



Research
Education
Outreach

CCA

Allievi Program and MAFiRM

TUTORIAL IN R CODING

Fall 2021

Instructor: Silvia Montagna

Contact Information

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Introduction

R is a programming language that is especially powerful for data exploration, visualisation, and statistical analysis. This module aims 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 exploratory data analysis. Moreover, they should be comfortable exploring new R packages, when required, for more advanced applications.

Prerequisites

There are no prerequisites for this course, although familiarity with another programming language will facilitate learning.

Course Content

The module mainly covers the following topics:

- 1) Basic data types
- 2) Data structures
- 3) Control structures/loops and functions
- 4) Reading and writing data
- 5) Tools for data manipulation (dplyr package), data visualization (ggplot2), and functional programming (purrr)
- 6) Web scraping (if time allows)

Grading

The final grade will be based on a take-home exam at the end of the course. Students are not allowed to work in group(s) on the final exam.

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)

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.