

Branch Name:	COMPUTER ENGINEERING – SOFTWARE ENGINEERING
Program Code:	ET203
Course Title:	Computer Algorithms Practical
Course Code:	2ET2030101P
Pre-requisite Course:	Fundamentals of Data Structures and Algorithms.

Course Objectives:

1. The objective of this course is to apply important algorithmic design paradigms and methods of analysis.
2. Synthesize efficient algorithms in common engineering design situations.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (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

Course Contents:

Unit	Details	Contact Hours
1	To analyze Time complexity of Quick and Merge sort Algorithm.	2
2	Implement max-heap sort algorithm.	2
3	Derive knapsack problem using dynamic programming.	2
4	Implement matrix chain multiplication using dynamic programming.	2
5	Demonstrate the knapsack problem using greedy algorithm.	2
6	Draw the DFS and BFS Tree using Graph Traversal Technique.	2
7	Implement Prim's algorithm for minimum spanning tree.	2
8	Find the Shortest path from source to destination using Dijkstra's shortest path algorithm.	2
9	Find longest common sequence for X = (A, B, C, B, D, A, B) and Y = (B, D, C, A, B, A) using dynamic programming.	2
10	Given integer a1, a2, ... find contiguous subsequence whose sum is maximum using any programming language. e.g. If input is {8,-4,13,-2,5} then output is 20.If input is {5,-3,4,-2,-1,6} then output is 9.	2
11	To implement Naïve String matching Algorithm.	2

Reference Books:

1. G. Brassard and P. Bartley: Algorithmics: Theory and Practice, Prentice Hall International 1996
2. A. V. Aho, J. E. Hopcroft and J. D. Ullman: Design and Analysis of Algorithms, Addison-Wesley, 1974.

Course Outcomes:

At the end of the course, students will be able to:

Course Outcomes	Description	Bloom's Taxonomy Level
CO1	Describe how scientific problems can be solved using iterative method and how to cope with limitations of algorithm power.	3 Applying, 2 Understanding
CO2	Critically analyze the different algorithm design techniques for a given problem based on its time and space complexity.	5 Evaluate, 3 Applying, 4 Analyze
CO3	Apply the dynamic programming and greedy techniques to solve computing problems.	2 Understanding, 3 Applying
CO4	Modify existing algorithms to improve efficiency	6 Creating

Mapping of CLO with PO and PSO

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	-	-	-	-	-	-	-	-	-	M	M	-	-
CLO2	H	M	M	-	-	-	-	-	-	-	-	-	M	-	M	-
CLO3	M	L	L	-	-	-	-	-	-	-	-	-	H	M	-	-
CLO4	H	M	M	-	-	-	-	-	-	L	-	M	-	M	-	-

H: High, M: Medium, L: Low