Data Science:
Statistical programming with R (S24)
14-18 July 2025

Course Director: Dr. Laurence E. Frank
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Day	Time	Type	Description	
Monday	09:00 – 12:00	Lecture, computer lab, Plenary discussion	Welcome. Introduction tot the R environment (RStudio) and the online resources. Introduction to reproducible data analysis with R Markdown. Organise your work with R Projects.	**Koningsberger building** Room Pangea
	12:00 - 13:00	*Lunch Break*	In **Vening Meinesz building A**	
	13:15 - 16.30	Lecture, computer lab, Plenary discussion	R programming basics: how to work with packages and functions, resources and getting help, R objects and data types.	**Koningsberger building** Room Pangea
Tuesday	09:00 – 12:00	Lecture, computer lab, Plenary discussion	Data manipulation with tidyverse: dplyr functions, pipe operator. Re-coding and transforming variables.	**Koningsberger building** Room Atlas
	12:00 - 13:00	*Lunch Break*	In **Vening Meinesz building A**	
	13:15 - 16.30		Data visualisation with ggplot2. Uni- and bivariate plots. Plots for numerical and categorical data. Plot arrays and faceting.	**Koningsberger building** Room Atlas
Wednesday	09:00 – 12:00	Lecture, computer lab, Plenary discussion	Fitting linear models. Continuous and categorical predictors. Interactions.	**Koningsberger building** Room Atlas
	12:00 - 13:00	*Lunch Break*	In **Vening Meinesz building A**	
	13:15 - 16.30	Lecture, computer lab, Plenary discussion	Model diagnostics. Linearity, normality, homoscedasticity and outliers. Polynomials and splines.	**Koningsberger building** Room Atlas

Thursday	09:00 – 12:00	Lecture, computer lab, Plenary discussion	More advanced statistical programming: write your own function, for loops.	**Koningsberger building** Room Atlas
	12:00 - 13:00	*Lunch Break*	In **Vening Meinesz building A**	
	13:15 - 16.30	Lecture, computer lab, Plenary discussion	Inferential models and resampling (bootstrap).	**Koningsberger building** Room Atlas
Friday	09:00 – 12:00	Lecture, computer lab, Plenary discussion	Report the results of data analyses inpublication ready tables and other communication modes in Rmarkdown. Apply what you learned in this course on a data set: the entire data analysis cycle (import, tidy, transform, visualise, model, communicate the results) and make a report or presentation.	**Koningsberger building** Room Cosmos
	12:00 - 13:00	*Lunch Break*	In **Vening Meinesz building A**	
	13:15 - 16.30	Lecture, computer lab, Plenary discussion	Presentations of statistical analyses with slides or report.	**Koningsberger building** Room Cosmos

In the morning, at around 10:00, there will be coffee and tea breaks. Additionally, in the afternoon around 15:30, breaks will include sodas and fruit.

For information about the Social Programme, please visit the <u>Utrecht Summer School website</u>!