

Branch Name:	BCA (Bachelor of Computer Application)
Program Code:	CS101
Course Title:	Computer Architecture
Course Code:	21-CAM102-1C
Pre-requisite Course:	Basic knowledge of Computer.

Course Objective:

This course is intended to make the students:

1. To be aware of working principles of components involved in a typical computer system.
2. To learn about various number systems and conversion among them.
3. To recognize various basic building blocks (logic gates) and combinational circuits.

Teaching and Examination Scheme:

Teaching Scheme (Hours. per week)				Evaluation Scheme (Marks)								
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory				Practical				Total
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	
4	-	2	5	18	50	18	50	-	-	09	25	125

Course Contents:

Sr. No	Topics	Total Hours	Weightage (%)
1	Introduction to Computers and Peripherals: Basics of Computer, Classifications of Computers, Computer Generations, Major Components of a Digital Computer: Hardware & Software, System Software vs. Application Software. Input Devices: Keyboard, Mouse, Scanner. Output Devices: Monitors (CRT/VDU). Printers: Dot Matrix, Inkjet, Laser.	12	25
2	Number Systems and Arithmetic: Types of Number Systems (Binary, Decimal, Octal, Hexadecimal). Number System Conversions: Binary <-> Decimal, Decimal <-> Octal, Octal <-> Binary, Hexadecimal <-> Binary, Decimal <-> Hexadecimal, complements. Binary Arithmetic: Addition, Subtraction	12	25
3	Basic concepts of Memory and Logic Circuits: Types of Memory (Primary, Secondary, Cache and Virtual), Storage Devices (Hard Disk, Floppy Disk, CD, DVD) Logic Gates: AND, OR, NOT, NAND, NOR, XOR, XNOR.	12	25
4	Combinational Circuits: Half Adder and Full Adder, half and full Subtractor, Decoders, Encoder. Sequential Circuits: Flip-Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop	12	25

Course Learning Outcomes (CLO):

At the end of this course, the student would be able:

- CLO 1:** Identify and explain the basic structure and components of a digital computer system.
- CLO 2:** Distinguish between types of computer memory and storage devices, and explain their uses.
- CLO 3:** Apply different number systems and perform conversions between them accurately.
- CLO 4:** Demonstrate understanding of basic logic gates and construct simple logical circuits.

List of Text Book:

- Fundamentals of computers – By. V. Raja Raman, PHI Publication

List of Reference Books:

- Fundamentals of computers – By. Anand Kumar, PHI Publication
- Computer Architecture – By K M Hebbar, MacMillan Publication

E-Resource / Web Links:

- <http://williamstallings.com/ComputerOrganization/>
- <https://www.pearsonhighered.com/cs-resources/products/product.html#product,isbn=0132916525>
- NPTEL – Computer Organization and Architecture:
<https://nptel.ac.in/courses/106/105/106105163/> (Free video lectures and materials by IIT professors)
- Geeks for Geeks – Computer Organization Basics: <https://www.geeksforgeeks.org/computer-organization-and-architecture-tutorials/> (Tutorials with diagrams and simple explanations)
- Tutorials Point – Computer Fundamentals: https://www.tutorialspoint.com/computer_fundamentals/index.htm (Good for hardware, input/output devices, and memory concepts)

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

- Design and verify operation of half adder and full adder.
- Design and verify operation of half subtractor.
- Familiarize the computer system layout: marking positions of SMPS, motherboard, FDD, HDD, CD, DVD and add on cards.
- Identify the Computer Name and Hardware Specification (RAM capacity, Processor type, HDD, 32 bit/ 64 bit)
- Configure BIOS settings- disable and enable
- Adding additional RAM to the system. (expanding RAM size).
- To Study motherboard layout of a system.
- Demonstrate the assembly of a PC
- Demonstration of various ports: CPU, VGA port, PS/2 (keyboard, mouse), USB, LAN, Speaker, Audio.
- Install and configure windows OS

Mapping of CLO, 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
CLO1				H	H		M						L		
CLO2	H		M	H	H		M			M	M		M	L	M
CLO3		M		M	M	M		M						M	
CLO4				H	H		M						L		

H: High, M: Medium, L: Low