Lesson plan

**Name of Faculty: Pardeep Kumar**

**Discipline: Computer Engg**

**Semester: 4TH**

**Subject: Data Structures Using C**

**Lesson Plan Duration: 15 Weeks**

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| Week | **Theory** | | **Practial** | |
| Lecture Day | Topic (including assignment/test ) | Pr Day | Topic |
| 1st | 1st | Problem solving concept, top down and bottom up design | 1 | Inserting elements in array |
| 2nd | structured programming Concept of data types, variables and constants |
| 3rd | Concept of pointer variables and constants, Introduction to data Structure | 2 | Inserting elements in array |
| 2nd | 4th | Array, Linked List, Stack, | 3 | deleting elements in array |
| 5th | Queue, Trees, graphs | 4 | deleting elements in array |
| 6th | Revision |
| 3rd | 7th | Concept of Arrays, | 5 | The addition of two matrices using  functions |
| 8th | Single dimensional array |
| 9th | Two dimensional array | 6 | The addition of two  matrices using functions |
| 4th | 10th | Representation of Two dimensional Array (Base Address, LB, UB) | 7 | Insertion of elements in linked list |
| 11th | searching, |
| 12th | traversing, | 8 | Deletion of elements in linked list |
| 5th | 13th | Inserting | 9 | Insertion of elements in doubly linked list |
| 14th | Inserting |
| 15th | Deleting | 10 | Deletion of elements in doubly linked list |
| 6th | 16th | Revision | 11 | Viva-Voce/File Check |
| 17th | **Test** | 12 | Push and pop operation in stack |
| 18th | Introduction to linked list and double linked list Representation of linked lists in Memory |
| 7th | 19th | Comparison between Linked Listand Array Traversing alinked list Searching linked list | 13 | Conversion from in-  Fix to postfix notation |
| 20th | Insertion, deletion into linked list (At first Node, Specified Position, Last ) | 14 | Conversion from in- fix to postfix notation |
| 21st | Application of linked lists |

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| 8th | 22nd | Doubly linked lists | 15 | The factorial of a given number using recursion |
| 23rd | Traversing Doubly linked lists |
| 24th | Insertion and deletion into doubly linked lists | 16 | Fibonacci Series using  recursion |
| 9th | 25th | Introduction to stacks, Representation of stacks with array and Linked List | 17 | Insertion and Deletion of elements in queue using pointers |
| 26th | Implementation of stacks | 18 | Insertion and Deletion of elements  in queue using pointers |
| 27th | Application of stacks: Polish Notations |
| 10th | 28th | Converting Infix to Post Fix Notation | 19 | Insertion of elements in circular queue using pointer |
| 29th | **Test** |
| 30th | Evaluation of Post Fix Notation, Tower of Hanoi Recursion: Concept and Comparison between recursion and Iteration | 20 | Deletion of elements in circular queue  using pointers |
| 11th | 31st | Introduction to queues, Implementation of queues  using array algorithm | 21 | File Check/Revision/Viva |
| 32nd | Implementation of queues using Linked List with algorithm |
| 33rd | Circular Queues , De-queues | 22 | Traversing of tree |
| 12th | 34th | Concept of Binary Trees, Concept of representation of Binary Tree | 23 | Heap Sort |
| 35th | Concept of balanced Binary Tree |
| 36th | Traversing Binary Trees (Pre order, Post order and In  order) | 24 | The linear search procedures to search an element in given list |
| 13th | 37th | Searching, | 25 | The binary search procedures to search an element in a given  list |
| 38th | inserting in binary search trees, deleting in binary search trees |
| 39th | Linear Search algorithm, Binary Search algorithm | 26 | The bubble sort techniques |
| 14th | 40th | Concept of sorting , Bubble Sort, Insertion Sort | 27 | The selection sort techniques |
| 41st | Selection Sort |
| 42nd | Merge Sort, Radix Sort | 28 | The quick sort technique |
| 15th | 43rd | Heap Sort | 29 | The merge sort technique |
| 44th | Test |
| 45th | Revision | 30 | File Check/Viva voce |