

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 2nd

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name Web Technologies

Subject Code 25BCA402SEC02

Sr.No	Unit	SYLLABUS DETAILS/LESSON PLAN	Month
1	Unit-1	Introduction to HTML, history of HTML, Objective, basic Structures of HTML, Header Tags, body tags, Paragraph Tags. Tags for FORM Creation, TABLE, FORM, TEXTAREA, SELECT, IMG, IFRAME FIELDSET, ANCHOR. Lists in HTML. Introduction to DIV tag, NAVBAR Design.	1 st - 31 st Jan (4 weeks)
2	Unit-2	Introduction to CSS, types, Selectors, and Responsiveness of a web page. Introduction to Bootstrap, downloads/linking, using classes of Bootstrap, understanding the Grid System in Bootstrap. Introduction to www, Protocols and Programs, Applications and development tools, web browsers, DNS, Web hosting Provider, Setting up of Windows/Linux/Unix web servers, Web hosting in cloud, Types of Web Hosting.	1 st - 31 st Feb (4 weeks)
3	Unit-3	Introduction to JavaScript: Functions and Events, Document Object model traversing using JavaScript. Output System in JavaScript i.e. Alert, throughput, Input box, Console. Variables and Arrays in JavaScript.Date and String handling in JavaScript.	1 st - 31 st Mar (4 weeks)
4	Unit-4	Manipulating CSS through JavaScript: Form Validation like Required validator, length validator, Pattern validator. Advanced JavaScript, Combining HTML, CSS and JavaScript events and buttons, controlling your browser.Introduction to AJAX, Purpose, advantages and disadvantages, AJAX based Web applications and alternatives of AJAX. Introduction to XML: uses, Key concepts, DTD 8 schemas, XSL, XSLT, and XSL Elements and transforming with XSLT. Introduction to XHTML. JSON: Introduction to JSON, Keys and Values, Types of Values, Arrays, Objects	1 st - 30 th Apr (4 weeks)

Name: - Yukta Assistant professor Department. Of Computer Science

Date: 13/11/2025

Yukta

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 4TH

Syllabus Completion Performance Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: Computer Graphics

Subject Code: 24BCA404DS04

Sr.No	Unit	SYLLABUS DETAIL/LESSON PLAN		Month
1	Unit-1	Introduction to Computer Graphics: Graphics primitives:	Overview of computer graphics and its applications, Historical development, Application areas e.g. entertainment, scientific visualization, user interfaces, Basics of raster and vector graphics, differences between raster and vector graphics, Representation and storage formats, Graphics pipeline and rendering process, stages of the graphics pipeline (modeling, transformation, rendering), concepts of rendering primitives, vertices, and fragments.	1 st - 15 th Jan
			Coordinate systems, types of primitives (points, lines, polygons), Cartesian and homogeneous coordinate systems, transformation matrices and their applications	16 th - 31 st Jan
2	Unit-2	2D Graphics Programming: 2D Transformations: Windowing techniques:	Pixel operations and drawing algorithms, color models (RGB, CMYK, HSL), pixel operations (blending, interpolation), Line drawing algorithms (Digital differential analyzer algorithm, Bresenham's line drawing algorithm), Circle drawing algorithms (Midpoint circle algorithm, Bresenham's circle drawing algorithm). translation, rotation, scaling in 2D space, mirror reflection basic and advance problems involving composite operations. basic terminologies-window, viewport, clipping window, region codes.	1 st - 15 th Feb 16 th - 28 th Feb
		Clipping techniques:	Mathematics of point clipping, line clipping (midpoint subdivision method, Cohen-Sutherland line clipping algorithm), polygon clipping (Sutherland-Hodgman polygon clipping algorithm)	1 st - 15 th Mar
3	Unit-3	3D Graphics Programming: Projection techniques:	3D transformations, Translation, Rotation, Scaling in 3D space, Homogeneous coordinates and transformations. Orthographic projection, Perspective projection and vanishing points	16 th - 31 st Mar
		Lighting and shading models: Hidden surface removal algorithms:	Phong reflection model, Gouraud and Phong shading techniques Z-buffer algorithm, Scan line algorithm for hidden surface removal	1 st - 15 th Apr
4	Unit-4	Texture mapping and image rendering:	Texture coordinates and mapping techniques, Texture filtering and mipmapping.	16 th - 30 th Apr

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 4TH

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: Java Programming

Subject Code: 24BCA404DS03

Sr.No	Unit	SYLLABUS DETAILS/LESSON PLAN		Month
1	Unit-1	Introduction to Java:	Java Features, Java Virtual Machine (JVM), Byte code, Java API, Java Development Kit (JDK), Garbage Collection. Language Basics: Keywords, Constants, Variables and Data Types, Operators and Expressions, Decision Making, Branching and Looping.	1 st - 15 th Jan
		Introducing Classes, Objects and Methods:	Defining a Class, Methods Declaration, Creating Objects and accessing Class members, Constructors, Methods Overloading, Wrapper Classes, Inheritance, Methods Overriding, Final Class, variables and methods, Abstract Class and Methods, Interfaces.	16 th - 31 st Jan
2	Unit-2	Arrays, Strings and Vectors:	Creating and using Arrays, String operations, String Buffer, String builder, and String Tokenizer class, Vector class.	1 st - 15 th Feb
		Packages and Exceptions:	Java API packages, Creating and using packages, static import, Exceptions handling, Types of Exceptions, multiple catch statements, 'throw' and 'throws', using 'finally' statement, Creating your own exceptions.	16 th - 28 th Feb
3	Unit-3	Multithreaded Programming:	Single threaded and multi-threaded program, Creating threads using Thread class, Life cycle of a Thread, Stopping and blocking a Thread, getting and setting the Thread Priority, Synchronization, implementing the Runnable interface.	1 st - 15 th Mar
		Managing Input/Output Streams:	Concept to fstreams, Byte and Character streams, Reading and Writing from Console and Files. Input output exceptions.	16 th - 31 st Mar
4	Unit-4	Applet Programming:	How Applets differs from Java Application, Applet Life Cycle, APPLET Tag, Running an Applet, Passing Parameters to Applet.	1 st - 15 th Apr
		Event Handling: GUI Programming:	Mechanism, The Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter and inner classes. Working with Frame Window, Graphics and Text, AWT Controls and classes. Layout Managers, working with Menus.	16 th - 30 th Apr

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 6TH

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: E-COMMERCE

Subject Code: BC3006

SYLLABUS DETAILS/LESSON PLAN			Month
Sr.No	Unit		
1	Unit-1	Electronic Commerce: Overview of Electronic Commerce, Scope of Electronic Commerce, Traditional Commerce vs. Electronic Commerce, Impact of E-Commerce, Electronic Markets, Internet: Commerce, e-commerce in perspective, Application of E-Commerce in Direct Marketing and Selling, Obstacles in adopting E-Commerce Applications; Future of E-Commerce.	1 st - 15 th Jan 16 th - 31 st Jan
2	Unit-2	Value Chains in Electronic Commerce, Supply chain, Porter's value chain Model, Inter Organizational value chains, Strategic Business unit chains, Industry value chains. Security Threats to E-commerce: Security Overview, Computer Security Classification, Copyright and Intellectual Property, security Policy and Integrated Security, Intellectual Property Threats, electronic Commerce Threats, Clients Threats, Communication Channel Threats, server Threats.	1 st - 15 th Feb 16 th - 28 th Feb
3	Unit-3	Implementing security for E-Commerce: Protecting E-Commerce Assets, Protecting Intellectual property, Protecting Client Computers, Protecting E-commerce Channels, Insuring Transaction Integrity, Protecting the Commerce Server. Electronic Payment System: Electronic Cash, Electronic Wallets, Smart Card, Credit and Change Card.	1 st - 15 th Mar 16 th - 31 st Mar
4	Unit-4	Business to Business E-Commerce: Inter-organizational Transitions, Credit Transaction Trade Cycle, a variety of transactions, Electronic Data Interchange (EDI): Introduction to EDI, Benefits of EDI, EDI Technology, EDI standards, EDI Communication, EDI Implementation, EDI agreement, EDI security.	1 st - 15 th Apr 16 th - 30 th Apr

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 6TH

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: ARTIFICIAL INTELLIGENCE

Subject Code: BC3007

SYLLABUS DETAILS/LESSON PLAN

Sr.No	Unit		Month
1	Unit-1	Overview of A.I: Problems, problem space and search:	15 th - 15 th Jan
		Heuristic search techniques:	16 th - 31 st Jan
2	Unit-2	Knowledge Representation:	16 th - 15 th Feb
		Using Predicate Logic:	16 th - 28 th Feb
3	Unit-3	Natural language processing:	16 th - 15 th Mar
		Learning:	16 th - 31 st Mar
4	Unit-4	Expert System:	16 th - 15 th Apr

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 2nd

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name Object Oriented Programming using Java

Subject Code: 25BCA402SEC01

SYLLABUS DETAILS/LESSON PLAN

Sr.No	Unit			Month
1	Unit-1	Fundamentals of Object-Oriented Programming: Java Evolution:	Basic Concepts of Object-Oriented Programming (OOP), Benefits and Applications of OOP. Java Features, Difference between Java, C and C++, Java and Internet, Java Environment.	January (2 weeks)
		Overview of Java Language:	Introduction to Simple Java Program, Use of Comments and Math function, Application of two classes, Java Program Structure, Java Tokens and statements, Implementing Java program and JVM, Command Line Arguments.	January (2 weeks)
		Constants, Variables and Data Types:	Constants, Variables, Data Types, Declaration of Variables, Giving values to Variables, Symbolic Constants, Type casting.	February (1 week)
		Operators & Expressions:	Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment & Decrement operators, conditional operators, Bitwise operators, Arithmetic Expressions, Evaluation of Expressions, Type Conversions in Expressions, Operator Precedence & Associativity.	February (10 days)
2	Unit-2	Decision Making, Branching & Looping:	Decision Making with Control Statements, Looping statements, Jump in loops, Labelled loops.	February (10 days)
		Classes, Objects and Methods:	Defining Class, Methods Declaration, Constructors, Methods Overloading, Overriding Methods, Inheritance	March (10 days)
3	Unit-3	Arrays, Strings and Vectors:	1D arrays, Creating an Array, 2D arrays, Strings, Vectors, Wrapper Classes, Enumerated Types	March (10 days)
		Inheritance:	Defining, extending classes, and Implementing Interfaces. Multiple inheritance and polymorphism.	March (10 days)
		Packages:	Basics of packages, System packages, Creating and accessing packages, Creating user defined packages, Adding class to a package.	April (2 weeks)
4	Unit-4	Exception Handling	: Using the main keywords of exception handling: try, catch, throw, throws and finally; Nested try, Multiple catch statements, Creating user defined exceptions	April (2 weeks)

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Reena

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 2nd

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: Data Structures

Subject Code: 25BCA402DS02

Sr.No	Unit	SYLLABUS DETAIL/LESSON PLAN		Month
		Introduction and Overview:	Definition, Classification and Operations of Data Structures. Algorithms: Complexity, Time-Space Trade off.	January (1st week)
1	Unit-1	Arrays:	Definition and Classification of Arrays, Representation of Linear Arrays in Memory, Operations on Linear Arrays: Traversing, Inserting, Deleting, Searching, Sorting and Merging. Searching: Linear Search and Binary Search, Comparison of Methods. Sorting: Bubble Sort, Selection Sort, and Insertion Sort. Two-Dimensional Arrays, Representation of Two-Dimensional Arrays in Memory, Matrices and Sparse Matrices, Multi-Dimensional Arrays.	January (last 3 weeks)
2	Unit-2	Linked Lists:	Definition, Comparison with Arrays, Representation, Types of Linked lists, Traversing, Inserting, Deleting and Searching in Singly Linked List, Doubly Linked List and Circular Linked List. Applications of Linked Lists: Addition of Polynomials.	February (2 weeks)
		Hashing and Collision:	Hashing, Hash Tables, Types of Hash Functions, Collision, Collision Resolution with Open Addressing and Chaining.	February (2 weeks)
3	Unit-3	Stacks:	Definition, Representation of Stacks using Arrays and Linked List, Operations on Stacks using Arrays and Linked List, Application of Stacks: Arithmetic Expressions, Polish Notation, Conversion of Infix Expression to Postfix Expression, Evaluation of Postfix Expression.	March (10 days)
		Recursion:	Definition, Recursive Notation, Runtime Stack, Applications of Recursion: Factorial of Number, GCD, Fibonacci Series and Towers of Hanoi.	March (1 week)
		Queues:	Definition, Representation of Queues using Array and Linked List, Types of Queue: Simple Queue, Circular Queue, Double-Ended queue, Priority Queue, Operations on Simple Queues and Circular Queues using Array and Linked List, Applications of Queues.	March (2 weeks)
4	Unit-4	Graphs:	Definition, Terminology, Representation, Traversal.	April (10 days)
		Trees:	Definition, Terminology, Binary Trees, Traversal of Binary Tree, Binary Search Tree, Inserting, Deleting and Searching in Binary Search Tree, Height Balanced Trees: AVL Trees, Insertion and Deletion in AVL Tree.	April (20 days)

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Reena

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 4th

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: Computer System Architecture

Subject Code: 24BCA404DS01

Sr.No	Unit	SYLLABUS DETAILS/LESSON PLAN		Month
1	Unit-1	Basic Computer Concepts:	Computer Types: Analog and Digital, Digital Computer Organization and Architecture: Functional Units, Basic Organizational Concepts, Von-Neumann Architecture, Bus Structure. Data representation: Number Systems, Fixed and Floating point representation.	Jan. (2 weeks)
		Basic Computer Concepts:	Computer Types: Analog and Digital, Digital Computer Organization and Architecture: Functional Units, Basic Organizational Concepts, Von-Neumann Architecture, Bus Structure. Data representation: Number Systems, Fixed and Floating point representation.	Jan. (2 weeks)
2	Unit-2	Basic Computer Design:	Instruction codes, Common Bus System Architecture, Computer Instructions: Instruction Set and Instruction Cycle. Types of Instructions: Register Reference, Memory Reference and Input-Output Reference.	February (2 weeks)
		Interrupts:	Classifications of Interrupts: Maskable and Non maskable, Hardware and Software. Interrupt Service Routine, Context Switching, Interrupt Identification: Daisy Chaining, Polling and Vectored Interrupt. Interrupt Cycle.	February (2 weeks)
3	Unit-3	Central Processing Unit:	Introduction, General Register Organization, Stack Organization: Register and /memory Stack, Reverse Polish Notation. Instruction Formats: Three Address, Two Address, One Address and Zero Address.	March (10 days)
		Data Transfer and Manipulation:	Addressing Modes: Implied, Immediate, Register Direct and Indirect Mode and Direct Address Mode. Data Transfer and Data Manipulation Instructions, Program Control, Reduced Instruction Set Computer (RISC) and Complex Instruction Set Computer (CISC).	March (20 days)
4	Unit-4	Memory Organization:	Memory Hierarchy, Main Memory Technologies, Auxiliary Memory, Associative Memory: Hardware requisites, Working Principle and Operations. Cache Memory: Characteristics, Types of Mapping, Writing into Cache, Cache Coherence.	April (2 weeks)
		Input-Output Organization:	Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer: Programmed I/O and Interrupt Initiated I/O. Concepts related to Priority Interrupt: Daisy Chaining Priority and Parallel Priority Interrupt. Direct Memory Access (DMA): DMA Controller and DMA Transfer.	April (2 weeks)

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Syllabus Completion Performance/Lesson Plan: Bachelor of Computer Science & Application: 2025-26

Semester: 4TH

Subject Name: Data Communication & Computer Networks

Subject Code: 24BCA404DS02

Sr.No	Unit	SYLLABUS DETAILS/LESSON PLAN		Month
1	Unit-1	Introduction:	Data Transmission concepts, transmission impairments, switching, modulation, multiplexing.	Jan.
		Network Hardware:	LAN, MAN, WAN, Wireless networks, Internet-works.	(2 weeks)
		Network Software:	Layer, Protocols, interfaces and services.	
		Reference Models: Transmission Media:	OSI, TCP/IP and their comparison Magnetic, twisted pair, coaxial cable, fibre optics, wireless transmission (radio, microwave, infrared).	Jan. (2 weeks)
2	Unit-2	Data Link Layer :	Framing, Error control, Sliding window protocols (one bit, Go back n, selective repeat). DLL Protocols—HDLC, PPP	February (2 weeks)
		Medium Access Sub layer :	Channel Allocation, MAC protocols – ALOHA, CSMA protocols, Collision free protocols, Limited Contention Protocols, Wireless LAN protocols, IEEE 802.3, 802.4, 802.5 standards and their comparison.	February (2 weeks)
3	Unit-3	Network Layer:	Design issues, Routing algorithms (shortest path, flooding, flow based, distance vector, hierarchical, broadcast, multicast, for mobile hosts), Congestion control algorithms (Leaky bucket, Token bucket, Choke Packet, Load shedding), Internetworking, IP Protocol, ARP, RARP.	March (4 weeks)
4	Unit-4	Transport Layer:	Addressing, establishing and releasing connection, flow control, buffering, Internet Transport Protocol (TCP and UDP).	April (2 weeks)
		Application Layer:	Domain name system, E-mail, File transfer protocol, HTTP, HTTPS, TELNET.	April (2 weeks)

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GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Semester: 6TH

Syllabus Completion Performance Plan: Bachelor of Computer Science & Application: 2025-26

Subject Name: OBJECT TECHNOLOGIES & PROGRAMMING USING JAVA

Subject Code: BC3007

Sr.No	Unit	SYLLABUS DETAILS/LESSON PLAN			Month
1	Unit-1	Object Oriented Methodology-1: Object Oriented Methodology-2:	Paradigms of Programming Languages, Evolution of OO Methodology, Basic Concepts of OO Approach, Comparison of Object Oriented and Procedure Oriented Approaches, Benefits of OOPs, Introduction to Common OO Language, Applications of OOPs.	Classes and Objects, Abstraction and Encapsulation, Inheritance, Method Overriding and Polymorphism.	Jan (2 weeks)
2	Unit-2	Java Language Basics: Object Oriented Concepts Inheritance and Polymorphism:	Introduction To Java, Basic Features, Java Virtual Machine Concepts, Primitive Data Type and Variables, Java Operators, Expressions, Statements and Arrays.	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, Method overloading, Garbage Collection, The Finalize () Method. Inheritance Basics, Access Control, Multilevel Inheritance, Method Overriding, Abstract Classes, Polymorphism, Final Keyword	Feb (3 weeks)
3	Unit-3	Packages: Interfaces: Exceptions Handling:	Defining Package, CLASSPATH, Package naming, Accessibility of Packages, using Package Members. Implementing Interfaces, Interface and Abstract Classes, Extends and Implements together.	Exception, Handling of Exception, Using try-catch, Catching Multiple Exceptions, using finally clause, Types of Exceptions, Throwing Exceptions, Writing Exception Subclasses	March (2 weeks)
4	Unit-4	Multithreading: I/O in Java: Strings and Characters:	Introduction, The Main Thread, Java Thread Model, Thread Priorities, Synchronization in Java, Inter thread Communication. I/O Basics, Streams and Stream Classes, The Predefined Streams, Reading from, and Writing to, Console, Reading and Writing Files, The Transient and Volatile Modifiers, Using Instance of Native Methods.	Fundamentals of Characters and Strings, The String Class, String Operations, Data Conversion using Value Of () Methods, String Buffer Class and Methods.	April (2 weeks)

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