



THE UNIVERSITY OF  
**SYDNEY**

# **From R to Python Course**

*Centre for  
Continuing Education*

# From R to Python Course



To excel in today's data science field, proficiency in the most effective tools is essential. These proficiencies include a mastery of both R and Python programming languages. This course is designed for data scientists, statisticians, and analysts who are proficient in R and want to transition to using Python for their data science and automation tasks.

This course will cover the fundamental differences between R and Python, key Python libraries for data science, and practical examples to help you become comfortable with Python. This course is a great companion to the Intermediate and Advanced R programming courses offered by CCE.

## Intended audience

This course is ideal for data scientists, analysts, and programmers who regularly use R and are eager to broaden their expertise by learning Python programming.



### Course duration

1 session, 8 hours total



### Time

9am - 5pm



### Format

Face-to-face  
or  
Online in real-time



### Dates

Browse available  
[course dates](#)

## Prerequisites

It is assumed you have completed CCE's R Programming Course: Intermediate, or have equivalent knowledge.



## Upon completion

Every participant receives a University of Sydney certificate of completion.



## Aims

This course aims to provide more experienced users with proficient skills in Excel's three major strands: formulas, list management and charts, as well as providing tips to assist efficiency.



## Outcomes

By the end of this course, you should be able to:

- use the fill operations available to fill a data series
- use a range of techniques to work with worksheets
- protect data in worksheets and workbooks
- use common worksheet functions
- understand and create simple PivotTables
- create more complex formulas and functions
- apply a range of number formatting techniques to worksheet cells
- apply conditional formatting to ranges in a worksheet
- use goal seeking to determine the values required to reach a desired result
- understand and use Excel's Quick Analysis tools
- create and work with tables
- use a range of elements and features to enhance charts
- select and change the format of objects in a chart.



## Content

### Introduction to Python

- Overview of Python and its applications in data science
- R and Python – pros and cons
- Setting up Python environment using Jupyter Notebooks
- Installing packages in Python
- Basic syntax and data types in Python vs R
- Comparison of R and Python syntax
- Python loops

### Data structures in Python

- Lists, tuples, dictionaries, and sets
- Numpy arrays and their advantages over R vectors
- Pandas DataFrames vs. R DataFrames

### Data manipulation with Pandas

- Comparison to R Dplyr package

- Importing and exporting data
- Data cleaning and preprocessing
- Data manipulation using Pandas (filtering, grouping, merging)
- Practical examples and exercises

### Data visualisation

- Introduction to Matplotlib and Seaborn
- Creating various types of plots (line, bar, scatter, histograms)
- Comparison of visualisation capabilities in R ggplot and Python

### Advanced topics

- Python functions
- Introduction to Object Oriented Programming
- Python Streamlit vs R Shiny data applications



## Delivery style

This course is an interactive experience that includes lectures, individual exercises and discussion.

## Materials

Course materials, including a presentation and a course booklet, are provided electronically.

## Before the course

Please download and install the following software prior to class:

- R 3.6.x
- R Studio
- Python 3.12.5

Other required package software including pandas, Reticulate and Jupyter notebooks, will be downloaded and installed during class.

## Recommended reading

Boehmke, B. and Greenwell, B. (2019). *Python and R for Data Science*. CRC Press.

Scavetta, R.J. and Angelov, B. (2021). *Python and R for the Modern Data Scientist*. O'Reilly Media.

VanderPlas, J. (2023). *Python Data Science Handbook: Essential Tools for Working with Data*. 2nd ed. O'Reilly Media.



## Organisational training and development

This course can be delivered as a private session for groups, and tailored to meet the needs of your business. Contact us to discuss our range of organisational training solutions.

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*inspire leadership*

**For more information**

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