

COURSE CONTENT

UNIT-I **Introduction to Engineering Statistics and Data Representation** **10 Hours**

The Role of Statistics in Engineering: The Engineering Method and Statistical Thinking - Collecting Engineering Data - Basic Principles - Retrospective Study - Observational Study - Designed Experiments -Observing Processes Over Time - Mechanistic and Empirical Models Data Description and Representation: Collection of data- Classification and Tabulation of data - Stem-and-Leaf Diagrams - Frequency Distributions and Histograms - Box Plots - Time Sequence Plots - Probability Plots

UNIT-II Descriptive Statistics and Correlation Analysis 10 Hours

Descriptive Statistics: Measures of central Tendency-Measures of Dispersion- Skewness and

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| Expert Member: | | | Chairman - BoS: | |

**DEPARTMENT OF MATHEMATICS
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Kurtosis. Correlation and Regression: Scatter Diagram - Types of Correlation - Karl Pearson's

Coefficient of Correlation and Spearman's Rank Correlations- Method of Least Squares -
Linear
Regression.

UNIT-III Sampling and Estimation 12 Hours

Sampling: Different types of sampling - Sampling Distributions – Sampling Distribution of Mean

Point Estimation of Parameters: General Concepts of Point Estimation -Unbiased Estimators
Variance of a Point Estimator - Standard Error- Methods of Point Estimation (Method of
Moments - Method of Maximum Likelihood).Statistical Intervals for a Single Sample:
Confidence Interval on the Mean of a Normal Distribution with Variance Known - Confidence
Interval on the Mean of a Normal Distribution with Variance Unknown - Confidence Interval
on
the Variance and Standard Deviation of a Normal Distribution - A Large-Sample Confidence
Interval for a Population Proportion

UNIT-IV Hypothesis Testing for a Single Sample 10 Hours

Tests of Hypotheses for a Single Sample: Tests of Statistical Hypotheses - General Procedure for

Hypothesis Testing – Tests on the Mean of a Normal Distribution with Variance Known - Tests

on the Mean of a Normal Distribution with Variance Unknown - Tests on the Variance and Standard Deviation of a Normal Distribution

UNIT-V Statistical Inference for Two Samples 10 Hours

Statistical Inference for Two Samples: Inference For a Difference in Means of Two Normal Distributions with Variances Known - Inference For a Difference in Means of Two Normal Distributions with Variances Unknown - Inference on the Variances of Two Normal Distributions