

College of IT and Management Education

Lesson Plan

Sub : Analysis and Designing of Algorithm (MCC-301)

Branch : MCA

Semester : 3rd Semester MCA (July – Dec,2016)

Name of the Faculty : Shesha Shankar Gnanindranath Mishra

Total Credit Point: 4:

Total Number of Classes: 45

Sl. No.	TOPIC PLANNED	SESSION
MODULE-I		15 Hours
1	Introduction to Algorithm , Design	1
2	Some algorithm, Growth of Function,	1
3	Time, Space Complexity ,Asymptotic Notation	1
4	Asymptotic Notation	1
5	Best case worst case and average case analysis	1
6	Recurrence: By substitution	1
7	Recurrence: By Master Method	1
8	Recurrence: By Recurrence Tree	1
9	Recurrence: By Recurrence Tree	1
10	Divide & Conquer Approach: Merge Sort	1
11	Quick Sort : Performance	1
12	Heap Sort	1
13	Priority Queues and its operations	1
14	Data Structure for disjoint set, Linked representation of Disjoint set	1
15	Disjoint set forest: Path Compression , Union by rank ,Other operations	1
MODULE-II		18 Hours
16	Dynamic Programming: Introduction and properties,	1
17	Matrix Chain Multiplication	1
18	Matrix Chain Multiplication	1
19	Longest Common Subsequence	1
20	Longest Common Subsequence	1
21	Greedy Approach: Activity Selection	1
22	Comparison with Dynamic programming 0-1 Knapsack vs Fractional Knapsack	1
23	Activity Selection Problem	1
24	Huffman Code.	1

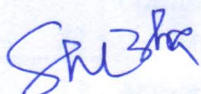
25	Minimum Spanning Tree: Kruskal Algorithm	1
26	Graph Concepts : BFS and DFS	1
27	Minimum spanning tree: Prim's Algorithm	1
28	Kruskal's Algorithm	1
29	Single Source Shortest Path : Negative weight cycle, Relaxing, Bellman ford algorithm	1
30	Dijkstra's algorithm for Single Source Shortest Path	1
31	All pair shortest path Algorithm: Floyd-Warshall Algorithm	1
32	Backtracking, Branch and bound Techniques	1
33	N Queen Problem, Subset Sum problem	1
MODULE-III		12 Hours
34	String Matching : Brute force Patter matcher	1
35	Flow Network, Max flow Problem	1
36	Flow Network: Ford Fulkerson Algorithm	1
37	Ford Fulkerson problem practice	1
38	Introduction to various kind of problems ,P, NP, NPC	1
39	Verification and Reducibility	1
40	Class NP Problems, NP Completeness	1
41	NPC Problems	1
42	NPC Problems	1
43	Approximation Algorithm: Travelling salesman Problem	1
44	Doubt clearing classes	1
45	Doubt clearing classes	1

Text book:

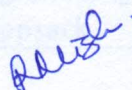
1. T.H. Cormen, C.E. Leiserson, R.L. Rivest and L. Stein, "Introduction to Algorithms"

Reference books:

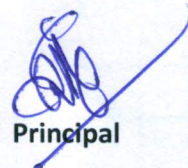
1. E. Horowitz, S. Sahani, S. Rajsekharan, "Fundamentals of Computer Algorithms", Universities Press.
2. J. Kleinbers, E. Tardos, "Algorithm design", Pearson Education Inc., New Delhi , 2006
3. R. Johnsonbaugh, M. Schaefer, "Algorithms", Pearson Education Inc., New Delhi , 2004
4. Kenneth A. Berman & Jerome L. Paul, "Algorithms", CENGAGE Learning India Pvt. Ltd.
5. Anany V. Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education Inc.
6. Michael T. Goodrich and Roberto Tamassia, "Algorithm Design: Foundations, Analysis, and Internet Examples", 2nd Edition, Wiley India Pvt. Ltd., New Delhi



Faculty



Course Coordinator



Principal