

# Postgraduate Certificate Object Oriented Programming in Python



## Postgraduate Certificate Object Oriented Programming in Python

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/in/information-technology/postgraduate-certificate/object-oriented-programming-python](http://www.techtitute.com/in/information-technology/postgraduate-certificate/object-oriented-programming-python)

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# 01

# Introduction

Exception and Error Handling in object-oriented programming (OOP) in Python is used by computer scientists to ensure that codes are robust. In this way, they can deal with unexpected or exceptional situations without interrupting program execution. Furthermore, these procedures are useful for maintaining the integrity of objects, keeping them in a consistent and valid state. Professionals will be able to deal with these failures effectively and provide controlled responses. For this reason, TECH launches a program that will delve into both exceptions and error handling in Python OOP. And all with a convenient online methodology for students to combine their studies with the rest of their activities.



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*You will develop advanced skills in the design and implementation of object-oriented software in just 6 weeks thanks to this program"*

Object Oriented Programming is a key computing paradigm, improving various aspects that improve the organization, modularity and reusability of the code. In turn, this leads to more efficient and maintainable software development. Related to this, OOP allows modeling real-world concepts in programs in a more faithful way. Objects represent entities with attributes and behaviors, which facilitates both the compression and the design of the system. Also, thanks to this system, experts create classes and targets that encapsulate specific functionalities and then reuse them in different parts. This translates into time and effort savings during development.

In this context, TECH develops a revolutionary program dedicated to Object Oriented Programming in Python. Developed by specialists in this field, the syllabus will analyze the various initialization methods, taking into account factors such as attributes. The syllabus will highlight the importance of the encapsulation and abstraction process for safe programming. The course materials will also delve into polymorphism, emphasizing the technique of *duck typing* to make codes more flexible. In addition, the program will explore the use of decorators in classes, as well as custom collections.

The program has the avant-garde and exclusive Relearning methodology so that students can assimilate complex concepts and competences in a fast and flexible way. At the same time, its contents are not subject to rigid schedules or continuous evaluation schedules. In this way, each graduate has the opportunity to personalize study time in accordance with their personal or professional obligations. This way, you will not have to abandon other academic programs or your current work, also avoiding unnecessary displacement. In short, all content will be accessible from any portable device 24 hours a day, 7 days a week.

This **Postgraduate Certificate in Object Oriented Programming in 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 the self-assessment process can be carried out 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



*A rigorous and intensive program that will allow you to advance quickly and efficiently in your learning"*



“

*The Relearning system applied by TECH in its programs reduces the long hours of study so frequent in other teaching methods"*

*You will nurture your professional praxis by using Decorators in class thanks to this university program.*

*You will delve into Exceptions and Error Handling in OOP to maintain program integrity.*

The program's teaching staff includes professionals from the industry who contribute their work experience to this 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

Thanks to this Postgraduate Certificate, graduates will acquire the necessary skills to develop robust and efficient software in an object-oriented environment. In this way, students will master both the creation and use of Python classes. In addition, they will apply inheritance and polymorphisms to facilitate code reuse. In addition, students will implement advanced object programming concepts such as abstract classes and custom exceptions. Professionals will be prepared to take advantage of the opportunities offered by a rapidly expanding IT industry.







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*Increase your confidence in decision-making by updating your knowledge through this Postgraduate Certificate"*



## General Objectives

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- ♦ 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

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- Master the creation and use of classes and objects in Python
- Apply Inheritance and Polymorphism in Python



*You will have access to the contents from any fixed or portable device with Internet connection, even from your cell phone”*

# 03

# Course Management

TECH has recruited leading professionals in Object Oriented Programming in Python to be part of its teaching team, with the aim of providing a university qualification of an excellent level. These experts have been responsible for developing updated materials, which will give students the opportunity to acquire knowledge from professionals with extensive experience in the IT field. Esto le dará las claves necesarias para su desarrollo profesional en un campo que se adapta a las nuevas tecnologías y los últimos avances.







“

*You will have access to a syllabus designed by a reputable teaching staff, which will guarantee you a successful learning"*



## 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

### 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

### 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

**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

**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 ProfessionalCoaching
- ♦ 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. Delgado Panadero, Ángel**

- ♦ ML Engenieer at Paradigma Digital
- ♦ Computer Vision Engineer at NTT Disruption
- ♦ Data Scientist at Singular People
- ♦ Data Analyst at Parclick
- ♦ Specialist in Data Engineering on GPC
- ♦ Specialist in Deep Learning
- ♦ Degree in Physics at the University of Salamanca



*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 focus on understanding and applying the principles of Object Oriented Programming in Python. The syllabus will explore the creation of abstract classes and the implementation of custom exceptions. In addition, the syllabus will cover the concept of inheritance including how to override and extend methods. The module will cover aspects such as the use of decorators on classes, handling custom classes or collections. It will also include an immersion in exception and error handling in the context of OOP. Graduates will be equipped with the necessary skills to develop robust software.

```
cellbindings.js  
.js api.js  
.js command.js  
.js editor.js  
.js fileManager.js  
.js main.js  
.js readme.txt
```

```
49  
+ 50  
51  
▪ 52  
53  
: 54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65
```

```
input.on  
hist  
var self  
  
input.on  
//escap  
if (e.k  
// th  
self.  
retur  
}  
if (e.k  
e.st  
e.pro  
self.  
self.  
retur  
}  
//up/d  
if (e.k  
e.pro  
e.st  
if (
```

```
= this.input;  
= this.searchHistory;  
= this;  
("keydown", function(e) {  
    if (e.keyCode == 27) {  
        // this is a new line  
        deactivate(true);  
        return; // this is a modified line  
    }  
    if (e.keyCode == 13) {  
        stopImmediatePropagation();  
        eventDefault();  
        search();  
        deactivate();  
        return;  
    }  
    if (e.keyCode == 38) {  
        eventDefault();  
        stopImmediatePropagation();  
        search();  
        deactivate();  
        return;  
    }  
})
```

“

*TECH's online methodology allows you, through case studies, to practice in simulated learning environments”*



## Module 1. Object Oriented Programming (OOP) in Python

- 1.1. Object Oriented Programming (OOP) in Python
  - 1.1.1. Classes and Objects
  - 1.1.2. Encapsulation and Abstraction
  - 1.1.3. Object Oriented Programming (OOP) in Python
- 1.2. Creation of Classes and Objects in Python
  - 1.2.1. Classes in Python OOP
  - 1.2.2. Instantiation and Initialization Methods
  - 1.2.3. Attributes and Methods
- 1.3. Attributes and Methods in Python
  - 1.3.1. Instance Attributes vs. Class
  - 1.3.2. Instance, Class and Static Methods
  - 1.3.3. Encapsulation and Information Hiding
- 1.4. Inheritance and Polymorphism in Python
  - 1.4.1. Single and Multiple Inheritance
  - 1.4.2. Overwriting and Method Extensions
  - 1.4.3. Polymorphism and Duck Typing
- 1.5. Properties and Attribute Access in Python
  - 1.5.1. Getters and Setters
  - 1.5.2. @Property Decorator
  - 1.5.3. Access Control and Validation
- 1.6. Custom Classes and Collections in Python
  - 1.6.1. Creating Collection Types
  - 1.6.2. Special Methods (`__len__`, `__getitem__`)
  - 1.6.3. Custom Iterators
- 1.7. Aggregation and Composition in Python Classes
  - 1.7.1. Relationships Between Classes
  - 1.7.2. Aggregation vs. Composition
  - 1.7.3. Object Lifecycle Management







- 1.8. Use of Decorators in Python Classes
  - 1.8.1. Use of Decorators in Python Classes
  - 1.8.2. Class Decorators
  - 1.8.3. Applications and Use Cases
- 1.9. Abstract Classes and Methods in Python
  - 1.9.1. Abstract Classes
  - 1.9.2. Abstract Methods and Implementation
  - 1.9.3. Use of ABC (Abstract Base Class)
- 1.10. Python OOP Exceptions and Error Handling
  - 1.10.1. Custom Exceptions in Classes
  - 1.10.2. Exception Handling in Methods
  - 1.10.3. Best Practices in Exceptions and OOP

“

*This university qualification will allow you to fulfill your professional aspirations with academic excellence. Enroll now!*”

# 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.





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*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.



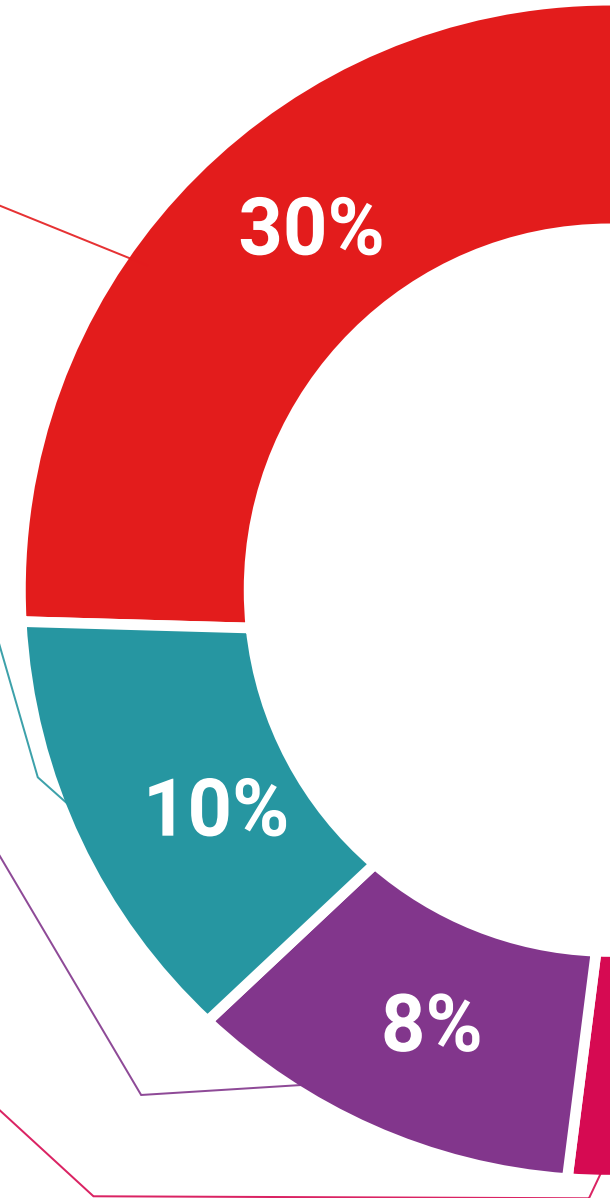
### Practising Skills and Abilities

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

The Postgraduate Certificate in Object Oriented Programming in Python guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Technological University.





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

This **Postgraduate Certificate in Object Oriented Programming in Python** contains the most complete and up to date academic program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The certificate issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Object Oriented Programming in Python**

Official N° of Hours: **150 h.**



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

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
development lang  
virtual classroom



Postgraduate Certificate  
Object Oriented  
Programming in Python

- » Modality: online
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- » Dedication: 16h/week
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