

Discipline: CSE	Semester: 3rd	Name of the Teaching Faculty: Tanmay Nath Mishra
Subject: Algorithms	No. Of Days/per week class allotted: 3	Semester: From Date: 18-09-2025 To Date:-15-11-2025 No. Of Weeks: 15
Week	Class	Topics to be covered
1st	1	Introduction to Algorithms
	2	Criteria of Algorithms – Input/Output, Finiteness
	3	Definiteness and Effectiveness
2nd	1	Writing Algorithms – Basics
	2	Pseudocode – Examples
	3	Algorithms vs Programs
3rd	1	Algorithm Writing Practice
	2	Tutorial on Algorithms
	3	Algorithmic Complexity – Introduction
4th	1	Space Complexity
	2	Time Complexity
	3	Worst, Average and Best Case
5th	1	Big-O Notation
	2	Big-Ω and Big-Θ Notations
	3	Finding Complexity of Algorithms
6th	1	Tutorial on Complexity
	2	Iteration vs Recursion
	3	Recursive Algorithm – Fibonacci
7th	1	Recursive Algorithm – Factorial
	2	Tower of Hanoi
	3	Complexity of Recursive Algorithms
8 th	1	Converting Recursive to Iterative
	2	Greedy Method
	3	Divide and Conquer – Concept
9 th	1	Divide and Conquer – Examples
	2	Dynamic Programming
	3	Backtracking
10 th	1	Branch and Bound
	2	Paradigm Comparison
	3	Tutorial on Paradigms
11 th	1	Sorting Problem
	2	Bubble Sort
	3	Selection Sort
12 th	1	Insertion Sort
	2	Merge Sort
	3	Quick Sort
13 th	1	Heap Sort

	2	Radix Sort
	3	Searching – Symbol Table, Hashing, BST
14 th	1	Graph Basics – Directed and Undirected
	2	Spanning Trees, DAG, Topological Sorting
	3	Minimum Spanning Tree – Kruskal
15 th	1	Minimum Spanning Tree – Prim
	2	Dijkstra's Algorithm
	3	Flow-Based Algorithms Tutorial on Graph Algorithms