# 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/](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.**

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## 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