

MSC 514: Statistical Methods

Credits: 3
Lecture Hours: 48

Course Objectives

The course aims to impart knowledge and skills of statistical techniques and their applications in solving business problems

Course Details

Unit 1: Probability

LH 6

Concept and importance of probability, approaches to probability. Additive and multiplicative theorems, conditional probability, Baye's theorem and decision tree.

Unit2: Probability Distribution

LH 6

Discrete probability distribution: Binomial and Poisson, Continuous probability distribution: Normal Distribution and their properties along with applications.

Unit 3: Sampling and Estimation

LH 6

Sampling techniques, sampling and non-sampling errors, sampling distribution, standard error, application of standard error, concept of central limit theorem
Estimation theory, criteria of good estimator, point and interval estimate, relationship among errors, risk and sample size, determination of sample size

Unit 4: Testing of Hypothesis

LH 18

Meaning of hypothesis testing, types of error in hypothesis testing, critical region, one tailed and two tailed test, Parametric Test: large sample test of mean and proportions, small sample test of mean, paired t-test, test of significance of correlation coefficient, variance ratio test, one way and two way Analysis of Variance (ANOVA), Non-parametric test: Chi-square test of goodness of fit and independence of attributes, chi-square test for population variance.

Unit 5: Correlation and Regression Analysis

LH 12

Partial and multiple correlation, coefficient of determination, concept of linear and non-linear regression, multiple regression equation, standard error of estimate for multiple regression, test of regression model and regression coefficients, auto-correlation and multicollinearity, Residual analysis: Linearity of the regression model, Homoscedasticity, Normality of error.

Reference Books

Richard I. Levin and David S. Rubin, *Statistics for Management*, Prentice Hall of India
S.C.Gupta, *Fundamental of Statistics*, Himalayan Publishing House