers, Second Edition

Web References:

1. <https://www.javatpoint.com/computer-organization-and-architecture-tutorial>
2. <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/>

App References:

1. https://play.google.com/store/apps/details?id=com.faadooengineers.free_computerorganizationarch&hl=en
2. https://play.google.com/store/apps/details?id=com.cdac.csa&hl=en_US

Syllabus Coverage from text /reference book & web/app reference:

Unit No.	Topics/Subtopics
I	Ch.1: [1.1 to 1.7]
II	Ch.2: [2.1 to 2.6]
III	Ch.5: [5.1 to 5.3, 5.6, 5.7]
IV	Ch.8: [8.2 to 8.5]