

PROBABILITY , STATISTICS AND QUEUING THEORY(I.T)

Credits	Periods			Exam Hrs.	Sessional Marks	Exam Marks	Total Marks
	Theory	Tutorial	Lab				
4	3	1	-	3	40	60	100

Course Outcomes: At the end of the course student should be able to:

CO - 1	Understand the concepts of various statistical measures like mean , variance and standard deviation of a random variable.
CO - 2	Familiarize the different types probability distributions and their properties.
CO - 3	Compute simple correlation between the variables and fit straight line , parabola by the principle of least squares.
CO - 4	Analyze the statistical data and apply various small or large sample test for testing the hypothesis.
CO - 5	Learn about different Queuing models and its applications.

UNIT I : PROBABILITY & MATHEMATICAL EXPECTATIONS

(12 Periods)

Introduction to probability: Definition of Random Experiment, Events and Sample space, Definition of probability, Addition and Multiplication theorems, Conditional probability, Baye's Theorem, Simple Problems on Baye's theorem. Random Variables: Discrete and Continuous random variables, Distribution function of random variable, Properties, Probability mass function, Probability density function, Mathematical expectation, Properties of Mathematical expectations, Mean and Variance.

UNIT II : PROBABILITY DISTRIBUTION

(14 Periods)

Discrete Distributions: Binomial Distribution, Mean and Standard Deviations of Binomial Distribution, Poisson distribution, Mean and Standard Deviations of Poisson Distribution, Applications. Continuous Probability Distributions: Uniform Distribution, Exponential Distribution, Normal Distribution, Properties of Normal Distribution, Importance of Normal Distribution, Area properties of Normal curve.

UNIT III : CURVE FITTING , CORRELATION AND REGRESSION

(10 Periods)

Curve Fitting : Principle of Least Squares , Method of Least Squares

(Straight Line and Parabola).

Correlation : Definition, Measures of correlation,

Correlation for Bivariate Distribution, Rank correlation coefficients.

Regression : Simple linear regression, regression lines and properties.

UNIT IV : TESTING OF HYPOTHESIS

(14 Periods)

Formulation of Null Hypothesis, Critical Region, Level of Significance.

Small Samples : Students t - distribution (Significance test of a sample mean,

Significance test of difference between sample means),

F- distribution, χ^2 - test, Goodness of fit.

Large samples : Test of Significance of Large Samples – Single Proportion, Difference

between two Proportions , Single mean and Difference of means.

UNIT V : QUEUEING THEORY

(10 Periods)

Queue description, characteristics of a queuing model, study state solutions of
M/M/1: Model, M/M/1 ; N Model.

TEXT BOOK :

1. Probability, Statistics and Random Processes by T.Veerarajan, Tata McGraw Hill Publications.

REFERENCE BOOKS:

1. Probability & Statistics with Reliability, Queuing and Computer Applications by Kishor S. Trivedi , Prentice Hall of India ,1999 .