STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **Mathematics**

Name of the Faculty : **Dr. Teresa Arockiamary S**

Course Title : **Elements of graph theory**

Course Code : **25MT/MC/EG35**

Shift : **1**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall and list the basic concepts of graph theory	K1
CO2	summarize and outline the various graph theoretical terminologies	K2
CO3	identify and apply suitable methods to find solutions to problems related to graph theory	K3
CO4	analyse and examine the properties of various types of graphs through illustrative examples	K4
CO5	choose suitable graph theoretical concepts to evaluate graphical parameters for a given graph	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6)	1	**Basic Concepts of**	K1-K5	5	CO1-5	Lecture	Questioning and

		Graph theory 1.1 Graphs-Vertices and Edges 1.2 Degrees				Group discussions	interaction Group Work (working out exercise problems)
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	1.3 Subgraphs 1.4 Isomorphism 1.5 Matrices	K1-K5	5	CO1-5	Lecture Group discussions	Questioning and interaction **Unit 1** True and false questions Group Work
July 2 – July 8, 2026 (Day Order 1- 6)	1& 2	1.6 Operations on Graphs **Degree Sequences** 2.1 Degree Sequences 2.2 Graphic Sequences	K1-K5	5	CO1-5	Lecture Group discussions	Slip test Assignment Problems in Unit 1
July 9 – 16, 2026 (Day Order 1- 6)	2	2.2 Graphic Sequences **Connectedness** 2.3 Walks, Trails and Paths	K1-K5	5	CO1-5	Lecture Group discussions Problem solving	Questioning and interaction Assignment Problems in Unit 2
July 17 – 24, 2026 (Day Order 1- 6)	2	2.4 Connectedness and Components	K1-K5	5	CO1-5	Lecture	Questioning and interaction

		2.5 Blocks				Presentations	**Unit 2** True and false questions
July 25 – 28, 2026 (Day Order 1- 3)	2 & 3	2.5 Blocks **Eulerian and Hamiltonian Graphs** 3.1 Eulerian Graphs	K1-K5	3	CO1-5	Presentations Problem solving	Component 1: MCQ for 15 marks (Unit 1& 2)
July 29 – Aug 3, 2026	**C.A. Test - I Unit 1 & 2**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	3.1 Eulerian Graphs 3.2 Konigsberg Bridge Problem	K1-K5	2	CO1-5	Lecture Presentations	Questioning and interaction Group work
Aug 7 – 14, 2026 (Day Order 1- 6)	3	3.2 Konigsberg Bridge Problem 3.3 Hamiltonian Graphs	K1-K5	5	CO1-5	Lecture Group discussions	Questioning and interaction Group work
Aug 17 - 24, 2026 (Day Order 1- 6)	3	3.3 Hamiltonian Graphs	K1-K5	5	CO1-5	Lecture	**Unit 3** True and false

		3.4 Closure of a Graph				Presentations Group work	questions Group work
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	**Trees** 4.1 Characterisation of Trees 4.2 Centre of a Tree	K1-K5	5	CO1-5	Lecture Group discussions	Questioning and interaction Group work
Sep 3 – 11, 2026 (Day Order 1- 6)	4	4.2 Centre of a Tree **Planarity** 4.3 Definition and Properties	K1-K5	5	CO1-5	lecture Group discussions	Component 2: Assignment submission for 15 marks (Unit 3 Questions from exercises) **Unit 4** True and false questions
Sep 15-17, 2026 (Day Order 1 - 3)	4 & 5	4.4 Characterization of Planar Graphs **Directed Graphs** 5.1 Def of Directed Graphs	K1-K5	3	CO1-5	Lecture Group discussions	Questioning and interaction Group work

Sep 18 –23, 2026	**C.A. Test - II Unit 3 & 4**						
Sep 24 - 28, 2026 (Day 4 – 6)	5	5.2 Types of digraphs 5.3 Directed paths and connectedness	K1-K5	2	CO1-5	Lecture Group discussions	Questioning and interaction Group work
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	5.4 Euler digraphs 5.5 Matrices of digraphs	K1-K5	5	CO1-5	Lecture Group discussions	Questioning and interaction Component 3: Test for 20 marks (Unit 5:Theorems)
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	**Graph Algorithms** 5.6 Prim's algorithm 5.7 Kruskal's algorithm	K1-K5	5	CO1-5	Lecture Group discussions	Questioning and interaction Group work
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						