LNCT UNIVERSITY, BHOPAL

Programme:- BCA (CA)   **Semester - I**   **wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
Problem Solving and Programming in C (Major)	**BCA-101**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	70	30	100

Course Objective	The objective of this course is to provide foundation in the basic concepts of C programming. Also to teach the students the development of programming logics that are appropriate for problems solving.

Units	Contents (*Theory*)	Hours /week
I	**Overview of C Language:** Programming concepts: Software, Classification of Software, Modular Programming, Structured Programming, Algorithms and Flowcharts with examples History of C, Character set, C tokens, Identifiers, Keywords, Data types, Variables, Constants, Symbolic Constants, Operators in C, Hierarchy of Operators, Expressions, Type Conversions and Library Functions, Storage Classes - Automatic, External, Static and Register Variables	**8**
II	**Control Statements and Functions**: Decision Making Statements - if Statement, if–else statement, nesting of if-else statements, else–if ladder, switch statement, Looping –for loop, while, do-while, Nested loop, break, continue, and goto statements. Functions**:** Function Definition, prototyping, types of functions, passing arguments to functions, Nested Functions, Recursive functions.	**8**
III	**Arrays and Strings:** Declaration and Initialization, Types of Arrays, Operations on arrays, Strings: Declaration and Initialization, String Functions, Arrays of strings, passing strings to functions.	**8**
IV	**Pointers, Structure and Union:** Pointer concept, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions And Pointers, Arrays And Pointers, Pointer Arrays, Structure: Definition and declaration; Variables initialization; Accessing members of a Structure; , arrays of structures , size of structure ,Nested structures, Union**:** Definition and declaration, difference between Union and structure .	**8**
V	**I/O Formats and Files:** Concept of Files, Text and Binary files, File Opening in Various Modes and Closing of a File, Reading from a File, Writing onto a File.	**8**

Text Books/Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
E. Balaguruswamy	Programming in ANSI C	7th edition	Mc Graw Hill
Brian W. Kernighan and Dennis M. Ritchie	The C programming language	2nd edition, 1988	Prentice Hall of India
Yashavant Kanetkar	Let Us C	15th Edition	BPB
Yashavant Kanetkar	Working With C	1994	BPB

COURSE OUTCOMES: Students will be able to

CO1	Write, compile and debug programs in C language.
CO2	Design programs involving decision structures, loops and functions.
CO3	differentiate between call by value and call by reference.
CO4	Understand the dynamics of memory by the use of pointers.
CO5	Create/update basic data files.

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Programme:- BCA (CA)   **Semester - I**   **wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
Computer Fundamentals and Organization (Minor)	BCA-102	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	70	30	100

Course Objective	The objective of this course is to help to acquire the basic learning and knowledge of computer. Also to understand digital systems and acquire the knowledge of computer organization.

Units	Contents (Theory)	Hours /week
I	**Introduction to Computer:** Computer Characteristics, Concept of Hardware, Software Evolution of computer and Generations, Types of Computer – Analog and Digital computers, Hybrid Computers, General Purpose and Special Purpose Computer, Limitations of Computer, Applications of Computer in Various Fields. Functional Block Diagram of Computer: CPU, ALU, Memory Unit, Bus Structure of Digital Computer – Address, Data and Control Bus.	8
II	**Input/output Devices:** Input Device, Keyboard, Mouse, Scanner, MICR, OMR. Output Devices – VDU, Printers – Dot Matrix, Daisy-wheel, Inkjet, Laser, Line Printers and Plotters. Computer Memory: Memory Concept, Memory Cell, Memory Organization, Semiconductor Memory – RAM, ROM, PROM, EPROM, Secondary Storage Devices – Magnetic Tape, Magnetic Disk (Floppy Disk and Hard Disk.), Compact Disk. Software – System and Application Software.	8
III	**Introduction to Digital Systems:** Introduction to Digital electronics, Digital and Analog Signals and Systems, Binary Digits, Data Representation: Number System: Binary, Octal, Hexadecimal, Conversions from one base to another. Binary Arithmetic: Binary arithmetic operations; Representation of Negative Numbers;1's complement and 2's complement, Complement arithmetic, Binary Codes: BCD code, ASCII code, EBCIDIC code.	8
IV	**Boolean algebra:** Rules and laws of Boolean algebra, Boolean theorems, Boolean functions and Truth tables, Digital Logic gates: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates–XOR, XNOR, NAND, NOR, Half-Adder, Full-Adder, Encoders, Decoders, Multiplexers, De- multiplexers, Flip-flops, Registers, Counters.	8

V	**Memory Organization:** Primary memory-RAM, ROM, PROM, EPROM, PLA programmable logic array, Secondary memory and its types, Internal organization of a memory chip, Organization of a memory unit, Concept of cache memory, Concept of virtual memory.	**8**

Text Books/ Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
M. Morris Mano	Digital Logic and Computer Design	4th edition, 2013	Prentice Hall of India Pvt. Ltd.
W. Stallings	Computer Organization and Architecture- Designing for Performance	6th edition, 2003	Prentice Hall, Inc.
Andrew S. Tanenbaum,	Structured Computer Organization	6th edition, 2013	Prentice Hall of India Pvt. Ltd.
S.K. Basandra	Computer Today	First edition, Ver. 06, 1995	Galgotia Publications.
P.K. Sinha	Computer Fundamentals	6th edition, 1992	BPB publications
B. Ram	Computer Fundamentals and Architecture	4th edition, 2000	New Age International

COURSE OUTCOMES: Students will be able to

CO1	Identity input and output devices of Computer system.
CO2	Understand Computer hardware and Computer Software
CO3	Convert different type of codes and number systems which are used in digital communication and computer systems.
CO4	Create the appropriate truth table from a description of a combinational logic function.
CO5	Design and analyze circuits for digital arithmetic.

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Programme:- BCA (CA)   **Semester - I**   **wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
Mathematics (GEC)	**BCA-103**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	70	30	100

Course Objective	The objective of this course is to teach the basic concepts of mathematics.

Units	Contents (*Theory*)	Hours /week
I	**Sets**: Introduction of elements of mathematics, Set & subset, Finite and Infinite set, Equal set, Null set, Proper subset, universal set, Singleton set. Union, Intersection, complement of set. Common applications of set, case study based questions.	**8**
II	**Theory of Indices**: Definition & types of matrices, Elementary transformation of matrices, Determinant and matrices, Special matrices, Addition and subtraction of matrix, Inverse of a matrix, rank of matrix. Number system, Percentage, Ratio and Proportion, Profit & Loss, simple interest. Discount, compound interest.	**8**
III	**Permutation Combinations & Probabilities**: The rules of sum and product, Permutations, Combinations, Binomial and Multinomial theorems, Combinations with repetitions, probability basics.	**8**
IV	**Frequency distribution:** Histogram, Measure of central tendency, Mean, Mode, Median, Standard deviation, variance.	**8**
V	**Mathematical Series**: Arithmetic, Geometric & Harmonic Series. Differentiation of functions, derivatives of some common functions, polynomials, exponential, logarithmic & trigonometric functions.	**8**

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Text Books/Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. M. Shukla.	Business Mathematics	2018	Sahitya Bhawan Publications
H. S. Sharma.	Mathematical Statistics	First Edition, 2017	Ram Prasas Publications
Ray & Seth.	Matrices	2014	R. Chand and Co.
D.C. Agarwal, Sonendra Gupta, Avnish Mishra	Business Mathematics	2017	Shree Sai Prakhashan

COURSE OUTCOMES: Students will be able to

CO1	Understand the foundations of mathematics.
CO2	Perform basic computations in higher mathematics.
CO3	Understand set related operations.
CO4	Solve polynomials, exponential, logarithmic & trigonometric functions.
CO5	Understand and solve probability and permutation and combination problems.

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Programme:- BCA (CA)   **Semester - I**   **wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
Basic Communication (AEC)	**BCA-104**	**L**	**T**	**J**	**EST**	**CAT**	**Total**
		3	1	0	70	30	100

Course Objective	The objective of this course is to understand details of communication and various media of communication.

Units	Contents (*Theory*)	Hours /week
I	**Communication:** Meaning and process of communication, Importance of effective communication, Communication situation, Barriers to communication, Objectives of communication, Types of communication, Principles of communication, Essentials of effective communication.	**8**
II	**Media of Communication:** Written, Oral, Face-to-Face, Visual, Audio-Visual, Merits and demerits of written and oral communication.	**8**
III	**Communication Skills:** Developing communication skills, Listening, Speaking, Reading-Writing (oral & written), Body language, Utility of aids in Communication.	**8**
IV	**Spoken Skills:** Preparing for oral presentation, Conducting presentations, Debates, Seminar, Speeches, Lectures, Interviews, Telephonic Conversation, Negotiations, Group Discussions.	**8**
V	**Writing Skills:** Preparing of bio-data, Seminar, Paper, Bibliography, Official correspondence, Mechanics of writing, Formal & Informal writings, Letters, Paragraphing, Precise, Report writing, Technical reports, Length of written reports, Organizing reports, Writing technical reports, Creative writing, Common Errors in Language.	**8**

Text Books/ Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Rajendra Pal and J.S. Korlahalli	Essentials of Business Communication	13th Edition	Sultan Chand & Sons Publishers, New Delhi
U. S. Rai & S. M. Rai	Business Communications	6th Edition	Himalaya Publishing House.
Menzal and D. H. Jones	Writing a technical Paper	1961	Mc Graw Hill,
Scot Ober	Contemporary Business Communication	5th Edition	Wiley India.

COURSE OUTCOMES: Students will be able to

CO1	Learn the basics of English language
CO2	Enhance their reading and writing skills.
CO3	Improve their vocabulary through comprehension.
CO4	Write different types of reports.
CO5	Give presentations

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Programme:- BCA (CA)　　　　**Semester - I**　　　　**wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
Current Trends in Information Technology (GEC)	BCA-105	L	T	J	EST	CAT	Total
		3	1	0	70	30	100

Course Objective	The objective of this course is to aware the students about current technologies, applications and systems around us.

Units	Contents (Theory)	Hours /week
I	**Wireless Technology:** Fundamentals of wireless communication, Wireless Channel, Introduction and basic concept of modern communication and technology: Overview of Cellular Systems and evolution 2G, 3G, 4G and 5G, Difference between 4G and 5G, Bluetooth, WI-Fi, Radio Network, Communication satellite, radar, fiber optics.	8
II	**Internet and Security :** Introduction to Internet, World Wide Web, E-commerce Computer Security Basics: Definition, Principles, Introduction to viruses, worms, malware, Trojans, Spyware and Anti-Spyware Software, Different types of attacks like Money Laundering, Information Theft, Email spoofing, Man-in-the-middle attack , SQL injection Denial of Service (DoS), Phishing, Hacking, Spamming, Security measures Firewall, Computer Ethics, Cyber Security, Introduction of Cyber Laws about Internet Fraud, Good Computer Security .	8
III	**Block chain technology**: Introduction of Block chain, Working, Scope of Block chain, Different components involved in Block chain, Hyper ledger Fabric model and its architecture, Hyper ledger composer and explorer, Bit coin, Crypto currency.	8
IV	**Introduction to IOT**: Architectural Overview, Design principles and needed capabilities, IOT Applications, Sensing, Different types of Sensors, Actuation, Security aspects in IOT, elements of IOT, Basic IOT Framework, Architectural view, Physical & Logical design.	8
V	**Artificial Intelligence & Big Data**: Introduction to Emerging Trends, Artificial Intelligence (AI), Various types of AI, Machine Learning, Natural Language Processing (NLP), Advantages of AI, Risks of AI, Big Data Fundamentals, Concepts of Big Data, Types of Big data, components of big data, Characteristics of Big Data, Hadoop and its uses, Risk of Big data.	8

Text Books/ Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Elaine Rich and Kevin Knight	Artificial Intelligence	3rd Edition	Tata McGraw Hill.
Balamarugan Balusamy, Nandhini Abirami R, Seifedine Kadry and Amir Gandomi	Big Data: Concepts, Technology, and Architecture	2019	WILEY
Andrew Minteer	Analytics for the Internet of Things (IOT): Intelligent analytics for your intelligent devices	I	PACKT
Antony Lewis	The Basics of Bitcoins and Blockchains	I	MANGO
Atul Kahate	Cryptography and Network Security	3rd Edition	Tata McGraw Hill.

COURSE OUTCOMES: Students will be able to

CO1	Describe wireless communication.
CO2	Understand security and its terminologies.
CO3	Describe what IOT is and how it works.
CO4	Have conceptual understanding of block chain technology and how it can be used.
CO5	Understand the concepts and applications of Artificial Intelligence and Big data.

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Name of Paper & Category	Paper Code	Practical				
		Credit		Marks		
Programming Lab in C (Major)	**BCA-106**	**P**	**J**	**ESP**	**CAP**	**Total**
		2	-	70	30	100

Programming List:-

1. WAP that accepts the marks of 5 subjects and finds the sum and percentage marks obtained by the student.
2. WAP that calculates the Simple Interest and Compound Interest. The Principal, Amount, Rate of Interest and Time are entered through the keyboard.
3. WAP to calculate the area and circumference of a circle.
4. WAP that accepts the temperature in Centigrade and converts into Fahrenheit using the formula C/5=(F-32)/9.
5. WAP that swaps values of two variables using a third variable.
6. WAP that checks whether the two numbers entered by the user are equal or not.
7. WAP to find the greatest of three numbers.
8. WAP that finds whether a given number is even or odd.
9. WAP that tells whether a given year is a leap year or not.
10. WAP that accepts marks of five subjects and finds percentage and prints grades according to the following criteria:
    Between 90-100%--------------Print 'A'
    80-90%------------------------Print 'B'
    60-80%------------------------Print 'C'
    Below 60%---------------------Print 'D'
11. WAP that takes two operands and one operator from the user and perform the operation and prints the result by using Switch statement.
12. WAP to print the sum of all numbers up to a given number.
13. WAP to find the factorial of a given number.
14. WAP to print sum of even and odd numbers from 1 to N numbers.
15. WAP to print the Fibonacci series.
16. WAP to check whether the entered number is prime or not.
17. WAP to find the sum of digits of the entered number.

Note: Execute the code of programs and develop an algorithm with flowchart.

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Name of Paper & Category	Paper Code	Practical				
		Credit	Marks			
		P	J	ESP	CAP	Total
Lab in PC Package (Minor)	**BCA-107**	2	-	70	30	100

Contents:-

1. Basic Computer Operations:

   o Powering on/off the computer
   o Navigating the operating system
   o Using the keyboard and mouse
2. File Management:
   o Creating, renaming, and deleting files and folders
   o Copying, moving, and organizing files and folders
3. Operating System Basics:
   o Understanding the file system
   o Managing user accounts and permissions
   o Customizing system settings
4. Internet and Web Browsing:
   o Connecting to the internet
   o Using web browsers
   o Searching and navigating websites
5. Word Processing:
   o Creating and formatting documents
   o Inserting images and tables
   o Spell checking and grammar checking
6. Spreadsheets:
   o Creating and formatting spreadsheets
   o Entering data and formulas
   o Using functions and creating charts
7. Presentations:
   o Creating and designing slides
   o Adding text, images, and multimedia
   o Applying transitions and animations
8. Computer Security:
   o Importance of passwords and user accounts
   o Recognizing and avoiding phishing scams
   o Installing and updating antivirus software
9. Data Backup and Recovery:
   o Creating data backups
   o Restoring files from backups
   o Using recovery options in case of system failure

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Programme:- BCA (CA)   **Semester - I**   **wef: July 2025**

Name of Paper & Category	Paper Code	Theory					
		Credit			Marks		
		L	T	J	EST	CAT	Total
Disaster Management (AEC)	FC-111	-	-	-	-	-	-

Course Objective	The Programme has been framed with an intention to provide a general concept in the dimensions of disasters caused by nature beyond human control as well as the disasters and environmental hazards induced by human activities with emphasis on Natural disaster, Man-made disaster.

Units	Contents (*Theory*)	Hours /week
I	**Introduction:** Hazard, Risk, Vulnerability, Disaster; Disaster Management, Meaning, Nature Importance, Dimensions & Scope of Disaster Management, Disaster Management Cycle. National disaster management framework; financial arrangements for Disaster management, International Strategy for Disaster reduction	2
II	**Natural Disasters:** Meaning and nature of natural disasters, their types and effects, Hydrological Disasters - Flood, Flash flood, Drought, cloud burst, Geological Disasters- Earthquakes, Landslides, Avalanches, Volcanic eruptions, Mudflow Unit, Wind related- Cyclone, Storm, Storm surge, tidal waves, Heat and cold Waves, Climatic Change, Global warming, Sea Level rise, Ozone Depletion	2
III	**Manmade Disaster:** CBRN – Chemical disasters, biological disasters, radiological disasters, nuclear disasters Fire – building fire, coal fire, forest fire, Oil fire	2
IV	**Types of Man – made Disasters:** Accidents- road accidents, rail accidents, air accidents, sea accidents. Pollution and deforestation- air pollution, water pollution, deforestation, Industrial wastewater pollution, deforestation	2
V	**Disaster Determinants:** Factors affecting damage – types, scale population, social status, habitation pattern, physiology and climate. Factors affecting mitigation measures, prediction, preparation, communication, area and accessibility, population, physiology and climate	2

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Text Books/ Reference Books:-

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. L. Goel	Disaster Administration and Management, Text & Case studies-	2nd edition	Deep and Deep Publications
G.K. Ghosh	Disaster Management	4th edition	A.P.H. Publishing Corporation
Vinod K Sharma-	Disaster Management	10th edition	IIPA
S. K. Singh, S.C. Kundu, Shobha Singh	Disaster Management	2nd edition	William Publications

COURSE OUTCOMES: Students will be able to

CO1	Explain disaster management theory
CO2	Prevent and control Public Health consequences of Disasters
CO3	Know man-made disasters
CO4	Classify man-made disasters
CO5	Reveal unfounded myths about human behavior in disasters.