

Govt. College, Aharwala (Bilaspur) -Yamuna Nagar
Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr.Ajay Rattan
Department	Computer Science
Class & Section	BCA 2nd Semester
Subject and Code	BCA – 121 Advanced Programming in C
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Introduction, Declaration and initialization of string, String I/O, Array of strings, String manipulation functions: String length, copy, compare, concatenate, search for a substring.	
Week 2	
Structure and Union: Introduction, Features of structures, Declaration and initialization of structures, Structure within structure, Array of structures, Structure and functions.	
Week 3	
Union: Introduction, Union of structures. Typedef, Enumerations.	
Week 4	
Pointers: Introduction, Pointer variables, Pointer operators, Pointer assignment	
Week 5	
Pointer conversions, Pointer arithmetic, Pointer comparison, Pointers and arrays	
Week 5	
Pointers and functions, Pointers and strings	
Week 6	
Pointer to pointer, dynamic allocation using pointers.	
Week 7	
Files: Introduction, File types	
Week 8	
File operations, File I/O	
Week 9	
Structure Read and write in a file, Errors in file handling	

Week 10
Random-access I/O in files.
Week 11
Preprocessor: Introduction, #define, macros, macro versus functions
Week 12
#include, Conditional compilation directives
Week 13
undefining a macro
Week 14
Command line arguments: defining and using command line argument
<p>Note:-</p> <p>The teaching of topics to the students on the Week s mentioned above may not be exactly followed and may have little variations/fluctuations because of some unforeseen circumstances. For example: various Functions/Activities organized by the College (Musical Meet, Blood Donation, Important Days Celebrations, Co-Curricular/Extra-curricular Activities etc.), Response of Students in the Class, Request of Students for Repetition of some specific Topics, Practical Examinations, Unpredicted Leaves, Restricted Holidays etc.</p>

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Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr. Ajay Rattan
Department	Computer Science
Class & Section	BCA 3rd Semester
Subject and Code	BCA – 241 ADVANCED DATA STRUCTURE
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees	
Week 2	
Traversal algorithms using stacks, Binary search trees: introduction, storage, Searching, Insertion and deletion in a Binary search tree	
Week 3	
Huffman's algorithm, General trees	
Week 4	
Graph: Introduction, Graph theory terminology	
Week 5	
Sequential and linked representation of graphs, operations on graphs, traversal algorithms in	

Week 6
Warshall's algorithm for shortest path, Dijkstra algorithm for shortest path
Week 7
Sorting: Internal & external sorting, Radix sort
Week 8
Quick sort, Heap sort
Week 9
Merge sort, Tournament sort

Week 10
Comparison of various sorting and searching algorithms on the basis of their complexity
Week 11
Files: Introduction Attributes of a file, Classification of files
Week 12
File operations, Comparison of various types of files
Week 13
File organization: Sequential, Indexed-sequential, Random-access file
Week 14
Hashing: Introduction, Collision resolution.
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Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr.Ajay Rattan
Department	Computer Science
Class & Section	BCA 3rd Semester
Subject and Code	BCA – 242 Advanced PROGRAMMING USING C++
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Dynamic Polymorphism: Function Overriding, Virtual Function and its Need	
Week 2	
Pure Virtual Function, Abstract Class, Virtual Derivation, Virtual Destructor.	
Week 3	
Conversion between objects of different classes,	
Week 4	
Inheritance: Rules of Derivations – Private, Protected and Public Derivations., Practical Examples	
Week 5	
Different Forms of Inheritance – Single, Multiple	
Week 6	
Multilevel, Hierarchical and Multipath Inheritance, Practical Examples	
Week 7	
Roles of Constructors and Destructors in Inheritance, Practical Examples	
Week 8	
Genericity in C++: Templates in C++, Practical Examples	
Week 9	
Function templates, Class templates in C++, Practical Examples	
Week 10	
Exception Handling in C++: try, throw and catch, Practical Examples	

Week 11
Files I/O in C++, Practical Examples
Week 12
Class Hierarchy for Files I/O, Practical Examples
Week 13
Text versus Binary Files Practical Examples
Week 14
Opening and Closing Files, File Pointers, Operation on files
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Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr.Ajay Rattan
Department	Computer Science
Class & Section	BCA 5TH Semester
Subject and Code	BCA-365: Advanced Programming with Visual Basic
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Collections: Adding, Removing, Counting, Returning Items in a Collection, processing a Collection; Working with Forms: Form Properties, Creating, Adding, Removing Forms in Project,	
Week 2	
Adding Multiple Forms, Managing Forms at Run Time, Hiding & Showing Forms, Load & Unload Statements, Drag and Drop Operation, Activate & Deactivate events,	
Week 3	
Form-load event, Example using Forms, Programs in VB using Forms	
Week 4	
Menu Designing in VB, adding a Menu to a Form, Modifying and Deleting Menu Items, Adding Access Characters, Adding Shortcut Keys	
Week 5	
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,	
Week 6	
List View, Rich Text Box Control, Toolbar, Status Bar, Progress Bar, Cool bar, Image List Program Development in VB using Menus and Advance Controls	
Week 7	
File Handling & File Controls: Sequential & Random files, Opening and Closing Data Files, Viewing the Data in a File, Performing Operations on a File	
Week 8	

, 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). Working with Graphics: Using Paint, Line, Circle, Manipulating Graphics Program Development in VB using Files and Graphics
Week 9
Accessing Databases: Data Controls, Data-Bound Controls, DAO, RDO, ADO, Creating the Database, Setting Properties, Applying Operations on Database
Week 10
Viewing the Database, Updating the Database (adding, deleting records) Program Development in VB using Database and Advance Controls
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Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr.Ajay Rattan
Department	Computer Science
Class & Section	B.A. 4TH Semester
Subject and Code	PAPER I: Object Oriented Programming with C+
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Object oriented Programming: Object-Oriented programming features and benefits. Object-Oriented features of C++, Class and Objects, Data Hiding & Encapsulation, Structures	
Week 2	
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.	
Week 3	
Constructor, Initialization using constructor	
Week 4	
types of constructors– Default, Parameterized & Copy Constructors	
Week 5	
Constructor overloading, Default Values to Parameters, Destructors	
Week 6	
Console I/O: Hierarchy of Console Stream Classes, Unformatted and Formatted I/O Operations.	
Week 7	
Manipulators, Friend Function, Friend Class, Arrays, Array of Objects	
Week 8	
Passing and Returning Objects to Functions, String Handling in C++	
Week 9	
Dynamic Memory Management: Pointers, new and delete Operator	
Week 10	

Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers
Week 11
Static Polymorphism: Operators in C++
Week 12
Precedence and Associativity Rules, Operator Overloading
Week 13
Unary & Binary Operators Overloading, Function Overloading
Week 14
Inline Functions, Merits/Demerits of Static Polymorphism.
<p>Note:-</p> <p>The teaching of topics to the students on the Week s mentioned above may not be exactly followed and may have little variations/fluctuations because of some unforeseen circumstances. For example: various Functions/Activities organized by the College (Musical Meet, Blood Donation, Important Days Celebrations, Co-Curricular/Extra-curricular Activities etc.), Response of Students in the Class, Request of Students for Repetition of some specific Topics, Practical Examinations, Unpredicted Leaves, Restricted Holidays etc.</p>

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Lesson Plan (2021-22) [Even Semester]

Name of Techer	Dr.Ajay Rattan
Department	Computer Science
Class & Section	B.A. 4TH Semester
Subject and Code	PAPER II: Operating System
Semester Duration (Tentative)	TDC-III: 1st April 2022 - 15th June 2022 (Week 1 to Week 10) TDC-I & II: 1st April 2022 - 15th July 2022 (Week 1 to Week 14)
Topics - Week Wise	
Week 1	
Introduction: operating system, architecture, functions, characteristics, historical evolution, types: Serial batch, multiprogramming, time sharing, real time, distributed and parallel. OS as resource Manager.	
Week 2	
Computer system structures: I/O structure, storage structure, storage hierarchy.	
Week 3	
Operating system structure: system components, services, system calls, system programs, system structures.	
Week 4	
Process management: process concepts, process state, process control block, operations, process scheduling, inter process communication. CPU Scheduling: scheduling criteria, levels of scheduling	
Week 5	
scheduling algorithms, multiple processor scheduling.	
Week 6	
CPU Scheduling: scheduling criteria, levels of scheduling, scheduling algorithms, multiple processor scheduling.	
Week 7	
Deadlocks: Characterization, methods of handling, deadlock detection, prevention, avoidance, recovery.	
Week 8	
Storage Management: memory management of single-user and multiuser operating system, partitioning, swapping	

Week 9
paging and segmentation, virtual memory, Page replacement Algorithms
Week 10
Thrashing. Process synchronization: critical section problems
Week 11
semaphores. Mutual exclusion
Week 12
Device and file management: Disk scheduling, Disk structure, Disk management
Week 13
File Systems: Functions of the system, Directory Systems: Structured Organizations, directory and file protection mechanisms.
Week 14
File access and allocation methods,
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