BS-M201 Syllabus
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Module -1

Basic Probability: Probability spaces, conditional probability, independence; Discrete random variables, Independent random variables, the Multinomial distribution, Poisson approximation to the Binomial distribution, infinite sequences of Bernoulli trials, sums of independent random variables; Expectation of Discrete Random Variables, Moments, Variance of a sum, Correlation coefficient, Chebyshev's Inequality. [**11L**]

Module -2

Continuous Probability Distributions:Continuous random variables and their properties, Distribution functions and densities, Normal, Exponential and Gamma densities. [**4L**]

Module -3

Bivariate Distributions:Bivariate distributions and their properties, distribution of sums and quotients,Conditional densities, Bayes' rule. [**5L**]

Module -4

Basic Statistics: Measures of Central tendency, Moments, Skewness and Kurtosis, Probability distributions: Binomial, Poisson and Normal and evaluation of statistical parameters for these three distributions, Correlation and regression Rank-correlation. [**8L**]

Module -5

Applied Statistics:Curve fitting by the method of least squares- fitting of straight lines, second degree parabolas and more general curves. Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations. [**8L**]

Module -6

Small samples:Test for single mean, difference of means and correlation coefficients, test for ratio of variances - Chi-square test for goodness of fit and independence of attributes. [**4L**]

Course Objective

This course is intended to explain the fundamental facts of probability, probability distribution and bivariate distributions and facts related to these to solve problems associated with

computer science and engineering. This course is also mean to explain the fundamental of basic and applied statistics and facts related to sampling to solve problems associated with computer science and engineering.

BS-M201 Course-Outcomes

BS-M201.1. Apply definitions of probability and their basic properties to solve engineering problems.

BS-M201.2. Apply the concepts of various discrete and continuous distributions to solve complex engineering problems.

BS-M201.3. Understand the ideas of mathematical and applied statistics in the context of real life problems.

BS-M201.4. Analyze data samples to draw appropriate statistical inference.

References

1. W. Feller, An Introduction to Probability Theory and its Applications, Vol. 1, Wiley.

2. Mathematical Statistics, John E. Freund.

3. S. Ross, A First Course in Probability, Pearson Education India.