Course Title: Probability and Statistics

Course no: STA-103 **Full Marks**: 60 + 20 + 20

Credit hours: 3 **Pass Marks**: 28 + 8 + 8

Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)

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.

Unit2:

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 → mode $<^{odd}_{even}$
IV. do → fitting
V. do → 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 $\aleph^2$, t & F; Mean, Median, Mode, variance; Properties and applications; Concept of $\bar{\times}$ 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.