

SSN COLLEGE OF ENGINEERING  
SSN NAGAR – 603 110  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LESSON PLAN

SUB.CODE : CS6402    SUB.NAME : DESIGN AND ANALYSIS OF ALGORITHMS

**Name of the staff:** Mr.V.Balasubramanian, Ms. S.Kavitha  
**Designation:** AP

**Class:** IV SEM

**Teaching Methodology and Aids:**

Class room teaching using black board and chalk piece / OHP / LCD

**Date:** 02-01-15

S.No	Unit No	Topic	No of periods		Remarks
			Plan	Actual	
1	I (10 Hrs)	Introduction – Notion of an algorithm	1		
2		Fundamentals of algorithmic problem solving	1		
3		Important problem types	1		
4		Analysis framework	1		
5		Asymptotic notations and its properties	3		
6		Mathematical analysis for recursive and non-recursive algorithms	3		
7	II (9 hrs)	Brute Force - Closest-Pair and Convex-Hull Problems	2		
8		Exhaustive Search - Travelling Salesman Problem - Knapsack Problem - Assignment problem	1		
9		Divide and conquer methodology Merge sort, Quick sort, Binary Search	3		
10		Multiplication of Large Integers	1		
11		Strassen's Matrix Multiplication	1		
12		Closest-Pair and Convex-Hull Problems	1		
13	III (10 hrs)	Dynamic Programming- Computing a Binomial Coefficient	1		
14		Warshall's and Floyd's Algorithm	2		
15		Optimal Binary Search Trees	1		
16		Knapsack Problem and Memory functions	1		
17		Greedy Technique-Prim's algorithm	1		
18		Kruskal's Algorithm	1		

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19		Dijkstra's Algorithm	1		
20		Huffman Trees	2		
21	IV (9 hrs)	Iterative Improvement - The Simplex Method	3		
22		The Maximum-Flow Problem	2		
23		Maximum Matching in Bipartite Graphs	2		
24		The Stable marriage Problem	2		
25	V (10 hrs)	Limitations of Algorithm Power-Lower-Bound Arguments	1		
26		Decision Trees	1		
27		P, NP and NP-Complete Problems	1		
28		Backtracking - n-queens problem	1		
29		Hamiltonian circuit problem, Subset sum problem	1		
30		Branch and bound-Assignment problem	1		
31		Knapsack problem	1		
32		Traveling salesman problem	1		
33		Approximation Algorithms for NP Hard Problems-Travelling Salesman problem	1		
34		Knapsack problem	1		

**TEXT BOOK:**

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithm", Third Edition, Pearson Education, 2012.

**REFERENCES:**

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Third Edition, PHI Learning Private Limited, 2012.
2. Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, "Data Structures and Algorithms", Pearson Education, Reprint 2006.
3. Donald E. Knuth, "The Art of Computer Programming", Volumes 1 & 3 Pearson Education, 2009.
- Steven S. Skiena, "The Algorithm Design Manual", Second Edition, Springer, 2008.
4. <http://nptel.ac.in/>

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