STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **MATHEMATICS**

Name of the Faculty : **Dr. Benazir Obilia X A**

Course Title : **DATA STRUCTURES AND ALGORITHMS WITH PRACTICALS**

Course Code : **25MC/MC/DA35**

Shift : **II**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall the searching, sorting algorithms, and basic data structures	K1
CO2	understand the different data structures for a given problem	K2
CO3	analyse the searching, sorting algorithms and the data structures	K3
CO4	evaluate the performance of algorithms	K4
CO5	implement the data structures using a programming language	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6)	1	**1.1 Introduction to Algorithms and Data**	K1-K5	5	CO1-5	Lecturing	Questioning

		Structures: Pseudo code - Algorithm - Characteristics of algorithm – Algorithmic notations – Complexity of Algorithm: Best, Average, Worst cases				Learning by doing practical	
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	**1.1 Introduction to Algorithms and Data Structures:** Rate of Growth of standard functions: n, log n, n log n, n2,n3,2n– Asymptotic notations: big O, omega, theta – Abstract Data Type –Examples: Stack, List **1.2 Data Structure:** Difference between ADT and Data Structures	K1-K5	5	CO1-5	Lecturing Learning by doing practical	Questioning
July 2 – July 8, 2026 (Day Order 1- 6)	2	**2.1 Searching and Sorting Algorithms:** Linear Search– Binary Search - Insertion Sort	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning
July 9 – 16, 2026 (Day Order 1- 6)	2	**2.2 List:** List ADT specification - Operations – Traversing,	K1-K5	5	CO1-5	Presentation Learning by doing	Questioning

		Searching, Insert, Delete				practical	
July 17 – 24, 2026 (Day Order 1- 6)	2	**2.2 List:** Implementation – Array-Memory Allocation – Linked List: Singly, Doubly, Circular	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning & **III Component 1- MCQ TEST** (Unit 2) **[10 marks]**
July 25 – 28, 2026 (Day Order 1- 3)	3	**3.1 Stack:** ADT specification - Operations – Push, Pop	K1-K5	2	CO1-5	Presentation Learning by doing practical	Questioning
July 29 – Aug 3, 2026	**C.A. Test – I (Unit 1 & 2)**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	**3.1 Stack:** Representation: Array based, Linked List based – Infix, Prefix, Postfix notations	K1-K5	3	CO1-5	Presentation Learning by doing practical	Questioning
Aug 7 – 14, 2026 (Day Order 1- 6)	3	**3.2 Applications of Stack:** Infix to Postfix conversion, Implementation of Recursive procedures by stacks, QuickSort, Merge Sort	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning

Aug 17 - 24, 2026 (Day Order 1- 6)	3	**3.3 Queue:** ADT specification - Operations- Enqueue, Dequeue **3.4 Representation:** Array based, Linked List based	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	3 4	**3.4 Representation:** Circular Queue **4.1 Tree:** Definition and Terms - Binary Tree	K1-K5	5	CO1-5	Lecturing Learning by doing problems	Questioning & **III Component-2** Assignment (Unit 3) **[20 marks]**
Sep 3 – 11, 2026 (Day Order 1- 6)	4	**4.1 Tree:** Representation, Traversal: Inorder Preorder, PostOrder	K1-K5	5	CO1-5	Lecturing Learning by doing problems	Questioning
Sep 15-17, 2026 (Day Order 1 - 3)	4	**4.2 Binary Search Tree (BST)** Searching, Deleting and Inserting	K1-K5	2	CO1-5	Presentation Learning by doing practical	Questioning

Sep 18 –23, 2026	**C.A. Test - II**						
Sep 24 - 28, 2026 (Day 4 – 6)	5	**5.1 Graph:** Definition and Terms - Representation of Graphs	K1-K5	3	CO1-5	Presentation Learning by doing practical	Questioning
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	**5.1 Graph:** Graph Traversals: Breadth First Search, Depth First Search	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning & **III Component -3** Practical Test (unit 5: 5.1) **[20 marks]**
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	**5.2 Shortest Path algorithm:** Dijkstra's algorithm - Minimal spanning trees – Prim's and Kruskal's algorithms	K1-K5	5	CO1-5	Presentation Learning by doing practical	Questioning
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						