

Postgraduate Certificate Advanced Data and Flow Control with Python



Postgraduate Certificate Advanced Data and Flow Control with Python

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Credits: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/information-technology/postgraduate-certificate/advanced-data-flow-control-python

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 16

05

Methodology

p. 20

06

Certificate

p. 28

01

Introduction

Python dictionaries are fundamental data structures used to store and organize information in the form of key-value pairs. Each element is a unique key associated with a value, allowing fast and efficient access to data. These tools generate several benefits for computer scientists, including the storage of application or program configurations, since they allow the organization of parameters and options in a clear manner. In addition, they are mutable structures, which means that professionals can modify, add or delete components after creating the dictionary. Given this, TECH develops an advanced program that will delve into collections in Python. Moreover, it is taught in a 100% online format.



“

You will employ Frozen Sets structures to ensure that elements are immutable and do not accidentally change in the most professional way thanks to TECH”

Advanced Data and Flow Control become very important in solving problems related to Python programming. For example, in many applications, data are not simple numeric values or text strings, but more complex structures (such as lists, tuples or sets). By working with these advanced data types, computer scientists can model and handle information more effectively. For this reason, experts need to delve into this subject to become more skilled programmers, capable of optimizing processes. They also have a responsibility to keep abreast of developments in the IT field.

To help them with this task, TECH implements a Postgraduate Certificate that will analyze in detail Advanced Data and Flow Control with Python. Designed by experts in this subject, the syllabus will delve into both identifiers and keywords. In this way, students will master variable naming rules, reserved words and naming conventions. Likewise, the syllabus will delve into *strings* formatting, based on *Unicode* encodings. The didactic materials will also emphasize advanced control structures ranging from conditionals to function decorators. Graduates will have a comprehensive understanding and advanced skills for the practical use of Python in complex programming scenarios.

This is a 100% online academic experience, which can be followed from anywhere and at any time. In this way, it is the students who individually plan their schedules and evaluation timetables. Therefore, students forget about preset schedules or face-to-face attendance at academic centers. In addition, they will be qualified through real cases and from the hand of the most consolidated experts in the IT panorama.

This **Postgraduate Certificate in Advanced Data and Flow Control with Python** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Python Development
- ♦ The graphic, schematic and practical contents of the book provide theoretical and practical information on those disciplines that are essential for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



TECH's 100% online methodology will allow you to update your knowledge without interrupting your professional work"

“

You will delve into Floating Point Operations to make approximate representations of real numbers”

This program includes real case studies and exercises to bring the development of the program closer to the usual IT practice.

The Relearning methodology used in this Postgraduate Certificate will get you to learn autonomously and progressively. At your own speed!.

The program's teaching staff includes professionals from the field who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.



02 Objectives

Upon completion of this university program, graduates will be experts in Advanced Data and Flow Control with Python. In this way, experts will master both conventions and practices related to the handling of identifiers and keywords. In addition, computer scientists will apply complex data structures and their respective operations. Moreover, they will apply functions with which to split and sort codes into simpler parts for debugging. Students will have obtained a set of programming skills that will help them to broaden their professional horizons and excel in a booming industry.



“

At the end of this 6-week program, you will have obtained the necessary tools to boost your career as a computer scientist”



General Objectives

- ♦ Provide a comprehensive understanding of Python
- ♦ Enable advanced data and type handling in Python
- ♦ Apply the principles of Object Oriented Programming (OOP) in Python
- ♦ Encourage the use of best practices and modern methodologies in software development
- ♦ Provide comprehensive education in web and mobile development with Python
- ♦ Integrate UI/UX principles in software development
- ♦ Teach the configuration and use of data development tools and environments
- ♦ Delve into the use of data structures and functions in Python
- ♦ Learn advanced data visualization techniques with Matplotlib
- ♦ Learn performance optimization and data warehousing strategies





Specific Objectives

- Master the conventions and practices for handling identifiers and keywords
- Apply complex data structures and their operations



You will have access to the multimedia resource library and the entire syllabus from day one. No fixed schedules or on-site attendance!"

03

Course Management

In order to promote first class learning, TECH carries out a rigorous selection process of each and every one of the teachers who make up its university programs. For this reason, the professionals who make up this Postgraduate Certificate are characterized by having a vast knowledge of Advanced Data and Flow Control with Python. In this sense, they pour into the teaching materials their years of experience in this IT sector. Therefore, we can guarantee the highest quality in the academic contents, which will allow students to acquire new skills to take a quality leap in their profession.



“

An experienced teaching staff will guide you throughout the learning process and will resolve any doubts you may have"

Management



Mr. Matos Rodríguez, Dionis

- Data Engineer at Wide Agency Sadexo
- Data Consultant at Tokiota
- Data Engineer at Devoteam
- BI Developer at Ibermática
- Applications Engineer at Johnson Controls
- Database Developer at Suncapital España
- Senior Web Developer at Deadlock Solutions
- QA Analyst at Metaconcept
- Professional Master's Degree in Big Data & Analytics by the EAE Business School
- Professional Master's Degree in Systems Analysis and Design
- Bachelor's Degree in Computer Engineering from APEC University

Professors

Mr. Villar Valor, Javier

- ◆ Director and Founding Partner of Impulsa2
- ◆ Chief Operations Officer (COO) at Summa Insurance Brokers
- ◆ Director of Transformation and Operational Excellence at Johnson Controls
- ◆ Professional Masters Degree in Professional Coaching
- ◆ Executive MBA from Emlyon Business School, France
- ◆ Professional Master's Degree in Quality Management from EOI, Spain
- ◆ Computer Engineering from the University Action Pro-Education and Culture (UNAPEC)

Mr. Gil Contreras, Armando

- ◆ Lead Big Data Scientist at Jhonson Controls
- ◆ Data Scientist-Big Data at Opensistemas S.A
- ◆ Fund Auditor at Creatividad y Tecnología S.A. (CYTSA)
- ◆ Public Sector Auditor at PricewaterhouseCoopers Auditores
- ◆ Professional Master's Degree in Data Science at University Center of Technology and Art
- ◆ Professional Máster Degree MBA in International Relations and Business from the Center for Financial Studies (CEF)
- ◆ Bachelor's Degree in Economics from the Technological Institute of Santo Domingo

Ms. Gil Contreras, Milagros

- ◆ Content Creator at MPCTech LLC
- ◆ Project Manager
- ◆ Freelance IT Writer
- ◆ MBA from the Complutense University of Madrid
- ◆ Degree/Graduate in Business Administration from the Technological Institute of Santo Domingo

Ms. Delgado Feliz, Benedit

- ◆ Administrative Assistant and Electronic Surveillance Operator for the National Drug Control Directorate (DNCD)
- ◆ Customer Service at Cáceres y Equipos
- ◆ Claims and Customer Service at Express Parcel Services (EPS)
- ◆ Microsoft Office Specialist at the National School of Informatics (Escuela Nacional de Informática)
- ◆ Social Communicator from the Catholic University of Santo Domingo



Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

04

Structure and Content

This program will enable graduates to master advanced data and type management, while developing skills in program flow control. The syllabus will dive into identifiers and keywords in Python, covering the rules for variable names. In addition, the syllabus will explore integral and Boolean types, including conversions. Also, the teaching materials will delve into collections (such as tuples, lists or dictionaries) highlighting their comparison, efficiency and selection of the appropriate type. In addition, the program will provide an in-depth analysis of the use of lambda functions, their syntax, best practices and applications.



“

You will master the Conventions and Practices for handling both identifiers and keywords”

Module 1. Advanced Data and Flow Control with Python

- 1.1. Identifiers and Keywords in Python
 - 1.1.1. Variable Naming Rules
 - 1.1.2. Python Reserved Words
 - 1.1.3. Naming Conventions
- 1.2. Integral and Boolean Types in Python
 - 1.2.1. Integral Types
 - 1.2.2. Boolean Specific Operations
 - 1.2.3. Conversions and Representations
- 1.3. Floating-point Types and Complex Numbers in Python
 - 1.3.1. Accuracy and Representation
 - 1.3.2. Floating Point Operations
 - 1.3.3. Use of Complex Numbers in Calculations
- 1.4. String Formatting and Encodings in Python
 - 1.4.1. Advanced Formatting Methods
 - 1.4.2. Unicode and UTF-8 Encodings
 - 1.4.3. Working with Special Characters
- 1.5. Collections: Tuples, Lists and Dictionaries in Python
 - 1.5.1. Comparing and Contrasting Types
 - 1.5.2. Type-specific Methods
 - 1.5.3. Efficiency and Selection of Suitable Type
- 1.6. Sets and Frozen Sets in Python
 - 1.6.1. Creation and Operations in Sets
 - 1.6.2. Frozen Sets
 - 1.6.3. Practical Applications and Performance
- 1.7. Iterating and Copying Collections in Python
 - 1.7.1. For Loops and List Comprehensions
 - 1.7.2. Shallow vs. Deep
 - 1.7.3. Iterators and Generators





- 1.8. Using Lambda Functions in Python
 - 1.8.1. Syntax and Creation of Lambda Functions
 - 1.8.2. Applications in Filters and Maps
 - 1.8.3. Limitations and Best Practices
- 1.9. Control Structures: Conditionals and Loops in Python
 - 1.9.1. if-else and elif Structures
 - 1.9.2. While and For Loops
 - 1.9.3. Flow Control with Break, Continue and Else
- 1.10. Advanced Functions and Methods in Python
 - 1.10.1. Recursive functions
 - 1.10.2. Higher Order Functions
 - 1.10.3. Function Decorators

“

TECH's goal is to offer you the most complete education in the market so that you can expand your knowledge and become more efficient in your profession"

05 Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





“

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

“

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world”



You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.



The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“*Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method has been the most widely used learning system among the world's leading Information Technology schools for as long as they have existed. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, students will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

This methodology has trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, and financial markets and instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Practising Skills and Abilities

They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this program. Cases that are presented, analyzed, and supervised by the best specialists in the world.



Interactive Summaries

The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Testing & Retesting

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



06

Certificate

This Postgraduate Certificate in Advanced Data and Flow Control with Python guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.





“

*Successfully complete this program
and receive your university qualification
without having to travel or fill out
laborious paperwork”*

This program will allow you to obtain your **Postgraduate Certificate in Advanced Data and Flow Control with Python** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Advanced Data and Flow Control with Python**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH Global University will make the necessary arrangements to obtain it, at an additional cost.



Postgraduate Certificate Advanced Data and Flow Control with Python

- » Modality: **online**
- » Duration: **6 weeks**
- » Certificate: **TECH Global University**
- » Credits: **6 ECTS**
- » Schedule: **at your own pace**
- » Exams: **online**

Postgraduate Certificate Advanced Data and Flow Control with Python