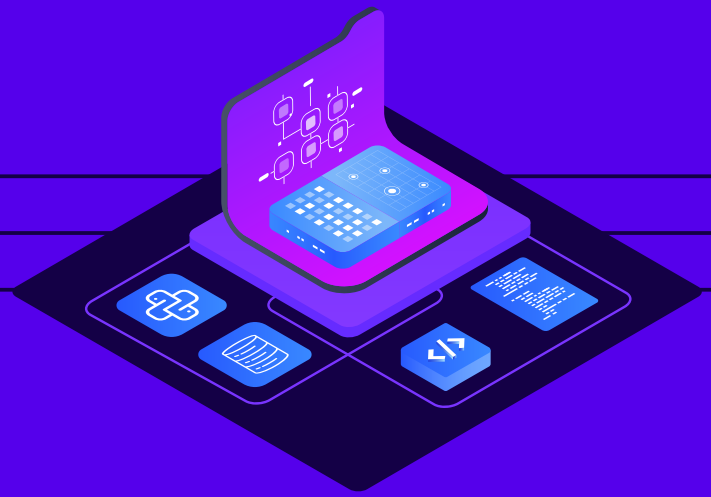
stackfuel

Skill Track • Curriculum

Python – Focus Object-Oriented Programming

Design Principles for Software Development with
Object-Oriented Programming



Why this course?

Object-oriented programming, also known as OOP, is one of the most powerful methods Python has to offer. OOP is a programming paradigm based on objects with attributes and procedures. It offers numerous advantages that are becoming increasingly indispensable for programmers. OOP will help you to independently realize various software solutions using advanced Python elements and to write object-oriented class definitions for structured code.

A fundamental advantage of the OOP method is that attributes and processes are bundled in objects or modules. These bundled objects or modules, as well as the code you write with them, can be easily reused with OOP and built up according to your individual needs.

With the **Python - Object-Oriented Programming** course, you will deepen your knowledge of Python and bring it to the next level.

You will learn the most important design principles and best practices of object-oriented programming, so that you can implement your software projects even faster and more efficiently.

Python is the most popular programming language in the world. Python Development jobs are expected to increase by

21% **by 2028.**

You'll learn to work with the widely used Python Standard Library and explore advanced concepts of object-oriented programming such as inheritance and composition. You will also learn how programs, modules and class methods differ and which special methods and class representations can be portrayed with `__str__()` and `__repr__()`.

You'll complete the online course with two business-relevant final projects for typical OOP use cases: Designing your own interface configuration to a popular data science library and programming your own blockchain.

Course content.

- Process functions and lists in Python
- Working with selected OOP classes & attributes
- Interactive interim project on best practice handling of work processes
- Object-oriented programming focusing on classes and attributes
- Using inheritance to reuse code
- Advanced functions for simplifying classes

At a glance.

Duration

32 hours

Type

Online course

Structure

5 chapters + 2 exercise projects

Language

German, English

Level

mid level

Completion

Certificate of completion

Prerequisites

Basic programming knowledge in Python is required to take part in this course.

Target group

The midlevel course is designed for people who already have experience with Python and want to use the programming language effectively in a professional context.

Chapter overview.

Chapter 1

Advanced Python

In the first chapter you will look at defining functions in more detail and learn about default **values**, **type hints** and **assert statements**. Afterwards, you can use functions even more effectively as tools for your projects.

You will work with the concepts of **list comprehension** and **dictionary comprehension** to efficiently create lists and dictionaries. At the end of the chapter you will learn how to adapt your code to the **PEP8 industry standard** by means of layout and structure.

Chapter 2

OOP basics

In the second chapter, you will learn what **OOP** is, which programming principles are based on it, and which conclusions you can draw from it, using simple examples.

In the main part of the chapter, you will explore how **classes** and **attributes** are defined and used. You will use examples to examine **instance methods**, how they're used and defined with **method chaining**. You'll learn what the **self keyword** is, as well as how to distinguish debugging from **class definitions**.

Finally, you will test your previous knowledge in an **interactive interim project** and repeat the exercises from the chapter.

Chapter 3

OOP concepts

In the third chapter, you will learn what **inheritance** and **composition** are and how to use these concepts in use cases. In addition to simple inheritance, you will also learn more advanced methods such as **inheritance hierarchy** and **multiple inheritance**.

In doing so, you'll practice deep **inheritance methods** to make data reusable from parent to child classes, to compensate for data loss.

Finally, you will learn the most important **best practices** for unit testing in order to detect errors in your code before your users find them.

Chapter overview.

Chapter 4

Advanced OOP

In the fourth chapter, you will deal with more **advanced concepts** of object-oriented programming, which you will use in your daily work. You will study the difference between **programs** and **modules** and what role `__main__` plays. You will learn what **decorators** are and how to use **property decorators** optimally. You will look at **static** and **class methods** and what special methods and class representations you can use with `__str__()` and `__repr__()`.

Based on this, you will learn about the possibilities offered by operator overloading as well as other important methods from the **Python Standard Library** and then apply what you have learned in a **business-relevant interim project**.

Chapter 5

OOP applications and final projects

In the fifth chapter, you will demonstrate your knowledge in two larger projects that represent classic use cases of **object-oriented programming**.

In the first project, you'll build your own **interface for a popular data science library** that makes it possible to apply machine learning or data or text analytics methods.

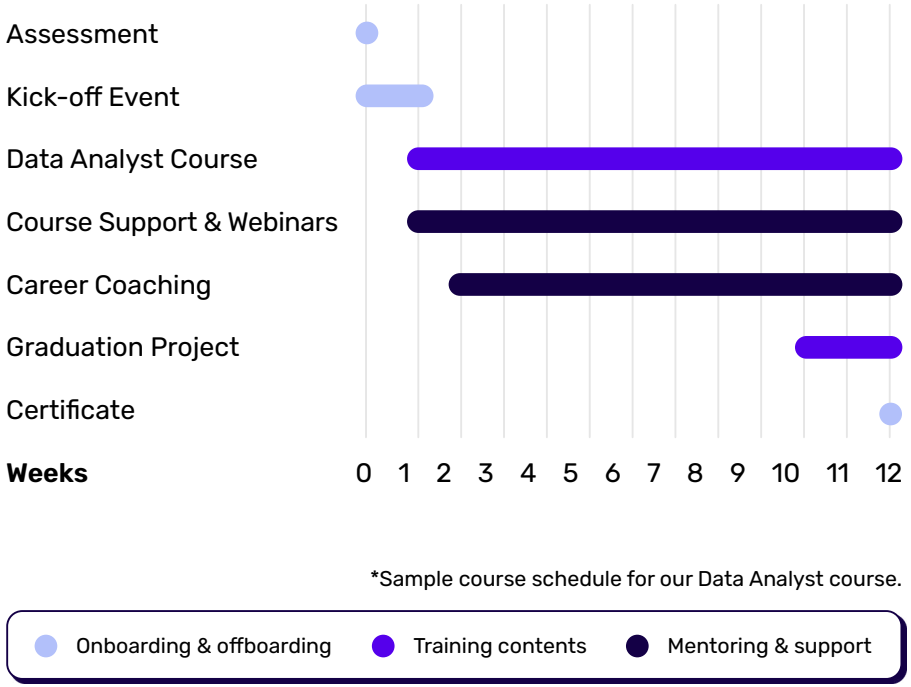
The second project deals with programming your own **blockchain**, where you will learn more about the underlying concepts.

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!

For Individuals

Maria Schwenke

Education Advisor

Book free consultation

For Businesses

Ginesh Koottakara

Head of Sales

Book free demo

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