GOAPAL KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY
GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: CSPC2006 DESIGN AND ANALYSIS OF ALGORITHMS
Name of the Faculty: Amod Kumar Bagh
Semester: 4th **Branch:** Computer Sc. & Engg.
Semester From: **No. of Hours: 40**

WEEK	DAY	THEORY TOPICS	CLASSES
		Module-I: Notion of Algorithm:	**8**
1	1	Notion of Algorithm: Growth of functions, Recurrences:	1
	2	The Master method, The Substitution method,	2
	3		
	4	The Iteration method	1
2	5	, Asymptotic Notations and Basic Efficiency Classes (Use of Big O, θ, etc.) in analysis of algorithms,	2
	6		
	7	Mathematical Analysis of few Non-Recursive and Recursive Algorithms.	2
	8		
		Module-II: Sorting and Searching Techniques:	**8**
3	9	Sorting and Searching Techniques fundamental	1
	10	Selection Sort, Bubble Sort, Insertion Sort,	1
	11	Sequential Search, Binary Search, Depth First Search and Breadth First Search,	2
	12		
4	13	Sequential Search, Binary Search, Depth First Search and Breadth First Search,	1
	14	Balanced Search Trees, AVL Trees, Red-Black Trees, Heaps and Heap Sort, Disjoint Set and their Implementation,	1
	15	Divide and Conquer Paradigm of problem solving, Complexity analysis and understanding of Merge Sort, Quick Sort, Binary Search Trees..	2
	16		
		Module-III: Greedy Techniques:	**12**
5	17	Greedy Techniques: Prim's Algorithm, Kruskal's Algorithm,	2
	18		
	19	Dijkstra's and Bellman Ford Algorithm,	1
	20	Huffman Trees, Knapsack problem.	2
6	21		
	22	Dynamic Programming Paradigm: Floyd-Warshall Algorithm,	1
	23	Optimal Binary Search trees, Matrix Chain Multiplication Problem, Longest Common Subsequence Problem, 0/1 Knapsack Problem, Maximum Network Flow Problem.	2
	24		

Module-IV: (08 Hrs.) String Matching Algorithms:			**7**
7	25	**String Matching Algorithms:** Naive string-matching algorithm,	1
	26	The Rabin-Karp Algorithm, string matching with Finite Automata,	3
	27		
	28		
8	29	Knuth Morris Pratt string matching algorithm.	1
	30	Backtracking: n-Queen's problem, Hamiltonian Circuit problem,	1
	31	Subset-Sum problem,	1
	32	State Space Search Tree for these problems	1
Module-V: (08 Hrs.) Branch and Bound:			**08**
9	33	Branch and Bound: Travelling Salesman Problem and its State Space Search Tree.	4
	34		
	35		
	36		
10	37	Introduction to Computability: Polynomial-time verification,	2
	38		
	39	NP-Completeness and Reducibility, NP- Complete problems.	1
	40	Approximation Algorithms: Vertex Cover Problem.	1