

SEMESTER - I

COURSE 1: DESCRIPTIVE STATISTICS

Theory

Credits: 3

3 hrs/week

Program Objectives

1. To build the basis for promoting various statistical methods theoretically and their applications in study of multidisciplinary sciences by emphasizing real life problems.
2. To inculcate statistical thinking and computer approach towards statistical methods, tools and techniques among the students.
3. To develop skills in handling complex problems in data analysis and research design.

Course Outcomes

After successful completion of the course students will be able to:

1. To acquaint with the role of statistics in different fields with special reference to business and economics.
2. To review good practice in presentation and the format most applicable to their own data.
3. To learn the measures of central tendency or averages reduce the data to a single value which is highly useful for making comparative studies.
4. To familiar with the measures of dispersion throw light on reliability of average and control of variability.

Unit – 1: Statistical Description of Data

Origin, history and definitions of Statistics. Importance, Scope and limitations Statistics. Function of Statistics – Collection, Presentation, Analysis and Interpretation. Collection of data – primary and secondary data and its methods. Classification of data – Quantitative, Qualitative, Temporal, Spatial. Presentation of data – Textual, Tabular – essential parts.

Unit – 2:

Measurement Scales – Nominal, Ordinal, Ratio and Interval. Frequency distribution and types of frequency distributions, forming a frequency distribution. Diagrammatic representation of data – Histogram, Bar, Multiple bar and Pie with simple problems. Graphical representation of data: Histogram, frequency polygon and Ogives with simple problems.

Unit – 3: Measures of Central Tendency (MCT)

Arithmetic Mean – properties, methods. Median, Mode, Geometric Mean (GM), Harmonic Mean (HM). Calculation of mean, median, mode, GM and HM for grouped and ungrouped data. Median and Mode through graph. Empirical relation between mean, median and mode. Features of good average.

Unit – 4: Measures of Dispersion

Concept and problems – Range, Quartile Deviation, Mean Deviation and Standard Deviation and their coefficients, Variance and its applications viz. Business and Pharmacy etc.

Unit – 5:

Central and Non – Central moments and their interrelationship, Problems. Sheppard's correction for moments and problems. Skewness and its methods, kurtosis and related problems.

Text Books

1. S. C. Gupta & V. K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. K. Rohatgi & Ehsanes Saleh: An Introduction to Probability and Statistics, John Wiley & Sons.

References

1. O. P. Gupta: Mathematical Statistics, Kedarnath Ramnath & Co.
2. P. N. Arora & S. Arora: Quantitative Aptitude Statistics – Vol II, S. Chand & Company Ltd.

Suggested Co-curricular Activities:

1. Training of students by related industrial experts.
2. Assignments including technical assignments if any.
3. Seminars, Group Discussions, Quiz, Debates etc. on related topics.
4. Preparation of audio and videos on tools of diagrammatic and graphical representations.
5. Collection of material/figures/photos/author photoes of related topics.
6. Invited lectures and presentations of stalwarts to those topics.
7. Visits/field trips of firms, research organizations etc.

SEMESTER - I

COURSE 1: DESCRIPTIVE STATISTICS

Practical

Credits: 1

2 hrs/week

List of Experiments:

1. Writing a Questionnaire in different situations.
2. Forming a grouped and ungrouped frequency distribution table.
3. Diagrammatic presentation of data – Bar, multiple Bar and Pie.
4. Graphical presentation of data – Histogram, frequency polygon, Ogives.
5. Computation of measures of central tendency – Mean, Median and Mode.
6. Computation of measures of dispersion – Q.D., M.D and S.D.
7. Computation of non-central, central moments, β_1 and β_2 for ungrouped data.
8. Computation of non-central, central moments, β_1 and β_2 and Sheppard's corrections for grouped data.
9. Computation of Karl Pearson's and Bowley's Coefficients of Skewness.
10. Computation of Kurtosis.