

Code: STAT-101

Title: Elementary Statistics

Credit Hours: 03

Objectives:

The purpose of this course is to familiarize students with basic concepts of statistics and data analysis for their uses in economics.

Course Contents

Introduction

Descriptive and inferential statistics; Variable and constant, population and sample, parameter and statistic; The four basic activities in statistics: Designing a plan for data collection, Exploring the data, Estimating an unknown quantity, Hypothesis testing; 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; Significant digits and rounding off numbers; Errors: Biased and unbiased.

Presentation of Data

Introduction; Classification; Tabulating numerical data: The frequency distribution, The

cumulative frequency distribution, The relative frequency distribution, The percentage frequency distribution; Graphic and diagrammatic representation: Bar chart, Pie chart, Histograms, Frequency curves and Histograms; Histograms by Hand: Stem-and-leaf.

Measure of Central Tendency

Introduction; Types of Averages: Mean: Arithmetic mean, Geometric mean, Harmonic mean, Trimmed mean and Winsorized mean; Quintiles: Median, Quartiles, Deciles, Percentiles; The mode; Box plot and detailed box plot; Empirical relation between Mean, Median and Mode; The cumulative distribution function: Finding the percentile ranking for a given number, Finding the percentile for a given percentage; Summary measures and type of data.

Measures of Dispersion, Skewness and Kurtosis

Absolute and relative measure of dispersion; Different measures of dispersion: The Range, Quartile deviation, Mean deviation, Variance and standard deviation: Definition and interpretation of variance and standard deviation, Computation of variance and standard deviation, Step deviation method or coding method, Coefficient of variation, Standardized variable, Properties of standard deviation and variance; Skewness: Karl Pearson's coefficient of skewness, Bowley's coefficient of skewness; Kurtosis.

Index Numbers

Index Numbers, Un-weighted index numbers; Simple aggregative index; Weighted indexes; Laspeyre's price index, Paasche's price index, Marshall-Edgeworth price index; Fisher's ideal index; Consumer Price Index (CPI), Producer Price Index (PPI), CPI versus GDP Deflator; Issues in constructing and using index numbers; Application of index numbers to business and economics.

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.
- Anderson, D. R., Williams, T. A., & Sweeney, D. J. (2011). Statistics for Business and Economics. 12th. Cengage Learning.
- Lind, Douglas A., Marshall, William G. and Mason, Robert D., (2015) Statistical Techniques in Business and Economics (16th edition). Boston: McGraw Hill, 2003.