



# INTRODUCTION TO PYTHON

COURSE GUIDE: AUGUST 2019 – FEBRUARY 2020

© 2019 PYTHON CHARMERS

# Introduction to Python

An intensive hands-on course

**Audience:** This is a course for people from various backgrounds with an interest in powerfully automating day-to-day tasks.

**Overview:** This intensive, hands-on, practical training course will give you an introduction to writing Python code for a variety of scripting and data analysis tasks.

**Skills:** You will learn the fundamentals of Python's powerful data types and how to manipulate tabular data with ease in a variety of formats, including CSV, Excel, SQL databases, and time-series. You will learn about tools for rapid prototyping and interactive data visualization.

You will also learn about the elegance and power of the Python language and the breadth of its amazing ecosystem of powerful packages for solving many kinds of problems. You will be well-placed to continue learning more in the future.

**Format:** Each topic is a mixture of expert instruction, worked examples, and hands-on exercises.

**Expert instructors:** See bios below.

**Venues:** modern computer-based training facilities (CBD locations).

**Dates and locations, August 2019 - February 2020:**

Sydney: 26-27 August; 14-15 October 2019; 3-4 February 2020

Melbourne: 21-22 October; 18-19 November 2019; 28-29 January 2020

Canberra: 2-3 December 2019

Brisbane: 19-20 August 2019

Singapore: 21-22 October 2019

**Duration:** 2 days

**Price:** \$1,600 (excl GST)

**PYTHON**  
CHARMERS

# Topic outline

## Day 1: Python basics

Day 1 covers how to use Python for basic scripting and automation tasks, including tips and tricks for making this easy:

- Why Python? What's possible?
- The *Jupyter* notebook for rapid prototyping
- Modules and packages
- Python concepts: an introduction through examples
- Essential data types: strings, tuples, lists, dicts
- Worked example: retrieving real-time data from a REST web API
- Raising and handling exceptions

# Topic outline

## Day 2: Handling, analyzing, and presenting data in Python

Python offers amazingly productive tools like Pandas for working with different kinds of data. Day 2 gives a thorough introduction to analyzing and visualizing data easily:

- Reading and writing essential data formats:  
CSV, Excel, SQL, JSON, time-series (others on request)
- Indexing and selecting data in *Pandas*
- Data fusion: joining & merging datasets
- Summarization with “group by” operations; pivot tables
- Visualization and statistical graphics with *Seaborn*
- Worked example: creating automated reports with *Jupyter*

## Supplemental materials

We will provide you with printed course notes, cheat sheets, and a USB stick containing kitchen-sink Python installers for multiple platforms, solutions to the programming exercises, several written tutorials, and reference documentation on Python and the third-party packages covered in the course.



**PYTHON**  
CHARMERS

# Instructor bio



**Dr Edward Schofield**

Ed has consulted to or trained over 2000 people from dozens of organisations in Python, including Atlassian, Barclays, Cisco, CSIRO, Dolby, Harvard University, IMC, Singtel Optus, Oracle, Shell, Telstra, Toyota, Verizon, and Westpac. He is well-known in the Python community as a former release manager of *SciPy* and the author of the widely used *future* package. He regularly presents at conferences in data analytics and Python in Australia and internationally.

Ed holds a PhD in machine learning from Imperial College London. He also holds BA and MA (Hons) degrees in mathematics and computer science from Trinity College, University of Cambridge. He has 20+ years of experience in programming, teaching, and public speaking.



# Instructor bio



**Henry Walshaw**

Henry has almost 15 years of experience in Python application development and has trained hundreds of people in how to use Python from organisations including AGL, the Bureau of Meteorology, ESRI, the NSW Department of Finance, National Australia Bank, and Telstra.

Henry's core technical expertise relates to the development and analysis of large scale spatial datasets (primarily using Python), and communicating this understanding to both subject matter experts and the general public.

Before joining Python Charmers, Henry worked in both government and industry — at Geoscience Australia, the Victorian Department of Sustainability and Environment, and the Environmental Protection Agency (EPA); as a consultant with Sinclair Knight Merz (SKM), a manager at we-do-IT, and as CTO of a startup. He holds a Bachelors in Computational Science.



# Instructor bio



**Dr Robert Layton**

Robert is the author of the book “Data Mining in Python”, published by O’Reilly. He provides analysis, consultancy, research and development work to businesses, primarily using Python. Robert has worked with government, financial and security sectors, in both a consultancy and academic role. He is also a Research Fellow at the Internet Commerce Security Laboratory, investigating cybercrime analytics and data-mining algorithms for attribution and profiling.

Robert is a contributor to the Python-based *scikit-learn* open source project for machine learning and writes regularly on data mining for a number of outlets. He is also the author of the website “LearningTensorflow.com”. He has presented regularly at a number of international conferences in Python, data analysis, and its applications.





# Instructor bio



**Janis Lesinskis**

Janis is a software developer who has been using Python since 2005. He has worked on several high-end Python projects across a variety of software industry sub-sectors, including: mathematical optimization engines for logistics, a game theory solver, a variety of backend web apps with *Django* and *Flask*, and as a scalability consultant improving Python performance.

Janis loves open source and is the author of several open source Python projects on GitHub. He is involved in education in several ways: in an in-house capacity as a Python consultant, as a regular blogger, as a volunteer for events like Django Girls and Python community workshops, and as a frequent presenter about Python at local meetup events.

Janis is a co-founder of the Custom Programming Solutions consulting group and joined Python Charmers as a trainer in 2018.



**PYTHON**  
CHARMERS

# Instructor bio



**Dr Clare Sloggett**

Clare conducts research into algorithms and in the application of machine learning to genomics, primarily using Python. She co-organised the Python in Science and Data Miniconf for PyCon AU from 2015–2017 and regularly gives talks at conferences and community events in genomics and data analytics with Python and other open source tools.

Clare holds a BSc and PhD in computational physics from the University of NSW, Australia. Her thesis was on the properties of quantum dots and quantum point contacts using analytical and computational techniques.



## Other information

**Computer:** A computer will be provided for you during the course.

**Exercises:** There will be practical programming exercises throughout the course. These will be challenging and fun, and the solutions will be discussed after each exercise and provided as source code. During the exercises, the trainer(s) will offer individual help and suggestions.

**Timing:** The course will run from 9:00 to roughly 17:00 each day, with breaks of 50 minutes for lunch and 20 minutes each for morning and afternoon tea.

**Personal help:** Your trainer(s) will be available after each day for you to ask any one-on-one questions you like — whether about the course content and exercises or about specific problems you face in your work and how to use Python to solve them. We encourage you to have your own data sets ready to discuss if you wish.

**Venue:** our modern partner training facilities (CBD locations)

**Food and drink:** We will provide lunch, morning and afternoon tea, and drinks.

**Certificate of completion:** We will provide you a certificate if you complete the course and successfully answer the majority of the exercise questions.

```
data, cmap='winter')
```

```
python3.7/site-packages/matpl
```

```
cnis+ elementwi comparison
```

```
but the future will perfo
```

```
str('ce')
```



**PYTHON**  
CHARMERS



## **About Python Charmers**

Python Charmers is the leading provider of Python training in the Asia-Pacific region, based in Australia and Singapore. Since 2010, Python Charmers has given over 350 training courses and bootcamps to over 3000 delighted people from organizations such as AGL, Atlassian, Barclays, CSIRO, Cisco, Deloitte, Dolby, IMC, pwc, Singtel Optus, Shell, Sportsbet, Telstra, Toyota, Verizon, Westpac, and Woolworths. Python Charmers specializes in teaching programming and data science to scientists, engineers, data analysts, quants, and computer scientists in the Python language.

Python Charmers' trainers boast years of Python experience and deep roots in the open source community, as both speakers at events and contributors to well-known open source projects, including *NumPy*, *SciPy*, *Scikit-Learn*, *Pandas*, and *Python-Future*.

**Testimonials:** Testimonials from past participants of similar bootcamps and training courses are available at

<https://pythoncharmners.com/testimonials/>

**Questions:** We would be happy to hear from you. Please let us know if you have any questions.

**Contact:**

Phone: +61 1300 963 160

Email: [info@pythoncharmners.com](mailto:info@pythoncharmners.com)

Web: [pythoncharmners.com](http://pythoncharmners.com)

The logo for Python Charmers features the word "PYTHON" in a large, bold, sans-serif font. The letter "O" is replaced by a stylized green snake head. Below "PYTHON", the word "CHARMERS" is written in a smaller, all-caps, sans-serif font. The background of the entire page is a grayscale image of a laptop keyboard and screen displaying code.

PYTHON  
CHARMERS

The logo features the word "PYTHON" in a bold, white, sans-serif font. The letter "O" is replaced by a stylized green Python logo. Below "PYTHON" is the word "CHARMERS" in a smaller, white, spaced-out, sans-serif font. The background is a blurred image of a person's hands typing on a laptop keyboard.

PYTHON  
CHARMERS