Course Code: STAT-105

Title: Elementary Statistics
Credit Hours: 03

Course Objectives:

The aim of this course is to familiarize and give students a thorough understanding of statistics particularly topics related to process of statistical solution to a problem, descriptive statistics including classification, organization and graphical presentation of data, measures of central tendency, dispersion and a survey of basic probability concepts.

Course Contents

Introduction

Descriptive and inferential statistics, basic terminologies including variable and constant, population and sample, parameter and statistic. Sequence of statistical solution to a problem. Type of measurement scales: nominal, ordinal, interval and ratio. Types of data: univariate, bivariate and multivariate data, primary and secondary data, quantitative data and qualitative data, time series, cross-sectional and pooled data. The concept of significant digits and rounding off numbers; errors: biased and unbiased.

Presentation of Data

Classification and tabulation, the frequency distribution, the cumulative frequency distribution, the relative frequency distribution, The percentage frequency distribution; Graphic and diagrammatic representation: simple and multiple bar charts, pie chart, histograms and frequency curves.

Measure of Central Tendency

Types of averages for grouped and ungrouped data including arithmetic mean, weighted mean, geometric mean, harmonic mean, median, quartiles, deciles, percentiles, mode. The summary measures and box plot. Empirical relation between mean, median and mode. Advantages and limitations of mean, median and mode.

Measures of Dispersion, Skewness and Kurtosis

Absolute and relative measure of dispersion including range, quartile deviation, mean deviation, variance, standard deviation and coefficient of variation for grouped and ungrouped data. Definition and interpretation of variance and standard deviation, computation of variance and standard deviation, properties of standard deviation and variance; skewness: Karl Pearson's coefficient of skewness, Bowley's coefficient of skewness; kurtosis and chebyshev's theorem. Covariance and correlation analysis.

Basic Probability Concepts

A survey of probability concepts: classical probability, empirical concept, subjective probability. Some rules of probability: rules of addition, rules of multiplication, conditional probability, counting rules: the multiplication formula, the permutation formula, the combination formula.

Recommended Books:

- Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. (2014). Essentials of statistics for business and economics. Cengage Learning.
- Lind, Douglas A., Marshal, William G. and Mason, Robert D., (2015) Statistical Techniques in Business and Economics (16th edition). Boston: McGraw Hill, 2003.

- Robert Johnson and Patricia Kuby (Latest issue), “Elementary Statistics”, Thomson Brooks/COLE.