

UNIQ+ Introduction to R 2025

Doctoral Training Center - Seminar Rooms 2A and 2B

Please Note: Prior to the course, participants are asked to install R and RStudio (<https://posit.co/download/rstudio-desktop/>). If you run into any issues with installation, the instructors will be on hand from 9:00 to help troubleshoot.

Course materials: https://github.com/micahpf/UNIQplus_R_Course_2025/tree/main

Thursday 10th July - R Fundamentals

Morning - Introduction to R

R and RStudio Installation Troubleshooting - 9:00-9:30

Session 1.1 - 9:30-10:15

- Introductions
 - Course Structure, Goals
- Intro to R and RStudio
- Demo - Getting Started
 - R as a calculator
 - Functions
 - Finding help
- *Exercise*

Session 1.2 - 10:20-11:00

- Data types (numeric, character, factor)
- Data structures (atomic vectors, data frames, lists, matrices)
- Arithmetic with data structures
- Subsetting, filtering, reordering
- *Exercise*

Tea/Coffee Break 11:00-11:15

Session 1.3 - 11:15-12:30

- Conditionals
- Loops: for, while
- apply() family
- Custom functions
- *Exercise*

Lunch - 12:30-13:30

Afternoon - Exploring data

Session 1.4 - 13:30-14:30

- Importing data
- Tabular data
- Missing values
- Summary statistics
- Plotting with base R
- *Exercise*

Session 1.5 - 14:45-15:30

- Another example dataset
- Matrix data
- More plotting with base R
- *Exercise*

Session 1.6 - 15:45-16:30

- Choose your own adventure
 - *Exercise*
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Friday 11th July - Into the Tidyverse

Morning - Advanced plotting and data wrangling

Session 2.1 - 9:30-10:15

- Packages: Installing & loading
- Plotting with ggplot2
 - Geometries, aesthetics
 - Facets
- *Exercise*

Session 2.2 - 10:20-11:00

- Long, wide, and tidy data
- Verbs: select, filter, mutate
- Pipes: |>, %>%
- Grouping: count, group_by, summarize
- *Exercise*

Tea/Coffee Break 11:00-11:15

Session 2.3 - 11:15-12:30

- Reshaping data
- Data wrangling and plotting
- *Exercise*

Lunch - 12:30-13:30

Afternoon - Reproducible research

Session 2.4 - 13:30-14:30

- Reproducible research
- Revisiting RProjects and files: `here()`
- RMarkdown
- *Exercise*

Session 2.5 - 14:45-15:30

- Practice exploratory data analysis

Session 2.6 - 14:45-15:30

- Practice exploratory data analysis