

Certificate Course on Basics of Statistical Data Analysis

Offered by
Department of Statistics, Vimala College (Autonomous), Thrissur

Overview

The word “Data” drives the current world. Every nation or organization, or even a single person can crumble or strengthen with the power of data. An increasingly digital-driven world also boasts of data that is more measurable and trend-reflective.

This certificate course will provide a comprehensive and exhaustive hands-on experience on data science based software packages such as spreadsheets and SPSS after strengthening the theoretical frame work of statistical concepts. The major topics covered are measures of central tendency, dispersion, graphical representation of data, verifying the relationship between the variables and establishing a model based on their relationship.

Course Objectives

1. To develop the student's ability to deal with numerical and quantitative variables
2. To have a proper understanding of statistical investigations on data analytics
3. To enable the use of software packages on data manipulation and its interpretation

Course Outcomes

On completion of this course, the students will be able to:

1. understand and discuss critically that data based on central tendency measures, dispersion measures, and relation measures.
2. handle the spreadsheets and SPSS and basic data manipulations on it
3. perform basic statistical analysis and its interpretation based on spreadsheets and SPSS

Syllabus

Module I

Introduction to data, presentation of raw data, graphs and diagrams (Pie chart, Bar chart, and Histogram), measures of central tendency (Mean, Median and Mode) and dispersion (Standard deviation), correlation (Pearson’s and rank correlation), linear regression.

Module II

Elements of a spreadsheet (Excel or Google sheet or Open Office or Libre Office), creation of worksheets, editing, formatting, and saving, introduction to functions in a spreadsheet, if function, freeze panes, vlookup, hlookup, sorting, filter and creation of pivot tables.

Module III

Data analysis using spreadsheets - graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode, Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Module IV

Data analysis using SPSS - the creation of data file, editing, saving, graphs and diagrams (Pie chart, Bar chart, and Histogram), summary statistics (Mean, Median, Mode and Standard deviation), calculation of correlation coefficient and performing a simple linear regression.

Reference

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3. Alexander, M., & Kusleika, R. (2016). Excel 2016 Formulas. John Wiley & Sons.
4. Salkind, N. J. (2015). Excel statistics: A quick guide. Sage Publications.
5. Schmuller, J. (2013). Statistical analysis with Excel for dummies. John wiley & sons.
6. George, D., & Mallery, P. (2019). IBM SPSS Statistics 26 step by step: A simple guide and reference. Routledge.
7. McCormick, K., & Salcedo, J. (2017). SPSS statistics for data analysis and visualization. John Wiley & Sons.