

Branch Name:	Computer Engineering / Information Technology / Information and Communication Technology
Program Code:	ET103/ ET105 / ET107
Subject Title:	Design and Analysis of Algorithm
Subject Code:	2ET1030401P
Pre-requisite:	Fundamentals of Data and file Structures

Course Objective: Obtaining efficient algorithms is very important in modern computer engineering as the world wants applications to be time and space efficient. This course enables to understand and analyze efficient algorithms for various applications.

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	—	—	—	—	10	25	10	25	50

List of Suggested titles of Experiments (If Any):

Sr.No	Practical Exercise	Contact Hours
1.	Implementation and Time analysis of sorting algorithms. (Bubble sort, Selection sort, Insertion sort, Merge sort and Quick sort)	2
2.	Implementation and Time analysis of linear and binary search algorithm.	2
3.	Implementation and Time analysis of factorial program using iterative and recursive method	2
4.	Implementation of a knapsack problem using dynamic programming	1
5.	Implementation of chain matrix multiplication using dynamic programming.	1
6.	Implementation of making change problem using dynamic programming	1
7.	Implementation of a knapsack problem using greedy algorithm	1
8.	Implement prim's algorithm	1
9.	Implement kruskal's algorithm.	1
10.	Implement LCS problem	2

List of Text Books:

1. Introduction to Algorithms. Thomas Cormen, Charles Leiserson, Ronald Rivest. PHI publication
2. Fundamentals of Algorithms. Gilles Brassard, Paul Bratley. PHI publication.

List of Reference Books:

1. Design Analysis and Algorithms by Hari Mohan Pandey
2. Introduction to Design and Analysis of Algorithms, Anany Levitin, Pearson.
3. Design and Analysis of Algorithms, Dave and Dave, Pearson.
4. Fundamentals of Algorithms.-E. Horowitz et al.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Discuss the fundamental concepts problem solving algorithm, its types and the parameters to analyze those algorithms	2 Understanding 4 Analyze
CLO2	Apply Brute Force method and Divide and Conquer method to solve computing problems.	1 Remembering 3 Applying
CLO3	Apply the dynamic programming and greedy techniques to solve computing problems.	2 Understanding, 3 Applying
CLO4	Describe how scientific problems can be solved using iterative method and how to cope with limitations of algorithm power.	3 Applying, 2 Understanding
CLO5	Critically analyze the different algorithm design techniques for a given problem based on its time and space complexity.	3 Applying, 4 Analyze, 5 Evaluate
CLO6	Modify existing algorithms to improve efficiency	6 Creating

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M	L	L										H	M		
CLO2	M	L	L										H	M		
CLO3	M	L	L										H	M		
CLO4	M	L	L										M	M		
CLO5	H	M	M										M		M	
CLO6	H	M	M							L		M		M		