LESSON PLAN- DS

Name of Faculty   : **Deepak Kumar**

Discipline   :   **Computer Science Engg.**

Semester   :   **BSC 2nd**

Subject   :   **Data Structure**

Lesson plan duration   :   **15 Weeks**

Work Load (Lecture/Practical) Per Week (in hours):

Week	Theory		Practical	
	Lecture day	**Topic (Including assignment and test)**	**Practical Day**	**Topic**
1	1	Data Types, Built in and User Defined Data Structures, Applications of Data Structures	1	Write a program for Binary Search method.
	2	Algorithm Analysis, Worst, Best and Average Case Analysis, Notations of Space and Time Complexity		
	3	One Dimensional Arrays		
2	4	Two Dimensional Arrays Multi-Dimensional Arrays	2	Write a program for insertion sort
	5	Sparse Matrices		
	6	Storage Class, Basics of Recursion		
3	7	Searching from array using Linear search	3	Write a program for selection sort
	8	Binary Search algorithm		

	9	Sorting of array using Selection, Bubble		
4	10	Insertion Sort ,Radix Sort	4	Write a program for bubble sort
	11	Class Test		
	12	Definition, Implementation of Stacks and Its Operations		
5	13	Evaluation of Infix, prefix and Postfix Expression	5	Write a program to implement stack and its operation.
	14	Inter-conversion of Infix Expression, Prefix and Post-Fix Expression		
	15	Implementation of Merge Sort		
6	16	Implementation of Quick Sort	6	Write a program for quick sort.
	17	Definition, Sequential Implementation of Linear Queues and Its Operations		
	18	Circular Queue and Its Implementation		
7	19	Priority Queues and Its Implementation, Applications of queues	7	Write a program for merge sort.
	20	Definition, Implementation of Stacks and Its Operations		
	21	Evaluation of Infix, prefix and Postfix Expression		
8	22	Class Test	8	Write a program to implement Queue and its operation
	23	Dynamic Implementations, Need of Dynamic Data Structures		
	24	Single Link List		

		and Its Dynamic Implementation		
9	25	Traversing, Insertion, Deletion Operations on Single Link Lists	9	Write a program to implement Circular Queue and its operation.
	26	Comparison between Static and Dynamic, Implementation of Linked List		
	27	Circular Link Lists and Doubly Link List		
10	28	Dynamic Implementation of Primitive Operations on Doubly Linked Lists and Circular Link List.	10	Write a program to implement doubly linked list for the following operations: create, display, inserting, counting, searching, traversing and deletion.
	29	Dynamic Implementations, Need of Dynamic Data Structures		
	30	Single Link List and Its Dynamic Implementation		
11	31	Traversing, Insertion, Deletion Operations on Single Link Lists	11	Write a program to implement singly linked list for the following operations: create, display, searching, traversing and deletion.
	32	Comparison between Static and Dynamic, Implementation of Linked List		
	33	Circular Link Lists and Doubly Link List		
12	34	Class Test	12	Write a program to implement circular linked list for the following operations: create, display, inserting, counting, searching, traversing and deletion.
	35	The principle sources of optimization, loop optimization		
	36	Definition, Basic		

		Terminology, Binary Tree, External and Internal Nodes		
13	37	Representation of Infix, Post-Fix and Prefix Expressions using Trees	13	Write a program to implement insertion in b tree
	38	Introduction to Binary Search Trees		
	39	B trees, B+ trees		
14	40	AVL Trees	14	Write a program to implement deletion in b tree
	41	Threaded Binary trees, Balanced Multi-way search trees		
	42	Implementation of Heap Sort Algorithm		
15	43	Basic Terminology, Definition of Undirected & Directed Graphs, Memory Representation of Graphs	15	Write a program to implement traversing in b tree
	44	Minimum-Spanning Trees		
	45	Class Test		