

# Python - parallel and asynchronous programming

Course code: PYTHON\_ASYNC

The course introduces participants to modern trends in the development of multithreaded and multiprocess programs in Python. In addition, the options offered by the asyncio module, ie asynchronous programming, are also discussed. In this course, you will learn not only details about the capabilities of current Python, but also about other capabilities contained in third-party modules. We will also try most of these options in practice.

Affiliate	Duration	Course price	ITB
Praha	3	15 900 Kč	30
Brno	3	15 900 Kč	30
Bratislava	3	690 €	30

The prices are without VAT.

## Course terms

Date	Duration	Course price	Type	Course language	Location
T 19.03.2025	3	15 900 Kč	Telepresence	CZ/SK	Gopas Praha Prezenční_GTT
T 19.03.2025	3	15 900 Kč	Telepresence	CZ/SK	Gopas Brno Prezenční_GTT
T 19.03.2025	3	690 €	Telepresence	CZ/SK	Gopas Bratislava Prezenční_GTT
T 30.06.2025	3	15 900 Kč	Telepresence	CZ/SK	Gopas Praha Prezenční_GTT
T 30.06.2025	3	15 900 Kč	Telepresence	CZ/SK	Gopas Brno Prezenční_GTT
T 30.06.2025	3	690 €	Telepresence	CZ/SK	Gopas Bratislava Prezenční_GTT

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## Required input knowledge

- Basic knowledge of Python
- Object-oriented programming in Python

## Teaching methods

- Expert explanation with practical examples, exercises on computers.

## Studying materials

- Printed presentations of the subject matter.

## Basics

### Introduction

- Terminology (multithreading, multiprocessing, asynchronous IC)
- GIL and its role in Python
- Options for alternative Python implementations
- IO-bound and CPU-bound processes

### Multithreading

- modules for multithreading
- Threading and lifecycle management
- daemon threads

### Multiprocessing

- multiprocessing module
- creating new processes

#### GOPAS Praha

Kodaňská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

#### GOPAS Brno

Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

#### GOPAS Bratislava

Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)



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# Python - parallel and asynchronous programming

- process management

## AsyncIO

- Coroutines
- Principles of asynchronous IO in Python
- Async module (async / await construction)
- Aiohttp module
- Where and when to use

## Synchronization primitives and data structures

- Locks and condition variables
- Pipes and queues

## Third party modules

- Futures
- Goroutines
- Actors

### **GOPAS Praha**

Kodaňská 1441/46  
101 00 Praha 10  
Tel.: +420 234 064 900-3  
[info@gopas.cz](mailto:info@gopas.cz)

### **GOPAS Brno**

Nové sady 996/25  
602 00 Brno  
Tel.: +420 542 422 111  
[info@gopas.cz](mailto:info@gopas.cz)

### **GOPAS Bratislava**

Dr. Vladimíra Clementisa 10  
Bratislava, 821 02  
Tel.: +421 248 282 701-2  
[info@gopas.sk](mailto:info@gopas.sk)



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