**Govt. College, Nalwa (Hisar)**

**Lesson Plan**

**Name of Teacher :- Anil Kumar Session :-2023-24**

**PGDCA (2nd Semester) Paper :- Data Structures and**

**Algorithms**

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| Week 1 Date 1.1.2024 to 6.1.2024  Data Structures Definition and its types, Data Structure operations, Static and dynamic memory storage |
| Week 2 Date 8.1.2024 to 13.1.2024  Algorithms complexity and time-space tradeoff, Big-O notation. Strings: Introduction, storing strings |
| Week 3 Date 15.1.2024 to 20.1.2024  Arrays: one-dimensional arrays, matrices, sparse matrices, multi-dimensional arrays, operations on arrays |
| Week 4 Date 22.1.2024 to 27.1.2024  Linear search, Binary search, Insertion sort, selection sort, Bubble sort, Merge sort |
| Week 5 Date 29.1.2024 to 03.2.2024  Linked List: Array vs linked list, Types (singly, doubly, singly circular, header, doubly circular,) |
| Week 6 Date 5.2.2024 to 10.2.2024  Operations on Lists – create, insert, delete, search, Applications of linked lists. |
| Week 7 Date 12.2.2024 to 17.2.2024  Definition, Array implementation of stacks, Linked implementation of stacks, Applications of Stacks: Infix, Postfix and prefix expression, conversions and evaluation of expressions |
| Week 8 Date 19.2.2024 to 24.2.2024  Recursion, Quick Sort, Queue: Definition, Array implementation of queues, Linked implementation of queues, Circular queues |
| Week9 Date 26.2.2024 to 2.3.2024  Trees:Binary Trees and their properties, Linked and static Representation of binary trees |
| Week 10 Date 4.3.2024 to 9.3.2024  , Complete Binary Tree, Threaded Binary tree |
| Week 11 Date 11.3.2024 to 16.3.2024  Different tree traversal algorithms, |
| Week 12 Date 18.3.2024 to 22.3.2024  Binary Search Tree (create, delete, search, insert, display),Heap Sort and its complexity analysis, |
| Week 13 Date 01.4.2024 to 6.4.2024  Introduction to AVL Trees and Balanced multi-way search trees. |
| Week 14 Date 08.4.2024 to 13.4.2024  Graph: Definition, Array and linked representation of graphs, |
| Week 15 Date 15.4.2024 to 20.4.2024  Graph Traversal (BFS and DFS) |
| Week 16 Date 22.4.2024 to 27.4.2024  Adjacency matrix and adjacency lists, path matrix, Finding Shortest Path - Warshall's Algorithm. |
| Week 17 Date 29.4.2024 to 30.4.2024  Revision |

**Govt. College, Nalwa (Hisar)**

**Lesson Plan**

**Name of Teacher :- Anil Kumar Session :-2023-24**

**PGDCA (2nd Semester) Paper :- Computer Networks**

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| Week 1 Date 1.1.2024 to 6.1.2024  Computer Communications and Networking Technologies; Uses of Computer Networks; Network Devices: Nodes, and Hosts; |
| Week 2 Date 8.1.2024 to 13.1.2024  Types of Computer Networks and their Topologies; |
| Week 3 Date 15.1.2024 to 20.1.2024  Network Software: Network Design issues and Protocols; Connection-Oriented and Connectionless Services; |
| Week 4 Date 22.1.2024 to 27.1.2024  Computer Communications and Networking Models: Decentralized and Centralized Systems, |
| Week 5 Date 29.1.2024 to 03.2.2024  Distributed Systems, Client/Server Model. |
| Week 6 Date 5.2.2024 to 10.2.2024  Physical, Data Link, Network, Transport, Session, Presentation and Application layer |
| Week 7 Date 12.2.2024 to 17.2.2024  Advantages and Disadvantages of OSI model; Example Networks: Internet, ATM. |
| Week 8 Date 19.2.2024 to 24.2.2024  Connectors, Transceivers, Network Interface Cards, Hubs, |
| Week9 Date 26.2.2024 to 2.3.2024  Switches, Repeater, Bridges, Routers, Gateways |
| Week 10 Date 4.3.2024 to 9.3.2024  Unguided-Radiowaves, Microwaves, Infrared Transmission, Wired versus Wireless Networks |
| Week 11 Date 11.3.2024 to 16.3.2024  Transmission media: Guided- Twisted, Coaxial, Fiber –optic cable, |
| Week 12 Date 18.3.2024 to 22.3.2024  Representing Data as Analog Signals, Representing Data as Digital Signals, |
| Week 13 Date 01.4.2024 to 6.4.2024  Data Rate and Bandwidth, Capacity, |
| Week 14 Date 08.4.2024 to 13.4.2024  Baud Rate; Digital Carrier Systems; Communication Satellites |
| Week 15 Date 15.4.2024 to 20.4.2024  Switching and Multiplexing; Dialup Networking, Broadband Connection, Wireless Connection. |
| Week 16 Date 22.4.2024 to 27.4.2024  Revision |
| Week 17 Date 29.4.2024 to 30.4.2024  Revision |

**Govt. College, Nalwa (Hisar)**

**Lesson Plan**

**Name of Teacher :- Anil Kumar Session :-2023-24**

**PGDCA (2nd Semester) Paper :- Object Oriented**

**Systems and C++**

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| Week 1 Date 1.1.2024 to 6.1.2024  Procedural vs Object oriented programming Characteristics of OOP; Classes& Object, |
| Week 2 Date 8.1.2024 to 13.1.2024  Data encapsulation and Abstraction, Polymorphism, Inheritance, |
| Week 3 Date 15.1.2024 to 20.1.2024  Dynamic Binding and message passing, OOPs Applications; |
| Week 4 Date 22.1.2024 to 27.1.2024  Structure of C++ Program ,Data types ,Variables, Operators, Namespaces, |
| Week 5 Date 29.1.2024 to 03.2.2024  Enums, Type Conversion, Control Statements |
| Week 6 Date 5.2.2024 to 10.2.2024  Arrays, Strings, Structure, Pointers. Struct vs. Classes, Class Definition, |
| Week 7 Date 12.2.2024 to 17.2.2024  Classes and Objects, Access Specifiers: Private, Public and Protected, Member functions of the class |
| Week 8 Date 19.2.2024 to 24.2.2024  Constructor and Destructor, Parameterized Constructor, Copy Constructors. Inheritance: Reusability, Types of Inheritance: Single inheritance, Multiple, Multilevel, Hybrid Inheritance |
| Week9 Date 26.2.2024 to 2.3.2024  Public, Private, and Protected Derivations, Using derived class, Constructor and destructor in derived class, Object initialization and conversion |
| Week 10 Date 4.3.2024 to 9.3.2024  Nested classes (Container classes), Virtual Inheritance and Virtual base class |
| Week 11 Date 11.3.2024 to 16.3.2024  Function Overloading, Static Class Members, Static Member Functions, Friend Functions, Operator Overloading: Unary and Binary Operator Overloading |
| Week 12 Date 18.3.2024 to 22.3.2024  . Abstract class, Virtual function, Pure virtual function, Overloading vs. Overriding. |
| Week 13 Date 01.4.2024 to 6.4.2024  Memory management: new, delete, object Creation at Run Time, This Pointer. Exception handling: Throwing, Catching, Re-throwing an exception, specifying exceptions, processing unexpected exceptions, Exceptions when handling exceptions, resource capture and release. |
| Week 14 Date 08.4.2024 to 13.4.2024  Templates and Files: Introduction, Class templates and Function templates, Overloading of template function, namespaces. |
| Week 15 Date 15.4.2024 to 20.4.2024  Introduction to STL: Standard Template Library: benefits of STL, containers, adapters, iterator, vector, list. |
| Week 16 Date 22.4.2024 to 27.4.2024  Working with files: C++ streams, C++ stream classes, creating, opening, closing and deleting files, file pointers and their manipulators, updating file, random access to file, Error handling during file operations. |
| Week 17 Date 29.4.2024 to 30.4.2024  Revision |

**Govt. College, Nalwa (Hisar)**

**Lesson Plan**

**Name of Teacher :- Anil Kumar Session :-2023-24**

**PGDCA (2nd Semester) Paper :- Computer**

**Organization**

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| Week 1 Date 1.1.2024 to 6.1.2024  Number Systems, Binary Arithmetic Operations |
| Week 2 Date 8.1.2024 to 13.1.2024  Fixed-point and Floating point representation of numbers, BCD, ASCII, EBCDIC, Grey Code. |
| Week 3 Date 15.1.2024 to 20.1.2024  Boolean Algebra, Duality Principal, Boolean Theorems, Boolean Functions Truth Tables, De Morgan’s Law |
| Week 4 Date 22.1.2024 to 27.1.2024  Simplification of Boolean Functions using Venn Diagram, |
| Week 5 Date 29.1.2024 to 03.2.2024  Karnaugh Maps |
| Week 6 Date 5.2.2024 to 10.2.2024  Digital Logic: Logic Gates -AND, OR, NOT, Universal Gates - NAND, NOR, others XOR, XNOR. |
| Week 7 Date 12.2.2024 to 17.2.2024  Combinational Logic: Design Procedure, Adders, Subtractors |
| Week 8 Date 19.2.2024 to 24.2.2024  Encoders, Decoders |
| Week9 Date 26.2.2024 to 2.3.2024  Multiplexers and De-multiplexers. |
| Week 10 Date 4.3.2024 to 9.3.2024  Sequential Logic: Flip-flops |
| Week 11 Date 11.3.2024 to 16.3.2024  Registers |
| Week 12 Date 18.3.2024 to 22.3.2024  Counters. |
| Week 13 Date 01.4.2024 to 6.4.2024  Basic Computer Organization: Instruction Code, Computer Registers, |
| Week 14 Date 08.4.2024 to 13.4.2024  Computer instructions, Timing and control |
| Week 15 Date 15.4.2024 to 20.4.2024  Instruction Cycle. CPU organization: General Register Organization, |
| Week 16 Date 22.4.2024 to 27.4.2024  Stack Organization, Instruction Formats, Addressing Modes. |
| Week 17 Date 29.4.2024 to 30.4.2024  Revision |

**Govt. College, Nalwa (Hisar)**

**Lesson Plan**

**Name of Teacher :- Anil Kumar Session :-2023-24**

**PGDCA (2nd Semester) Paper :- Software Engineering**

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| Week 1 Date 1.1.2024 to 6.1.2024  Introduction: Program vs. Software, Software Engineering paradigms, Software Crisis – problem and causes |
| Week 2 Date 8.1.2024 to 13.1.2024  Phases in Software development: Requirement, Analysis, Software Design, Coding, Testing, Maintenance |
| Week 3 Date 15.1.2024 to 20.1.2024  Software Development Process Models: Waterfall, Prototype, Evolutionary and Spiral models. |
| Week 4 Date 22.1.2024 to 27.1.2024  Software Requirement Analysis and Specifications: Feasibility Study Software Requirements, |
| Week 5 Date 29.1.2024 to 03.2.2024  Need for SRS, Characteristics of an SRS, Components of an SRS |
| Week 6 Date 5.2.2024 to 10.2.2024  Structure of a requirements document, validation and metrics, Problem Analysis, |
| Week 7 Date 12.2.2024 to 17.2.2024  Data Flow Diagram, Data Dictionary, Decision table, Decision trees |
| Week 8 Date 19.2.2024 to 24.2.2024  Software Project Planning: Process Planning, Effort estimation, COCOMO model |
| Week9 Date 26.2.2024 to 2.3.2024  Project scheduling and Staffing, team structure, Software configuration management, Quality assurance plans |
| Week 10 Date 4.3.2024 to 9.3.2024  Risk Management, Project monitoring plans. Software Implementation and Maintenance: Type of maintenance, Management of Maintenance, |
| Week 11 Date 11.3.2024 to 16.3.2024  Maintenance Process, maintenance characteristics. |
| Week 12 Date 18.3.2024 to 22.3.2024  Testing fundamentals, Error, Fault, and Failure, Test Oracle, Test Case and Test Criteria |
| Week 13 Date 01.4.2024 to 6.4.2024  Psychology of testing, Black Box Testing, Boundary value analysis, Equivalence Class Partitioning, Decision Table based testing, |
| Week 14 Date 08.4.2024 to 13.4.2024  Cause effect graphing, White box testing , Control flow based criteria, level of testing, Unit testing |
| Week 15 Date 15.4.2024 to 20.4.2024  Integration testing, System testing, Validation testing |
| Week 16 Date 22.4.2024 to 27.4.2024  , alpha, beta, and Acceptance testing. |
| Week 17 Date 29.4.2024 to 30.4.2024  Revision |