STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

Course Schedule: November 2024 – April 2025

Department : Mathematics

Name/s of the Faculty : S Mercy Soruparani

Course Title : Optimization Techniques

Course Code : 19MT/ME/OT45

Shift : I

Week & No. of hours	Units & Topics	Teaching Methodolo	Text & References	Method of Evaluation
Nov 18 – 25, 2024 (Day Order 1-6)	**Unit 1: Linear Programming** 1.1 Formulation of Linear Programming Problems 1.2 Graphical Method of Solution	5	Gupta, Premkumar and Hira D.S. Operations Research	Lecture
Nov 26- Dec 3, 2024	1.3 Canonical and Standard Form 1.4 Simplex Method	5		Questioning
Dec 4-11, 2024 (Day Order 1 to 6)	1.5 Artificial Variable Technique: Big-M Method **Unit 2: Duality in LPP** 2.1 Formulation of Dual LPP	5		Problem Solving
Dec 12-19, 2024 (Day Order 1 to 6)	2.2 Characteristics of the Dual Problem 2.3 Primal-Dual Optimal Solutions Transportation Model 2.4 Introduction and assumptions to the Model	5	Richard Bronson, Govindaswami Naadimuthu, Schaum's Outlines Operations Research	Lecture
Dec 20, 2024 (Day Order 1)	2.5 Matrix Terminology	1		Questioning
Jan 3 – 7, 2025 (Day Order 3 to 6)	2.6 Formulation and Solution of Transportation Model Least Cost method Vogel's Approximation method MODI's Optimality Test	3		Test 25 marks 1.4 & 1.5
Jan 8 – 17, 2025 (Day Order 1 to 6)	2.7 Variants in Transportation Problems **Unit 3: Assignment Model** 3.1 Formulation and Solution of the Assignment Models 3.2 Mathematical Representation of Assignment Models	5	Swarup Kanti, Gupta P.K., Man Mohan, Operations Research	Problem Solving
Jan 18 - 23, 2025	**C.A. Test – I UNITS 1 & 2**			

Jan 24 - 30, 2025 (Day Order 1 to 6)	3.3 Comparison with Transportation Model 3.4 Hungarian Method for Solution of the Assignment Problems 3.5 Travelling Salesman Problem Sequencing Models and Related Problems	5	Ravindran, A., Don. T. Phillips, and James J. Solberg. Operations Research-Principles and Practice	Lecture
Feb 3-8, 2025 (Day Order 1 to 6)	3.6 Sequencing Problems – Assumptions in Sequencing Problems 3.7 Processing n Jobs through One Machine (SPT rule only) 3.8 Processing n Jobs through Two Machines	5		Test 25 marks 3.2 & 3.3
Feb 10– 18, 2025 (Day Order 1 to 4)	**Unit 4: Theory of Games** 4.1Theory of Games 4.2 Characteristics of Games	3		Problem Solving
Feb 19- 26, 2025 (Day Order 1-6)	4.3 Game Models – Definitions 4.4 Rules for Game Theory 4.4.1 Rule 1: Look for a Pure Strategy	5		Questioning
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4.4.2 Rule 2: Reduce Game by Dominance 4.4.3 Rule 3: Solve for a Mixed Strategy	5	Panneerselvam, R. Operations Research	Problem Solving
Mar 7 – 11, 2025 (Day Order 1 to 3)	4.5 Mixed Strategies (2×2 Games) – Mixed Strategies (2 × n games or m × 2 games) **Unit 5: Network Analysis in Project Planning** 5.1 Project – Project Planning – Project Scheduling – Project Controlling	3		Lecture
Mar 12 –17, 2025	**C.A. Test – II Units 3 & 4**			
Mar 18 – 20, 2025 (Day 4 to 6)	5.2 W.B.S. – Basic Tools and Techniques of Project Management 5.3 Role of Network Techniques in Project Management 5.4 Network Logic-Numbering the Events	2	Ackoh R.L, Fundamentals of Operations Research	Questioning
Mar 21 - 28, 2025 (Day Order 1 to 6)	5.5 Activity on Node Diagram 5.6 Merits and Demerits of AON Diagram 5.7 Critical Path Method: Measure of Activity – Time Units	5		Lecture
Mar 29- April 3, 2025 (Day Order 1 to 3)	5.8 Critical Path Analysis 5.9 The Three Floats. PERT: Time Estimates 5.10 Frequency Distribution Curve for PERT – Probability of Completing the Whole Project by a given Time	3		Problem Solving
	REVISION			