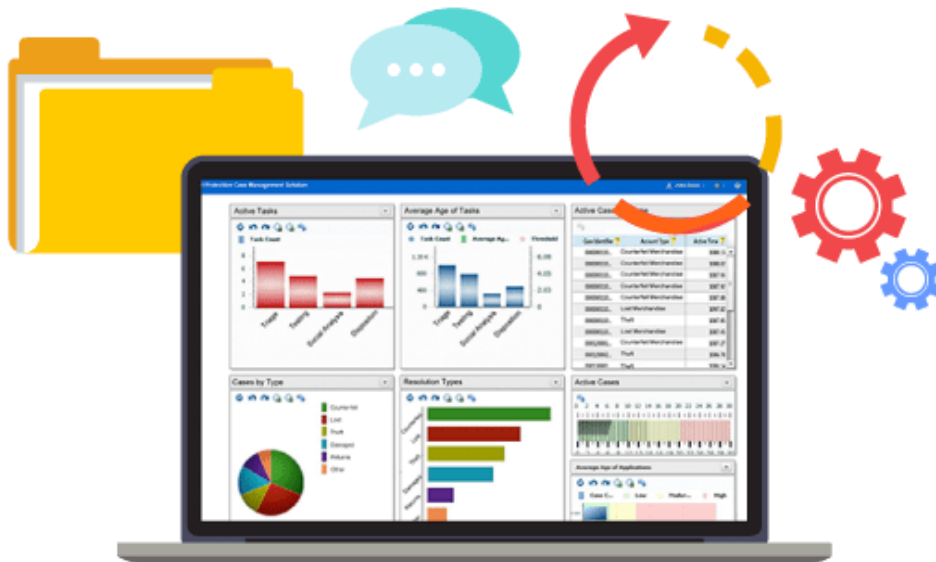# SPSS

SPSS
(Statistical Package for Social Science)

SPSS (Statistical Package for Social Science) is a tool for the statistical analysis of data. It allows performing a wide variety of statistical procedures.

Main objective of the course is to provide participants with a basic knowledge of the program in order to be able to use it in a socio-economic context and in the exploration of corporate data. Upon successful completion of this course, the student should be able to:

- Understand the main features of SPSS
- Use the SPSS GUI effectively
- Perform Descriptive Analyses with SPSS
- Perform Common Parametric and Non-Parametric Tests
- Perform Simple Regressions and Multivariate Analyses (Factor and Cluster)
- Know where to Find Help

Why SPSS is Used?

SPSS is the abbreviation of Statistical Package for Social Sciences and it is used by researchers to perform statistical analysis. As the name suggests, SPSS statistics software is used to perform common statistical operations. ... Cleaning, coding and visualisation and analysis and reporting.

What is the use of SPSS in Research?

SPSS, which stands for statistical package for the social sciences, is an application that can aid in quantitative data handling. Before SPSS, researchers had to run statistical tests on data sets by hand. However, SPSS automates this process.

SPSS (Statistical Package for Social Science)

1. **Introduction to SPSS**
   - Data Analysis with SPSS: General Aspects, Workflow, Critical Issues
   - SPSS: General Description, Functions, Menus, Commands
   - SPSS File Management

2. **Input and Data Cleaning**
   - Defining Variables
   - Manual Input of Data
   - Automated Input of Data and File Import

3. **Data Import [Excel File]**
   - Excel Data : Initial Preparation
   - Check Cell Range of Data
   - Give Variable Names
   - Store basic Checks Max Min Mean
   - Import into SPSS

4. **Data Import [Text Data / CSV Data]**
   - In Notepad or Text Pad
   - Check Total No of Rows
   - How many Rows Per Case
   - How Many Variables
   - Import Text File

5. **Scales**
   - Nominal Ordinal Interval Ratio
   - What Techniques Apply to which Type of Data

6. **Data Manipulation**
   - Data Transformation
   - Output Management
   - Re-Coding
   - If..Else Stmt

7. **Visualisation in SPSS**
   - Basics of charting: Legacy Graphs in SPSS
   - Modern Charting Techniques in SPSS
   - How to Customise Charts to Better Represent different types of Data

8. **Descriptive analysis of data**
   - Frequencies
   - Descriptives
   - Explore
   - Crosstabs
   - Charts

9. **What is Significance**
   - Statistical Tests for significance: Chi Square, t test, z test F test
   - Test of Normality

10. Statistical Tests

- Means
- T-test
- One-way ANOVA
- Non parametric tests
- Normality tests

11. Correlation

- How To Read a Correlation Table
- Data Entry for Correlational Analysis
- Choice of a Suitable Correlation Coefficient
- Non-Parametric Correlation (Kendall's Tau)
- Parametric Correlation (Pearson's, Spearman's)
- Special Correlation (Biserial, Point-Biserial)
- Partial and Distance Correlation

12. Regression

- Assumptions behind Linear Regression.
- Running a Basic Linear Regression Model
- Checking for Model Fit
- Model Diagnostics
- What Steps to Take to Improve Model Fit
- Multiple Regression (Linear)
- The method of Least Squares
- Linear Modelling
- Assessing the Goodness of Fit
- Simple Regression
- Multiple Regression (sum of squares, R and R2 , hierarchical, step-wise)
- Choosing a Method Based on Your Research Objectives
- Checking the Accuracy of Regression Model
- Logistic Regression
- Reporting the Output in APA Format

13. Sampling
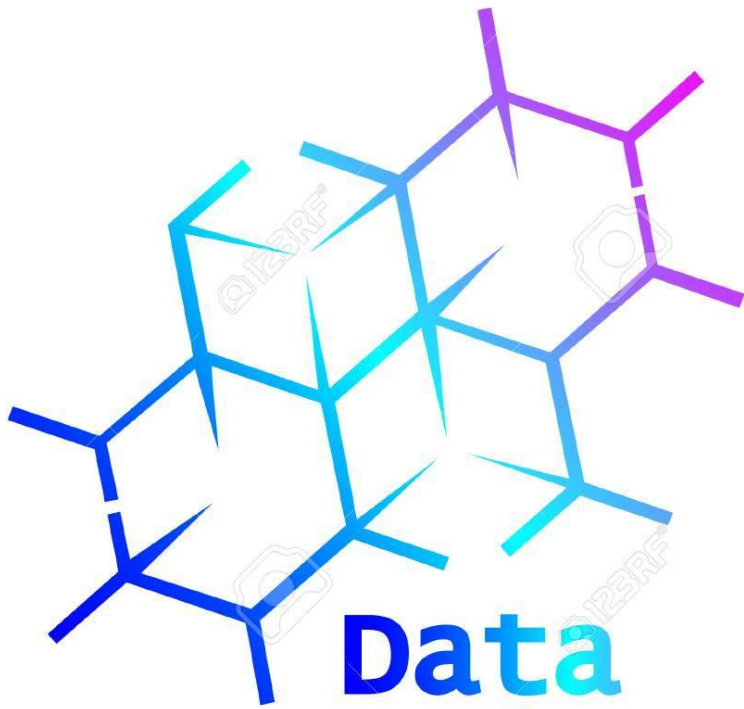- Basics of Sampling: Simple Random, Stratified Sampling

14. Tables
- Basic Frequencies
- Descriptive Stats
- Custom Tables for Reports and Slides.

15. Multivariate Analysis [Factor Analysis]
- Principal Component Analysis (PCA)
- Role of PCA in Data Analysis
- How to Choose Data for PCA
- Examining Options for Extracting Principal Components
- Interpreting PCA Output
- How are PCA Results used in Regression Modelling
- Theoretical Foundations of Factor Analysis
- Exploratory and Confirmatory Factor Analysis
- Testing Data Sufficiency for EFA & CFA
- Principal Component Analysis
- Factor Rotation
- Factor Extraction
- Factor Analysis for Test Construction
- Interpreting the SPSS output: KMO & Bartlett's Test
- Correlation Matrix
- Anti-Image
- Explaining the Total Variance
- Communalities
- Eigen-Values
- Scree Plot
- Rotated Component Matrix
- Component Transformation Matrix
- Factor Naming

16. Multivariate Analysis [Cluster Analysis]

- Basic Concepts
- K-Means How it Works
- How to Prepare Data for Cluster Analysis
- No of Clusters: How to Make an Informed Choice
- Options for Interobject Distances and Clustering Method
- Formatting and Visualisation of Cluster Results for Presentation
- Interpreting Cluster Analysis Output
- Cluster Analysis Purpose and Uses
- Selecting Distance Measures
- K-Means Clustering and Hierarchical Clustering
- Combining the Clusters
- Working with the SPSS Output: Agglomeration Schedule
- Proximity Matrix
- Cluster Membership
- Icicle Plot and Dendograms
- Transform Values and Transform Measures