

Objective:

To learn the fundamentals of probability and statistical methods

Unit I:

Probability Spaces- Properties of Probability function – Conditional Probability – Independent events – Random variables – Probabilistic modelling

Unit II:

Binomial, Poisson, exponential and Normal Distributions – Fitting of Probability distributions – Correlation and Regression – Linear regression – Correlation coefficient – Multiple linear regression

Unit III:

Sampling Distributions & Descriptive Statistics: The Central Limit Theorem, distributions of the sample mean and the sample variance for a normal population, Sampling distributions, problems. Graphical representation, measures of locations and variability.

Unit IV:

Estimation : Unbiasedness, consistency, the method of moments and the method of maximum likelihood estimation, confidence intervals for parameters in one sample and two sample problems of normal populations, confidence intervals for proportions, problems.

Unit V:

Test of Hypothesis- Testing for Attributes – Mean of Normal Population – One-tailed and two-tailed tests, F-test and Chi-Square

Text Books:

1. John.E..Freund, Irwin Miller, Marylees Miller “Mathematical Statistics with Applications “, 8th, Prentice Hall of India, 2012
2. Yannis viniotis, “ Probability and Random Processes for electrical engineers”, McGraw-Hill International Edition, 1998
3. Ross, Sheldon. M, “Introduction to Probability and Statistics for Engineers and Scientists”, Academic Press, 2009
4. V.K. Rohatgi & A.K. Md. E. Saleh An Introduction to Probability and Statistics
5. J.S. Milton & J.C. Arnold Introduction to Probability and Statistics
6. H.J. Larson Introduction to Probability Theory and Statistical Inference

Course Outcome:

Students will be able to

1. Explain basic probabilistic and statistical models and illustrate their related applications
2. Estimate the likelihood of events from population
Propose, test and evaluate hypothesis