Course Title: Probability and Statistics
Course Code: MT-331

## Course Contents

## STATISTICS:

Introduction, Types of data \& variables, presentation to data, object, classifications, Tabulation, Frequency distribution, Graphical representation, Simple \& Multiple Bar diagrams, Sartorial \& Pie-Diagram, Histogram, Frequency Polygon, Frequency Curves \& their types.

## MEASURES OF CENTRAL TENDENCY AND DISPERSION:

Statistics Averages, Median Mode, Quartiles, Range, Moments, Skew ness \& Kurtosis, Quartile Deviation, Mean Deviation, Standard Deviation, Variance \& its coefficient, Practical Significance in related problems.

## CURVE FITTING:

Introduction, fitting of a first and second degree curve, fitting of exponential and logarithmic curves, related problems. Principle of least squares, Second order Statistics \& Time series not in bit detail.

## SIMPLE REGRAESSION \& CORRELATION:

Introduction, Scatter diagrams, Correlation \& its Coefficient, Regression lines, Rank Correlation \& its Coefficient, Probable Error (P.E), Related problems. SAMPLING AND SAMPLING DISTRIBUTIONS Introduction, Population, Parameter \& Statistic, Objects of sampling, Sampling distribution of Mean, Standard errors, Sampling \& Non-Sampling Errors, Random Sampling, Sampling with \& without replacement, Sequential Sampling, Central limit theorem with practical significance in related problems.

## STATISTICAL INFERENCE AND TESTING OF HYPOTHESIS:

Introduction, Estimation, Types of Estimates, Confidence interval, Tests of Hypothesis, ChiSquare distribution/test, one tails \& two tails tests. Application in related problems.

## PROBABILITY:

Basic concepts, Permutation \& Combination, Definitions of probability, Laws of probability. Conditional probability, Baye's nile. Related problems in practical significance.

## RANDOM VARIABLES:

Introduction, Discrete \& Continuous random variables, Random Sequences and transformations. Probability distribution, Probability density function, Distribution function, Mathematical expectations, Moment Generating Function (M.G.F.), Markove random walks chain/ Related problems.

## PROBABILITY DISTRIBUTIONS:

Introduction, Discrete probability distributions, Binomial Poisson, Hyper geometric \& Negative binomial distributions. Continuous probability distribution, Uniform, Exponential \& Normal distributions \& their practical significance.

## Recommended Books

1. Advance Engineering Mathematics Erwin Kreyszig
2. Mathematical Statistics Hogg \& Craig
3. Introduction to Statistics Walpole
4. Exploring Statistics Larry J. Kitchens
