



Programming with R statistical package

Course duration:

30 hours.

Description:

R is an open-source mathematical package for statistical computing and graphics.

During the course, students will create scripts for data analysis and visualisation, by understanding the fundamental concepts, syntax and semantics of this programming language.

This course is suitable for students with no or little programming experience and it will offer a hands-on experience using this modern statistical analysis package.

Syllabus covered:

1. The R Environment

- Command Line Interface
- R Studio
- Command Packages

2. Basics of R

- Basic Math
- Variables
- Data Types
- Vectors
- Calling Functions
- Function documentation
- Missing Data

3. Advance Data Structures

- Data frames
- Lists
- Matrices
- Arrays

4. Reading Data into R

- Reading CVs
- Excel Data
- Reading from Databases
- Data from other statistical tools
- R Binary Files
- Data included with R

5. Statistical Graphics

- Base Graphics
- Box-whisker plots, scatter plots, line charts, pie charts, bar charts

6. Writing R Functions

- Hello World!
- Function arguments
- Return values

7. Control Statements

- if and else
- switch
- ifelse

8. Loops and iterations

- for loops
- while loops
- Controlling loops

9. Probability Distributions

- Normal distribution
- Binomial Distribution
- Poisson Distribution

10. Basic Statistics

- Summary statistics
- Correlation and Covariance
- t-Tests
- ANOVA

11. Linear Models

- Simple Linear Regression
- Multiple Regression