**Lesson Plan: Computer Graphics (BCA - Semester IV)**

**Course Code:** B23-CAP-403

**3rd Week Feb,2025**

* **Introduction to Computer Graphics**
	+ History and evolution of Computer Graphics (CG)
	+ Applications of CG in various fields
	+ Components of an interactive graphics system

**4th Week Feb,2025**

* **Display Devices**
	+ Refresh CRT, Color CRT, Plasma Panel, LCD Panels
	+ Raster-scan System vs. Random scan System
	+ Graphic software, Input/output Devices, Tablets

**1st Week March,2025**

* **Output Primitives**
	+ Points and Lines
	+ DDA Line Drawing Algorithm
	+ Bresenham’s Line Drawing Algorithm

**3rd Week March,2025**

* **Circle Drawing Algorithms**
	+ Polynomial Method
	+ Bresenham’s Circle Drawing Algorithm
	+ Introduction to Bezier Curves

**4th Week March,2025**

* **2D Transformations**
	+ Homogeneous Coordinates Systems
	+ Composite Transformations: Translation, Scaling, Rotation

**1st Week April,2025**

* **Advanced 2D Transformations & Clipping**
	+ Mirror Reflection, Rotation about an Arbitrary Point
	+ Clipping and Windowing Operations

**2nd Week April,2025**

* **Line Clipping Algorithms**
	+ Mid-Point Subdivision Method
	+ Cohen-Sutherland Line Clipping Algorithm

**3rd Week April,2025**

* **Polygon Clipping & Text Clipping**
	+ Sutherland Hodgeman Algorithm
	+ Introduction to Text Clipping

**4th Week April,2025**

* **Mid-Term Exam & Revision**

**1st Week May,2025**

* **Introduction to 3D Graphics**
	+ 3D Object Representations
	+ 3D Transformations: Translation, Rotation, Scaling

**2nd Week May,2025**

* **Projections in 3D Graphics**
	+ Parallel and Perspective Projections
	+ Applications of Projections

**3rd Week May,2025**

* **Hidden Surface Elimination Techniques**
	+ Back Face Removal
	+ Depth Buffer Algorithm

**4th Week May,2025**

* **Shading Techniques in 3D Graphics**
	+ Scan-Line Algorithm
	+ Depth Sort Algorithm



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**Lesson Plan: Object-Oriented Programming using C++ (BCA - Semester II)**

**Course Code:** B23-CAP-201

**3rd Week Feb 25**

* + History and Features of C++
	+ Basics of C++ syntax
	+ Unformatted and Formatted I/O operations

**4th Week Feb 25**

* + I/O using insertion and extraction operators
	+ Streams in C++

**1st Week March 25**

* + Function declaration and definition
	+ Return values and argument passing
	+ Call by value, reference, and pointer

**3rd Week March 25**

* + Recursion
	+ Inline Functions
	+ Function Overloading

**4th Week March 25**

* + Basics of pointers and dynamic memory allocation
	+ Structures and Unions in C++

**1st Week April 25**

* + Class and Objects
	+ Data hiding, encapsulation, abstraction
	+ Access specifiers

**2nd Week April 25**

* + Default, Parameterized, and Copy constructors
	+ Destructor and dynamic initialization of objects

**3rd Week April 25**

* + Unary and Binary operator overloading
	+ Arithmetic operators and string manipulation using operators

**4th Week April 25**

* + Base and derived classes
	+ Multilevel, multiple, hierarchical, and hybrid inheritance

**1st Week May 25**

* + Concept of Virtual Base Class
	+ Implementing Abstract Classes

**2nd Week May 25**

* + Types of Polymorphism
	+ Virtual Functions and Pure Virtual Functions

**3rd Week May 25**

* + Exception handling model and constructs
	+ Try, throw, and catch mechanisms

**4th Week May 25**

* + Solving Past Papers
	+ Doubt Clearing Sessions



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**Lesson Plan**

Class BCA-6th Sem

**Paper**  BCA-361: Web Designing Using Advanced Tools

**3rd Week Jan,2025**

 JavaScript: Introduction, Features, Data types, Operators

**4th Week Jan,2025**

Statements, Functions, Event Handling, Use of Predefined Object and Methods

**1st Week Feb,2025**

Frames, Windows, Tables, Images, Links

**2nd Week Feb,2025**

VBScript: Introduction, Features, Variables, Data Types, Numeric and Literal Constants, Arrays, Operators

**3rd Week Feb, 2025**

Subroutine Procedures, Function Procedures, Control Statements, Strings, Message and Input Boxes, Date and Time, Event Handlers, Embedding VBScript in HTML

**4th Week Feb,2025**

Active Script Pages – Introduction, Features, Client-Server Model, Data Types, Decision Making Statements, Control statements,

**1st Week March,2025**

Use of Various Objects of ASP, Various Techniques of Connecting to Database

**3rd Week March,2025**

Macromedia Flash, Macromedia Dreamweaver, PHP: Basic Introduction and Features

**4th Week March,2025**

Introduction, Features, Events, Dynamic Positioning, Layer Object, Properties of STYLE, Dynamic Styles, Inline Styles, Event Handlers

**1st Week April, 2025**

Cascading Style Sheets (CSS): Basic Concepts, Properties, Creating Style Sheets; Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors; Marquee; Mouseovers

**2nd Week April, 2025**

Filters and Transitions; Adding Links; Adding Tables; Adding Forms; Adding Image and Sound; Use of CSS in HTML Documents Linking and Embedding of CSS in HTML Document

**3rd Week April, 2025**

Microsoft FrontPage: Introduction, Features, Title Bar, Menu bar, FrontPage Tool Bar, Style, FontFace and Formatting Bar, Scroll Bars

**4th Week April, 2025**

Introduction, Features, XML Support and Usage, Structure of XML Documents, Structures in XML, Creating Document Type Declarations, Flow Objects, Working with Text and Font, Color and Background Properties;



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 **Lesson Plan**

Class BCA-6th Sem

**Paper** BCA-366: Programming in Core Java

**4th Week Jan,2024**

Basic Principles of Object Oriented Programming

**1st Week Feb,2024**

Introduction to Java, History and Features of Java

**2nd Week Feb, 2024**

 Java Virtual Machine (JVM), Java’s Magic Bytecode; The Java Runtime Environment

**3rd Week Feb, 2024**

Basic Language Elements: Lexical Tokens, Identifiers, Keywords

**4th Week Feb, 2024**

Literals, Comments, Primitive Data types, Operators, Assignments; Input/output in Java: Basics, I/O Classes, Reading Console Input

**1st Week March,2024**

Control Structures in Java: Decision and Loop Control Statements, Defining Class in Java, Creating Objects of a Class

**2nd Week March,2024**

Constructors, Nested Class, Inner Class , Defining Methods, Argument Passing Mechanism, Using Class and Objects, Abstract Class, Dealing with Static Members

**3rd Week March,2024**

Array & String in Java: Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Defining String, Operation on Array and String, Creating Strings using String Class, Creating Strings using String Buffer Class

**4th Week March,2024**

**Holi Vacations**

**1st Week April, 2024**

Polymorphism in Java: Basic Concept, Types, Overriding vs. Overloading, Implementation , Benefits of Inheritance, Types of Inheritance in Java, Access Attributes, Inheriting Data Members and Methods, Role of Constructors in Inheritance,

**2nd Week April, 2024**

Use of “super”; Packages & Interfaces: Basic Concepts of Package and Interface, Organizing Classes and Interfaces in Packages, Defining Package, Adding Classes from a Package to Your Program, CLASSPATH Setting for Packages, Import Package, Naming Convention For Packages , Access Protection in Packages, Standard Packages

**3rd Week April, 2024**

Exception Handling in Java: The Idea behind Exception, Types of Exception, Use of try, catch, finally, throw, throws in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions

**4th Week April, 2024**

Applet in Java: Applet Basics, Applet Architecture, Applet Life Cycle, Applet Tag, Parameters to Applet, Embedding Applets in Web page, Creating Simple Applets, Designing Graphical User Interfaces in Java, Components and Containers, Using Containers, Layout Managers, AWT Components, AWT Classes, AWT Controls,

 **Dr Sushil Kumar**(Computer Science)