Ganpat University
॥ विद्यया समाजोत्कर्षः ॥

Faculty of Computer Applications

Programme	BCA Honors (Cyber Security)	**Branch**	Computer Applications
Semester	I	**Version**	1.0.0.0
Effective from Academic Year	2026-2027	**Effective for the batch Admitted in**	June 2026
Subject Code	U101B3COA	**Subject Name**	COMPUTER ORGANIZATION AND ARCHITECTURE

Teaching scheme						**Examination scheme (Marks)**			
(Per week)	**Lecture (DT)**		**Practical (Lab.)**		**Total**		**CE**	**SEE**	**Total**
	L	TU	P	TW					
Credit	4		-	-	4	Theory	50	50	100
Hours	4		-	-	4	Practical	-	-	-

Objective:

The objective of this course is to learn Basic Knowledge about Fundamentals of Computer and its architecture.

Pre-requisites:

Students should have a good working understanding basic knowledge of computer system.

Course Outcomes :

Name of CO	Description
CO1	Identify the number system and different codes system
CO2	Understand Error Detection and Correction Codes, codes such as Gray code, BCD (Binary-Coded Decimal), and excess-3 code.
CO3	Understanding of Computer Components, Addressing techniques
CO4	Understand and describe Memory allocation.
CO5	Identify and describe different types of peripheral devices

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	1	1	1	0	1	1	1
CO2	3	2	2	1	0	1	1	1
CO3	3	2	1	1	0	1	1	1
CO4	3	2	1	1	0	1	1	1
CO5	3	1	1	1	0	1	1	1

Content:

Unit		Hrs

1	**Data Representation and Number System** Number System: Introduction to Decimal, Binary, Octal, Hexadecimal number system, Conversation of number from one number system to another number system (like Decimal to Binary etc.), Binary Arithmetic: - Addition (Simple Method, using 1's Complement, Using 2's Complement method), Subtraction (Simple Method), Multiplication (Simple Method), Division (Simple Method)	12
2	**Different Codes** Representation of Error Detection Codes: Parity Bit Method, Checksum Method, Representation of Error Correction Code: Hamming Code, Alphanumeric Codes: ASCII, EBCDIC, Excess – 3 Code, BCD Addition Method, Gray Code: Gray to Binary Conversion, Binary to Gray Conversion	12
3	**Fundamentals of Computer** Introduction to Ideal Microcomputer, An Actual Microcomputer: CPU, Address Bus, Data Bus, Control Bus, History of Microprocessor, Microcontroller (Application Only), Addressing Techniques, Types of Instructions: Arithmetic Instruction, Logical Instruction, Branch Instruction, Instruction Execution, Language Processor: Compilers, Interpreter, Assemblers.	12
4	**Memory Allocation** Memory: RAM - SRAM, DRAM, ROM - PROM, EPROM, UVEPROM, EEPROM, Secondary Storage Devices: Floppy Disk, Hard Disk, CD-ROM, DVD (Above all topics Include only principles, types, data storage and Application)	12
5	**Computer Peripherals** Input Devices: Key Board, Mouse, Touch screen, Scanner, Output Devices: VDU (Computer Graphics, Working of CRT, Resolution of different VDU), Printer (Characteristic, Classification, Working, principle, Uses), Communication Devices: Network Interface Card (NIC), Modem, Router, Miscellaneous Peripherals: External Storage Devices, Card Readers, USB Hubs, Graphics Tablet, Barcode Scanner.	12

Practical Content:

Not Applicable

Text Books:

1	Fundamentals of Computers by V. Raja Raman

Reference Books:

1	Structured Computer Organization by Andrew S. Tanenbaum
2	Digital Principles and Applications by Malvino and Leach –TMH Publications
3	Digital Principles and Applications by Albert Paul Malvino and Donald P. Leach

Web References / MOOC / Certification Course

1	https://www.udemy.com/course/computer-fundamentals-by-mbj/
2	https://www.coursera.org/specializations/computer-fundamentals
3	www.edx.org/learn/computer-architecture
4	www.tutorialspoint.com/computer_fundamentals/index.htm

Question Paper Scheme:

	End Semester Examination Duration: (2 Hours Theory Examination) **Note for Examiner:** - Q-1 Any Five out of Seven (25 Marks) Q-2 Any Two out of Three (06 Marks) Q-3 Mandatory question (05 Marks) Q-4 Any Two out of Three (08 Marks) Q-5 Any Two out of Three (06 Marks) *The question paper must comprehensively address all Course Outcomes (COs), align Taxonomy levels, and ensure complete syllabus coverage.*