

ALLIED - MATHEMATICAL STATISTICS-II

Semester	Subject Code	Category	Lecture		Theory		Practical	Credits
II	21CAST2A	Allied	Hrs/week	Hrs/Sem	Hrs/week	Hrs/Sem	0	4
			4	60	4	60		

COURSE OBJECTIVES:

The students will be able to

- Impart knowledge in statistical concepts which includes Distribution, Sampling, Estimation and Test of Significance
- Improve practical knowledge in the field of Mathematical Statistics.

COURSE OUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level(K1-K4)
CO1	Understand the concepts of Distribution	K2
CO2	Acquire the knowledge about Sampling Distributions	K2
CO3	Discuss about hypothesis , analyze largessamples and draw conclusions	K3
CO4	Analyze small samples and draw conclusions	K4
CO5	Learn about the Estimation Theory	K2

Knowledge Level: K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze

MAPPING WITH PROGRAMME OUTCOMES

Cos	PO1	PO2	PO3	PO4	PO5	PO6
CO1	M	M	S	S	S	M
CO2	M	S	S	M	S	S
CO3	S	S	S	M	S	M
CO4	S	M	S	M	M	S
CO5	S	S	S	S	M	S

S- Strong; M- Medium; L- Low

UNIT – I : DISTRIBUTIONS**12 Hours**

Discrete Distributions: Binomial, Poisson – Continuous Distributions: Normal Distributions.

UNIT – II :SAMPLING DISTRIBUTIONS**12 Hours**

Student's 't' Distribution – Derivation of student's 't' distribution –Fisher's 't' – Distribution of Fisher's 't' – Constants of t-distribution – Limiting form of t-distribution - Chi-Square Distribution - Derivation of the Chi-Square Distribution – Moments Generating Function, Cumulant Generating Function, Limiting form of Chi-Square Distribution – Characteristic Function of Chi-Square Distribution – Mode and Skewness of Chi-Square Distribution - Additive property of Chi-Square Variates - F- distribution(without proof)- Constants, Mode and Points of inflexion of F-Distribution.

UNIT – III - TESTING OF LARGE SAMPLES**12 Hours**

Test of Significance –Null and Alternative Hypothesis – Error in sampling – Critical Region and Level of Significance- One tailed and Two tailed tests – Critical Values –Procedure for Testing of Hypothesis - Test of significance for large samples - Sampling of Attributes – Test of significance for Single Proportion, Difference of Proportions – Standard Error for Sample Mean – Test of significance for Single Mean, Difference of Means, Difference of Standard Deviation.

UNIT – IV - TESTING OF SMALL SAMPLES**12 Hours**

Application of t-Distribution – t-test for Single Mean, Difference of Means - Paired t-test for Difference of Means- Applications of Chi - Square Distribution – Inferences about a Population Variance – Goodness of Fit Test- Test of Independence of Attributes - Contingency tables- Yates's Correction (for 2×2 Contingency table) – Application of F- Distribution – F- test for Equality of Two Population Variances- Simple Problems.

UNIT – V –THEORY OF ESTIMATION**12 Hours**

Characteristics of Estimators - Concept of Unbiasedness – Consistency – Efficient Estimators – Most Efficient Estimators – Sufficiency- Cramer –Rao Inequality –Method of Moments - Power of the test – Neymann Pearson lemma.

DISTRIBUTION OF MARKS: THEORY 20% AND PROBLEMS 80%

TEXT BOOK

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	S. C. Gupta and V. K. Kapoor	Fundamentals of Mathematical Statistics	Sultan & Sons	1971

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Hogg, R. V. & Craig, A. T	Introduction to Mathematical Statistics	Macmillan	1998
2.	Mood, A. M, Graybill, F. A & Boes, B.	Introduction to theory of statistics	McGraw Hill	1974
3.	Snedecor, G. W & Cochran, W. G	Statistical Methods,	Oxford and IBH	1967
4.	Hoel P. G	Introduction to Mathematical Statistics	Wiley	1971
5.	Wilks S. S	Elementary Statistics Analysis	Princeton University Press	2016
6	Dr. S. P. Gupta	Statistical Methods	Sultan Chand & sons	2012

WEB RESOURCES

1. <https://www.e-booksdirectory.com/listing.php?category=413>
2. <https://www.textbooks.com/Catalog/MDL/Intermediate-and-Advanced-Statistics.php>

TEACHING METHODOLOGY

1. Class room Teaching
2. Assignments
3. Seminars
4. Discussions
5. PPT Presentations

SYLLABUS DESIGNERS

1. Mrs. G. Vinu Priya, Head and Assistant Professor of Mathematics
2. Mrs. R. Ramya, Assistant Professor of Mathematics