Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 4th Semester**
Subject and Code	**Advance Data structure**
Semester Duration	**1st Feb 2023 – 26th May 2023**

Topics

Month of February

Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks, Binary search trees: introduction, storage, Searching, Insertion and deletion in a Binary search tree, Heap sort , Huffman's algorithm, General trees

Month of March

Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs, operations on graphs, traversal algorithms in graphs and their implementation, Warshall's algorithm for shortest path, Dij kstra algorithm for shortest path

Month of April

Sorting: Internal & external sorting, Radix sort, Quick sort, Merge sort, Tournament sort, Comparison of various sorting and searching algorithms on the basis of their complexity.

Month of May

Files: Introduction Attributes of a file, Classification of files, File operations, Comparison of various types of files, File organization: Sequential, Indexed-sequential, Random-access file. Hashing: Introduction, Collision resolution.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.Com 4th Semester (CAV)**
Subject and Code	**Java**
Semester Duration	**1st Feb 2023 - 26th May 2023**

Topics

Month of February

Introduction to Java- features of Java- object oriented concepts- data types – variables- arrays- operators

Month of March

control statements- input and output- scanner and system - class print(), printIn(), printf() methods; Class- objects- constructors- overloading method- access control- static and fixed methods- inner classes- string class- inheritance.

Month of April

GUI components- common GUI event types and listener interfaces - Joptionpane – Jlabel – JtextField – Jbutton – JcheckBox - JTextarea – JcomboBox – Jlist – Jpannel - Mouse Event Handling – Adapter Classes - Key Event Handling.

Month of May

Layout Managers – Flow layout, Borderlayout, Gridlayout - Graphics and Java 2D - Graphics contexts and Graphics objects - Color control - Font Control – Drawing Lines, Rectangles and ovals - JSlider- Using menus with frames

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.A.4th Sem**
Subject and Code	**Object Oriented Programming with C++**
Semester Duration	**1st Feb 2023 – 26th May 2023**

Topics

Month of February

Object oriented Programming: Object-Oriented programming features and benefits. Object-Oriented features of C++, Class and Objects, Data Hiding & Encapsulation, Structures, Data members and Member functions, Scope resolution operator and its significance, Static Data Members, Static member functions, Nested and Local Class, Accessing Members of Class and Structure.

Month of March

Constructor, Initialization using constructor, types of constructor– Default, Parameterized & Copy Constructors, Constructor overloading, Default Values to Parameters, Destructors, Console I/O: Hierarchy of Console Stream Classes, Unformatted and Formatted I/O Operations

Month of April

Manipulators, Friend Function, Friend Class, Arrays, Array of Objects, Passing and Returning Objects to Functions, String Handling in C++, Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers.

Month of May

Static Polymorphism: Operators in C++, Precedence and Associativity Rules, Operator Overloading, Unary & Binary Operators Overloading, Function Overloading, Inline Functions, Merits/Demerits of Static Polymorphism.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 6th Semester**
Subject and Code	**Advanced Programming with Visual Basic**
Semester Duration	**1st Feb 2023 - 26th May 2023**

Topics

Month of February

Working with Menu: Menu Designing in VB, Adding a Menu to a Form, Modifying and Deleting Menu Items, Adding Access Characters, Adding Shortcut Keys, Manipulating Menus using Common Dialog Box, Attaching Code to Events, Creating Submenus, Dynamic Menu Appearance Advanced Controls in VB: Scroll Bar, Slider Control, Tree View, List View, Rich Text Box Control, Toolbar, Status Bar, Progress Bar, Cool bar, Image List Program Development in VB using Menus and Advance Controls

Month of March

Collections: Adding, Removing, Counting, Returning Items in a Collection, Processing a Collection; Working with Forms: Form Properties, Creating, Adding, Removing Forms in Project, Adding Multiple Forms, Managing Forms at Run Time, Hiding & Showing Forms, Load & Unload Statements, Drag and Drop Operation, Activate & Deactivate events, Form-load event, Example using Forms, Programs in VB using Forms

Month of April

Accessing Databases: Data Controls, Data-Bound Controls, DAO, RDO, ADO, Creating the Database, Setting Properties, Applying Operations on Database, Viewing the Database, Updating the Database (adding, deleting records) Program Development in VB using Database and Advance Controls

Month of May

Working with Graphics: Using Paint, Line, Circle, Manipulating Graphics Program Development in VB using Files and Graphics File Handling & File Controls: Sequential & Random files, Opening and Closing Data Files, Viewing the Data in a File, Performing Operations on a File, Creating a Sequential Data File, Writing Data to a Sequential File, Reading the Data in a Sequential File, Finding the End of a Data File, Locating a File, Reading and Writing a Random File (get, put, LOF, seek).

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.Sc. 4th Sem**
Subject and Code	**Object Oriented Programming with C++**
Semester Duration	**1st Feb 2023 – 26th May 2023**

Topics

Month of February

Object oriented Programming: Object-Oriented programming features and benefits. Object-Oriented features of C++, Class and Objects, Data Hiding & Encapsulation, Structures, Data members and Member functions, Scope resolution operator and its significance, Static Data Members, Static member functions, Nested and Local Class, Accessing Members of Class and Structure.

Month of March

Constructor, Initialization using constructor, types of constructor– Default, Parameterized & Copy Constructors, Constructor overloading, Default Values to Parameters, Destructors, Console I/O: Hierarchy of Console Stream Classes, Unformatted and Formatted I/O Operations

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Manipulators, Friend Function, Friend Class, Arrays, Array of Objects, Passing and Returning Objects to Functions, String Handling in C++, Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers.

Month of May

Static Polymorphism: Operators in C++, Precedence and Associativity Rules, Operator Overloading, Unary & Binary Operators Overloading, Function Overloading, Inline Functions, Merits/Demerits of Static Polymorphism.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.Sc. 4th Sem**
Subject and Code	**Operating System**
Semester Duration	**1st Feb 2023 – 26th May 2023**

Topics

Month of February

Introduction: operating system, architecture, functions, characteristics, historical evolution, types: Serial batch, multiprogramming, time sharing, real time, distributed and parallel. OS as resource Manager. Computer system structures: I/O structure, storage structure, storage hierarchy. Operating system structure: system components, services, system calls, system programs, system structures.

Month of March

Process management: process concepts, process state, process control block, operations, proce ss scheduling, inter process communication. CPU Scheduling: scheduling criteria, levels of scheduling, scheduling algorithms, multiple processor scheduling. Deadlocks: Characterization, methods of handling, deadlock detection, prevention, avoidance, recovery.

Month of April

Storage Management: memory management of single-user and multiuser operating system, partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms, Thrashing. Process synchronization: critical section problems, semaphores. Mutual exclusion.

Month of May

Device and file management: Disk scheduling, Disk structure, Disk management, File Systems: Functions of the system, File access and allocation methods, Directory Systems: Structured Organizations, directory and file protection mechanisms.

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar Lesson Plan (2022-23) [Even Semester]

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.A. 4th Sem**
Subject and Code	**Operating System**
Semester Duration	**1st Feb 2023 – 26th May 2023**

Topics

Month of February

Introduction: operating system, architecture, functions, characteristics, historical evolution, types: Serial batch, multiprogramming, time sharing, real time, distributed and parallel. OS as resource Manager. Computer system structures: I/O structure, storage structure, storage hierarchy. Operating system structure: system components, services, system calls, system programs, system structures.

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Month of April

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