**Background information**

In this practical, we will be introducing the programming language R, using the interface R Studio. We will then use R to implement the SIR models explored in Practical 1.

To prepare for the practical, please install the R programming language and R Studio.

To install R, follow the instructions at:

<https://cran.r-project.org/bin/windows/base/>

To install R Studio, follow the instructions at:

<https://posit.co/download/rstudio-desktop/>

Once these are installed, please open R Studio. If you have not used R before, you might like to explore the interface and try it out – there are many online guides to using R and R Studio. We will also have a section in this practical on using R, but any prior experience will be helpful.

To be ready for the course, please open R Studio and go to the console, usually on the bottom left:

A screenshot of a computer screen

AI-generated content may be incorrect.

To install the required packages, type in each of the following lines (hit Enter after each line):

install.packages(“tidyverse”)

install.packages(“ggplot2”)

install.packages(“patchwork”)

install.packages(“EpiNow2”)

install.packages(“deSolve”)

**The practical**

This practical will be comprised of three parts.

*Part 1: part0\_R\_basics.R*

In the first part, we will work through an introduction to using R in R Studio. This will be an interactive workshop where we will work through the commands in R as a group. We will look at basic operations and assignments, functions, working with dataframes, and reading in data.

*Part 2: part1\_R\_plotting.R*

In this part of the tutorial, we will work through how to create some plots using a package called ggplot2.

*Part 3: part2\_SIR\_models.R*

Finally, we will replicate the deterministic and stochastic SIR models that we explored in the first practical.