

SYLLABUS :-

Prerequisite: void

Probability: Classical, relative frequency and axiomatic definitions of probability, addition rule and conditional probability, multiplication rule, total probability, Bayes' Theorem and independence.

Random Variables: Discrete, continuous and mixed random variables, probability mass, probability density and cumulative distribution functions, mathematical expectation, moments, moment generating function, Chebyshev's inequality.

Special Distributions: Discrete uniform, Binomial, Geometric, Poisson, Exponential, Gamma, Normal distributions. Functions of a Random Variable.

Joint Distributions: Joint, marginal and conditional distributions, product moments, correlation, independence of random variables, bivariate normal distribution.

Sampling Distributions: The Central Limit Theorem, distributions of the sample mean and the sample variance for a normal population, Chi-Square, t and F distributions.

Estimation: The method of moments and the method of maximum likelihood estimation, confidence intervals for the mean(s) and variance(s) of normal populations.

Testing of Hypotheses: Null and alternative hypotheses, the critical and acceptance regions, two types of error, power of the test, the most powerful test and Neyman-Pearson Fundamental Lemma, tests for one sample problems for normal populations.