

WAT-E2090

Water and People in a Changing World – Fall 2022

Pre-assignment

1. Introduction

The Water and People course consists of lectures, hands-on sessions, workshops, and independent project work. Computation using R over RStudio is in the core of the hands-on parts of the course. In the weekly hands-on sessions, we will be using Aalto computers, which can also be accessed remotely through the Aalto virtual desktop infrastructure (VDI).

We recommend using the Aalto computers, especially given that remote access through VDI is possible. However, it is possible to install all required software to your own computer (see extra instructions in the end of this document). The benefit of using your own computer is that it may have more computing power and personalized environment, but some additional work is required for the setup.

Please, do make the choice whether using the Aalto or your own computer already now, and ideally keep using the same environment throughout the course to avoid troubles.

The following instructions outline the steps to be taken in order to set up the course's computing environment and to get started with the pre-assignment. **The main goal of the pre-assignment is to get everyone's computing environment up and running already before the first exercise;** this way, we can concentrate on the exercise topic rather than spend time solving technical issues. For those previously not familiar with R, the pre-assignment also outlines some of the basic syntax, structures and operations of R.

2. Completing the pre-assignment

To get started with the pre-assignment, please see the videos below on how to get going. You can complete the pre-assignment in three ways:

- Using Aalto computers in a classroom, e.g. U351 in Otakaari 1 (videos 2-5 required)
- Using Aalto computers through Aalto VDI (videos 1-5 required)
- Using your own computers (videos 2-5 required)

Most of these videos are recycled from previous years, but they are still applicable. *Please note that the correct name of the course directory is wp-course-fall22 and the cyan identifier "master" in Shell has been changed to "main".*

The first video demonstrates how to connect to Aalto VDI. Even if you are planning to use the classroom computers or your own computer, it's good to watch it since the VDI provides an easy way to use Aalto software remotely, including e.g. Adobe Illustrator. We recommend opening a computer in classroom U351 or Y344 since there they have all the software used on this course.

The VDI is available in <https://vdi.aalto.fi/>. It requires a two-step authentication from the user: 1) Aalto credentials and 2) your choice of the second authentication step (either Microsoft Authenticator app or text message).

[Video: Connecting to Aalto VDI](#)

The second video demonstrates how to set up the course project from Aalto version control system that is used in distributing the exercise data and code. This step requires Git to be installed. The repository address is <https://version.aalto.fi/gitlab/wdrg/wp-course-fall22.git>

[Video: Creating the course project](#)

The third video demonstrates how to write and run code in rmd (R-markdown) files that will be used throughout the course. Instructions on what to do in the pre-assignment are attached to the code. Please read and run the code chunk by chunk and compose the plots to be returned. After doing that, return to these instructions and watch the remaining videos on customizing RStudio, finishing up the pre-assignment with a commit, and videos with useful tips and tricks.

[Video: Getting started with the pre-assignment](#)

The fourth video demonstrates how to customize RStudio. Customizing makes the coding experience a lot better. At minimum, you should disable console hiding after running chunks as instructed in the video.

[Video: Customizing RStudio](#)

The final video demonstrates how to create a *commit* after a working session in RStudio. The commit can be considered as a “checkpoint” that must be created each week before a new exercise is released. Please watch this video carefully, since **fetching new exercise material from the course repository is not possible if the commit has not been done.**

[Video: Finishing up the pre-assignment with a commit](#)

3. Additional instructions

Here are some additional videos that can be helpful when working with the pre-assignment. First, there’s a **short video on working with VDI and on how the connection is maintained.**

[Video: Working with the VDI](#)

Finally, **there are a couple of practical ways of moving files between the Aalto file system and your local machine.** This can be useful if you want to do some parts of your work in the VDI but some others with your own computer.

[Video: Moving files between VDI and your local machine](#)

4. Getting help

As mentioned, **the goal of the pre-assignment is to set up the computing environment ready for everyone before the first exercise** – be it on Aalto or your own computers. If you get stuck with the instructions and can’t get something to work, we’ll help you. We will host two timeslots during which we can set up one-to-one meetings with you to resolve issues. Help session timeslots are hosted in [course Teams](#).

Monday, October 24th from 13 to 15 (Sara Heikonen & Mika

Jalava): [Join meeting](#)

Tuesday, October 25th from 9 to 11 (Sara Heikonen & Mika

Jalava): [Join meeting](#)

If you need assistance, we’d kindly ask you to attend to the sessions above. If you are unable to join either but you would need help with the pre-assignment, send an e-mail to Sara Heikonen (sara.heikonen@aalto.fi) or Mika Jalava (mika.jalava@aalto.fi), also describing the

problem briefly.

Extra: Setting up the environment in your own computer

We need three main components to be installed for the exercises:

- **R language** itself
 - o Windows: <https://cran.r-project.org/bin/windows/base/>
 - o macOS: <https://cran.r-project.org/bin/macosx/>
 - o Linux distributions: <https://cran.r-project.org/bin/linux/>
- **Git** version control software to distribute exercises
 - o <https://git-scm.com/downloads>
- **RStudio** for writing and running the code neatly.
 - o <https://rstudio.com/products/rstudio/download/>

If you already have an R installation on your computer, it is **highly recommended to update it to version 4.2.1**. Older versions might work but have not been tested. There's plenty of guides available on how to install R & RStudio, see for example [here](#) if you want a more graphical instruction.

When installing Git, you will need to make sure that Git and RStudio can communicate. To do this, make sure that in the Git installation step *"Adjusting your PATH environment"*, the option *"Git from the command line and also from 3rd-party software"* is selected.

The defaults for all other installation options should work fine.

In the pre-assignment, we will check the installation status of required packages and test if the environment is working. There's also a video on detailing the package check on your own computer. If you're missing some packages, this video will guide you how to install those. In addition, if you already have an environment set up in your computer, it is highly recommended to update packages as instructed in the video. This way, errors from incompatible and outdated packages can be avoided.

[Video: Doing package check and update on home computer](#)

Note: the latest version of R is now 4.2.1 and not 4.0.5 as shown in this video from 2021