

# APPM27020

## Week 3 *Lecture 4*

### Plotting data

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This lecture will cover the basics of plotting data using the `plot` and `hist` functions.

#### Some basic concepts for graphics:

- Put as much information on a figure as you can and still keep the message clear.
- Always label the axes, give the plot a title and include legend if you plot different groups using different colors or symbols
- Think of your plotting region as a canvas and fill it up big blank areas are often confusing.
- If you just have a few values to show consider just listing them as a table
- If you have lots of values to show try to plot them. *Don't* just list them as a table.
- Different colors are helpful but use them sparingly

#### Drawing plots in R

The `plot` has lots of options but the most important technique is build up a complex (and useful!) figure in several simpler steps.

- use a function such as `plot` to draw the initial figure and set the axes scales, etc.
- use some helper functions to add more information.
  - `points(x,y)`
  - `lines(x,y)`
  - `text(x,y, label)`

- use additional options, `cex` , `col` `pch` , `lwd` and `lty` to adjust the size, color, plotting character, line width and line type.
- adjust the axis scales with `xlim` and `ylim` and use log scaling with the `log` argument.
- Remember use the help function and search on the web you are probably not the first to have a particular question about plotting in R!

Add a legend for the plot symbols or colors with the `legend` function (this takes a little practice to use it.)

If you want a separate and larger plotting window outside of R studio use the `quartz()` function to create one.

Some other high level plot functions in R are `hist` `matplot` `image` and `persp` `contour`