

Lesson Plans

of

BCA

Session: 2025-26
(Odd Semester)

K.L MEHTA DAYANAND COLLEGE FOR WOMEN, FARIDABAD
LESSON PLAN FOR THE SESSION 2025-2026

Name of the Assistant Professor: Dr. Vandana Class And Section: BCA (A &B) Subject: Mathematics Foundation to computer science(25BCA 401DS01)	
Week 1	Introduction of Syllabus,set, Relation and functions,set operations, Properties of set operations,Subset, Venn diagram, Cartesian product, Relation on a set, Properties of Relations, Representing Relation using matrices and digraph
Week 2	Types of Relation, Equivalence relation and partition on set, Closure of Relations Warshall's algorithm, functions, Properties of functions, Composition of functions, bijective functions, inverse function, Exponential and logarithmic function, Polynomial function, ceiling and floor functions
Week 3	Counting and recurrence Relation: Basic of counting, Pigeonhole principal, Permutations and combination
Week 4	Binomial coefficient, Binomial theorem, Recurrence relation modelling recurrence Relation with examples, Fibonacci numbers,Hanoi problem, Solving linear recurrence Relation with constant coefficients,Root method,
Week 5	Graph theory: Basic terminology of graphs,connected and disconnected graphs,subgraphs, weighed graphs,Ruler and Hamiltonian graphs
Week 6	Trees, Properties of trees, concept of spanning tree,Planner graphs, Definition and basic results on the topics mentioned.
Week 7	Matrix Algebra: Types of Matrices, algebra of Matrices - addition, subtraction and multiplication of Matrices,determinant of Matrix
Week 8	Symmetric and skew symmetric matrices, orthogonal Matrix
Week 9	Rank of Matrix, inverse of a matrix, applications of matrices
Week 10	Solving system of linear equations
Week 11	Eigen values and eigen vectors,cayley- Hamilton theorem
Week 12	MOCK TEST
Week 13	Revision
Week 14	Revision
Week 15	REVISION

Name of the Assistant Professor: Ms. Rupinder Kaur Class and Section: BCA-1st Year (A and B) Subject: Computer Architecture Code : 25BCA401DS02	
Week 1	Digital Principles: Definition for Digital signals, Digital logic, Digital computers, Von Neumann Architecture, Boolean Laws and Theorems,
Week 2	K-Map: Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don't Care Conditions, SOP and POS
Week 3	Number Systems: Decimal, Binary, Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Class Test - 1
Week 4	Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC, Excess3 Code, The Gray Code. Combinational Circuits: Half Adder and Full Adder, Subtractor,
Week 5	Decoders, Encoder, Multiplexer, Demultiplexer Sequential Circuits: Flip-Flops- SR Flip- Flop
Week 6	D Flip-Flop, J-K Flip-Flop, T Flip-Flop Register: 4 bit register with parallel load, Shift Registers- Bidirectional shift register Class Test-2
Week 7	Bidirectional shift register with parallel load Binary Counters-4 bit synchronous and Asynchronous binary counter.
Week 8	Basic Computer Organization and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, InputOutput Interrupt,
Week 9	Complete Computer Description, Design of Basic Computer, Design of Accumulator logic. Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes,
Week 10	Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline
Week 11	Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output Processor (IOP).
Week 12	MOCK TEST
Week 13	Memory Organization: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory.
Week 14	Virtual Memory, Memory Management Hardware. Class Test - 3
Week 15	REVISION

Name of the Assistant Professor: Ms. Poonam Class And Section: BCA 1st Year ,Sec(A,B) Subject: Problem Solving Techniques , Code: 25BCA401SEC01	
Week 1	Problems And Problem Instances, Generalization and Special Cases, Types of Computational Problems, Classification of Problems, analysis of problems, solution approaches, algorithm development.
Week 2	Analysis of Algorithm, Efficiency, Correctness, Role of Data Structures in Problem Solving, Problem-Solving Steps (Understand the Problem, Plan, Execute, and review), Breaking the problem into sub-problems, Input / Output Specification, Input Validation, Pre and Post Conditions.
Week 3	Counting and Recurrence Relation: Structured Programming Concepts: Sequence (Input/Output/Assignment), Selection (If, If-Else) and repetition (For, While, Do-While) Statements, Control Structure stacking and nesting. different Kinds of Repetitions: Entry Controlled, Exit Controlled, Counter Controlled, Definite, Indefinite and Sentinel Controlled Repetitions. pseudo-code and flowcharts. definition and characteristics of algorithms, Standard Algorithm Format. Problems Involving Iteration and Nesting. Test 1
Week 4	Displaying Different Patterns and Shapes Using Symbols and Numbers, Generating arithmetic and Geometric Progression, Fibonacci and Other Sequences, Approximate Values For θ , Sin(x), Cos(x), Etc. Using Taylor Series. Different Kinds of Data in The Real World and How They are Represented in The Computer Memory. Representation of Integers: signed magnitude form, 1's Complement And 2's Complement. Representation of Real Numbers.
Week 5	IEEE 754 Floating Point Representation. Representation of Characters: ASCII, UNICODE. C Language: Introduction To Programming Languages, Different Generations of Programming Languages. Typed Vs Typeless Programming Languages, History of C Language, An Empty C Program. C Language Counterparts For Input (scanf()), Output (printf()) Statements, Assignment, Arithmetic, Relational and Logical Operators. .
Week 6	If, If-Else Statements, ForWhile, Do-While Statements. Data Types. Translating Pseudocode/Algorithm to C Program. Incremental Compilation and Testing of The C Program. Simple Problems Involving Input, Output, Assignment Statement, Selection and Repetition. Good Coding Practices.
Week 7	Elementary Graph Theory: Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number, Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial.
Week 8	Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum & Average) on a Sequence of Numbers which can read using Sentinel- Controlled Repetition using only a few variables. C Language: else-if ladder, switch case, Increment/Decrement Operators, break & continue Statements.
Week 9	Elementary Graph Theory: Problems on Numbers: Extracting Digits of a Number (Left to Right and Right to Left), Palindrome, Prime Number
Week 10	Prime Factors, Amicable Number, Perfect Number, Armstrong Number, Factorial, Converting Number from One Base to Another. Statistics (Maximum, Minimum, Sum & Average) on a Sequence of Numbers which can read using Sentinel- Controlled Repetition using only a few variables. C Language: else-if ladder, switch case, Increment/Decrement Operators, break & continue Statements. Test 2
Week 11	Matrix Algebra: Modular Programming, Top-Down and Bottom-Up Approaches to Problem Solving. Recursion. Problems on Arrays: Reading and Writing of Array Elements, Maximum, Minimum, Sum, Average, Median and Mode. Sequential And Binary Search. Any one Sorting Algorithm. Matrix Operations. Presentations
Week 12	MOCK TEST
Week 13	C Language: Function Definition and Declaration (Prototype), Role of Return Statement, One Dimensional and Two-Dimensional Arrays.
Week 14	String Functions. Other Operators, Operator Precedence and Associativity. Debugging.
Week 15	REVISION

Name of the Assistant Professor: Ms. Renu Kumari Class And Section: BCA 2ND Year (Sec-A&B) Subject: Java Programming(25CSC403SE01)	
Week 1	Overview of Java: Java Features, Setting Up the Java Development Environment, Writing, Compiling, and Running a Java Program, Java Virtual Machine (JVM)
Week 2	Bytecode, Java Development Kit (JDK) and Java Runtime Environment (JRE). Basic Language Elements: Java Syntax and Structure, Identifiers, Keywords,
Week 3	Literals, Comments, Operators Assignments, Data Types, Variables and its types, Constants, Expressions
Week 4	Assignment-1 Control Flow Statements: if-else, switch, loops (for, while, do-while)
Week 5	Array: Initializing, Single Dimensional Array, Operation on String, Mutable & Immutable String, Using Collection, Bases Loop for String, Creating Strings using StringBuffer.
Week 6	Class Fundamentals: Object, Object Life cycle, Creating and Operating Objects, Constructor & initialization code block
Week 7	Test-1 Access Control, Inner Class, Abstract Class, Argument Passing Mechanism, Method Overloading, Recursion, Use of Access Modifiers with Classes & Methods.
Week 8	Introduction to Inheritance: Use and Benefits of Inheritance in OOPs,
Week 9	Types of Inheritance in Java, Inheriting Data members and Methods
Week 10	Role of Constructors in inheritance, Overriding Super Class Methods, Use of “super”, Polymorphism in Java.
Week 11	Test-2 Interface: Purpose of interface, defining an interface, implementing interfaces, Interface reference variables, Interface with variables, Extending interfaces
Week 12	MOCK TEST
Week 13	Exception Handling: Types of Errors in Java, Try-Catch Blocks and Finally Clause, Throw and Throws Keywords, Creating Custom Exceptions.
Week 14	Packages: Package as Access Protection, Defining Package, CLASSPATH Setting for Packages, Import and Naming Convention for Packages. GUI programming.
Week 15	REVISION

Name of the Assistant Professor: Ms. Sandhya chuadhary Class And Section: BCAIInd Year Sec-A+B Subject: INTRODUCTION TO OPERATING SYSTEM Teaching Term: 22nd July 2025 to 22nd Nov 2025 (Excluding Diwali Break)	
Week 1	Fundamentals of Operating system: Introduction to Operating System, its need and operating System services ,Early systems
Week 2	Structures - Simple Batch, Multi programmed, timeshared, Personal Computer, Parallel, Distributed Systems, Real-Time Systems. .
Week 3	Process Management: Process concept, Operation on processes, Cooperating Processes.Threads, and Inter-process Communication.
Week 4	CPU Scheduling: Basic concepts, Scheduling criteria,
Week 5	Scheduling algorithms : FCFS, SJF, Round Robin & Queue Algorithms.
Week 6	Deadlocks: Deadlock characterization, Methods for handling deadlocks, Banker'sAlgorithm.
Week 7	Revision, Test Unit (1&2)
Week 8	Memory Management: Logical versus Physical address space, Swapping, Contiguous allocation, Paging, Segmentation.
Week 9	Virtual Memory: Demand paging, Performance of demand paging,
Week 10	Page replacement algorithms, Thrashing.
Week 11	File management: File system Structure, Allocation methods: Contiguous allocation, Linked allocation, Indexed allocation,
Week 12	Free space management: Bit vector, Linked list, Grouping, Counting.
Week 13	Device Management: Disk structure, Disk scheduling: FCFS, SSTF
Week 14	SCAN, C-SCAN, LOOK, C-LOOK. .
Week 15	Revision

Name of the Assistant Professor: Ms. Gurpreet Kaur Class and Section: BCA-2nd Year Section –A&B Subject: Object Oriented Programming in C++	
Week 1	Procedural Vs. Object- Oriented Programming, Principles of OOP and their benefits. Object, classes, Inheritance, Abstraction, Encapsulation Polymorphism, Dynamic Binding, Message passing.
Week 2	C++ Programming Basics: Syntax and structure of C++ programs, Data types, variables, and constants in C++, Control structures: decision making and looping constructs.
Week 3	Decision making and looping constructs. Defining and using classes and objects, Member functions and data members, Claas Test-1
Week 4	Access specifiers: public, private, protected, Functions and parameter passing in C++,Arrays and strings in C++, Pointer, Constructors and destructors.
Week 5	Inheritance: Derived class and Base class, Types of inheritance: single, multiple Inheritance
Week 6	Multilevel, hierarchical Inheritance, Access control in inheritance
Week 7	Polymorphism: function overloading, Operator overloading, Virtual functions
Week 8	Dynamic polymorphism, Abstract classes and pure virtual functions, Encapsulation and data hiding, Class Test-2
Week 9	Friend functions, static function. Memory Management: Dynamic Memory Allocation: new, delete, Object Creation at run time.
Week 10	Exception handling: Throwing, Catching, Re-throwing an exception, specifying exception: processing unexpected exceptions; try-catch blocks, Exception propagation
Week 11	Templates: class and function templates, Standard Template Library: benefits of STL and generic programming Working with Files: Stream Classes, File input and output Operations in C++.
Week 12	MOCK TEST
Week 13	Error handling during file operations, Doubt Class
Week 14	Discussion of Previous Year Question Papers
Week 15	REVISION

Name of the Assistant Professor: Ms. Neetu & Dr.Rakhi Class and Section: BCA-IIInd Year (3rd Sem A+B)) Subject: Database Management System (24BCA403DS03)	
Week 1	Introduction, Database System Applications, History of Database Systems, Database System Vs. File Processing System
Week 2	View of Data, Data Abstraction, Instances and Schemas. DBMS Environment, Database languages, Database Models.
Week 3	Physical, Conceptual and Logical Database design, Entity- Relationship Model: Entities, Relationships, Representation of entities, attributes
Week 4	Representation of relationship set, Generalization, Aggregation, Conceptual design with ER Model
Week 5	Introduction to the Relational Model, Attributes, Domains, Tuples, Relations and their schemes, relation representation, Keys, relationship, relational operations
Week 6	Relational Algebra and Calculus: Relational Algebra & its operations, Relational calculus & its types, Power of Algebra and calculus. Lab Problem(s): Creation and Query
Week 7	Schema Refinement, Problems caused by redundancy, Decomposition & its properties; Normalization: First, Second, Third Normal forms, BCNF, Multivalued Dependencies, Join Dependencies
Week 8	Transaction Management & Concurrency Control: ACID properties, Transactions and Schedules, Concurrent execution of transaction, Serializability and Recoverability,
Week 9	Lock based Concurrency control, Lock Management, Lock Conversion, Dealing with deadlocks, Concurrency without Locking.
Week 10	Failure classifications, storage structure, Recovery & Atomicity, Log base recovery, Recovery with concurrent transactions, Failure with loss of nonvolatile storage
Week 11	Database backup & recovery from catastrophic failure, Remote Backup System. Storage and File Organization
Week 12	MOCK TEST
Week 13	Overview of physical storage media, Storage access; File organization, Operations on Files, Serial Files, Sequential Files , Index-Sequential Files, Direct Files.
Week 14	Discussion of Previous Year Papers
Week 15	REVISION

Name of the Assistant Professor: Ms. Renu Kumari Class And Section: BCA 2ND Year (Sec-A&B) Subject: Java Programming(25CSC403SE01)	
Week 1	Overview of Java: Java Features, Setting Up the Java Development Environment, Writing, Compiling, and Running a Java Program, Java Virtual Machine (JVM)
Week 2	Bytecode, Java Development Kit (JDK) and Java Runtime Environment (JRE). Basic Language Elements: Java Syntax and Structure, Identifiers, Keywords,
Week 3	Literals, Comments, Operators Assignments, Data Types, Variables and its types, Constants, Expressions
Week 4	Assignment-1 Control Flow Statements: if-else, switch, loops (for, while, do-while)
Week 5	Array: Initializing, Single Dimensional Array, Operation on String, Mutable & Immutable String, Using Collection, Bases Loop for String, Creating Strings using StringBuffer.
Week 6	Class Fundamentals: Object, Object Life cycle, Creating and Operating Objects, Constructor & initialization code block
Week 7	Test-1 Access Control, Inner Class, Abstract Class, Argument Passing Mechanism, Method Overloading, Recursion, Use of Access Modifiers with Classes & Methods.
Week 8	Introduction to Inheritance: Use and Benefits of Inheritance in OOPs,
Week 9	Types of Inheritance in Java, Inheriting Data members and Methods
Week 10	Role of Constructors in inheritance, Overriding Super Class Methods, Use of “super”, Polymorphism in Java.
Week 11	Test-2 Interface: Purpose of interface, defining an interface, implementing interfaces, Interface reference variables, Interface with variables, Extending interfaces
Week 12	MOCK TEST
Week 13	Exception Handling: Types of Errors in Java, Try-Catch Blocks and Finally Clause, Throw and Throws Keywords, Creating Custom Exceptions.
Week 14	Packages: Package as Access Protection, Defining Package, CLASSPATH Setting for Packages, Import and Naming Convention for Packages. GUI programming.
Week 15	REVISION

Name of the Assistant Professor: Dr.Rakhi & Ms. Renu Kumari Class And Section: BCA 3rd Year (Sec-A+B) Subject: MANAGEMENT INFORMATION SYSTEM(BCA – 301)	
Week 1	Introduction to system and Basic System Concepts, Types of Systems, The Systems Approach
Week 2	Information System: Definition & Characteristics,Types of information, Role of Information in Decision-Making
Week 3	Sub-Systems of an Information system: EDP and MIS management levels
Week 4	Assignment-1 EDP/MIS/DSS.
Week 5	An overview of Management Information System: Definition & Characteristics
Week 6	Test-1 Components of MIS, Frame Work for Understanding
Week 7	MIS: Information requirements & Levels of Management
Week 8	Simon's Model of decision-Making, Structured Vs Un-structured decisions, Formal vs. Informal systems
Week 9	Developing Information Systems: Analysis
Week 10	Test-2 Design of Information Systems: Implementation & Evaluation
Week 11	Pitfalls in MIS Development
Week 12	MOCK TEST
Week 13	Functional MIS: A Study of Personnel, Financial and production MIS, Introduction to e business system
Week 14	Ecommerce – technologies, applications, Decision support systems support systems for planning, control and decision-making
Week 15	REVISION

Name of the Assistant Professor: Ms. Kamiya Chugh Class and Section: BCA-3rd Year (A and B) Subject: Computer Graphics	
Week 1	Introduction to computer graphics, Basics of Graphics systems, Application areas of Computer Graphics, overview of graphics systems, video-display devices
Week 2	Raster-scan systems, random scan systems, graphics monitors and workstations and input devices.
Week 3	Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Class Test - 1
Week 4	Filled area primitives: Scan line polygon fill algorithm, boundary fill and flood fill algorithms
Week 5	Translation, scaling, rotation, reflection and shear transformations, matrix representations
Week 6	Homogeneous coordinates, composite transforms, transformations between coordinate systems. Class Test-2
Week 7	The viewing pipeline, viewing coordinate reference frame, window to view port coordinate transformation, viewing functions.
Week 8	Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.
Week 9	Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Class Test - 3
Week 10	Bezier curve and B-Spline curves Basic illumination models, polygon-rendering methods.
Week 11	Translation, rotation, scaling, reflection and shear Transformations in 3D graphics, composite transformations.
Week 12	MOCK TEST
Week 13	Viewing pipeline, viewing coordinates, view volume
Week 14	General projection, transforms and clipping. Class Test - 4
Week 15	REVISION

Name of the Assistant Professor: Ms. Kritika Vaid Class And Section: BCA IIIrd Year (Sec-A & B) Subject: Data Communication and Networking BCA (303)	
Week 1	Introduction to Computer Communications and Networking Technologies, Uses of Computer Networks, Network Devices, Nodes, and Hosts; Types of Computer Networks and their Topologies
Week 2	Network Software: Network Design issues and Protocols, Connection-Oriented and Connection less Services, Network Applications and Application Protocols
Week 3	Computer Communications and Networking Models: Decentralized and Centralized Systems, Distributed Systems, Client/Server Model, Peer-to-Peer Model, Web Based Model
Week 4	Network Architecture and the OSI Reference Model, TCP/IP reference model, Example Networks: The Internet, X.25, Frame Relay, ATM. Test - 1
Week 5	Analog and Digital Communications Concepts: Concept of data, signal, channel, bit-rate, maximum data-rate of channel, Representing Data as Analog Signals, Representing Data as Digital Signals
Week 6	Data Rate and Bandwidth, Capacity, Baud Rate, Asynchronous and synchronous transmission, data encoding techniques, Modulation techniques
Week 7	Digital Carrier Systems; Guided and Wireless Transmission Media, Communication Satellites
Week 8	Switching and Multiplexing, Dial-up Networking, Analog Modem Concepts, DSL Service. Test-2
Week 9	Data Link Layer: Framing, Flow Control, Error Control, Error Detection and Correction, Sliding Window Protocols, Media Access Control: Random Access Protocols
Week 10	Token Passing Protocols, Token Ring, Introduction to LAN technologies: Ethernet, switched Ethernet, VLAN, fast Ethernet, gigabit Ethernet, token ring
Week 11	FDDI, Wireless LANs, Bluetooth, Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways. Test-3
Week 12	MOCK TEST
Week 13	Network Layer and Routing Concepts: Virtual Circuits and Datagrams, Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing

Name of the Assistant Professor: Dr. Neha Jain and Ms. Reena Class And Section: BCA 3rd YEAR SEC(A +B) Subject: VISUAL BASIC	
Week 1	Introduction to VB:- visual and non- visual programming. Procedural, object oriented and event driven programming languages.
Week 2	The VB environment :- Menu bar,toolbar,project explorer, toolbox,properties windows
Week 3	Form designer,form layout,immediate window,visual development and event driven programming.
Week 4	Assignment-1 basics of programming:- variables,declaring variables,types of variables,converting variables types
Week 5	User-defined data types,forcing variables declarations,scope and lifetime of variables.Constants:- named and intrinsic
Week 6	Test-1 Operators:- arithmetic ,relational and logical operators .I/O in VB: various controls for I/O in VB,message box , input box,print statement
Week 7	Programming with VB :- decisions and conditions, if statement,if-then else statement, nested if- then else
Week 8	looping statements: do loops,for next loop,while wend loop,exit statement
Week 9	Nested control structures , Arrays:- declaring arrays and using arrays, one dimensional and two dimensional arrays
Week 10	Test-2 Static and dynamic array, arrays of array,collection: adding,removing,counting,returning items in collections,processing a collection
Week 11	Programming with VB:- procedures: general and event procedures, Subroutine ,functions ,calling procedure
Week 12	MOCK TEST
Week 13	Arguments- passing mechanisms ,optional arguments,named arguments ,function returning custom data types,function returning arrays
Week 14	Working with forms nd menus :- adding multiple form in vb ,hiding ,showing forms, load and unload statements,creating menu,submenu,popup menu, menu designing in vb .simple programs in vb
Week 15	REVISION