MTH302:PROBABILITY AND STATISTICS

Course Outcomes: Through this course students should be able to

CO1 :: recall the basic principles of probability and Bayes theorem.

CO2 :: visualize and use the concept of random variables to find the probability of an event.

CO3 :: use of some important distributions to find the probabilities.

CO4 :: develop and test the hypothesis based on the nature of a problem.

Unit I

Basics of Probability : Probability of an Event, Rules of Probability, Conditional Probability and Independent Events, Bayes theorem

Unit II

Random variables and its Characterization : Discrete and continuous random variables(in one dimension) and their distribution functions, Moments and Moment generating function of a random variable, Expectation and Variance of a random variable

Unit III

Probability Distributions : Binomial Distribution, Poisson Distribution, Moments and Moment generating function of Binomial Distribution, Moments and Moment generating function of Poisson Distribution, Normal Distribution its Moments and M.G.F.

Unit IV

Point Estimation : Definition ,Unbiased Estimators, Consistent Estimators, Sufficient Estimator, MLE (Method of Maximum Liklihood), Efficiency of estimations, Properties of Maximum liklihood

Unit V

Hypothesis Testing : Types of Error, Goodness of a Fit, Student t-test, Chi- Square Test, Z-test, F-test

Unit VI

Correlation and Regressions : Scatter plots, Coefficient of Correlation, Coefficient of Correlation for bi-variate data, Spearman's Rank Correlation Coefficient, Linear Regression, Properties of Regression Coefficients, Fitting of a curve

Text Books:

1. FUNDAMENTALS OF MATHEMATICAL STATISTICS by S.C.GUPTA AND V.K.KAPOOR, SULTAN CHAND & SONS (P) LTD.

References:

1. PROBABILITY STATISTICS AND RANDAM PROCESSES by T VEERARAJAN, MCGRAW HILL EDUCATION