

SYLLABUS FOR AUTONOMY

STATISTICS

SEMESTER I

COURSE : S. STA.1.01

DESCRIPTIVE STATISTICS (A)

[45 LECTURES]

LEARNING OBJECTIVES :

- 1) To introduce the technique of data collection and its presentation.
- 2) To emphasize the need for numerical summary measures for data analysis.

Unit – 1 : Data: Types , Collection and Management. (15 Lectures)

Types of data from a population :

Qualitative and Quantitative data; Geographical, Time series data; Discrete and Continuous data, Panel and Cross Section data.

Different types of scales: Nominal, Ordinal, Ratio and Interval.

Collection of Data :

Concepts of statistical population and sample.

Primary data- designing a questionnaire / schedule, distinction between them, Problems when collecting data through the questionnaire.

Secondary data– its major sources including some government publications.

Elementary Categorical Data Analysis

Preparation of tables with two or three factors (variable /attributes) of classification. Requisites of a good table. Independence and Association for 2 attributes in a 2 x 2 table using Yule's coefficient of colligation and coefficient of association. Relationship between the two coefficients.

Unit 2 : Presentation of Data. (15 Lectures)

Univariate : Frequency distribution of discrete and continuous variables. Cumulative frequency distribution.

Graphical representation of frequency distribution by Histogram, Frequency polygon, Frequency curve and Ogives.

Diagrammatic representation using Bar diagrams and Pie chart.

Exploratory data analysis: Stem and Leaf diagram, Dot plot.

Bivariate : Frequency distribution, Marginal and Conditional frequency distributions.

Unit 3 : Measures of Central Tendency or Location. (15 Lectures)

Arithmetic mean and its properties (simple and weighted), Combined mean. Geometric mean and Harmonic mean. Quantiles (Median, Quartiles, Deciles, Percentiles.) Mode. (Grouping Method not expected). Empirical relationship between mean, median and mode. Merits, Demerits and Uses of Mean, Median, Mode, G.M. and H.M.

Requisites of a good average.

Choice of scale of measurement for each measure of central tendency.

CIA Best 2 out of 3 Internal Tests

SEMESTER II

COURSE : S.STA.2.01

DESCRIPTIVE STATISTICS (B)

[45 LECTURES]

LEARNING OBJECTIVES :

- 1) To introduce the technique of data collection and its presentation.
- 2) To emphasize the need for numerical summary measures for data analysis.

Unit –1 : Absolute and Relative Measures of Dispersion. (15 Lectures)

Range, Interquartile Range, Quartile Deviation, Mean Absolute Deviation, Standard Deviation (Variance) and their relative measures. Combined variance. Raw and Central moments up to fourth order and the relationship between them (with proof). Measures of Skewness and Kurtosis
Box-Whisker Plot.

Unit-2 : Analysis of Bivariate Data. (15 Lectures)

Scatter diagram. Product Moment correlation coefficient and its properties. Rank correlation- Spearman's measure. Concept of linear regression. Principle of least squares. Fitting of straight line by method of least squares. Relation between regression coefficients and correlation coefficient. Coefficient of determination. Fitting of curves reducible to linear form by transformation. Fitting of quadratic curve using least squares.

Unit-3 : Index Numbers. (15 Lectures)

Index number as a comparative tool. Stages in the construction of Index Numbers. Simple and Composite Index Numbers.
Fixed base Index Numbers. Chain Base Index Numbers, Base shifting, Splicing and Deflating. Price and Quantity Index Numbers - Laspeyres', Paasche's , Marshal-Edgeworth's, Dorbisch-Bowley's and Fisher's Index Numbers. Value Index Number. Time reversal test. Factor reversal test, Circular test. Cost of Living Index Number. Concept of Real Income based on the Consumer Price Index Number.
Problems in the construction of Consumer Price Index Number.

CIA Internal Tests.

List of Practicals:

SEM –I

1. Collection of Data from Secondary source (including Internet sites) / Primary source
2. Tabulation of data (Quantitative and Categorical)
3. Classification of data.
4. Graphs and Diagrams
5. Measures of Central Tendency.

SEM -II

6. Measures of Dispersion.
7. Skewness and Kurtosis.
8. Correlation Analysis
9. Regression Analysis.

10. Curve fitting by the Method of Least Squares.
11. Index Numbers.

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