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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 3rd Semester**
Subject and Code	**Data structure, Paper Code: BCA-232**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures,

16th September 2022 - 30th September 2022

Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, String strings, String operations, Pattern matching algorithms.

1st October 2022 - 15th October 2022

Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparce matrics.

16th October 2022 - 31st October 2022

Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list

1st November 2022 - 15th November 2022

, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithms for Insertion, deletion in array, Single linked list

16th November 2022 - 30th November 2022

Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation,

1st December 2022 - 15th December 2022

Recursion. Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues.

16th December 2022 - 24th December 2022

Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks and using recursion. Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 3rd Semester**
Subject and Code	**SOFTWARE ENGINEERING , Paper Code: BCA-234**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes, Phases in Software development

16th September 2022 - 30th September 2022

Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.

1st October 2022 - 15th October 2022

Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS, Problem Analysis, Information gathering tools, Organizing and structuring information, Requirement specification, validation and Verification. . SCM

16th October 2022 - 31st October 2022

Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision tress, Structured English, Entity-Relationship diagrams,

1st November 2022 - 15th November 2022

Cohesion and Coupling. Gantt chart, PERT Chart, Software Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance characteristics.

16th November 2022 - 30th November 2022

Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing and personnel planning, team structure, Software configuration management, Quality assurance plans,

1st December 2022 - 15th December 2022

Project monitoring plans, Risk Management. Software testing strategies: unit testing, integration testing, Validation testing, System testing, Alpha and Beta testing

16th December 2022 - 24th December 2022

Revision

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

Name of Teacher	Ajay Rattan
Department	Computer Science
Class & Section	B.com 3rd Semester(cav)
Subject and Code	FUNDAMENTALS OF DATABASE MANAGEMENT SYSTEM, Paper Code: BC(voc)-306
Semester Duration	1st September 2022 - 24th December 2022

Topics

1st September 2022 - 15th September 2022

Overview of Data Management System: element of data-base system, DBMS and its architecture,

16th September 2022 - 30th September 2022

advantages of DBMS, types of database users, role of database administrator.

1st October 2022 - 15th October 2022

 Brief overview of hierarchical and network model, detailed study of relational model (relations, properties of relational model, keys and integrity rules)

16th October 2022 - 31st October 2022

E-R diagrams.

1st November 2022 - 15th November 2022

Normalization: concepts and update anomalies, functional and transitive dependencies normal forms (1NF, 2NF, 3NF and BCNF).

16th November 2022 - 30th November 2022

 Database objects: terminologies- tables, views, materialized views, indexes; triggers; synonyms; functions, procedures and packages; create operator, create directory, create library, database links.

1st December 2022 - 15th December 2022

SQL: methods to access SQL plan; DDL, describe command; DML, joining tables; break clause.

16th December 2022 - 24th December 2022

Oracle service: terminology; architecture and background support processes, role of database administrator, applications of ORACLE in business.

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.com 3rd Semester(cav)**
Subject and Code	Data structure **, Paper Code: BC(voc)-305**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Data structure: linear and least structures: array definition, type, address calculation,

16th September 2022 - 30th September 2022

stack: push/pop algorithms, applications.

1st October 2022 - 15th October 2022

 Queue: INS/DEL algorithm,

16th October 2022 - 31st October 2022

double and circular queue concept only

1st November 2022 - 15th November 2022

List: single linked list, algorithm and double linked list

16th November 2022 - 30th November 2022

 circular linked list concepts; B-Tree concept

1st December 2022 - 15th December 2022

Files: serial, sequential, indexed, direct, multi-list.

16th December 2022 - 24th December 2022

Revision

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.A/B.Sc 3rd Semester**
Subject and Code	Data Structures**, Paper Code: paper 1**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations

16th September 2022 - 30th September 2022

, Applications of data structures, Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, strings, String operations, Pattern matching algorithms

1st October 2022 - 15th October 2022

Arrays: Introduction, Linear arrays, Representation of linear array in memory, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse matrix.

16th October 2022 - 31st October 2022

Linked List: Introduction, Array vs. linked list, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Garbage collection, Applications of linked lists. Algorithm of insertion/ deletion in SLL.

1st November 2022 - 15th November 2022

Stack: primitive operation on stack, algorithms for push and pop. Representation of Stack as Linked List and array, Stacks applications : polish notation, recursion.

16th November 2022 - 30th November 2022

Introduction to queues, Primitive Operations on the Queues, Circular queue, Priority queue, Representation of Queues as Linked List and array, Applications of queue. Algorithm on insertion and deletion in simple queue and circular queue.

1st December 2022 - 15th December 2022

Trees - Basic Terminology, representation, Binary Trees, Tree Representations using Array & Linked List, Basic operation on Binary tree, Traversal of binary trees:- In order, Preorder & post order, Applications of Binary tree. Algorithm of tree traversal with and without recursion.

16th December 2022 - 24th December 2022

Revision

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.A/B.Sc 3rd Semester**
Subject and Code	**SOFTWARE ENGINEERING, Paper Coe: paper II**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction: Program vs. Software, Software Engineering, Programming paradigms, Software Crisis – problem and causes

16th September 2022 - 30th September 2022

Phases in Software development: Requirement Analysis, Software Design, Coding, Testing, Maintenance, Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models, Role of Metrics.

1st October 2022 - 15th October 2022

Feasibility Study, Software Requirement Analysis and Specifications: SRS, Need for SRS, Characteristics of an SRS, Components of an SRS,

16th October 2022 - 31st October 2022

Problem Analysis, Information gathering tools, Organising and structuring information, Requirement specification, validation and metrics. Cohesion & Coupling, Classification of Cohesiveness & Coupling

1st November 2022 - 15th November 2022

Structured Analysis and Tools: Data Flow Diagram, Data Dictionary, Decision table, Decision trees, Structured English, Entity-Relationship diagrams . Software Project Planning: Cost estimation: COCOMO model, Project scheduling, Staffing and personnel planning, team structure, Software configuration management, Quality assurance plans, Project monitoring plans, Risk Management.

16th November 2022 - 30th November 2022

Software testing strategies: unit testing, integration testing, V and V , System testing, Alpha and Beta testing. Black box, white box testing. Cyclomatic Complexity.

1st December 2022 - 15th December 2022

Software Implementation and Maintenance: Type of maintenance, Management of Maintenance, Maintenance Process, maintenance characteristics.

16th December 2022 - 24th December 2022

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**B.com 1st Semester(Gen)**
Subject and Code	**Computer Applications in Business, Paper Code: BC 104**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction to Computers: definition, components and characteristics of computers; Input and output devices: memory and mass storage devices; Introduction to modern CPU and processors.

16th September 2022 - 30th September 2022

Computer software: introduction, types of software: system, application and utility software; Programming languages; Introduction to operating system: types and function of operating system;

1st October 2022 - 15th October 2022

 Real-time applications; Operating systems for Tabs, mobile phones, Android, etc.; Open source software: An overview.

16th October 2022 - 31st October 2022

Application software: Spreadsheets, Word processors, Database management software;

1st November 2022 - 15th November 2022

Networks basic, types of networks, topologies.

16th November 2022 - 30th November 2022

, media, hardware and software required for networking

1st December 2022 - 15th December 2022

Revision

16th December 2022 - 24th December 2022

Revision

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 5th Semester**
Subject and Code	**Artificial Intelligence, Paper Code: BCA 353**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Artificial Intelligence : Intelligence, AI Concepts, Various definitions of AI, Knowledge, Knowledge Pyramid, People and Computers: What computers can do better that people, what people can do better than computers

16th September 2022 - 30th September 2022

Characteristics of AI Problems, Problem Representation in AI, Components of AI, AI Evolution, Application Areas of AI, History of AI, The Turing Test, The Revised Turing Test

1st October 2022 - 15th October 2022

 Expert System: Components of Expert System: Knowledge Base, Inference Engine, User Interface, Features of Expert System, Expert System Life Cycle, Categories of Expert System, Rule Based vs. Model Based Expert Systems, Advantages/Limitations of Expert System,

16th October 2022 - 31st October 2022

Developing an Expert System: Identification, Conceptualization, Formalization, Implementation, Testing, Using an Expert System, Application Areas of Expert System

1st November 2022 - 15th November 2022

AI and Search Process: Brute Force Search – Depth First/Breadth First Search, Heuristic Search: Hill Climbing, Constraint Satisfaction, Mean End Analysis,

16th November 2022 - 30th November 2022

Best First Search, A* Algorithm, AO* Algorithm, Beam Search Natural Language Processing: Introduction, Need, Goal, Fundamental Problems in Natural Language Understanding,

1st December 2022 - 15th December 2022

How People overcome Natural Language Problems, Speech Recognition: Introduction, Advantages and Approaches, Introduction to Robotics: Parts of a Robot, Controlling a Robot, Intelligent Robots, Mobile Robots

16th December 2022 - 24th December 2022

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

Name of Teacher	**Ajay Rattan**
Department	**Computer Science**
Class & Section	**BCA 5th Semester**
Subject and Code	**Programming Using Visual Basic, Paper Code: BCA 353**
Semester Duration	**1st September 2022 - 24th December 2022**

Topics

1st September 2022 - 15th September 2022

Introduction to VB: Visual & Non-Visual programming, Procedural, Object-Oriented, Object-Based and Event-Driven Programming Languages, VB as Even-Driven and Object-Based Language,

16th September 2022 - 30th September 2022

VBEnvironment: Menu bar, Toolbar, Project explorer, Toolbox, Properties Window, Form Designer, Form Layout, Immediate window, Default Controls in Tool Box Visual Development and Event Driven programming

1st October 2022 - 15th October 2022

Basics of Programming: Variables: Declaring Variables, Types of variables, Converting Variables Types, User Defined Data Types, Forcing Variable Declaration, Scope & Lifetime of Variables.

16th October 2022 - 31st October 2022

Constants: Named & Intrinsic, Operators: Arithmetic, Relational & Logical operators, Input/output in VB: Various Controls for I/O, Message box, Input Box, Print statement.

1st November 2022 - 15th November 2022

Decision Statements in VB - if statement, if-then-else, select-case; Looping Statements in VB: do-loop, for-next, while-wend; Exit statement, Nested Control Structure; Arrays: Declaring and using Arrays, One-dimensional, Two-dimensional and Multi-dimensional Arrays, Static and Dynamic arrays, Array of Arrays.

16th November 2022 - 30th November 2022

Procedures: General & Event Procedures, Subroutines, Functions, Calling Procedures, Arguments - Passing Mechanisms, Optional Arguments, Named Arguments, Functions Returning Custom Data Types

1st December 2022 - 15th December 2022

Simple Program Development in VB such as Sum of Numbers, Greatest among Numbers, Checking Even/Odd Number, HCF of Two Numbers, Generate Prime Numbers, Generate Fibonacci Series, Factorial of a Number, Searching, Sorting, etc.

16th December 2022 - 24th December 2022

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