C.V. RAMAN POLYTECHNIC BBSR

LESSON PLAN

Discipline: Diploma Branch: CSE	**Semester: 3rd**	**Name of the Teaching Faculty: Ipsita Ankita Hota**
Subject: Algorithms (CSEPC 209)	**No. of Days/per week class allotted:** 45days/ 3 class per week	**Semester From Date:** 14/07/2025 **To Date:** 15/11/2025 **No. of Weeks:** 15
Week	**Class Day**	**Theory**
1st	1st	Course introduction, syllabus overview, assessment methods
	2nd	Definition of algorithm; everyday examples
	3rd	Criteria of algorithms: Input/Output, Finiteness
2nd	1st	Criteria continued: Definiteness, Effectiveness; examples
	2nd	Pseudocode conventions and structure
	3rd	Writing an algorithm from a problem statement (sum of numbers)
3rd	1st	Algorithm vs Program; mapping algorithms to code
	2nd	Unit I recap and quiz
	3rd	Algorithmic complexity concept; cost model
4th	1st	Space complexity fundamentals
	2nd	Time complexity basics
	3rd	Case analysis: worst, average, best
5th	1st	Big-O notation; formal definition
	2nd	Common growth rates; graphical intuition
	3rd	Finding complexity by counting steps (practice)
6th	1st	Unit II tutorial & mini-quiz
	2nd	Iteration vs Recursion concepts

	3rd	Recursive Fibonacci algorithm; trace & complexity
7th	1st	Recursive factorial; tail recursion
	2nd	Tower of Hanoi algorithm & complexity
	3rd	Converting recursive algorithms to iterative versions
8th	1st	Unit III tutorial/exercises
	2nd	Overview of algorithm paradigms
	3rd	Greedy paradigm principles; coin-change example
9th	1st	Divide & Conquer concept; merge sort overview
	2nd	Binary search as D&C example
	3rd	Dynamic Programming intro; Fib DP & knapsack
10th	1st	Branch and Bound basics; TSP pruning
	2nd	Backtracking principles; N-Queens example
	3rd	Paradigms comparative summary & exercises
11th	1st	Sorting problem definition; properties
	2nd	Bubble sort algorithm & complexity
	3rd	Selection sort algorithm & complexity
12th	1st	Insertion sort algorithm & complexity
	2nd	Merge sort algorithm & complexity
	3rd	Quicksort algorithm & complexity; pivot strategies
13th	1st	Heap sort algorithm & complexity; heap operations
	2nd	Radix sort algorithm; counting vs radix
	3rd	Graphs: definitions; representations
14th	1st	Paths, cycles, spanning trees
	2nd	Directed Acyclic Graphs and Topological sorting
	3rd	Minimum Spanning Tree: Kruskal algorithm
15th	1st	Minimum Spanning Tree: Prim algorithm
	2nd	Shortest Path algorithms: Dijkstras
	3rd	Flow-based algorithms overview; course review

Ipsita Ankita Hota
Signature of Faculty

Signature of HOD (CSE)