

SEC: MS 405: STATISTICAL SOFTWARE PACKAGE

Course Objectives:

To familiarize students with data analysis using a statistical software package like SPSS or any other equivalent. To provide skills for research analysis and increase employability. To lay a foundation for advance data analysis work and higher education.

Learning Outcomes:

- Understand basic functions of statistical software package for managing variables and generate descriptive statistics to describe the data and analyze data through graphs and charts.
- Test differences in sample means.
- Identify relationships between variables and develop models for predicting dependent variables on the basis of independent variables.
- Understand data structures and identify clusters in data.
- Identify principal components that are relevant from a host of variables.

Course Contents:

Unit I

(3 Weeks)

Getting started with the software:

Introduction: Data Entry, Storing and Retrieving Files, Generating New Variables; Managing Data- Listing cases, replacing missing values, computing new variables, recoding variables, selecting cases, sorting cases, merging files, Graphs- Creating and editing graphs and charts; Descriptive Statistics Procedures: Frequencies, Descriptive, Explore, Cross Tabulation.

Reference:

Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication (Chapters 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 13, 14 and 16)

Unit II

(3 Weeks)

Hypothesis Testing for Means:

T-tests: One sample test, Independent samples and paired samples t-test; Anova - One way analysis of variance with post hoc analysis, Two way analysis of variance.

Reference:

Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication (Chapters 44, 45, 46, 47, 50 and 51)

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Unit III

(3 Weeks)

Testing for relationship between variables:

Parametric and Non-Parametric Chi-square analysis; Bivariate Correlation and simple scatter Plot; Linear Regression: Simple Linear Regression, Multiple regression analysis with matrix scatter plot; Binary Logistic Regression, Discriminant Analysis.

Reference:

Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication (Chapters 61, 62, 63, 65, 22, 24, 26, 30 and 55)

Unit IV

(3 Weeks)

Analysis of Structure:

Cluster analysis: Hierarchical Cluster analysis, K-Means Cluster Analysis; Factor analysis / Principal Components Analysis

Reference:

Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication (Chapters 59, 60, and 38)

Textbooks:

1. Performing Data Analysis using IBM SPSS, Lawrence S. Meyers, Glenn C. Gamst, A. J. Guarino, Wiley Publication
2. SPSS for Windows Step by Step A Simple Guide and Reference, Darren George and Paul Malley
3. SPSS in Simple Steps, Kiran Pandya, Smruti Bulsari, Sanjay Sinha, Dreamtech Press

Additional Readings:

1. Using SPSS in Research, Dr. Radha Mohan, Neelkamal.

Teaching Learning Process:

Lecture, demonstration of software application, videos, PowerPoint presentations, data analysis using software and lab assignments.

Assessment Methods:

- Internal Assessment : 25 marks
- Practical : 25 marks

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- Written Theory Exam : 50 marks

Keywords:

Data, variables, hypothesis, t-test, ANOVA, correlation, regression, cluster analysis, factor analysis, Discriminant analysis.