

Stat-112: Elementary Probability-I

50 Marks: 02 Credits

Number of Class: 20-26

Set Theory: Set, point of a set, describing set- List method and Roster method, finite set, infinite set, universal set, empty set and subsets. Set operations.

Combinatorial Methods: Methods of counting sample points, Review of Permutations, Combinations and Series.

Basic Concepts of Probability: Approaches to defining Probability: Subjective and Objective Probabilities, Classical, Empirical, Geometric and Axiomatic, Experiment, Outcomes, Equally likely outcomes, Mutually exclusive outcomes, Favourable outcomes, Exhaustive outcomes, Random experiment, Sample space and events, Event space, Union and Intersection of Events, Different Types of Events, Odds and Odds Ratio, Function, Set Function, Probability Functions, Theorems on Probability, Probability Space, Total Probability, Tree Diagrams and Compound Probability, Conditional Probability, Bayes' Theorem and its application.

Random Variable: Concepts of Random Variable, Discrete and Continuous Variables, Functions of Random Variables. Probability Mass Function, Probability Density Function, Distribution Function & Its Properties.

Text

1. Hogg, R.V. and Craig, A. T (2009): *Introduction to Mathematical Statistics*, 6th edition, Pearson Education, Singapore
2. Meyer, P. L. (1970): *Introductory Probability and Statistical Applications*, 2nd edition, Addison Wesley, New York.
3. Mood, A. M. and Graybill, F. A. and Boes, D.C. (1974): *Introduction to the Theory of Statistics*, 3rd edition, McGraw-Hill.

References

1. Feller, W. (1985): *Introduction to Probability Theory and Its Applications*, Vol.1, 3rd edition, John Wiley & Sons, New York.
2. Mosteller, F., Rourke and Thomas (1970): *Probability with Statistical Applications*, 2nd edition, Addison-Wesley, New York.
3. Rohatgi, V.K. and Saleh, A.K. Md. E. (2001): *An Introduction to Probability and Statistics*, John Wiley and Sons, New York.
4. Ross, S. M. (2008): *A First Course in Probability*, 8th edition, Prentice Hall.
5. Roy, M.K. (2008): *Fundamentals of Probability and Probability Distributions*, 8th edition.