2/4 B.Tech - FIRST SEMESTER

IT3T3 **PROBABILITY AND STATISTICS** **Credits: 3**

Lecture: 3 Periods/week **Internal assessment: 30 marks**

Practice/Interaction: 1Period/week **Semester end examination: 70 marks**

Objectives:

- To introduce random Phenomena and develop skills in understand and applying basic statistical methods.

Outcomes:

A the end of the course students will be able to

1. Demonstrate basic principles of probability, and sample spaces, Baye's theorem.
2. Comprehend concepts of discrete, continuous random variables and able to solve problems of probability using Binomial, Poison, Normal distributions.
3. Comprehend the concept of population and sampling and able to determine mean, variance of sampling distribution of means. Also calculate point and interval estimations of means, proportions.
4. Analyze null hypothesis of parameters corresponding to mean, proportion for large and small samples.
5. Analyze null hypothesis of parameters corresponding variances.

Syllabus:

UNIT- I

Probability and Random variables. Probability - Sample space and events – Probability – The axioms of probability - Some elementary theorems -Conditional probability – Baye"s theorem. Random variables – Discrete and continuous – Distribution – Distribution function.

UNIT- II

Probability Distributions Distribution - Binomial, Poisson and normal distribution – related properties.

UNIT -III

Sampling distributions Sampling distribution - Populations and samples - Sampling distributions of mean (known and unknown) Proportions, sums and differences. Estimation - Point estimation – interval estimation

UNIT-IV

Test of Hypothesis Statistical Hypothesis – Errors of Type I and Type II errors and calculation. One tail, two tail tests. Testing hypothesis concerning means, proportions and their differences using Z - test, t-test.

UNIT-V

Test of significance Test of significance – F-test, χ²-test, χ²-test for goodness of fit.
Analysis of variance (ANOVA) – ANOVA for one –way, two-way.

Text Books:

1. Probability and statistics by Dr.T.K.V.Iyengar, Dr.B.Krishna Gandhi, S.Ranganatham Dr. M.V.S.S.N.Prasad, S.Chand.

Reference books:

1. Probability, Statistics and Queuing theory applications for Computer Sciences 2nd edition, Trivedi, John Wiley & sons.
2. Probability & Statistics, D. K. Murugeson & P. Guru Swamy, Anuradha Publishers. A text book of Probability and statistics Unitech series by Dr. Shahnaz Bathul
3. Fundamentals of Mathematical Statistics – S.C. Gupta & V.K.Kapoor S.Chand

e-Learning Resources:

1. www.nptel.ac.in
2. www.jntuk coeerd.in