*Prior to the course: Participants are requested to install R (*[*https://cran.r-project.org/*](https://cran.r-project.org/)*) and RStudio (*[*https://posit.co/download/rstudio-desktop/*](https://posit.co/download/rstudio-desktop/) *).*

**Thursday 4th July**

**Session I: 9:30-10:15**

* Introductions
* Course structure
* Goals
* Install R/RStudio, download course materials
* Demo – ‘Getting started’

**Session II: 10:30-11:15**

* Reading and summarising dataframes (NYC Squirrel)
* Read/import datasets
* Exploratory data analysis (NYC Squirrel)
* Demo – ‘NYC Squirrel’

**Session III: 11:30-12:30**

* Motivation – NYC datasets: research questions and hypotheses
* Research question 1 (basic R)
* Subsetting/filtering

**Lunch break: 12:30-13:30**

**Session IV: 13:30-14:30**

* Installing packages
* Tidyverse introduction
* Demo – ‘NYC Squirrel Tidyverse’

**Session V: 14:45-15:30**

* Research question 2 exercise

**Session VI: 15:45-16:30**

* Data structures (atomic vectors, data frames, lists, matrices)
* Research questions
* Demo – ‘Data structures’

**Monday 8th July**

**Session I: 9:30-10:15**

* Introduction to new dataset: superheroes
* Work on your own: data exploration
* Motivation

**Session II: 10:30-11:30**

* Handling missing values
  + Merging data.frames
  + Basic statistics

**Session III: 11:45-12:30**

* + Demo – ‘Missing values, merging, stats’

**Lunch break: 12:30 – 13:30**

**Session IV: 13:30-14:15**

* Plotting with base R
* Histograms, boxplots
* Export graphs
* Exercise

**Session V: 14:30-15:15**

* Plotting with ggplot2
* Introduction/installation
* Export graphs
* Exercise

**Session VI: 15:30-16:30**

Exercise (plotting your own research questions) & discussion

**Monday 15th July**

**Session I: 9:30-10:30**

* Conditionals
* Demo – ‘Conditionals’
* Loops
* Demo – ‘Loops’

**Session II: 10:45-11:30**

* Exercise & discussion

**Session III: 11:45-12:30**

* Functions

**Lunch break: 12:30-13:30**

**Session IV: 13:30-16:00**

* Reproducible data analysis (commenting, Rmarkdown)
* Demo – ‘Markdown’
* Introduction to datasets
* FitBit (few files)
* Diabetes
* Best songs on Spotify 2000-2023
* US births
* Glass door gender gap
* Life expectancy (WHO)
* Student mental health
* Bladder Cancer Recurrence Dataset
* UFO sightings

**Monday 22nd July**

**Session I: 9:30-12:30**

* Capstone project, work in groups
* Presentation of results in groups
* Work through solutions
* Additional resources