

CODING IN R

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Research
Education
Outreach

CCA

Contact Information

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Learning Objectives

The module is aimed at providing students with a basic knowledge of the R software. At the end of the module, students should possess a basic set of tools to undertake their own data analysis in most standard cases. Moreover, they should be comfortable exploring new R packages, when required, for more advanced applications.

Prerequisites

No prerequisites are required for this course.

Course Content

The module is an introduction to the R language and mainly covers the following topics:

- 1) Basic data types;
- 2) Data structures;
- 3) Control structures/loops and functions;
- 4) Reading and writing data;
- 5) Advanced tools for data manipulation and data visualization.

Course Methodology

The course consists of 14 hours of computer lab. Students will be taught how to write their own code through concrete examples. Programming is a skill that is best learned with a lot of practice, so as much as possible students will be working on a variety of tasks and activities throughout each lecture.

Grading

The final grade will be based on a 2h open book exam at the end of the course, containing exercises similar to those assigned during the lectures: students are allowed to consult the slides provided by the instructor, the notes they took during the lectures and the R helper. Points attributed to each exercise depend on the complexity of the exercise they refer to. Exercises can require to write an R-script, to complete a given code or to comment an output.

R / RStudio

R is a programming language that is especially powerful for data exploration, visualisation, and statistical analysis. To interact with R we will primarily be using RStudio, an interactive development environment (IDE). It is recommended students install R (<http://www.r-project.org/>) and RStudio (<https://rstudio.com/>) on their own laptop before the beginning of the course.

Textbooks

There are no required textbooks for this course, the following textbooks are recommended for supplementary and reference purposes:

- [Advanced R](#) - Wickham - Chapman and Hall/CRC, 2014 (978-1466586963)
- [R Packages](#) - Wickham - O'Reilly, 2015 (978-1491910597)
- [R for Data Science](#) - Golemund, Wickham - O'Reilly, 2016 (978-1491910399)