

MCA 205 PROBABILITY and STATISTICS

Lectures	:	5 periods/week	Sessional Marks	:	20
University Exam	:	3 hours	University Examination Marks	:	80

UNIT-I:

Some Probability Laws: Axioms of Probability, Conditional Probability, Independence of the Multiplication Rule, Baye's theorem.

Discrete Distributions: Random Variables, Discrete Probability Densities, Expectation and distribution parameters, Binomial distribution, Poisson Distribution, simulating a discrete distribution.

Continuous Distributions: Continuous Densities, Expectation and distribution parameters, Exponential distribution, Normal Distribution, Weibull Distribution and Reliability.

UNIT-II:

Estimation: Point estimation, interval estimation and central limit theorem.

Inferences on the mean and the Variance of a distribution:

Hypothesis Testing, significance testing, hypothesis and significance test on the mean, hypothesis test on the variance.

Inferences on Proportions:

Estimating proportions, testing hypothesis on a proportion,

Comparing two Proportions:

Estimation, comparing two proportions, hypothesis testing.

UNIT-III:

Comparing two means and two variances:

Point estimation: independent samples, Comparing means: variances equal..

Analysis of Variance: One-way classification fixed effects model, comparing variances, pair wise comparisons, randomized complete block design.

UNIT-IV:

Simple linear regression and correlation:

model and parameter estimation, inferences about slope, inferences about intercept, coefficient of determination.

Multiple linear regression models: least square procedures for model fitting, a matrix approach to least squares, interval estimation.

Prescribed Book:

1. J Susan Milton and Jesse C Arnold: "Introduction to Probability and Statistics". Fourth edition, TMH(2007)

Chapters: 2, 3.1 to 3.3, 3.5, 3.8, 3.9, 4.1, 4.2, 4.4, 4.7, 7.1, 7.4, 8.3 to 8.6, 9, 10.1 to 10.3, 11.1, 11.3, 11.6, 12.1, 12.2, 12.4, 13.1 to 13.3, 13.5