



**KKR & KSR INSTITUTE OF TECHNOLOGY AND  
SCIENCES**

**(Autonomous)**

Accredited by NBA & NAAC with Grade "A" and Affiliated to JNTUK-Kakinada  
Vinjanampadu, Vatticherukuru Mandal, Guntur, Andhra Pradesh 522017

**SEMESTER -  
III**

Course Code	Course Name	L	T	P	C
20SH3T05	PROBABILITY & STATISTICS	3	0	0	3

**Course Objectives:**

- To familiarize the students with the foundations of probability and statistical methods
- To impart probability concepts and statistical methods in various applications Engineering

**Course Outcomes:**

**At the end of the Course, the student will be able to**

**CO1 :** Determine the mean and variance of discrete and continuous random variables.

**CO2 :** Calculate probabilities using normal distribution and construct sampling distribution of means.

**CO3 :** Estimate the confidence interval for the mean of a population and test a hypothesis concerning means.

**CO4:** Estimate the confidence intervals, test a hypothesis concerning variances and proportions.

**CO5 :** Calculate correlation coefficient and determine line a regression for bivariate data.

**Unit I:**

**Random Variables:** Random variables, types of random variables, probability distribution function, probability density function, mean and variance of a random variable

**Unit II:**

**Probability Distributions and Sampling Distributions:**

Normal distribution: calculating normal probabilities, normal approximation to the Binomial distribution. Sampling distributions: population and sample, sampling distribution of the mean (known), sampling distribution of the mean (unknown).

**Unit III:**

**Estimation and Test of Hypothesis of Means :**

Point estimation, interval estimation, introduction to test of hypothesis, hypotheses is concerning one mean, hypothesis concerning two means, matched pair comparisons.

**Unit IV:**

**Estimation, Test of Hypothesis of Variances and Proportions** Estimation of variance, hypothesis concerning one variance, hypothesis concerning two variances, estimation of proportion, hypothesis is concerning one proportion, hypotheses is concerning several proportions.



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**Unit V:**

**Regression analysis:**

The method of least squares, curvilinear regression, multiple regression, correlation (excluding causation).

**Text book:**

1. Richard A. Johnson, "*Miller & Freund's Probability and Statistics for Engineers*", 8<sup>th</sup> edition, PHIL earning India Private Limited, 2011.

**Reference Books:**

- 1) S. Ross, "*A First Course in Probability*", Pearson Education India, 2002.
- 2) W. Feller, "*An Introduction to Probability Theory and its Applications*", 1<sup>st</sup> edition, Wiley, 1968.
- 3) Gilbert Strang, "*Introduction to Linear Algebra*", 5<sup>th</sup> edition, Wellesely- Cambridge Press, 2016.