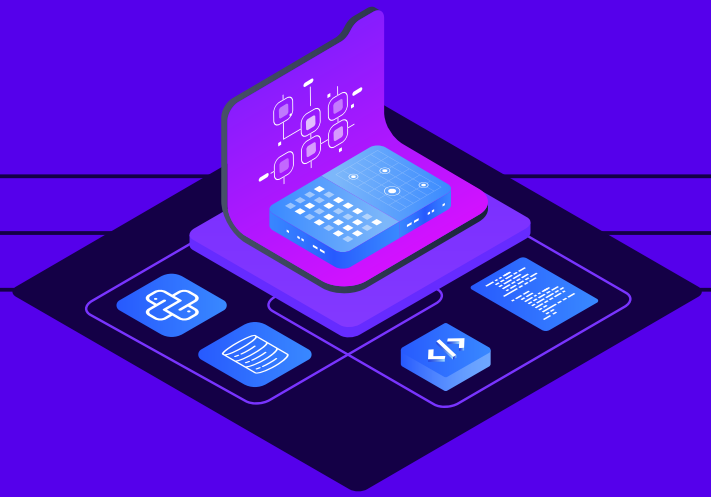
stackfuel

Advanced course • Curriculum

Advanced Python Programming for Data Scientist

Course for **object-orientiented programming (OOP)** with **Python**



Course content.

The goal of this course is to learn object-oriented programming (OOP) with Python. In addition, you will also learn basics in Bash and Git, enabling you to use and create code collaboratively in a team.

Automating digital processes and analyzing big data often requires customized solutions for use in a company. For this reason, Data Scientists should be able to generate production-ready code collaboratively in a team.

In a nutshell:

- Creating and modifying modules, classes and objects in the Python framework
- Working on and presenting software projects independently
- Using Git and bash for collaborative work on software projects

At a glance.

Type

Online course

Structure

4 modules

Language

German, English

Level

Beginner or career changer

Completion

Certificate of completion

Prerequisites

Solid knowledge of Python basics (using basic data types and flow control concepts)

Target group

The course is suitable for you and your career if you have completed a degree, ideally in the fields of mathematics, computer science, natural sciences, technology, business administration, (business) informatics or a comparable qualification or previous experience in a similar field.

Weekly Overview.

Week 1

Introduction

Objectives:

- Navigating through folder structures using the command line
- Viewing and searching text documents in the command line
- Running scripts and installing programs
- Writing clean code that follows recognized standards

Content:

- Introduction
  - Getting to know each other
  - Course schedule and look at the building blocks
  - Introduction to the learning environment
- Bash basics
  - Command line
  - Navigating through folder structures
  - Creating, copying and deleting files and folders
  - Filtering text files and scripts
  - Connecting commands with the pipe operator
  - Nano editor
  - Installing programs
  - Running Python scripts
  - Environment variables
  - Rights management
  - Bash script
- Advcanced Python basics
  - Defining functions
  - Flow control
  - List and dict comprehensions
  - Clean code & PEP 8

Weekly Overview.

Week 2

Introduction to Git and Object-Oriented Programming

Objectives:

- Creating and updating projects with Git
- Using Git collaboratively

Content:

- Introduction to Git
  - Explanation of term: version control
  - How Git functions
  - Creating and cloning projects
  - Git workflow
  - Branching & merging
  - Resolving merge conflicts
- Introduction to object-oriented Programming
  - The principles of object-oriented programming
  - Classes and instances
  - Attributes
  - Methods

Week 3

Recap of OOP, Inheritance and Composition in Python, Unit Testing

Objectives:

- Defining and using classes and assumptions about assertions
- Creating and using unit tests

Content:

- Recap: Introduction to object-oriented programming
- Inheritance and composition in Python
  - Simple inheritance
  - Multiple inheritance
  - Composition
  - Inheritance hierarchy
- Unit testing
  - Explanation of term: unit test
  - Conventions for test naming
  - Test assertions
  - Set-up methods

Weekly Overview.

Week 4

Advanced Object-Oriented Programming with Python

Objectives:

- Using and defining decorators
- Selecting and using external modules for typical tasks
- Presenting and discussingresults using specialist terminology
- Writing clean code by following recognized standards

Content:

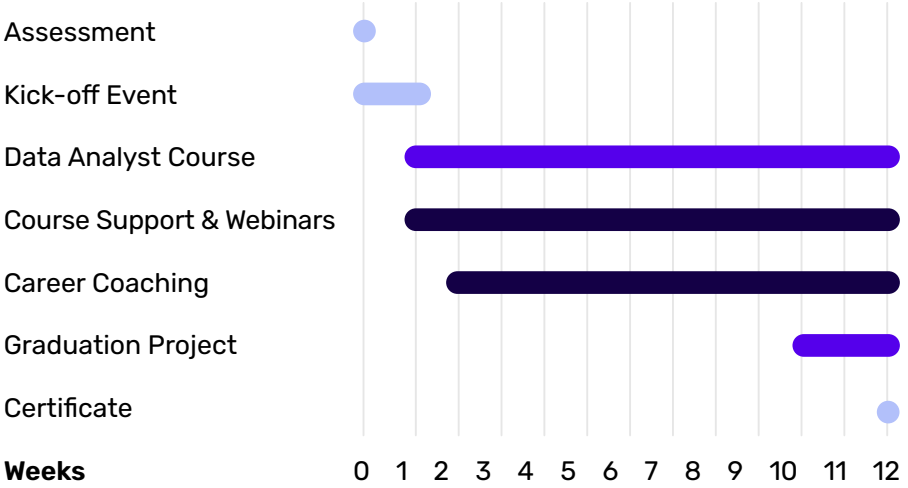
- Advanced object-oriented programming with Python
  - Operator overloading
  - Decorators
  - Special methods
- Modules from the Python standard library
  - os
  - pickle
  - json
  - zipfile
  - collections
  - difflib
- Project: fitting transformers in the machine learning pipeline
- Final examination

About StackFuel.

We are your strategic learning partner, suitable for every career level and professional orientation.

Whether you're changing careers, an employee or a manager, our certified and state-supported training courses in data, AI and programming will keep you up to date with the latest technologies.

Course schedule.



*Sample course schedule for our Data Analyst course.

Training philosophy.

Online & flexible

Do your course part-time or full-time and learn 100% online in your browser on your PC or laptop at home.

Hands-on practice with real-life projects

In our Data Lab you will write your own algorithms with industrial data sets in interactive exercises and coding challenges.

Mentoring & career coaching

Your personal mentoring team will accompany you with coaching, feedback, and weekly group webinars.

Certified & eligible

As a certified training provider, you can get our courses fully subsidized by the job center and the employment agency.

Facts.

91% completion rate

80% interactive exercises

20% expert videos & text lessons

+150.000 learning hours in the Data Lab

4,3 von 5 recommendation rate

Sponsorship opportunities.

Installments or part payment

Use our installments or part payment options to spread out the costs of your course over several months so you can remain financially flexible.

Education voucher

With an education voucher (Bildungsgutschein in German), you can get your course financed up to 100% by the Jobcenter or the Employment Office, if you are currently out of work or looking for employment.

Training opportunities act

If you are working, you can get your course partially or completely funded by your employer thanks to the Training Opportunities Act (Qualifiyierungschancengesetz in German) - regardless of your qualifications, age or the size of the company.

StackFuel scholarships

We regularly award various scholarships for our courses, to promote more diversity in the field of data. We want to encourage more people to take an interest in programming, and more women to work in data roles.

Support & mentoring.

Coaching

- Assessment
- Final project and evaluation
- 1:1 project feedback consultation
- Official certificate of completion

Personal mentoring

- Kick-off session
- Webinars with other course participants
- Support via email or phone
- Online forum

Career services

- CV and application coaching
- Talent pool and career intros
- Data community
- Career events

Ready to enroll?

Get in touch with our consultants and build up the skills you need!

Maria Schwenke

Education Advisor

Book free consultation

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