

# Intermediate Python for Data Analysis

## Course Overview - 1-day course

Following on from our *Data Analysis in Python* course, *Intermediate Python for Data Analysis* will build on your knowledge of Python and pandas. The focus of this course is learning to work more efficiently in Python. You will learn to use control flow structures and loops and write your own custom functions and classes to automate analyses and improve efficiency.

In this course, you will learn to:

- create user-defined functions and classes
- use loops and other control structures, plus alternatives
- use method chaining and pipes to perform multiple operations on DataFrames
- create interactive visualisations with Bokeh and
- write code to automate these processes.

## Detailed Content

### Introduction

Working more efficiently in Python  
Automating frequent data analysis operations  
Principles of working more efficiently with code

### User-Defined Functions

When to create your own functions  
Function basics  
Parameters  
Positional vs keyword arguments  
Defining a function  
Indentation  
Scope  
\*args and \*\*kwargs  
Unpacking operators  
Order of arguments in a function  
lambda expressions

### Loops and Other Control Structures

if...else  
for loops

Loop over sequences  
Loop over ranges  
Enumerate  
Loop over pandas groups  
Loop over multiple lists  
while loops

### Loop and if-else alternatives

Conditional expressions  
List comprehensions  
map()  
apply() and applymap()

### User-Defined Classes

When to create your own class  
Defining classes  
Docstrings  
The \_\_init\_\_() method  
The self parameter  
Class objects – attribute references and instantiation  
Data attributes  
Methods  
Scope  
Dunder methods

### Performing multiple operations on DataFrames

Method chaining

Using pandas pipes with custom functions

### Interactive Visualisations with Bokeh

Bokeh basics  
Working with Bokeh in Jupyter  
Glyphs  
Providing data  
Using the Bokeh toolbar  
Customising the Bokeh toolbar  
Creating links between plots  
Using interactive legends  
Using widgets to interact with plots  
Add tooltips to plots  
Save your Bokeh chart