R Programming Skills

Fall 2020

Lecturer:	Benjamin Schlegel	**Lecture Time:**	Do. 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: Thursday, 14.30 - 16.30 or by appointment (Microsoft Teams).

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 6 exercises. You will get the exercise after every other lecture and you have to hand it in two weeks later, Wednesday, 13.00 on OLAT. For every exercise you can get a max. of 100 points. Every exercises contains three parts. Part A (40 points) should be easy, here you are allowed to collaborate, but just copy/paste is not allowed. Part B (Medium, 40 points) and C (hard (and often time consuming), 20 points) you have to do on your own. The exercises count 90%. The other 10% is active collaboration.

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, 17th – introduction

Week 2 – September, 24th – tidyverse

Week 3 – October, 1st – modelizing / basic concepts

Week 4 – October, 8th – writing a function

Week 5 – October, 15th – recursion / documentation

Week 6 – October, 22th – writing efficient and parallel code

Week 7 – October, 29th – package development

Week 8 – November, 5th – package development

Week 9 – November, 12th – OOP / classes

Week 10 – November, 19th – OOP / classes

Week 11 – November, 26th – SQL - read

Week 12 – December, 3rd – SQL - read

Week 13 – December, 10th – SQL - write

Week 14 – December, 17th – feedback