

Python for Data Science

Go from your first line of Python to a complete, presentable data analysis in five days.

DURATION

5 days · 40 hours

LEVEL

Beginner

CURRICULUM

14 modules · 10 labs

DELIVERY

Live online, Onsite,
Corporate

Course overview

Python has become the everyday tool for working with data, from quick spreadsheet replacements to the foundations of machine learning. This five-day course is designed for professionals who want to analyse data confidently in Python, even if they have never programmed before.

Days one and two teach the language itself in a data-first way: variables, data types, strings, lists, dictionaries, control flow, functions, modules, files and error handling, followed by NumPy arrays and vectorised calculations. Every concept is practised immediately in Jupyter notebooks with realistic examples such as sales records and service tickets.

Day three is dedicated to pandas: reading CSV, Excel and database data, selecting and filtering, handling missing values and duplicates, working with dates, grouping and aggregating, merging and reshaping. Day four covers visualisation with Matplotlib and seaborn and the descriptive and inferential statistics analysts use most, including correlation and simple hypothesis tests.

Day five is a capstone project. You take a messy public dataset, clean it, explore it, answer business questions and present your findings in a well-structured notebook that you can add to your portfolio.

This is an original Ace Skills course with no vendor exam. On completion you receive an Ace Skills Consulting course completion certificate, and the course prepares you directly for our Machine Learning with Python programme.

Highlights

- 40 hours of live, trainer-led sessions
- Hands-on Jupyter notebooks every day
- pandas for cleaning, joining and reshaping data
- Charts with Matplotlib and seaborn
- Capstone analysis project on a real dataset

What's included

- Designed for beginners with no coding background
- Daily hands-on notebooks with realistic business data
- pandas data cleaning and transformation in depth
- Visualisation and storytelling with charts
- Practical statistics for analysts
- Capstone project for your portfolio
- Course completion certificate from Ace Skills Consulting
- Post-training doubt support

Who this course is for

Who should attend

- Analysts who work mainly in Excel
- Business and finance professionals handling data
- Engineers and graduates moving into data roles
- Managers who want to understand their data teams' work
- Anyone planning to learn machine learning

Prerequisites

- Comfort with spreadsheets and basic arithmetic
- No programming experience required
- A laptop capable of running Python (setup guidance provided)

Detailed curriculum — 5 days, 40 hours, 14 modules, 10 hands-on labs

Day 1 Python Fundamentals

8 hours

1.1 Getting started

- Python and the data ecosystem
- Variables and data types
- Jupyter notebooks
- Numbers, strings and formatting

LAB First notebook: calculations on sales figures · 30 min

1.2 Collections

- Lists and tuples
- Slicing and indexing
- Dictionaries and sets
- List and dictionary comprehensions

LAB Summarise a list of customer orders · 40 min

1.3 Control flow

- Conditionals
- Iterating over collections
- for and while loops

LAB Classify support tickets with rules · 35 min

Day 2 Functions, Files and NumPy

8 hours

2.1 Functions and modules

- Defining functions
- Lambda functions
- Virtual environments
- Arguments and return values
- Importing modules and packages

2.2 Files and errors

- Reading and writing text and CSV files
- Exceptions and try/except
- Working with JSON

LAB Parse and clean a CSV file with plain Python · 45 min

2.3 NumPy

- Arrays and shapes
- Indexing and boolean masks
- Vectorised operations
- Aggregations and broadcasting

LAB Analyse sensor readings with NumPy · 40 min

Day 3 Data Wrangling with pandas

8 hours

3.1 pandas basics

- Series and DataFrames
- Selecting with loc and iloc
- Reading CSV, Excel and SQL
- Filtering and sorting

3.2 Cleaning data

- Missing values
- Data types and conversions
- Dates and times
- Duplicates
- String methods

LAB Clean a messy HR dataset · 55 min

3.3 Transforming data

- groupby and aggregation
- Merging and joining
- Pivot tables
- Reshaping with melt and pivot

LAB Build a monthly sales report from three tables · 50 min

Day 4 Visualisation and Statistics

8 hours

4.1 Visualisation

- Matplotlib fundamentals
- Choosing the right chart
- seaborn for statistical charts
- Styling and annotating for presentation

LAB Create a visual story from retail data · 50 min

4.2 Descriptive statistics

- Central tendency and spread
- Correlation
- Distributions and outliers

4.3 Inferential statistics

- Sampling and confidence intervals
- Interpreting p-values responsibly
- t-tests and chi-square

LAB Test whether a campaign changed conversion · 45 min

Day 5 Capstone Project

8 hours

5.1 Project work

- Framing business questions
- Analysis and visualisation
- Cleaning and exploring the dataset
- Writing up findings

LAB End-to-end analysis of a public dataset · 210 min

5.2 Presentation and next steps

- Presenting results
- Where to go next: machine learning and SQL
- Sharing notebooks

Skills and tools

Skills you will build

Python

Jupyter

NumPy

pandas

Data cleaning

Data transformation

Matplotlib

seaborn

Descriptive statistics

Hypothesis testing

Data storytelling

Tools used in class

Python

Jupyter Notebook

VS Code

NumPy

pandas

Matplotlib

seaborn

SciPy

Frequently asked questions

Is there an exam?

No. This is an original Ace Skills course with no vendor exam; you receive an Ace Skills course completion certificate.

I have never coded. Can I join?

Yes. The course starts from the very basics and is designed for professionals without a programming background.

What software do I need?

A laptop with Python and Jupyter. We send setup instructions before the course and offer a cloud notebook option if installation is restricted.

What should I take next?

Machine Learning with Python is the natural next step and builds directly on this course.

Can we use our own company data?

For private corporate batches, yes — we can tailor exercises and the capstone to anonymised internal data.

Book a batch or talk to an advisor

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