

Devi Ahilya Vishwavidhyalaya, Indore, India Institute of Engineering & Technology				II Year B.Tech. (Computer Science & Engineering)		
Course Code & Name	Instructions Hours per Semester and Credits					
4RCPC1 Applied Statistics	Classroom Instruction (CI)		Lab Instruction (LI)	Term Work (TW) and Self Learning (SL)	Total no. of Hours Per semester	Total Credits (Total Hours/30)
	L	T	P	TW+SL	90	3
	30	10	-	50		

Course Objectives:

The course is designed to develop understanding of –

1. the use of applied statistical methods for analytical and objective basis for decisions.
2. the concept of statistical inference in daily life and engineering applications.

Prerequisite:

Elementary statistics, matrices and determinants, probability.

COURSE CONTENTS

UNIT-I

Multivariate analysis, plane of regression, Multiple and partial correlation, Random variables-discrete and continuous random variables, cumulative distribution function. Normal distribution.

Reliability: Basic Concepts, Evaluation of system reliability.

UNIT-II

Stochastic processes-classification, special stochastic processes-Poisson process, Markov process, Markov chains, n-step transition probabilities.

UNIT-III

Queuing Theory: Objectives and characteristics of a Queuing System, classification of Queuing models, probability distribution of arrival and service times, Models (M/M/1, M/M/C).

UNIT-IV

Elements of Hypothesis Testing: Null and Alternative hypotheses, Simple and Composite hypotheses, Critical Region, type I and type II Errors, Level of significance and size, p-value. Test of significance of large and small samples. Test of goodness of fit and independence of attributes.

UNIT-V

F-test and ANOVA: one-factor and two factor classifications.

Course Outcomes:

Students earned credits will develop ability to—

- CO1 use applied statistical methods for analytical and objective basis for decisions.
- CO2 use the common probability distributions that are used in statistical inference.
- CO3 test the hypothesis that the value of a population parameter equals a certain value.
- CO4 estimate the value of statistical inference, and use data to draw conclusions.
- CO5 identify the situations where One way and Two-way ANOVA is applicable.
- CO6 use statistics in computer science for a number of things, including data mining, data compression, speech recognition, vision & image analysis, artificial intelligence and network & traffic modeling.

Books Recommended:

- [1]. T. Veerarajan, Probability, Statistics and Random Processes, Tata McGraw - Hill Education, 2002.
- [2]. K. S. Trivedi, Probability and Statistics with Reliability, Queuing, and Computer Science Applications, John Wiley & Sons, 2006.
- [3]. Freund John E, Mathematical Statistics, PHI, N.D., 7th Ed., 2010.
- [4]. S.C.Gupta, Fundamentals of Statistics, Himalaya Publishing House, Mumbai, 6th Ed., 2009.

CO-PO Relationship:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	3	3	2	1	-	-	-	-	-	-	1	3	2
CO2	2	3	3	2	3	-	-	-	-	-	-	1	3	2
CO3	3	2	3	3	3	-	-	-	-	-	-	-	3	2
CO4	3	1	2	3	3	-	-	-	-	-	-	1	2	3
CO5	2	3	2	2	2	-	-	-	-	-	-	-	2	3