Lesson Plan of the 3rd semester for session 2020 -21 (July- Dec)

Name of the faculty: Ms. Ayushi Chahal

Designation: Assistant Professor

Discipline: Computer Science and Engg.

Semester: 3rd sem

Subject: **Data Structure & Algorithms**

Subject Code: PCC-CSE-203G

Lesson Plan duration: 15 weeks

Work Load per week in hours: Lectures- 03, Practical-04

Week	Lecture day	Topic
		UNIT – I (Introduction)
1	1	Basic Terminologies: Concept of Data Structure
	2	Choice of right Data Structure
	3	Algorithms
2	4	how to design and develop algorithm
	5	Complexity of algorithm
	6	Operations: insertion
3	7	Operations: deletion
	8	Operations: traversal
	9	Analysis of an Algorithm
4	10	Analysis of an Algorithm
	11	**Searching:** Linear Search and its complexity analysis.
	12	Binary Search and its complexity analysis.
5	13	Revision and class Test of Unit I
		UNIT – II (Stacks and Queues)
5	14	**Stack** : Basics and its operations
	15	Stack operations: Algorithms and their complexity analysis
6	16	Applications of Stacks: Expression Conversion; corresponding algorithms and complexity analysis
	17	Applications of Stacks: Evaluation; corresponding algorithms and complexity analysis
	18	**Queue :** Basics and its operations
7	19	Queue operations: Algorithms and their complexity analysis
	20	Types of Queue: Simple Queue, Circular Queue, Priority Queue

	21	Operations on each types of Queues : Algorithms and their analysis
8.	22	Revision and Class Test of Unit II
UNIT - III		
8.	23	**Linked Lists**: Singly linked lists: Representation in memory
	24	Algorithms of operations: Traversing, Searching on linked list
9.	25	Algorithms of operations : Insertion into, Deletion from linked list
	26	Linked representation of Stack
	27	Linked representation of Queues
10.	28	Header nodes
	29	Doubly linked list: operations on it and algorithmic analysis
	30	Circular Linked Lists: operations, their algorithms and the complexity analysis.
11.	31	**Trees:** Basic Tree Terminologies
	32	Different types of Trees: Binary Tree,
	33	Threaded Binary Tree: operations on it and algorithmic with complexity analysis
12.	34	Binary Search Tree : operations on it and algorithmic with complexity analysis
	35	AVL Tree : operations on it and algorithmic with complexity analysis
	36	Applications of Binary Trees: B Tree (definitions, algorithms and analysis)
13.	37	Applications of Binary Trees: B+ Tree (definitions, algorithms and analysis)
	38	Revision and Class Test of Unit III
UNIT - IV		
	39	**Sorting and Hashing:** Selection Sort, Bubble Sort
14.	40	Insertion Sort, Quick Sort
	41	Merge Sort, Heap Sort
	42	Graph: Basic Terminologies and Representations
15.	43	Graph search and traversal algorithms and complexity analysis.
	44	Graph search and traversal algorithms and complexity analysis.
	45	Revision and Class Test of Unit IV