

B.A. (VS) Insurance Management
Semester VI
DISCIPLINE SPECIFIC ELECTIVE COURSE (DSE- 6.4)
Data Analysis

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Total Credits	Lectures	Tutorial	Practical	Eligibility criteria	Pre-requisite of the course
Data Analysis DSE – 6.4	4	3	1	-	Pass in class 12th	Nil

Learning Objectives: Data analysis is a process of application of statistical tools on huge data sets by using software like R or Excel functions and formulas. It helps in reducing voluminous datasets into tables, charts, graphs and even in a set of few summary number which are comprehensible and enables analysis, interpretation and forecasting. Data Analysis is essential as it helps policymakers to design effective policies and businesses to understand their customers better, improves sales, reduces costs, and develop better problem-solving strategies.

Learning Outcomes: After completion of the course, learners will be able to: Mismatch of LO, PE and course content

- Recognize trends in data and detect outliers;
- Calculate measures of central tendency, measures of dispersion and coefficient of correlation in R and Excel
- Organize data into summary tables, multi-dimensional tables, frequency tables etc. and visualize data in form of charts, bar graphs, histograms, scatter plots etc.;
- Develop and test hypothesis to make policy decisions;
- Run simple and multiple linear regression to identify relationship between two or more variables to improve understanding of data and provide forecast.

Unit 1: Understanding different data sets; meaning of big data; structuring, summarizing and visualizing data. **10 hours**

Unit 2: Descriptive statistics- measures of central tendency, measures of dispersion, coefficient of correlation. **10 hours**

Unit 3: Hypothesis testing and statistical inference- develop and test hypothesis to analyze a single population or to analyze difference between two populations. **10 hours**

Unit 4: Single variable linear regression model; multiple variable linear regression model and forecasting. **15 hours**

Exercise:

1. Choose a data set or generate one with sample data and create visual representations using tools like Microsoft Excel, SPSS, Tableau, libraries.
2. Data Analysis and Summary:
Collect a dataset or use a provided dataset with numerical values.
 - Calculate measures of central tendency, such as mean, median, and mode, to determine the typical or central value of the dataset.
 - Calculate measures of dispersion, such as range, variance, and standard deviation, to assess the spread or variability of the dataset.
3. Gather two sets of data that are expected to have a relationship or connection (e.g., height and weight, test scores and study time).
Calculate the coefficient of correlation, such as Pearson's correlation coefficient, to quantify the strength and direction of the relationship between the variables.
4. Hypothesis Testing with Sample Data:
Formulate a research question or hypothesis related to a specific topic of interest.
 - Collect a sample dataset that is relevant to the research question.
 - Perform hypothesis testing using appropriate statistical tests (e.g., t-test, chi-square test) to analyze the sample data.
 - Interpret the results and draw conclusions based on the hypothesis testing outcomes

Notes: Hands on practice to be conducted as part of the practical on appropriate softwares like Excel, SPSS, Tableau, R Studio, etc.

Suggested Readings:

- D. Levine, D. Stephan, K. Szabat: Statistics for Managers using Microsoft Excel, 8th ed., Pearson (2017)
- Mark Gardener: Beginning R The Statistical Programming Language, Wiley (2012)
- Jay L. Devore: Probability and Statistics for Engineering and the Sciences, 8th edition, Cengage Learning (2012)
- John A. Rice :Mathematical Statistics and Data Analysis, 3rd ed. Thomson Brooks/Cole (2007)

Notes:

1. Suggested readings shall be updated and uploaded on the college website from time to time.
2. Examination scheme and mode shall be prescribed by the Examination branch, University of Delhi from time to time.