STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (November 2024 – April 2025)

Department : MATHEMATICS
Name of the Faculty : Dr. V. DHANALAKSHMI
Course Title : MATHEMATICAL STATISTICS II
Course Code : 23MT/AC/ST45
Shift : 1

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall the fundamental definitions and techniques employed in distributions and statistical tools	K1
CO2	demonstrate a comprehend understanding on statistical principles and their applications, especially in estimation, tests of significance, timeseries analysis, and analysis of variance	K2
CO3	apply sampling theory, time series analysis, ANOVA, and estimationmethods to the given data, addressing practical problems and makingappropriate decisions	K3
CO4	analyse real world data sets, trends and patterns in time series data, and perform comprehensive hypothesis tests, confidence intervals andANOVA experiments, including the interpretation of data given	K4
CO5	evaluate the robustness of sampling procedures, estimation theory, time series models, ANOVA experiments, and their impact on the validity ofstatistical conclusions	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1	**Sampling Theory** 1.1 Introduction 1.2 Types of Sampling 1.3 Method of Drawing Random Sample	K1-K5	5	CO1-5	Lecture	Slip Test
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1	**Sampling Theory** 1.4 Sampling Distributions of Sample Mean and SampleProportion **Distributions used in Sampling Theory** 1.5 Standard Normal Distribution, Chi-Square Distribution, Student's t-Distribution, Snedecor's *F*-Distribution	K1-K5	5	CO1-5	Examples	Homework
Dec 4-11, 2024 (Day Order 1 to 6)	1&2	**Distributions used in Sampling Theory** 1.6 Relations between Standard Normal, Chi-Square, *t*, *F*- Distribution	K1-K5	5	CO1-5	Group Discussions	Peer evaluation

		Theory of Estimation 2.1 Introduction					
Dec 12-19, 2024 (Day Order 1 to 6)	2	**Theory of Estimation** 2.2 Point Estimation- Criteria for Good Estimators 2.3 Methods of Point Estimation	K1-K5	5	CO1-5	Lecture	Assignment from Unit 1 (20 marks)
Jan 3 – 7, 2025 (Day Order 3 to 6)	2	**Interval Estimation** 2.4 Introduction 2.5 Approximate Confidence Limits (Large Samples) 2.6 Exact Confidence Limits (any Sample Size)	K1-K5	4	CO1-5	Lecture	Problem Test
Jan 8 – 17, 2024 (Day Order 1 to 6)	3	**Tests of Significance** 3.1 Statistical Hypothesis – Level of Significance, Critical Region, One-Tailed and Two-Tailed Tests, Type I & II Errors, Power of a Test	K1-K5	5	CO1-5	Lecture	Problem Test
Jan 18 - 23, 2025	**C.A. Test – I** (Unit 1 and Unit 2 – 2.1, 2.3)						

Jan 24 -31, 2025 (Day Order 1 to 6)	3	**Tests of Significance** 3.2 Large Sample Tests 3.3 Chi-Square Test for Goodness of Fit 3.4 Test For Independence of Attributes	K1-K5	5	CO1-5	Lecture	Peer Evaluation
Feb 3-8, 2025 (Day Order 1 to 6)	3	**Tests of Significance** 3.5 Yate's Correction 3.6 Small Sample Tests	K1-K5	5	CO1-5	Lecture	Quiz
Feb 10– 18, 2025 (Day Order 1 to 4)	4	**Analysis of Variance** 4.1 Introduction 4.2 Different Sources of variation	K1-K5	3	CO1-5	Group Discussions	Problem Test
Feb 19- 26, 2025 (Day Order 1-6)	4	**Analysis of Variance** 4.3 Technique in One-Way Classification 4.4 Locating Unequal Pairs of Means	K1-K5	5	CO1-5	Problem Solving	Problem Assignment from Unit 3 (20 marks)
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	4&5	**Analysis of Variance** 4.5 Technique in Two-Way Classification	K1-K5	5	CO1-5	Lecture	Presentation
Mar 7 – 11, 2025 (Day Order 1 to 3)	5	**Time Series Analysis** 5.1 Meaning and Necessity of Time Series	K1-K5	2	CO1-5	Problem Solving	Slip Test

Mar 12 –17, 2025	**C.A. Test – II** (Unit 3 & 4 – 4.1, 4.2, 44)						
Mar 18 – 20, 2025 (Day 4 to 6)	5	**Time Series Analysis** 5.2 Components of Time Series 5.3 Secular Trend	K1-K5	3	CO1-5	Lecture	Questioning
Mar 21 - 28, 2025 (Day Order 1 to 6)	5	**Time Series Analysis** 5.4 Measurement of Trend 5.5 Seasonal Variation 5.6 Measurement of Seasonal Variation	K1-K5	5	CO1-5	Group Discussions	Quiz (10 marks)
Mar 29- April 2, 2025 (Day Order 1 to 3)	**REVISION**						