

Bhoj Reddy Engineering College for Women: Hyderabad

Department of Information Technology

Lesson plan of faculty member for the academic year 2016–17

Class: II B Tech

Branch-Section: IT-A

Semester: II

Subject: Design and Analysis of Algorithms

Lectures per week: 4+1 (Tutorial)

Lecture Number	Topics to be covered	Date (s)
UNIT – I: Algorithm, Sets and Disjoint set Union, Divide and conquer		
1	Introduction Algorithm, Pseudo code for expressing algorithms	09 December 2016
2	Tutorial (G2) – Examples on Algorithm	10 December 2016
3	Performance Analysis-Space complexity	14 December 2016
4	Time complexity	14 December 2016
5	Tutorial (G1, G2) – Examples on complexity	14, 17 December 2016
6	Asymptotic Notation- Big oh notation, Omega notation,	15 December 2016
7	Theta notation, Little oh notation	16 December 2016
8	Probabilistic analysis	19 December 2016
9	Amortized analysis.	21 December 2016
10	Tutorial (G3, G1, G2) – Examples	19, 21, 24 December 2016
11	Sets and Disjoint set Union – Introduction union and find operation and algorithms	22 December 2016
12	Connected components	23 December 2016
13	Spanning trees	28 December 2016
14	Tutorial (G1, G2) – Examples	28, 31 December 2016
15	Bi-connected components	29 December 2016
16	Divide and conquer: General method	30 December 2016
17	applications-Binary search,	2 January 2017
18	Quick sort	4 January 2017
19	Tutorial (G3, G1, G2) – Examples	2, 4, 7 January 2017
20	Merge sort	5 January 2017
21	Strassen's matrix multiplication.	6 January 2017
22	Revision	9 January 2017
UNIT-II: Greedy method		
23	Greedy method: General method	11 January 2017
24	Tutorial (G3, G1, G2) – Examples	9, 11, 14 January 2017
25	applications - Job sequencing with dead lines	12 January 2017
26	0/1 knapsack problem	13 January 2017
27	Minimum cost spanning trees	16 January 2017
28	Prim's and Kruskal's algorithms	18 January 2017
29	Tutorial (G3, G1, G2) – Examples	16, 18, 21 January 2017
30	Single source shortest path problem.	19 January 2017
31	Single source shortest path problem.	20 January 2017
UNIT-III: Dynamic Programming		
32	Dynamic Programming: General method	23 January 2017
33	applications-Multistage graph	25 January 2017
34	Tutorial (G3, G1) – Examples	23, 25 January 2017
35	Optimal binary search trees	25 January 2017
36	0/1 knapsack problem	20 February 2017
37	All pairs shortest path problem	22 February 2017
38	Tutorial (G3, G1, G2) – Examples	20, 22, 25 February 2017
39	Travelling sales person problem	23 February 2017
40	Reliability design	27 February 2017
41	Revision	1 March 2017

UNIT-IV: Backtracking, Branch and Bound		
42	Backtracking: General method	2 March 2017
43	Tutorial (G3, G1, G2) – Examples	27 February, 1, 4 March 2017
44	sum of subsets problem	3 March 2017
45	graph coloring	6 March 2017
46	Hamiltonian cycles.	8 March 2017
47	Tutorial (G3, G1, G2) – Examples	6, 8, 11 March 2017
48	Branch and Bound: General method	9 March 2017
49	applications - Travelling sales person problem	10 March 2017
50	Examples	13 March 2017
51	0/1 knapsack problem	15 March 2017
52	Tutorial (G3, G1, G2) – Examples on 0/1 knapsack problem	13, 15, 18 March 2017
53	Examples	16 March 2017
54	LC Branch and Bound solution	17 March 2017
55	FIFO Branch and Bound solution	20 March 2017
56	Revision	22 March 2017
57	Tutorial (G3, G1, G2) – Examples on 0/1 knapsack problem	20, 22, 25 March 2017
UNIT-V: NP-Hard and NP-Complete problems		
58	NP-Hard and NP-Complete problems: Basic concepts	23 March 2017
59	Non deterministic algorithms	24 March 2017
60	Examples	27 March 2017
61	Tutorial (G3, G2) – Examples on 0/1 knapsack problem	27 March, 1 April 2017
62	NP - Hard	30 March 2017
63	NP Complete classes	31 March 2017
64	NP – Hard problems	3 April 2017
65	Cook's theorem.	6 April 2017
66	Revision	7 April 2017
67	Revision	10 April 2017
68	Revision	12 April 2017
69	Tutorial (G3, G1, G2) – Examples	10, 12, 15 April 2017
70	Revision	13 April 2017

Text books:

1. Fundamentals of Computer Algorithms, Ellis Horowitz, Satraj Sahni and Rajasekharam, Galgotia publications pvt. Ltd.
2. Foundations of Algorithm, 4th edition, R. Neapolitan and K. Naimipour, Jones and Bartlett Learning.
3. Design and Analysis of Algorithms, P. H. Dave, H. B. Dave, Pearson Education, 2008.

Name and signature of the faculty: Ms Tasneem Rahath ----

Name and signature of Head of the Department: Mr Sandeep K ----