DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING - CYBER SECURITY

Lesson Plan & Work-done Diary for AY: 2025-26 EVEN Semester

Course with Code: Analysis and Design of Algorithms – BCS401				Faculty: Shambhavi K A				Semester : IV	
Class No.	Date planned (DD/MM)	Topics to be covered	TLP Planned	Class No.	Date of Conduction (DD/MM)	Topics Covered		TLP Executed	Remarks if any deviation
BRIDGE COURSE									
1		Concepts of Data Structures	Chalk & Talk	1					
2			Chalk & Talk	2					
3			Chalk & Talk	3					
4			Chalk & Talk	4					
MODULE-1									
5		Introduction to course	Chalk & Talk	5					
6		Introduction: What is an Algorithm? Fundamentals of Algorithmic Problem solving,	Chalk & Talk	6					
7		Fundamentals of the Analysis of Algorithm Efficiency: Analysis Framework, Asymptotic Notations: Big-Oh notation (O), Omega notation (Ω), Theta notation ( ) with examples, Basic efficiency classes	Chalk & Talk	7					

8		Asymptotic Notations: Big-Oh notation (O), Omega notation (Ω), Theta notation ( ) with examples, Basic efficiency classes	Chalk & Talk	8				
9		Mathematical analysis of Non Recursive Algorithms.	Chalk & Talk	9				
10		Mathematical analysis of Non Recursive Algorithms.	Chalk & Talk	10				
11		Mathematical analysis of Recursive Algorithms.	Chalk & Talk	11				
12		Brute Force Approaches: Selection Sort and Bubble Sort, Sequential Search	Chalk & Talk	12				
13		Brute force string matching	Chalk & Talk	13				
14		Revision & quiz	PPT, MS forms quiz	14				

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MODULE-2									
15		Brute Force Approaches (contd..) Exhaustive Search-Travelling Sales Person problem	Chalk & Talk						
16		Knapsack Problem. Decrease and Conquer Approach: Introduction,	Chalk & Talk						
17		Insertion sort,	Chalk & Talk						
18		Topological Sorting	Chalk & Talk						
19		Divide and Conquer: Merge sort	Chalk & Talk						
20		Quick sort	Chalk & Talk						
21		Binary tree traversals	Chalk & Talk						
22		Multiplication of Large Integers and Strassen's Matrix Multiplication	Chalk & Talk						
23		Revision & quiz	PPT, MS forms quiz						

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MODULE-3									
24		**Transform and Conquer Approach:** Balanced Search Trees	Chalk & Talk					
25		Balanced Search Trees	Chalk & Talk					
26		Heaps and Heap Sort	Chalk & Talk					
27		Heap Sort	Chalk & Talk					
28		**Space-Time Tradeoffs:** Sorting by Counting: Comparison counting sort	Chalk & Talk					
29		Comparison counting sort	Chalk & Talk					
30		Input Enhancement in String Matching-Horspool's algorithm	Chalk & Talk					
31		Horspool's algorithm	Chalk & Talk					
32		Revision & quiz	PPT, MS forms quiz					

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MODULE-4									
33		**Dynamic Programming:** Three basic Examples	Chalk & Talk						
34		Knapsack Problem and Memory Functions	Chalk & Talk						
35		Warshall's Algorithm	Chalk & Talk						
36		Floyd's Algorithm	Chalk & Talk						
37		**Greedy Method:** Prim"s Algorithm	Chalk & Talk						
38		Kruskal's Algorithm	Chalk & Talk						
39		Dijkstra's Algorithm	Chalk & Talk						
40		Huffman Trees and Codes	Chalk & Talk						
41		Revision & quiz	PPT, MS forms quiz						

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MODULE-5								
42		Limitations of Algorithmic Power: Decision Trees	Chalk & Talk					
43		P, NP and NP-Complete problems	PPT					
44		Coping with limitations of algorithmic power: Backtracking: N-Queens problem	Chalk & Talk					
45		Sum of subsets problem	Chalk & Talk					
46		Branch and Bound:Knapsack problem	Chalk & Talk					
47		Knapsack problem	Chalk & Talk					
48		Approximation algorithms for NP-Hard problems (Knapsack problem) Discussion of expected questions & quiz	Chalk & Talk, PPT, MS Forms Quiz					

	Activity	Planned	Actual	Remarks
1	Theory Classes	44		
2	Assignments/ Quizzes/ Self-study	2/3 Quizzes		
3	Tutorials/ Extra classes	4		
4	Internal Assessments	2		
5	ICT based Teaching (% of usage in Curriculum)	20		

Planning	Execution
Faculty Signature:	**Faculty Signature:**
HoD Signature:	**HoD Signature:**