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**CCA**

# **CODING IN R**

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## **Contact Information**

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Office Hours: Send me an email and we set up an appointment

## **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)