BCA

LESSON PLAN

EVEN SEM

(2024-25)

K.L MEHTA DAYANAND COLLEGE FOR WOMEN,FARIDABAD

LESSON PLAN FOR THE SESSION 2024-25(EVEN SEMESTER)

Name of the Assistant Professor: Ms. AYEESHA **Class And Section: BCA 2ND SEM (A+B)** **Subject: DIGITAL LOGIC DESIGN** **Teaching Term: 1 February to 31st May 2025(Excluding Holi Break)**	
Week 1	Digital Systems and Binary Numbers: Digital Systems: Digital Signals, Digital Waveforms, Digital Computers and Digital Integrated Circuits.
Week 2	(**Assignment**)Number Systems: Binary Number Systems, Octal and Hexadecimal Number System. Number Base Conversions. Complements, Signed Binary Numbers and Binary Codes, Error Detection and Correction codes
Week 3	**(Test)**Boolean Algebra and Logic Gates: Boolean Algebra: Axiomatic Definition, Theorems and Properties. Boolean Functions, Canonical Standard forms: SOP and POS forms. Digital Logic
Week 4	Gates: NOT, OR, AND, NOR, NAND, XOR and XNOR. Universal Gates and their implementation
Week 5	Gate Level Minimization: Karnaugh Map (K-map) Method: Simplification: Algebra postulates and Canonical forms
Week 6	(**Assignment**)Prime Implicants: Types, Determination and Selection of Prime implicants.Don't Care Conditions, NAND and NOR implementation.
Week 7	**(Test)** Combinational Circuits: Introduction, Characteristics and Designing principles of Combinational circuits.
Week 8	Binary Adder: Half-Adder & Full-Adder, Subtractor: Half-Subtractor & Full-Subtractor, Parallel binary Adder/Subtractor,
Week 9	Binary Multiplier, Comparators, Multiplexers, De-multiplexers, Encoders and Decoders.
Week 10	**(Assignment**)Sequential Circuits: Characteristics of Sequential Circuits, Latches, Flip-Flops**:**
Week 11	(**Test**)S-R Flip flop, J-K Flip Flop, D Flip flop, T Flip flop and Master Slave Flip flop.
Week 12	**MOCK TEST**
Week 13	Registers: Shift Registers, Applications of Registers.
Week 14	Counters: Asynchronous & Synchronous Counters. Modulo-N Counters and Up-Down Counters.
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Poonam **Class And Section:BCA-2nd Sem(A+B)** **Subject: Data and File Structures(23BCA402DS02)** **Teaching Term: 1 February to 31st May 2025(Excluding Holi Break)**	
Week 1	Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures.
Week 2	**Arrays:** Introduction, Linear arrays, Representation of linear array in memory, address calculations, Traversal, Insertions, Deletion in an array,
Week 3	Multidimensional arrays, Parallel arrays, Sparse arrays. **Test 1**
Week 4	**Searching:** Introduction, Sequential search, Binary search, Prerequisite for binary search, Comparison in terms of efficiency.
Week 5	**Sorting:** Bubble sort, Selection sort, Insertion sort. **Test 2**
Week 6	Quick sort, Merge sort, Comparison in terms of their efficiency.
Week 7	Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks,Polish notation, Recursion.
Week 8	**Queues:** Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues.
Week 9	**Linked List:** Introduction, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list, Header linked list.
Week 10	Circular linked list, Two-way linked list, Threaded lists, Garbage collection, Applications of linked lists. **Test 3**
Week 11	**Tree:** Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks.
Week 12	**Graph:** Introduction, Graph Theory terminology, Sequential and Linked representation of Graphs. **Test 4**
Week 13	**Introduction to file structures:** Concept of a file, types of files, File operations - open, read, write, close. External storage devices, Concepts of record, file, database and database system. **File Organization:** Sequential file organisation – structures and processing, Record structures and access methods. **Assignment 1**
Week 14	Indexed sequential file organisation – structures and processing, Indexing techniques, B-trees and hashing for indexed files. Direct file organisation. Hashed File Organization - Hash function implementation.
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Vishakha Garg **Class and Section: BCA-2ndSem(Sec-A&B)** **Subject: Digital and Technological Solutions(23CSAX01VA01)** **Teaching Term: 1 February to 31st May 2025(Excluding Holi Break)**	
Week 1	Introduction & Evolution of Digital Systems :Role & Significance of Digital Technology; Information and Communication Technology (ICT) & Tools.
Week 2	Computer System & it's working, Software and its types.
Week 3	Operating Systems: Types and Functions. Problem Solving: Algorithms and Flowcharts. Communication Systems.
Week 4	Principles, Model & Transmission Media. **TEST 1**
Week 5	Computer Networks & Internet: Concepts & Applications, WWW, Web Browsers, Search Engines, Messaging, Email.
Week 6	Social Networking. Computer Based Information System: Significance & Types.
Week 7	E-commerce & Digital Marketing: Basic Concepts, Benefits & Challenges. **ASSIGNMENT 1**
Week 8	Emerging Technologies and their applications: Overview of Artificial Intelligence.
Week 9	Machine Learning, Deep Learning; Big Data. Emerging Technologies and their applications.
Week 10	Data Science, Big Data Analytics; Internet of Things (IoT). Emerging Technologies and their applications.
Week 11	Industrial Internet of Things (IIoT), Robotics and 3D Printing. Emerging Technologies and their applications.
Week 12	Block chain Technology; Quantum Computing; Cloud computing and its service models. **TEST 2**
Week 13	Digital India & e-Governance: Initiatives, Infrastructure, Services and Empowerment. Digital Financial Tools: Unified Payment Interface, Aadhar Enabled Payment System.
Week 14	Digital Financial Tools: USSD, Credit / Debit Cards, e-Wallets, Internet Banking, NEFT/RTGS and IMPS, Online Bill Payment and POS.
Week 15	Cyber Security: Threats, Significance, Challenges, Precautions, Safety Measures and Tools.

Name of the Assistant Professor: Ms. Renu Kumari **Class And Section: BCA 2nd Semester(Sec-A&B)** **Subject: Web Development-II (24CSC402SE01)** **Teaching Term:) 1 February to 31st May 2025(Excluding Holi Break)**	
Week 1	XML: Introduction, Syntax, Document structure, Document Type definitions, NamespacesXML Schemas: Displaying raw XML documents, Displaying XML documents with CSS, XSLT style sheets, XML Processors, Web services.
Week 2	ECMA Script: ECMA Script versions, ES5 Features, ES6 introduction, Var Declarations and Hoisting, let declaration, Constant declaration, function with default parameter values, default parameter expressions, unnamed parameters, the spread operator, arrow functions, object destructuring, array destructuring, sets and maps, Array. find(), Array, findIndex(), template strings, Javascript classes, callbacks, promises, async/await.
Week 3	AJAX: Introduction, Need for AJAX, Working of AJAX, Handling Ajax request and response, data formats: XML, JSON, Working with JSON data, Loading HTML with Ajax, Loading XML with Ajax, Loading JSON with Ajax.
Week 4	JQuery: Introduction, A basic JQuery example, Need of JQuery, finding elements, JQuery selection, getting element content, updating elements, changing content, inserting elements, adding new content, getting and setting attributes, getting and setting CSS properties, using each(), events, event object, effects, animating CSS properties, using animation, traversing the DOM, working with forms, JavaScript libraries, JQuery and Ajax.
Week 5	**Test 1**Web Servers: Introduction, HTTP Transactions, Multitier Application Architecture, Client Side Scripting versus Server-Side Scripting, Accessing Web Servers.
Week 6	Server Side Scripting with Node.js: Getting to know node, node.js changed JavaScript forever, features of node, when to use and not use node, asynchronous callbacks, the NoSql movement, node and MongoDB in the wild, Hello World in Node, package.json, modules, Built-in Modules: FS Module, HTTP Module, Events
Week 7	Node Package Manager (npm), web server using http, node.js with express, middleware, routing in express, CRUD operations in express, web server using express, making it live on Heroku.
Week 8	Node.js with MongoDB: Basics of MongoDB, MongoDB CRUD Operations, Building a data model with DCSA, Maharshi Dayanand University, Rohtak-124001 Page 7 MongoDB and Mongoose, Defining simple mongoose schemas, build node express app with MongoDB
Week 9	Introduction to PHP: Basic Knowledge of websites ; Introduction of Dynamic Website ; Introduction to PHP ; Why and Scope of PHP ; XAMPP and WAMP Installation PHP Functions ; PHP Functions
Week 10	**Test 2**Creating an Array ; Modifying Array Elements ; Processing Arrays with Loops ; Grouping Form Selections with Arrays ; Using Array Functions ; Using Predefined PHP Functions ; Creating User- Defined Functions PHP Programming Basics
Week 11	Creating an Array ; Modifying Array Elements ; Processing Arrays with Loops ; Grouping Form Selections with Arrays ; Using Array Functions ; Using Predefined PHP Functions ; Creating User- Defined Functions PHP Programming Basics
Week 12	**MOCK TEST**
Week 13	Creating an Array ; Modifying Array Elements ; Processing Arrays with Loops ; Grouping Form Selections with Arrays ; Using Array Functions ; Using Predefined PHP Functions ; Creating User- Defined Functions PHP Programming Basics ;
Week 14	Syntax of PHP ; Embedding PHP in HTML ; Embedding HTML in PHP ; Introduction to PHP Variable ; Understanding Data Types ; Using Operators ; Using Conditional Statements ; If(), else if() and else if condition Statement ; Switch() Statements ; Using the while() Loop ; Using the for() Loop.
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Rupinder Kaur **Class and Section: BCA 2nd Year Sec-(A+B)** **Subject: Web designing (BCA – 206)** **Teaching Term: 7 Jan 2025 to 5 May 2025(Excluding Holi Break)**	
Week 1	Introduction to Internet and World Wide Web, Evolution and History of World Wide Web, Basic features; Web Browsers; Web Servers; Hypertext Transfer Protocol.
Week 2	Overview of TCP/IP and its services; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools.
Week 3	Web Publishing: Hosting your Site; Internet Service Provider; Web terminologies.
Week 4	**Revision (UNIT 1)**
Week 5	Phases of Planning and designing your Web Site; Steps for developing your Site; Choosing the contents; Home Page.
Week 6	Domain Names, Front page views, Adding pictures, Links, Backgrounds, Relating Front Page to DHTML.
Week 7	Creating a Website and the Mark-up Languages (HTML, DHTML).**Revision and Test**
Week 8	Web Development: Introduction to HTML; Hypertext and HTML; HTML Document Features; HTML command Tags; Creating Links; Headers; Text styles; Text Structuring.
Week 9	Text colours and Background; Formatting text; Page layouts; **Revision and Test**
Week 10	Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts.
Week 11	Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes.
Week 12	DHTML: Dynamic HTML, Features of DHTML.
Week 13	CSSP (cascading style sheet positioning) and JSSS(JavaScript assisted style sheet).
Week 14	Layers of Netscape, The ID attributes, DHTML events.
Week 15	**Revision of Previous Year Question Papers**

Name of the Assistant Professor: Ms. Gurpreet Kaur **Class and Section: BCA-IInd Year Section:A & B** **Subject: Data Structure-II, BCA-207** **Teaching Term: 7th January to 5th May 2025(Excluding Holi Break)**	
Week 1	Tree: Header nodes, Threads, Binary search trees, Searching, Insertion and deletion in a Binary search tree
Week 2	AVL search trees, Insertion and deletion in AVL search tree, m-way search tree, Searching, Insertion and deletion in an m-way search tree.
Week 3	B-trees, Searching, Insertion and deletion in a B-tree, B+ tree, Huffman's algorithm, General trees.
Week 4	Graphs: Warshall's algorithm for shortest path, Dijkstra's algorithm for shortest path.
Week 5	Operations on graphs, Traversal of graph
Week 6	Topological sorting. Sorting: Internal & external sorting
Week 7	Searching: Liner search, binary search, Radix sort
Week 8	Quick sort, Heap sort
Week 9	Merging ,Merge sort, Tournament sort, Comparison of various sorting and searching algorithms on the basis of their complexity
Week 10	Files: Physical storage devices and their characteristics, Attributes of a file viz fields, records, Fixed and variable length records, ,
Week 11	Primary and secondary keys, Classification of files, File operations
Week 12	**MOCK TEST**
Week 13	Comparison of various types of files, File organization: Serial, Sequential, Indexed-sequential, Random-access/Direct, Inverted, Multilist file organization
Week 14	Hashing: Introduction, Hashing functions and Collision resolution methods
Week 15	**REVISION**

Name of the Assistant Professor:Ms.Neetu & Ms.Ayeesha **Class And Section:BCA-4th Sem (A+B)** **Subject: Object Oriented Programming Using C++ (BCA-208)** **Term: 7th January to 5th May(Excluding Holi Break)**	
Week 1	Procedural Language and Object Oriented approach, Characteristics of OOP
Week 2	user defined types, polymorphism and encapsulation.
Week 3	Getting started with C++: syntax, data types, variables, string, function, namespace
Week 4	**Assignment:-**Exception, operators, flow control, recursion, array and pointer, structure .
Week 5	Abstracting Mechanism: classes, private and public, Constructor and Destructor
Week 6	**TEST:-** Member function, static members, references;
Week 7	Memory Management: new, delete, object copying
Week 8	copy constructer, assignment operator, this input/output
Week 9	Inheritance and Polymorphism: Derived Class and Base Class, Different types of Inheritance
Week 10	**Assignment:-**Overriding member function, Abstract Class, Public and Private Inheritance
Week 11	Ambiguity in Multiple inheritance , Virtual function, Friend function, Static function.
Week 12	**TEST**:- Exception Handling: Exception and derived class, function exception declaration, unexpected exception, exception when handling exception, resource capture and release.
Week 13	Template and Standard Template Library: Template classes, declaration, template functions
Week 14	**Revision:-**Namespace, string, iterators, hashes, iostreams and other types
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Kritika Vaid and Ms. Renu Kumari **Class And Section: BCA 4thSem(Sec-A and Sec-B)** **Subject: BCA-209 Software Engineering ,BCA -209** **Teaching Term: 7th January to 5th May 2025(Excluding Holi Break)**	
Week 1	Introduction: Software Crisis, Software Processes & Characteristics, Software life cycle models, Waterfall, Prototype, Evolutionary and Spiral Models.
Week 2	Requirement engineering, requirement elicitation techniques like FAST, QFD, requirements analysis using DFD, Data dictionaries & ER Diagrams,
Week 3	Requirements documentation, Nature of SRS, Characteristics & organization of SRS. **TEST 1`**
Week 4	The Management spectrum, The People The Problem, The Process, The Project.
Week 5	Software Project Planning: Size Estimation like lines of Code & Function Count, Cost Estimation Models.
Week 6	COCOMO, Risk Management. **ASSIGNMENT 1**
Week 7	Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design
Week 8	Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics
Week 9	Software Implementation: Relationship between design and implementation, Implementation issues and programming support environment, Coding the procedural design, Good coding style.
Week 10	Software Testing: Testing Process, Design of Test Cases, Types of Testing, Functional Testing, Structural Testing.**TEST 2** .
Week 11	Test Activities, Unit Testing, Integration Testing and System Testing, Debugging Activities.
Week 12	**MOCK TEST**
Week 13	Software Maintenance: Management of Maintenance, Maintenance Process, Reverse Engineering
Week 14	Software Re-engineering, Configuration Management, Documentation.
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Vishakha Garg **Class and Section: BCA-6th Sem(Sec-A&B)** **Subject: E-Commerce (BCA – 306)** **Teaching Term: 7th January to 15th May**	
Week 1	Electronic Commerce: Overview of Electronic Commerce, Scope of Electronic Commerce.
Week 2	Traditional Commerce vs. Electronic Commerce, Impact of E-Commerce, Electronic Markets, Internet Commerce.
Week 3	E-commerce in perspective, Application of E Commerce in Direct Marketing and Selling, Obstacles in adopting E-Commerce.
Week 4	Applications; Future of E Commerce. **TEST 1**
Week 5	Value Chains in electronic Commerce, Supply chain, Porter's value chain Model.
Week 6	Inter Organizational value chains, Strategic Business unit chains, Industry value chains, Security Threats to E-commerce: Security Overview.
Week 7	Security Threats to E-commerce: Computer Security Classification, Copyright and Intellectual Property, security Policy and Integrated Security, Intellectual Property Threats.
Week 8	Security Threats to E-commerce: electronic Commerce Threats, Clients Threats, Communication Channel Threats, server Threats.
Week 9	Implementing security for E-Commerce: Protecting E-Commerce Assets, Protecting Intellectual Property.
Week 10	Protecting Client Computers, Protecting E-commerce Channels.
Week 11	Insuring Transaction Integrity. Protecting the Commerce Server.
Week 12	Electronic Payment System: Electronic Cash, Electronic Wallets, Smart Card, Credit and Change Card. **TEST 2**
Week 13	Business to Business E-Commerce: Inter-organizational Transitions, Credit Transaction Trade Cycle, Business to Business E-Commerce: A variety of transactions.
Week 14	Electronic Data Interchange (EDI): Introduction to EDI, Benefits of EDI, EDI Technology, EDI standards.
Week 15	Electronic Data Interchange (EDI): EDI Communication, EDI Implementation, EDI agreement, EDI security.

Name of the Assistant Professor: Ms. Sandhya Chaudhary and Ms. Rupinder Kaur **Class And Section: BCA. 6th Semester** **Subject: Java Programming** **Teaching Term: 7th January to 5th May 2025 (Excluding Holi Break)**	
Week 1	Object Oriented Methodology-1: Paradigms of Programming Languages, Evolution of OO Methodology, Basic Concepts of OO Approach, Comparison of Object Oriented and Procedure Oriented Approaches, Benefits of OOPs,
Week 2	Introduction to Common OO Language, Applications of OOPs .Object Oriented Methodology-2: Classes and Objects, Abstraction and Encapsulation, Inheritance, Method Overriding and Polymorphism.
Week 3	Java Language Basics: Introduction To Java, Basic Features, Java Virtual Machine Concepts, Primitive Data Type And Variables, Java Operators, Expressions, Statements andArrays.**TEST 1**
Week 4	Object Oriented Concepts: Class and Objects-- Class Fundamentals, Creating objects ,Assigning object reference variables; Introducing Methods, Static methods, Constructors ,Overloading constructors; This Keyword; Using Objects as Parameters, Argument passing, Returning objects ,
Week 5	Method overloading, Garbage Collection, The Finalize ( ) Method. Inheritance and Polymorphism: Inheritance Basics, Access Control, Multilevel Inheritance,Method Overriding, Abstract Classes, Polymorphism, Final Keyword.
Week 6	Packages : Defining Package, CLASSPATH, Package naming, Accessibility of Packages ,using Package Members.Interfaces: Implementing Interfaces, Interface and Abstract Classes, Extends and Implements together .
Week 7	Exceptions Handling : Exception , Handling of Exception, Using try-catch ,Catching Multiple Exceptions , Using finally clause , Types of Exceptions, Throwing Exceptions,Writing Exception Subclasses.**TEST 2**
Week 8	Multithreading : Introduction , The Main Thread, Java Thread Model, Thread Priorities,Synchronization in Java, Inter thread Communication.I/O in Java : I/O Basics,.
Week 9	Modifiers , Using Instance of Native Methods.Strings and Characters : Fundamentals of Characters and Strings, The String Class , StringOperations , Data Conversion using Value Of ( ) Methods , String Buffer Class and Methods
Week 10	Streams and Stream Classes ,The Predefined Streams, Reading from, and Writing to, Console, Reading and Writing Files , The Transient and VolatileInheritance Basics, Access Control, Multilevel Inheritance,Method Overriding, Abstract Classes,
Week 11	Exceptions , Using finally clause , Types of Exceptions, Throwing Exceptions,Writing Exception Subclasses.**TEST 3**
Week 12	**MOCK TEST**
Week 13	Assigning object reference variables; Introducing Methods, Static methods, Constructors ,Overloading constructors;
Week 14	Fundamentals of Characters and Strings, The String Class , StringOperations , Data Conversion using Value Of ( ) Methods , String Buffer Class and Methods
Week 15	**REVISION**

Name of the Assistant Professor: Ms. Kamiya Chugh **Class And Section: BCA 6th Semester** **Subject: Artificial Intelligence** **Teaching Term: 7th January to 5th May 2025 (Excluding Holi Break)**	
Week 1	Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success.
Week 2	Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem
Week 3	Heuristic search techniques : Generate and test, hill climbing, best first search technique, problem reduction
Week 4	**Assignment- Constraint Satisfaction**, Knowledge Representation: Definition and importance of knowledge
Week 5	Knowledge representation, Various approaches used in knowledge representation
Week 6	**Test of Unit-1**, Issues in knowledge representation. Using Predicate Logic: Represent ting Simple Facts in logic
Week 7	Representing instances and is_a relationship, Computable function and predicate.
Week 8	**Test of Unit-2,** Natural language processing: Introduction syntactic processing, Semantic processing
Week 9	**Assignment**- Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, Learning by taking advice, Learning in problem solving
Week 10	Learning from example-induction, Explanation based learning.
Week 11	**Test of Unit-3,** Expert System: Introduction, Representing using domain specific knowledge
Week 12	**MOCK TEST**
Week 13	Expert system shells.
Week 14	REVISION
Week 15	**REVISION**

Name of the Assistant Professor:Dr.NEHA JAIN, Ms.KRITIKA VAID **Class And Section: BCA 6 SEM (SEC-A, SEC-B)** **Subject: BCA – 309 INTRODUCTION TO .NET** **Teaching Term: 7th January to 5th May 2025(Excluding Holi Break)**	
Week 1	The Framework of .Net: Building blocks of .Net Platform (the CLR, CTS and CLS), Features of .Net.
Week 2	Deploying the .Net Runtime, Architecture of .Net platform
Week 3	Introduction to namespaces & type distinction. Types & Object in .Net, the evolution of Web development. **TEST 1**
Week 4	Class Libraries in .Net, Introduction to Assemblies & Manifest in .Net, Metadata & attributes.
Week 5	Introduction to C#: Characteristics of C#, Data types: Value types, reference types, default value, constants, variables, scope of variables, boxing and unboxing. **ASSIGNMENT 1**
Week 6	Operators and expressions: Arithmetic, relational, logical, bitwise, special operators,evolution of expressions, operator precedence & associativity.
Week 7	Control constructs in C#:Decision making loops. **TEST 2**
Week 8	Classes and Methods: class, Methods, constructors, destructors.
Week 9	Overloading of operators and functions.
Week 10	Inheritance & polymorphism: visibility control, overriding.
Week 11	Abstract class & methods, sealed classes & methods, interfaces.
Week 12	**MOCK TEST**
Week 13	Advanced features of C#: Exception handling & error handling, automatic memory management,
Week 14	Input and output (Directories, Files, and streams).
Week 15	**REVISION**