

Course Title: Probability and Statistics**Course no:** STA-103**Credit hours:** 3**Nature of course:** Theory (3 Hrs.) + Lab (3 Hrs.)**Full Marks:** 60 + 20 + 20**Pass Marks:** 28 + 8 + 8**Course Synopsis:** Concept of descriptive statistics, probability, probability distributions, inferential statistics and their applications.**Goal:** This course enhances the ability of students in computing and understanding summary statistics; understanding the concept of probability and probability distributions with their applications in statistics. Finally, students will develop their ability of using inferential statistics in decision-making processes.**Unit 2:**

- I. No G.M., H.M., No Measures of S_k (Kelly's moments)
- II. No M.D.

Unit 3:

- I. No Basic Principle of counting
- II. Proof for two events
 - a) Addition theorem of probability
 - b) Multiplication theorem of probability
 - c) Related problems

Unit 5:

- I. No proof
- II. Related numerical problems

Unit 6:

- I. Only Model of distance
- II. No proof
- III. $do \rightarrow mode < \begin{matrix} odd \\ even \end{matrix}$
- IV. $do \rightarrow fitting$
- V. $do \rightarrow characteristics for Binomial and position$

Unit 7:

- I. Definition, Notation, SNV, Characteristics without proof. Related numerical Problem
- II. Negative exponential or exponential definition, Modal, Parameter, mean and variance, simple cases, definition of Hazard rate function.

Unit 8:

Concept of characteristic function, canonical definition, p.d.f, of χ^2 , t & F; Mean, Median, Mode, variance; Properties and applications; Concept of \bar{x} and S^2 .

Unit 9:

S. E. of mean, Interval estimation of mean and numerical problem.

Unit 10:

- a) Correction; Concept, Definition, Methods
- b) Scattered diagram and K.P's Co-efficient of correlations; Numerical problems; co-efficient of determination.
- c) Simple Regression:
Definition, dependent & independent variable; Least square method only; Numerical problems; Assumptions; test for significance.