

# Statistical Techniques [1-0-0-0]

## Contents:

*Probability Models and Sampling Techniques* [3 Lectures]: Normal, Chi-Square and t distributions, Basic concepts of random sampling, sampling from normal distribution, properties of sample mean and sample variance.

*Tests of Hypotheses* [5 Lectures]: Basic concepts of statistical hypotheses testing-simple and composite hypotheses, critical regions, Type-I and Type-II errors, size and power of a test, Neyman Pearson lemma, tests for one-sample and two-sample problems from normal populations.

*Stochastic Processes* [6 Lectures]: Definition and classification of general stochastic processes; Markov Chains: definition, transition probability matrices, classification of states, limiting properties; Poisson process, Birth and death processes, exponential queuing model.

## Text Books

1. Casella, G. and Berger, R. (2002), Statistical Inference, Cengage Learning.
2. Ross, S.M. (1996), Stochastic Processes, Wiley.

## Reference Books

1. Rohatgi, V.K. and Saleh, A.K.M.E. (2018). An Introduction to Probability and Statistics, Wiley.
2. Ross, S.M. (2010). An Introduction to Probability Models, Elsevier.
3. Hoel, P.G., Port, S.C. and Stone, C.J. (1972). Introduction to Stochastic Processes, Houghton Mifflin Company.

## Evaluation Plan

S.No	Title	Weightage
1.	Continuous Evaluation	40%
	(a) Quiz	15%
	(b) Assignments	15%
	(c) End-sem Quiz	10%
2.	Discrete Evaluation	60%
Total		100%