

## Course Introduction

✓ **Video:** Introduction to the Course  
2 min

✓ **Video:** How is Python used in the real world?  
2 min

🗒 **Discussion Prompt:** What do you hope to learn?  
10 min

📖 **Reading:** Course syllabus  
5 min

✓ **Reading:** How to be successful in this course  
10 min

## Welcome to Python Programming

## Control flow and conditionals

# Course syllabus

## Prerequisites

To take this course, you don't need any previous development experience. You must simply be willing to get started with coding in Python!

## Course content

During this course, you'll cover everything you need to begin with Python development. The content of the four modules is listed below.

### Module 1 - Getting started with Python

In this module, you will get an introduction to the course and you'll cover a brief summary of the history of programming. You will also learn the basics of how programming works and discover typical uses for Python in real-life. There are also some tips on how to take this course successfully.

Before embarking on any coding you'll first establish if your current computer system is set up correctly and identify any required operating system dependencies. Then you'll explore different ways that you can run programs through Python.

Next, you'll study Python syntax using comments, variables, data types and user input and output. You'll proceed to expand your Python skills by using math and logical operators so you can control the flow of your code and perform operations such as addition, subtraction, division, and multiplication.

Python has multiple ways to do code loops or looping. You will examine looping constructs to iterate your code over multiple sequences.

### Module 2 - Basic programming with Python

In module 2, you'll receive an introduction to Python functions, including how to declare a function, and how to pass data to a function or return data from a function. You will also explore data structures, scope, and the concepts of lists and how they can be used in Python. You will also discover tuples, sets, dictionaries and kwargs, gaining an understanding of how their main uses.

Errors and exceptions are two very important aspects of learning Python as a new developer. In module 2, you will start with errors and exceptions, and explore what happens when something goes wrong with your code. Exception handling and Python file handling are covered, as are how to create files in Python and various methods of inserting content into a new file.

### Module 3 - Programming paradigms

In the third module, you will cover programming paradigms, and look at the features and concepts behind procedural programming, functional programming and object oriented programming.

A key feature of procedural programming is algorithms, you will explore how they can be used to solve problems, how algorithmic complexity is calculated and learn about Big-O notation.

Next you will learn about pure functions and recursion in functional programming, as well as the difference between maps and filters.

Finally, you will explore object-oriented programming and its four main concepts. You will explore the relationship between classes and instances in Python by creating classes, instantiating them, and accessing their variables and methods. You'll learn about abstract classes and methods and how to implement them. The rules of method resolution and inheritance with child and parent classes are also explained. Being able to read files is essential when working with stored data in Python and you'll discover several built-in functions to make this easier.

### Module 4 - Modules, packages, libraries and tools

In module 4, you learned that Python is a powerful language that allows you to build amazing things. But it can gain even more functionality with the use of modules, libraries and tools. You will learn about Modules and that they are the building blocks for adding functionality to your code, so you don't need to continually redo everything.

You will also explore some of the commonly used Python libraries in data analysis and data science, and how they can apply to the areas of machine learning and artificial intelligence.

Finally, you'll find out why testing is an essential component of Quality Assurance and explore the type of testing you should use. You will learn about test automation packages and the importance of automated testing and you'll write some tests using PyTest. Finally, you will explore the evolution of Test-driven development (or TDD), and focus on how to apply a test-driven development methodology.

### Module 5 - Graded assessment

Here you'll learn about the graded assessment. After you complete the individual items in this module, you'll test your knowledge and skills by completing an end of course graded assessment.

[Mark as completed](#)