

With effect from: 2025-26 (R-23)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

Accredited by NAAC with A++ Grade

9-5-81, Ibrahimbagh, Hyderabad-500031

DEPARTMENT OF MATHEMATICS

ESTIMATION THEORY AND STATISTICAL INFERENCE

(OPEN ELECTIVE)

For B.E., V- Sem., (CBCS)

(Common to CSE, AIML & IT Branches)

Instruction: 3 Hours per week	Sem. End Exam Marks: 60	Subject Reference Code: U23OE520MA
Credits: 3	Sessional Marks: 40	Duration of Semester End Exam: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<i>The course will enable the students to :</i>	<i>At the end of the course students should be able to:</i>
1. <i>Study</i> the concepts and application of sampling distribution	1. Apply Central Limit Theorem to the real-world problems and calculate and interpret, in testing one sample mean (σ known).
2. <i>Describe</i> the role of the point estimation, interval estimation and Bayesian estimation about a parameter.	2. <i>Apply</i> various estimators for estimating the parameters of standard distributions.
3. <i>Study</i> various methods of testing large samples.	3. <i>Infer</i> properties of population conducting tests on samples
4. <i>Analyze</i> standard statistical tests employed for small samples.	4. <i>Interpret</i> planned and unplanned comparisons for the one-way ANOVA.
5. <i>Study</i> the difference between non-parametric and parametric tests.	5. <i>Solve</i> problems on the Sign test, Wilcoxon Signed test, Mann- Whitney U-test.

UNIT – I: (8 Hours)

SAMPLING DISTRIBUTION

Sampling distribution of Mean (σ known)-Sampling distribution of Mean (σ unknown)-Sampling distribution of the Variance-Sampling distribution of differences and sums- Central Limit Theorem and its applications.

UNIT – II: (7 Hours)

ESTIMATION

Introduction- Point estimation- Interval estimation- Bayesian estimation.

UNIT – III: (7 Hours)

TESTING OF HYPOTHESIS FOR LARGE SAMPLES

Introduction -Test of significance for single proportion-Test of significance for two proportions- Standard deviation tests for two samples.

UNIT – IV: (7 Hours)

TESTING OF HYPOTHESIS FOR SMALL SAMPLES

Introduction- Paired Sample t-test- Chi- square test for independence of attributes- Analysis of Variance (ANOVA)

UNIT – V: (7 Hours)

NON-PARAMETRIC TESTS

The Sign test- Wilcoxon Signed Rank test- Mann-Whitney U- test.

Text Books:

1. Miller & Freund's Probability and Statistics for Engineers.
2. Fundamentals of Mathematical Statistics, Gupta & Kapoor, Sultan chand & sons. New Delhi.
3. Applied Statistics and Probability for Engineers by Douglas C. Montgomery and George C. N Runger, International Student Version, 6th Edition, 1 January 2016.

Reference Books:


- 1 R.K. Jain & S.R.K. Iyengar, Advanced Engineering Mathematics. Third Edition. Narosa Publications, 2007.
- 2 Higher Engineering Mathematics, Dr.B. S Grewal 40th Edition, Khanna Publishers.
- 3 Advanced Engineering Mathematics, Kreyszig E, 8th Edition, John Wiley & Sons Ltd, 2006.
- 4 A text book of Engineering Mathematics by N.P. Bali& Manish Goyal, Laxmi Publication.

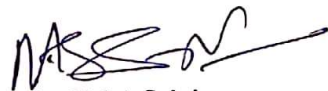
Online Resources:

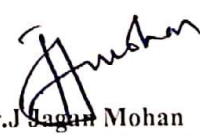
https://onlinecourses.nptel.ac.in/noc24_ma39/preview

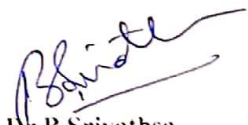
The break-up of CIE: Internal Tests + Assignments + Quizzes

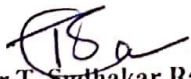
1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
4	Duration of Internal Tests	:	90 Minutes			


Prof.N.Kishan
(OU Nominee)


Prof.M.A.Srinivas
(Subject Expert-JNTUH)


Dr.Jagan Mohan
(Subject Expert-BITS, Hyd)


Dr.B.Srivathsa
(Industry Expert)


Dr.T. Sudhakar Rao
(Chairman, BOS)