

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**

**COURSE PLAN (November 2024 – April 2025)**

**Department** : MATHEMATICS  
**Name/s of the Faculty** : Dr. FANCY V. F.  
**Course Title** : ANALYSIS OF ALGORITHMS  
**Course Code** : 23MT/PE/AL15  
**Shift** : I

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
	On successful completion of the course, students will be able to	
<b>CO1</b>	recall simple algorithms written in pseudocode	K1
<b>CO2</b>	understand iterative and recursive algorithms for searching and sorting	K2
<b>CO3</b>	identify suitable algorithm for a problem using the best case, worst case and average case	K3
<b>CO4</b>	analyze algorithms in order to choose the better algorithm	K4
<b>CO5</b>	interpret different algorithm design techniques and evaluate their performance	K5

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Nov 18 – 25, 2024 (Day Order 1-6)	1	<b>Analysis of Algorithm</b> 1.1 Input Classes 1.2 Space Complexity 1.3 Cases to Consider	K1-K5	5 hours	CO1-CO5	Lecture & Demonstration	Questioning
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	<b>Analysis of Algorithm</b> 1.4 Rates of Growth 1.5 Divide and Conquer Algorithms 1.6 Recurrence Relations	K1-K5	5 hours	CO1-CO5	Lecture and Discussion	Problem solving
Dec 4-11, 2024 (Day Order 1 to 6)	2	<b>Searching and Selection Algorithms</b> 2.1 Sequential Search – Case Analysis	K1-K5	5 hours	CO1-CO5	Demonstration  Learning by Doing	Questioning
Dec 12-19, 2024 (Day Order 1 to 6)	2	<b>Searching and Selection Algorithms</b> 2.2 Binary Search – Case Analysis 2.3 Selection	K1-K5	5 hours	CO1-CO5	Presentation  Learning by Doing	Slip test

Dec 20, 2024 (Day Order 1)	2	<b>Searching and Selection Algorithms</b> 2.3 Selection	K1-K5	1 hour	CO1-CO5	Group Discussion	Case analysis discussion
Jan 3 – 7, 2025 (Day Order 3 to 6)	2	<b>Searching and Selection Algorithms</b> 2.3 Selection	K1-K5	4 hours	CO1-CO5	Discussion and Case analysis	Questioning
	3	<b>Sorting Algorithms</b> 3.1 Insertion Sort – Case Analysis					
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	<b>Sorting Algorithms</b> 3.1 Insertion Sort – Case Analysis 3.2 Heap Sort – Case Analysis	K1-K5	5 hours	CO1-CO5	Discussion and Case analysis	Questioning
Jan 18 - 23, 2025	<b>C.A. Test – I</b> (Portions: Units 1 & 2)						
Jan 24 -31, 2025 (Day Order 1 to 6)	3	<b>Sorting Algorithms</b> 3.3 Merge Sort – MergeLists Analysis, MergeSort Analysis	K1-K5	5 hours	CO1-CO5	Discussion and Case analysis	Quiz

Feb 3-8, 2025 (Day Order 1 to 6)	3    4	<b>Sorting Algorithms</b> 3.4 Quick Sort – Case Analysis  <b>Matching Algorithm</b> 4.1 String Matching	K1-K5	5 hours	CO1-CO5	Lecture and demonstration	<b>Component 1:</b> Test – 30 marks (Unit 3: secs 3.1 – 3.3)
Feb 10– 18, 2025 (Day Order 1 to 4)	4	<b>Matching Algorithm</b> 4.2 Finite Automata 4.3 Knuth-Morris-Pratt Algorithm  <b>Graph Algorithms</b> 4.4 Data Structures for Graphs	K1-K5	3 hours	CO1-CO5	Demonstration  Learning by Doing	<b>Component 2:</b> Seminar Presentation (10 marks)
Feb 19- 26, 2025 (Day Order 1-6)	4	<b>Graph Algorithms</b> 4.5 Depth First and Breadth First Traversal Algorithms 4.6 Minimum Spanning Tree Algorithms	K1-K5	5 hours	CO1-CO5	Group discussion  Solving problems	Presentation

Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4	<b>Graph Algorithms</b>  4.7 The Dijkstra-Prim Algorithm 4.8 The Kruskal Algorithm	K1-K5	5 hours	CO1-CO5	Group discussion	Presentation
	5	<b>Nondeterministic Algorithms</b>  5.1 NP-Complete Problems					
Mar 7 – 11, 2025 (Day Order 1 to 3)	5	<b>Nondeterministic Algorithms</b>  5.1 NP-Complete Problems	K1-K5	2 hours	CO1-CO5	Lecture and demonstration	Questioning
Mar 12 –17, 2025	<b>C.A. Test – II</b> (Portions: Units 3 & 4)						
Mar 18 – 20, 2025 (Day 4 to 6)	5	<b>Nondeterministic Algorithms</b>  5.2 Conditions for NP	K1-K5	3 hours	CO1-CO5	Lecture and demonstration	<b>Component 3:</b> Quiz (10 marks) Units: 2 & 4
Mar 21 - 28, 2025 (Day Order 1 to 6)	5	<b>Nondeterministic Algorithms</b>  5.3 Job Scheduling – Graph Coloring	K1-K5	5 hours	CO1-CO5	Lecture and demonstration	Questioning
Mar 29- April 2, 2025 (Day Order 1 to 3)	<b>REVISION</b>						