

Introduction to R

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Course description: This course provides an introduction to the statistical programming language R. The course material centres on the core tasks necessary to perform statistical analyses underlying quantitative research in the social sciences. No previous knowledge of R is necessary to follow this course, we will begin at zero. The goal of this course is to get the students familiar with R and provide them with an introduction to key functions, packages, and prominent datasets in Political Science. Upon successful completion of the course, students are capable to perform the complete workflow of a quantitative research project in R before conducting an analysis. This includes basic R programming, data import, data cleaning and wrangling, exploratory data analysis and visualization. Additionally, students will get time to perform coding exercises. The material is constructed around five modules. Each module is divided into different units and ends with exercises. The material will be provided in a ZIP file, which can be downloaded in R.

Requirements: Please bring your own laptops and charging devices. Download and install [R](#) and [R Studio](#). [Here](#) you can find nice instructions on how to download R and RStudio.

Time Schedule:

28.08. Mo 2.00 pm - 5.15 pm
29.08. Tue 9.15 am - 5.15 pm
30.08. Wed 9.15 am - 1.15 pm
31.08. Thu 9.15 am - 5.15 pm

Content

1. The R environment

- Basic Functionality (Calculations, Vectors, Matrices, Lists)
- Object classes
- Accessing, Subsetting and Naming Objects

2. Data Manipulation

- Pipelines or Piping
- The tidyverse - Dplyr
- Loading and Storing Data
- Ordering your Data
- Transforming Variables
- Missing Values
- Merging Data

3. Exploratory Data Analysis

- Summary Statistics - the Psych package
- Frequency Tables
- Cross-Tabulations, Correlation Matrices

4. Data Visualization

- The tidyverse - ggplot2
- Constructing Plots
- Lineplots, Boxplots, Scatterplots
- Histogram, Densityplots

5. R Programming

- For-Loops
- Apply function
- Functions