

CSE11110	Design and Analysis of Algorithms	L	T	P	C
Version 1.0	Contact Hours 45	3	0	0	3
Pre-requisite/Exposure	Discrete Mathematics				
Co-requisite	Concepts on Programming, Logical Ability, Problem Solving				

Course Objectives:

- To introduce problem solving approach through design.
- To develop students to analyse the existing algorithms and approach for improvement.
- To introduce the students a perspective to different design and analysis approach for algorithm(s) to solve a problem.
- To develop students to select optimal solution to a problem by choosing the most appropriate algorithmic method.

Course Outcomes:

On the completion of this course the student will be able to

CO1: Understand the basics about algorithms and learn how to analyse and design algorithms

CO2: Choose brute force, divide and conquer, dynamic programming and greedy techniques methods to solve computing problems

CO3: Understand the approach for solving problems using iterative method.

CO4: Describe the solution of complex problems using backtracking, branch and bound techniques. **CO5:** Classify the

different Computability classes of P, NP, NP-complete and NP-hard.

Course Description:

Algorithmic study is a core part of Computer Science. This study caters to all possible applicable areas of Computer Science. This study includes observation, design, analysis and conclusion. Various types of algorithms have different notions of implementation according to their cost (in terms of their time and space complexity). This study also includes refinement of one algorithm as per the applicability to real problems. Categorization of algorithms according to different methods of design also includes in this course. It also compares the same algorithm using different algorithm design methods. For example, Knapsack problem can be solved in Greedy approach and Dynamic approach, both are optimization methods. This course enables the students to think analytically while applying, designing an algorithm to solve a specific problem.

Course Content:

Course Code	Course Name	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
	Algorithms	CO11110.3	2	1	3	3	3	1	3	-	3	-	-	2	1	2	3
		CO1111	2	1	2	3	1	2	3	-	3	-	-	2	1	2	3
		0.4															
		CO1111	2	3	3	3	3	2	2	-	1	-	-	3	2	3	2
		0.5															
		CO1111	2.	1.	2.	3.	2.	1.	2.	-	2.	-	-	2.6	1.6	2.2	2.2
		0	2	4	6	0	4	8	0		2						