STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
COURSE PLAN June - November 2024

Department : Mathematics
Name/s of the Faculty : Dr. Benazir Obilia.X.A
Course Title : Elements of Graph Theory
Course Code : 23MT/MC/EG34
Shift : II

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 estimate the various graphical parameters for any given graph	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 19 – 26, 2024 (Day Order 1 - 6)	1	**Basic Concepts of Graph theory** 1.1 Graphs-vertices and edges 1.2 Degrees	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	**Basic Concepts of Graph theory** 1.3 Subgraphs 1.4 Isomorphism	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning & Slip Test
July 5 – 12, 2024 (Day Order 1 - 6)	1 2	**Basic Concepts of Graph theory** 1.5 Matrices 1.6 Operations on Graphs **Degree Sequences** 2.1 Degree Sequences	K1-K5	5 hours	CO1-5	Lecture Problem Solving	III |Component Quiz- Unit 1 **(15 marks)**
July 15 – 23, 2024 (Day Order 1 - 6)	2	**Degree Sequences** 2.2 Graphic Sequences **Connectedness** 2.3 Walks, Trails and Paths	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	2	**Connectedness** 2.4 Connectedness and Components	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Aug 1 – 5, 2024 (Day Order 1 - 3)	2 3	**Connectedness** 2.5 Blocks **Eulerian and Hamiltonian Graphs** 3.1 Eulerian Graphs	K1-K5	3 hours	CO1-5	Lecture Problem Solving	Questioning

Aug 6 – 10, 2024	**C.A. Test - I (unit 1 & 2)**						Questioning
Aug 12 – 14, 2024 (Day Order 4-6)	3	**Eulerian and Hamiltonian Graphs** 3.2 Konigsberg Bridge Problem	K1-K5	2 hours	CO1-5	Lecture Problem Solving	Questioning
Aug 16 – 23, 2024 (Day Order 1-6)	3	**Eulerian and Hamiltonian Graphs** 3.4 Hamiltonian Graphs	K1-K5	5 hours	CO1-5	Lecture Problem Solving	III Component - Assignment on Real life applications of Graph theory **(10 marks)**
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3 4	**Eulerian and Hamiltonian Graphs** 3.5 Closure of a graph **Trees** 4.1 Characterisation of Trees	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Sep 4 – 11, 2024 (Day Order 1-6)	4	**Trees** 4.2 Centre of a Tree **Planarity** 4.3 Definition and Properties	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Sep 12 - 20, 2024 (Day Order 1-6)	4	**Planarity** 4.3 Definition and Properties 4.4 Characterization of Planar Graphs	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Sep 23 - 26, 2024 (Day Order 1-4)	4 5	**Planarity** 4.4 Characterization of Planar Graphs **Directed Graphs** 5.1 Directed Graphs	K1-K5	4 hours	CO1-5	Lecture Problem Solving	Questioning & Slip Test
Sep 27 – Oct 3, 2024	**C.A. Test - II (unit 3 & 4)**						

Oct 4 – 5, 2024 (Day 5 & 6)	5	**Directed Graphs** 5.2 In degree and Out degree	K1-K5	1 hour	CO1-5	Lecture Problem Solving	Questioning
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	**Directed Graphs** 5.3 Sequential Representation of Directed Graphs **Graph Algorithms** 5.4 Prim's Algorithm	K1-K5	5 hours	CO1-5	Lecture Problem Solving	III Component Test-unit 5 (sec 5.1 to 5.4) **(25 marks)**
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	**Graph Algorithms** 5.5 Krushkal's Algorithm 5.6 Fluery's Algorithm	K1-K5	5 hours	CO1-5	Lecture Problem Solving	Questioning
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						