B.A /B.Sc. 2nd SEMESTER
STATISTICS
DISCIPLINE SPECIFIC COURSE

ST220C: STATISTICS: PROBABILITY THEORY AND PROBABILITY DISTRIBUTIONS

CREDITS: THEORY: 4, PRACTICAL: 2
MAXIMUM MARKS: THEORY: 60; PRACTICAL: 30

THEORY (4 CREDITS)

UNIT- I

Probability: Random Experiment: Trial, sample space, event, operation of events, independent events, exhaustive events and mutually exclusive events. Classical and relative frequency approach to probability with their merits and demerits. Axiomatic approach to probability. Addition and multiplication law of probability. Conditional probability, independence of events, Prior and posterior or revised probabilities, Bayes' theorem, its applications and importance.

UNIT –II

Random Variables: Discrete random variable, probability mass function, continuous random variable, probability density function. Expectation of random variables and their properties. Moment generating functions (mgf), properties and uses.

UNIT –III

Standard univariate discrete distributions: Uniform, Binomial, Poisson, Geometric, and Hypergeometric distribution (their applications and properties mean variance and mgf).

UNIT -IV

Continuous univariate distributions: Uniform, Exponential, Gamma and Normal (their applications and properties, mean, variance and mgf)

REFERENCES

1. S.C Gupta and V.K Kapoor (2007): Fundamentals of Mathematical Statistics.11th edition (reprint) Sultan Chand and sons.
2. S. P. Gupta: Statistical Methods. Sultan Chand and sons.
3. Bhat B.R Srivenkatramana T and Madhave K.S (1997): statistics: A Beginner's Text, Vol. New Age International (P) Ltd.
4. Edward P.J. Ford J. S and Lin (1974): Probability for statistical Decision- making, Pr Hall.
5. Mood A.M Graybill F. A and Boes D.C. (1974): Introducing of Theory of Statistics, McGraw Hill.
6. A.Mukhopadhay: Mathematical Statistics, Calcutta Publication

ADDITIONAL REFERENCES

1. Mood A.M. Graybill F.A and Boes D.C. (1974): Introduction to the Theory of Statistics. McGraw Hill.
2. Snedecor G.W and Cochran W.G. (1967); Statistical Methods. Lowa State University Press.
3. Cooke, Cramer and Clarke (1996): Basis Statistical Computing, Chapman and Hall.
4. David S. (1996): Elementary Probability, Oxford House.
5. Hoel P.G (1971): Introduction to Mathematical Statistics, Asia Publishing House.
6. Meyer P.L (1970): Introductory Probability and Statistical application, Addison Wesley.

PRACTICAL (2 CREDITS) **MAXIMUM MARKS: 30**

1. Evaluation of Probabilities using Addition law.
2. Evaluation of Probabilities using Multiplication law.
3. Evaluation of Probabilities using Bayes' theorem.
4. Fitting of Binomial distribution.
5. Fitting of Poisson distributions.
6. Fitting of Normal distribution.