Course : R environment, manipulations and elementary statistics

Practical course - 2d - 14h00 - Ref. MDR
Price : 1680 CHF E.T.

★★★★⯨ 4,7 / 5

R is a language and software dedicated to statistical processing. It also offers high-quality tools for data visualization. This course is designed for participants who are already familiar with the R language and who wish to carry out elementary statistical processing and professional displays.

🎯 Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Build datasets for analysis from multiple sources
- ✓ Manipulate data to transform them using various functions
- ✓ Drawing curves and graphs with R
- ✓ Apply several algorithms for calculating statistical indicators

Intended audience
Statisticians, analysts, engineers, developers. Anyone who needs to manipulate data, process data numerically and graphically, or create statistics in R.

Prerequisites
Basic knowledge of R software, or knowledge equivalent to that acquired in the course "R environment, introduction" (ref. TDA).

Course schedule

1 Reminders

- The RStudio environment.
- Data types in R, lists, DataFrames, factors and ordinal variables.
- Dates and time series.

Hands-on work
Getting to grips with scripts in the RStudio environment.

(2) Import-export and data production

- Read an ASCII text file, Excel, SPSS, Minitab, SAS or Matlab.
- Read data from the keyboard and copy and paste.
- Read/write files and databases.

Hands-on work
Read/write data from files, database, data lake and in R format.

(3) Data manipulation, functions

- Operations on matrices or DataFrames.
- The outer, apply, lapply, sapply and mapply functions.
- Logical and relational operations.
- String manipulation. Date and time unit manipulation.

Hands-on work
Handle matrices and DataFrames. Use lapply or sapply functions to replace for loops.

(4) Techniques for drawing curves and graphs

- Graphic windows: handling, saving.
- Low-level plot functions.
- Color management and graphic parameters.
- Add text, titles, axes and captions.
- Cross, organ pipe, stacked or circular diagrams. Mustache box.
- Empirical distribution function graph. Density histogram with equal or unequal class amplitudes.
- Frequency polygon. Graphical representations in a bivariate framework.

Hands-on work
Techniques for drawing curves and graphs.

(5) Elementary mathematics and statistics

- Structuring variables according to type.
- Digital summaries.
- Association measures.
- Concepts of random number generation and random variables.
- Law of large numbers and central limit theorem.
- Confidence intervals.
- Standard hypothesis testing. Other hypothesis tests.
- One-factor, two-factor or repeated-measures analysis of variance.

Hands-on work
Implementation of the algorithm for determining the type of a variable. Interpretation of a confidence interval.

Dates and locations

REMOTE CLASS
2026 : 30 Mar., 28 May, 8 Oct.