



Department of Computer Science and Engineering

Lesson Plan Cum Dairy 2015 - 16

Subject : Data Structures and Algorithms (14MT10504)
Class & Semester : I M.Tech – I Semester
Regulation : (SVEC 14)
Name(s) of the faculty Member(s) : Mr. B. Narendra Kumar Rao

S. No.	Topic	No. of periods required	Date(s) covered	No. of periods used	Book(s) followed	Topics for self study
UNIT – I: BASIC DATA STRUCTURES						
1	Review of Arrays, Stacks	1			T1	Multi-way linked list
2	Queues, Circular Queues, Singly Linked Lists	2			T1	
3	Circular Linked Lists, Doubly Linked Lists	2			T1	
4	Terminologies and Applications.	1			T1	
5	Algorithm Analysis :Efficiency of algorithms,,	1			T1	
6	Aprior Analysis, Asymptotic Notations	2			T1	
7	Polynomial Vs Exponential Algorithms	1			T1	
8	Average, Best, and Worst Case Complexities, Analyzing Recursive Programs	2			T1	
Total periods required:		12				
UNIT – II: SEARCHING, SORTING, TREES AND GRAPHS						
11	SEARCHING AND SORTING: Linear search, Binary search, Fibonacci search	2			T1	Implementation of recursive function call
12	Bubble sort, Insertion sort, Selection sort, Radix sort	2			T1	
13	Introduction, Definition and Basic terminologies of trees	1			T1	
14	Binary trees, Representation of trees and Binary Trees	2			T1	
15	Binary Tree Traversals, representation	2			T1	
16	Threaded binary trees, Graphs-basic concepts, Applications	2			T1	
17	DFS and BFS Traversals, Applications	2			T1	
Total periods required:		13				
UNIT -III: BINARY SEARCH TREE, AVL TREE, B-TREE, HASH TABLE						
20	Introduction	1				Red Black Trees
21	Binary Search Trees: Definition, Operations and applications.	2			T1	
22	AVL Trees: Definition, Operations and applications.	3			T1	
23	B-Trees: Definition, Operations and applications	3			T1	

24	Hash Tables: Introduction, Hash Tables, Hash Functions and its applications	3			T2	
Total periods required:		12				
UNIT – IV: DIVIDE AND CONQUER & GREEDY METHOD						
34	Divide and Conquer: General Method, Binary Search	1			T2	Minimum Spanning Trees
35	Finding Maximum and Minimum	1			T2	
36	Quick sort, Merge sort, Polyphase Merge Sort	2			T2	
37	Cascade Merge sort, Strassen's Matrix multiplication	2			T2	
38	Greedy Method- General Method	2			T1	
39	Minimum Cost Spanning Trees	1			T2	
40	Single Source Shortest Path	1			T2	
Total periods required:		10				
UNIT – V: DYNAMIC PROGRAMMING, BACK TRACKING & BRANCH AND BOUND						
46	Dynamic Programming: General method	2			T2	Comparison of Branch bound and backtrack
47	All pairs shortest path, single source shortest path	2			T2	
48	0/1knapsack problem	1				
49	Back Tracking: General method, 8-Queen's problem,	2			T2	
50	Graph coloring	1			T2	
51	Branch and bound: Method, LC Search, Control Abstraction	2			T2	
52	Bounding, 0/1knapsack problem.	2			T2	
Total periods required:		12				
Grand total periods required:		59				

TEXT BOOKS:

1. G. A. V. Pai, "Data Structures and Algorithms: Concepts, Techniques and Applications," Mc Graw Hill, First Edition, 2008.
2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms," Universities Press (India) Pvt. Ltd, Second Edition, 2008

REFERENCE BOOKS:

1. D. Samanta, "Classic Data Structures," PHI learning, 2005.
2. Aho, Hopcraft, Ullman, "Design and Analysis of Computer Algorithms," Pearson Education, New Delhi, 2006.
3. Goodman, Hedetniemi, "Introduction to the Design and Analysis of Algorithms," TMH, 2008.
4. Drozdek, "Data Structures and Algorithms in C++," Second Edition, Cengage learning, 2010.