

MUHAMMED SATHAK A J COLLEGE OF ENGINEERING
Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN							
Department of Computer Science & Engineering							
Name of the Subject	Design & Analysis of Algorithm			Name of the handling Faculty	G Rama Mohan Reddy		
Subject Code	CS6402			Year / Sem	II/IV		
Acad Year	2020 - 2021			Batch	2019 - 2023		
Course Objective							
1) To understand and apply the algorithm analysis techniques.							
2) To understand Divide and Conquer							
3) To critically analyze the efficiency of alternative algorithmic solutions for the same problem							
4) To understand different algorithm design techniques							
5) To understand the limitations of Algorithmic power.							
Course Outcome							
Explain the algorithms for various computing problems.							
Identify the problems and convert into Divide and Conquer Method							
Make Use of existing algoirhtms Solving problems							
Analyze the different algorithm and design techniques for a given problem.							
Explain the graphs.							
Lesson Plan							
Sl. No.	Topic(s)	T / R*	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
		Book					
UNIT I - INTRODUCTION							
1	Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving	T1	1	BB	L1	CO1	PO1
2	Important Problem Types – Fundamentals of the Analysis of Algorithm	T1	2	BB	L2	CO1	PO1-PO3
3	Analysis Framework – Asymptotic Notations and its properties	T1	3	BB	L3	CO1	PO1-PO3
4	Mathematical analysis for Recursive and Non-recursive algorithms	T1	3	BB	L3	CO1	PO1-PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Assignment							
Evaluation method							
UNIT II - BRUTE FORCE AND DIVIDE-AND-CONQUER							
13	Brute Force - Closest-Pair and Convex-Hull Problems-Exhaustive Search	T1	1	BB	L1	CO2	PO1
14	Traveling Salesman Problem - Knapsack Problem	T1	1	BB	L2	CO2	PO1
15	Assignment problem.	T1	1	BB	L3	CO2	PO1
16	Divide and conquer methodology – Merge sort	T1	1	BB	L3	CO2	PO1
17	Travelling Salesman Problem, Knapsack Problem	T1	1	BB	L3	CO2	PO1-PO3
18	Quick sort – Binary search	T1	1	BB	L3	CO2	PO1-PO3
19	Multiplication of Large Integers – Strassen"s Matrix Multiplication-Closest	T1	1	BB	L3	CO2	PO1-PO3
20	Pair and Convex-Hull Problems.	T1	2	BB	L3	CO2	PO1-PO3

Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Assignments							
Evaluation method							
UNIT III - DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE							
25	Computing a Binomial Coefficient – Warshall"s and Floyd" algorithm	T1	1	BB	L1	CO3	PO1
26	Optimal Binary Search Trees – Knapsack Problem and Memory functions	T1	2	BB	L2	CO3	PO1-PO3
27	Greedy Technique– Prim"s algorithm- Kruskal's Algorithm	T1	3	BB	L3	CO3	PO1-PO3
28	Dijkstra's Algorithm-Huffman Trees	T1	3	BB	L4	CO3	PO1-PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Assignments							
Evaluation method							
UNIT IV - ITERATIVE IMPROVEMENT							
37	The Simplex Method	T1	1	BB	L2	CO4	PO1
38	The Maximum-Flow Problem	T1	2	BB	L2	CO4	PO1-PO3
40	Maximum Matching in Bipartite Graphs	T1	3	BB	L4	CO4	PO1-PO3
42	Stable marriage Problem	T1	3	BB	L4	CO4	PO1-PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any Assignment							
Evaluation method							
UNIT V - COPING WITH THE LIMITATIONS OF ALGORITHM POWER							
49	Limitations of Algorithm Power-Lower	T1	1	BB	L1	CO5	PO1
50	Bound Arguments-Decision Trees-P, NP and NP	T1	1	BB	L2	CO5	PO1
51	Complete Problems--Coping with the Limitations	T1	1	BB	L3	CO5	PO1
52	Backtracking – n-Queens problem	T1	1	BB	L4	CO5	PO1-PO4
53	Hamiltonian Circuit Problem	T1	1	BB	L4	CO5	PO1-PO4
54	Subset Sum Problem-Branch and Bound	T1	1	BB	L4	CO5	PO1-PO4
55	Assignment problem – Knapsack Problem	T1	1	BB	L4	CO5	PO1-PO4
56	Traveling Salesman Problem- Approximation Algorithms for NP	T1	1	BB	L4	CO5	PO1-PO4
57	Hard Problems – Traveling Salesman problem – Knapsack problem	T1	1	BB	L1	CO5	PO1-PO3
Suggested Activity: Assignment / Case Studies / Tuorials/ Quiz / Mini Projects / Model Developed/others Planned if any:Quiz							
Evaluation method MCQ's on unsolved Problems							
Content Beyond the Syllabus Planned							
	1.Discuss in detail about algorithm analysis 2.Discuss in detail about design new algorithms						
Text Books							
1	Anany Levitin, —Introduction to the Design and Analysis of AlgorithmsI, Third Edition, Pearson Education, 2012.						
2	Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Computer Algorithms/ C++, Second Edition, Universities Press, 2007.						
3							
Reference Books							

1	Thomas H.Cormen, Charles E.Leiserson, Ronald L. Rivest and Clifford Stein, –Introduction to AlgorithmsI, Third Edition, PHI Learning Private Limited, 2012.														
2	Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, —Data Structures and AlgorithmsI, Pearson Education, Reprint 2006.														
3	Harsh Bhasin, —Algorithms Design and AnalysisI, Oxford university press, 2015.														
Website / URL References															
1															
2															
3															
Blooms Level															
Level 1 (L1) : Remembering					Lower Order Thinking			Fixed Hour Exams	Level 4 (L4) : Analysing					Higher Order Thinking	Projects / Mini Projects
Level 2 (L2) : Understanding									Level 5 (L5) : Evaluating						
Level 3 (L3) : Applying									Level 6 (L6) : Creating						
Mapping syllabus with Bloom’s Taxonomy LOT and HOT															
Unit No	Unit Name				L1	L2	L3	L4	L5	L6	LOT	HOT	Total		
Unit 1	INTRODUCTION				1	2	6	0	0	0	9	0	9		
Unit 2	BRUTE FORCE AND DIVIDE-AND-CONQUER				1	1	7	0	0	0	9	0	9		
Unit 3	DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE				1	2	3	3	0	0	6	3	9		
Unit 4	ITERATIVE IMPROVEMENT				0	3	0	6	0	0	3	6	9		
Unit 5	COPING WITH THE LIMITATIONS OF ALGORITHM POWER				2	1	1	5	0	0	4	5	9		
Total					5	9	17	2	0	0	31	14	45		
Total Percentage					11.11	20.0	37.78	4.4	0	0	68.9	31.11	100		
CO PO Mapping															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
CO1	3	3	3	0	0	0	0	0	0	0	0	0	2	2	
CO2	3	3	3	0	0	0	0	0	0	0	0	0	2	2	
CO3	3	3	3	0	0	0	0	0	0	0	0	0	2	2	
CO4	3	3	3	0	0	0	0	0	0	0	0	0	2	2	
CO5	3	3	3	0	0	0	0	0	0	0	0	0	2	2	
CO6	3	3	3	3	0	0	0	0	0	0	0	0	2	2	
Avg	3	3	3	3	0	0	0	0	0	0	0	0	2	2	
3		High level			2			Moderate level			1		Low level		
Name & Sign of Faculty Incharge : G Rama Mohan Reddy															
Name & Sign of Subject Expert :															
Head of the Department : CSE															

