

R PROGRAMMING SKILLS

Fall 2022

Lecturer: Benjamin Schlegel	Lecture Time: Wednesday 12.15 – 13.45
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Goal: R is a very useful open source program to perform statistical computations and draw nice graphics. The program can be very helpful for the master thesis, but also for later. If you decide to write a PhD and plan your career at the university, if you plan to work at the government or if you want to become a journalist, R will often be a useful tool to make things easier and faster.

As the world get more and more digitalized, it get more and more important to know how to write computer code. The goal of this course is that you learn some basics of computer science on software level. We will apply it with the open source software R, which is useful for many tasks. We start with basic elements like loops and branches. We will learn when and how to write a function in R. Further we will cover how to write efficient and parallel code which decreases the execution time of your code. When you have written a efficient function you might want to include it in a package that everyone can use it. So we learn how to write a package in R. Then we will cover object oriented programming. Finally we learn how to work with an SQL-Database to read and write data from and to it from R.

Course Pages

1. <https://lms.uzh.ch/olat/dmz/>

Office hours / R-Helpdesk: Wednesday, 14:30 - 16:30 or by appointment (H-343).

Requirements: Basic knowledge of R

Software: This course is taught with the open source statistics program R. Because of its flexibility, universalism and the excellent graphic possibilities, R is becoming more and more the standard program of data analysis in political science. R is available for all major operation systems and can be downloaded from [Comprehensive R Archive Network](#). I highly recommend you to also install [RStudio](#), which has a nice graphical interface for R. Make sure to first install R and then RStudio.

Assessment: In this course there will be 3 exercises and 1 mini-project task. For every exercise you can get a max. of 100 points (total: 300 points). The exercises count 75%. The other 25% are the mini-project(s).

Important: Please register for the course in the *Modulbuchungstool*. Otherwise you will not be able to get any ETCS-Points for the course.

Program:

Week 1 – September 21st – Introduction, R Project, R Markdown

Week 2 – September 28th – Tidyverse

Week 3 – October 5th – Modelizing, Basic Concepts, Writing a Function, Recursive Function
start of HW 1 (deadline: October, 20th 2022 8am)

Week 4 – October 12th – Writing Efficient and Parallel Code

Week 5 – October 19th – OOP: Concept, S3 and R6

Week 6 – October 26th – Using what we learned: Writing a S3-simulation function
start of HW 2 (deadline: November, 10th 2022 8am)

Week 7 – November 2nd – SQL Read

Week 8 – November 9th – SQL Write
start of HW 3 (deadline: November, 24th 2022 8am)

Week 9 – November 16th – Regex, Webscraping

Week 10 – November 23rd – Package Development

Week 11 – November 30th – Using what we learned: Webscraping and saving into a DB
start of mini projects (deadline: December, 20th 2022 8am)

Week 12 – December 7th – OPEN - your wishes

Week 13 – December 14th – OPEN - your wishes

Week 14 – December 21st – OPEN - your wishes, feedback