Intro to R for Biologists

This interactive online MSD Skills training course is aimed at MSD postgraduate research students and staff with minimal or no programming experience who want to perform basic data analysis in R and get familiar with programming environment.

You are expected to attend two sessions:

19th January @ 9.30am - 1.00pm

26th January @ 10.00am - 1.00pm

COURSE AIM

This course is aimed at those with minimal or no programming experience to perform basic data analysis in R and get familiar with the programming environment. By the end of this module, you will be able to explore your own data in R including basic statistics, plotting, and data reorganisation.

Please make sure you read all of the sections below relating to how the course will work, and the survey and attendance certificate policy.

COURSE OBJECTIVES

By the end of this course, you will learn:

how to set up your R environment, how to handle simple biological data, and how to look for help

how to load and clean your data and perform basic statistical analysis

how to reorganise and summarise your tabular data

how to create simple graphs to explore your data

COURSE FORMAT

The course is structured into 2 half-day sessions as follows:

Session 1 - Setting up your R environment, reading and writing data files, looking at and filtering the data

Session 2 - Data exploration - conditionals, loops, basic graphs and basic statistics, loading and installing packages

PARTICIPANT NUMBERS

25

HOW IT WILL WORK

It is highly recommended to go through the material up to and including the 'data types and structures' lesson on the R for Data Science LinkedIn course ([https://www.linkedin.com/learning/learning-r-2/r-for-data-science](https://www.linkedin.com/learning/learning-r-2/r-for-data-science" \t "_blank)) before the first session on 19th January. Access to this material is free through your Oxford single-sign on (SSO) account.

For each session, you will be sent a link along with joining instructions. Each 3-hour session would consist of a mix of teaching and hands-on training, with a feedback from the tutors and Q&A at the end. You are expected to interact with the instructors and other course participants during the sessions for problem-solving and assignments. The code and worksheets for this course will become available at the first session and can be accessed anytime during and after the course.

WHAT YOU WILL NEED

Software requirements:

•         R (version 4.0 or higher) which you can download using this [link](https://cran.r-project.org/" \o "" \t "_self).

•         Rstudio (Desktop free version), which you can download, using this [link](https://rstudio.com/products/rstudio/download/" \o "" \t "_self): https://rstudio.com/products/rstudio/download/

Any installation questions could be addressed to [courses@medsci.ox.ac.uk](mailto:courses@medsci.ox.ac.uk" \o "" \t "_self)

Hardware requirements:

It is highly recommended to have an access to the microphone and ideally a second screen during the sessions.

ATTENDANCE CERTIFICATE ON SURVEY COMPLETION

In order to receive a certificate of attendance, participation in both sessions is mandatory. Once you have completed the course, you will be sent an email with a link to the overall course survey, where you can propose the topics, which you would like to be covered in a follow-up advanced module - Data analysis & visualisation in R, which will be open for registration from the 2nd February.

When you have filled in and submitted the survey, you will be sent an email with a link to your attendance certificate. Survey results are downloaded and stored anonymously.

PLEASE NOTE

Where there is no cost in the shopping trolley, no deposit is required. However, more than two consecutive non-attendances or late cancellations without good reason will be logged and may mean you cannot attend any further MSD training that term. Please refer to our Terms and Conditions for further information.

Data analysis & visualisation in R for biologists

*(Registration should open on the 2nd of February)*

This interactive online MSD Skills training course is aimed at MSD postgraduate research students and staff with some programming experience in R who want to expand their skills in order to create reproducible analysis workflows and publication quality figures from biological data. In order to register to this course you are required to complete a short pre-course quiz on Canvas using your SSO login (link).

23rd February @ 9.30am - 1.00pm

2nd March @ 10.00am - 1.00pm

4th March @ 10.00am - 1.00pm

COURSE AIM

By the end of this module, you will be able to perform end-to-end analysis of your own data including statistics and advanced visualization using the third-party packages, which extend the functionality of the base R.

Please make sure you read all of the sections below relating to how the course will work, and the survey and attendance certificate policy.

By the end of this course, you will learn:

how to find and install the third-party packages relevant for your analysis

how to perform advanced data wrangling

how to create your own functions

how to create graphs and figures for publication

how to visualise more complex data and relationships within the data

COURSE FORMAT

The course is structured into 3 half-day sessions as follows:

Session 1 - filtering, merging, grouping, aggregating data - Introduction to common packages such as dplyr and data.table

Session 2 – visualising data and statistical information with ggplot2 and its extensions

Session 3 – advanced visualization and plots for high-dimensional data (heatmaps, PCA), interactive plots with Shiny/Plotly

PARTICIPANT NUMBERS

25

HOW IT WILL WORK

In order to register to this course you are required to complete a short pre-course quiz on Canvas using your SSO login (link). This quiz is intended to assess your knowledge of basic R concepts to make sure you are at the right level to attend this course. Upon the successful completion of the quiz you will redirected to the course registration page.

For each session, you will be sent a link along with joining instructions. Each 3-hour session would consist of a mix of teaching and hands-on training, with a feedback from the tutors and Q&A at the end. You are expected to interact with the instructors and other course participants during the sessions for problem-solving and assignments. The code and worksheets for this course will become available at the first session and can be accessed anytime during and after the course.

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Hardware requirements:

It is highly recommended to have an access to the microphone and ideally a second screen during the sessions.

ATTENDANCE CERTIFICATE ON SURVEY COMPLETION

In order to receive a certificate of attendance, participation in all three sessions is mandatory. Once you have completed the course, you will be sent an email with a link to the overall course feedback survey. When you have filled in and submitted the survey, you will be sent an email with a link to your attendance certificate. Survey results are downloaded and stored anonymously.

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