Data Visualization in R – 3CFU 15 hours

Brief course description

The Course will provide the basics of the R programming language necessary for data visualization. Students will be introduced to the graphic user interface "R studio" and the "ggplot2" package. At the end of the course students will have sufficient knowledge to represent the most common graphic forms of data visualization such as Bar charts, Boxplots, Violin plots and Scatterplots.

Course dates:

The course will be carried out in September, in the second and third week. It will be divided in the following days

10th of September 2025 from 9.00 – 13.00

11th of September 2025 from 9.00 – 13.00

17th of September 2025 from 9.00 – 13.00

18th of September 2025 from 9.00 – 12.00

Location:

Aula H – ingresso A -edificio 5 PT

Lecturer:

Dr. Antonino Cusumano (antonino.cusumano@unipa.it)

Requirement

Students should bring their own PC in class. Students should have installed in their own PC: 1) the R software (http://r-project.org); 2) R studio graphical user interface (https://posit.co/download/rstudio-desktop/); It is also advisable that the relevant packages are installed but this can also be done during the course if student have no basic knowledge of R.

> To install the ggplot2 Package
> in the R console type: install.packages("ggplot2");
>
> To install the patchwork Package
> in the R console type: install.packages("patchwork ")

Day one - An introduction to R and Rstudio

- How to Install packages
- Creating objects
- Data structures

- Working with vectors and data frames
- Reading data into R

Day two and day three – Plotting with R with a focus on the ggplot2 package

- Plot data in the basic R environment
- introduction to ggplot2 package
- the grammar of graphics and aesthetic mappings
- Bar charts
- Boxplots, Violin plots and jittered points
- Scatterplots
- Graphical Representation of Multivariate Data
- Making multiple panel plots with the patchwork package

Day four – Case studies

- Case studies will be carried out in close collaboration with the students using their own data