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| **IMSENGINEERINGCOLLEGE** | IMSEC/QF/46 |
| **FORMATS** | Page 1 of 3   |
| Issue No: 02 |
| **Teaching Plan** | Issue Date:1 May 2010 |
| **Prepared by: MR** | **Approved by: Director** |

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| **Subject Code** | NCS-301 | **Start Date** |  |
| **Subject Name** | Data Structure Using C | **Planned End Date** |  |

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| **Lec No.** | **Topics to be covered** | **Referred Book** | **Attendance** | **Date****Planned** | **Date****Completed** | **Assignment/ Quiz** |
| **Ass. No.** | **Hand over Date** | **Evaluation Date** |
|  | **UNIT-I** |  |  |  |  |  |  |  |
| 1 | Introduction: data and information |  |  |  |  |  |  |  |
| 2 | Introduction: Basic Terminology, Elementary Data Organization, |  |  |  |  |  |  |  |
| 3 | Algorithm, Efficiency of an Algorithm, Time and Space Complexity, |  |  |  |  |
| 4 | Asymptotic notations: Big-Oh, Time-Space trade-off. Abstract Data Types (ADT) |  |  |  |  |
| 5 | Arrays: Definition, Single and Multidimensional Arrays, |  |  |  |  |
| 6 | Representation of Arrays: Row Major Order, and Column Major Order, |  |  |  |  |
| 7 | Application of arrays, Sparse Matrices and their representations. |  |  |  |  |
| 8 | Linked lists: Array Implementation and Dynamic Implementation of Singly Linked Lists, |  |  |  |  |
| 9 | Doubly Linked List, Circularly Linked List, |  |  |  |  |
| 10 | Operations on a Linked List. Insertion, Deletion, Traversal |  |  |  |  |
| 11 | Polynomial Representation and Addition, Generalized Linked List |  |  |  |  |
|  | **UNIT-II** |  |  |  |  |
| 12 | Stacks: Abstract Data Type, Primitive Stack operations: Push & Pop, |  |  |  |  |
| 13 | Array and Linked Implementation of Stack in C |  |  |  |  |
| 14 | Application of stack: Prefix and Postfix Expressions, Evaluation of postfix expression, |  |  |  |  |
| 15 | Recursion, Tower of Hanoi Problem, Simulating Recursion, Principles of recursion, Tail recursion, Removal of recursion |  |  |  |  |
| 16 | Queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues |  |  |  |  |
| 17 | Array and linked implementation of queues in C |  |  |  |  |
| 18 | Dequeue and Priority Queue |  |  |  |  |
|  | **UNIT-III** |  |  |  |  |
| 19 | Trees: Basic terminology, Binary Trees, Binary Tree Representation: Array Representation and Dynamic Representation |  |  |  |  |  |  |  |
| 20 | Complete Binary Tree, Algebraic Expressions |  |  |  |  |  |
| 21 | Extended Binary Trees, Array and Linked Representation of Binary trees, |  |  |  |  |  |
| 22 | Tree Traversal algorithms: Inorder, Preorder and Postorder,  |  |  |  |  |  |
| 23 | Threaded Binary trees, Huffman algorithm |  |  |  |  |  |
|  | **UNIT-IV** |  |  |  |  |  |
| 24 | Graphs: Terminology, Sequential and linked Representations of Graphs: Adjacency Matrices, Adjacency List, Adjacency Multi list |  |  |  |  |  |
| 25 | Graph Traversal : Depth First Search and Breadth First Search,  |  |  |  |  |  |  |  |
| 26 | Connected Component, Spanning Trees Minimum Cost Spanning Trees: Prims and Kruskal algorithm.  |  |  |  |  |  |
| 27 | Transistive Closure and Shortest Path algorithm: Warshal Algorithm |  |  |  |  |  |
| 28 | Dijikstra Algorithm, Introduction to Activity Networks |  |  |  |  |  |
|  | **UNIT-V** |  |  |  |  |  |
| 29 | Searching : Sequential search, Binary Search, Comparison and Analysis |  |  |  |  |  |
| 30 | Internal Sorting: Insertion Sort, Selection, Bubble Sort, |  |  |  |  |  |
| 31 | Quick Sort, Two Way Merge Sort, |  |  |  |  |  |
| 32 | Heap Sort, Radix Sort, and Practical consideration for Internal Sorting. |  |  |  |  |  |
| 33 | Search Trees: Binary Search Trees(BST), Insertion and Deletion in BST,  |  |  |  |  |  |
| 34 | Complexity of Search Algorithm |  |  |  |  |  |
| 35 | AVL trees |  |  |  |  |  |
| 36 | Introduction to m-way Search Trees, B Trees & B+ Trees |  |  |  |  |  |
| 37 | Hashing: Hash Function, Collision Resolution Strategies |  |  |  |  |  |
|  | Collision Resolution Strategies |  |  |  |  |  |
| 38 | Storage Management: Garbage Collection and Compaction |  |  |  |  |  |
| 39 | Revision |  |  |  |  |  |

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| **Signature of Course Instructor** | **Name, Designation & Department** |
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