

Postgraduate Certificate Python and Back-End Development from Scratch



Postgraduate Certificate Python and Back-End Development from Scratch

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

Website: www.techtute.com/us/information-technology/postgraduate-certificate/python-back-end-development-scratch

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01

Introduction to the Program

Back-end development has become one of the key areas in the creation of robust technological applications and systems. According to a report published by the Python Software Foundation (PSF) in collaboration with JetBrains, Python is the most widely used programming language in backend projects, with a sustained annual growth of 27%. Taking into account that this field is the driving force behind the most innovative applications and systems in the digital world, TECH has developed this Postgraduate Certificate that will provide a comprehensive educational experience, focused on the fundamental and advanced aspects of developing robust, secure and scalable applications. Through a 100% online modality, specialists will address the essential concepts for transforming ideas into high-impact technological solutions.



“

You will master the language of the future from the comfort of your own home! With this program you will learn the basics to create innovative and functional applications. All this, using the best online methodology”

The digital world is constantly evolving, which is why learning Python and Back-End Development has become a key skill for both professionals and those looking to venture into technology. In this sense, Python is one of the most popular and versatile programming languages, thanks to its simple syntax and ability to adapt to various areas such as web development, Artificial Intelligence, data analysis and more.

The high importance of these disciplines led TECH to develop an innovative program that will provide the most up-to-date knowledge to respond to the demands of the industry. This Python and Back-End Development program will delve into the practical use of tools and methodologies that transform ideas into functional technological solutions. In this way, the syllabus, designed with a comprehensive approach, will address key topics such as the design of relational and non-relational databases, the creation of RESTful APIs, the implementation of solutions with frameworks, and the management of collaborative development environments using GitHub. This guarantees a comprehensive experience that fosters both technical understanding and applied creativity.

Graduates will be prepared to take on strategic roles in technology companies, start-ups and consultancies specialized in software development. Job opportunities range from Back-end developer to solutions architect, with the ability to participate in large-scale projects involving the creation of scalable and secure applications. In short, this program will become the gateway to consolidating a career in a constantly evolving sector with a high demand for qualified professionals.

Thanks to its 100% online format, this qualification will allow students to organize their studies in a flexible way and adapt them to their personal or professional commitments. In turn, the Relearning methodology will facilitate the progressive assimilation of key concepts, ensuring efficient and long-lasting learning that adapts to the needs of the modern professional.

This **Postgraduate Certificate in Python and Back-End Development from Scratch** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- ♦ The development of case studies presented by experts in programming
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning
- ♦ Special emphasis on innovative methodologies in Python and Back-End Development from Scratch
- ♦ 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



Ready to become the expert that companies are looking for? With this qualification you will have everything you need to learn how to program from scratch. Progress at your own pace and build your first applications!"

“

Become a Back-end Developer from scratch thanks to TECH. This Postgraduate Certificate is designed to train you with case studies, online lessons and the support of the best professionals in the industry"

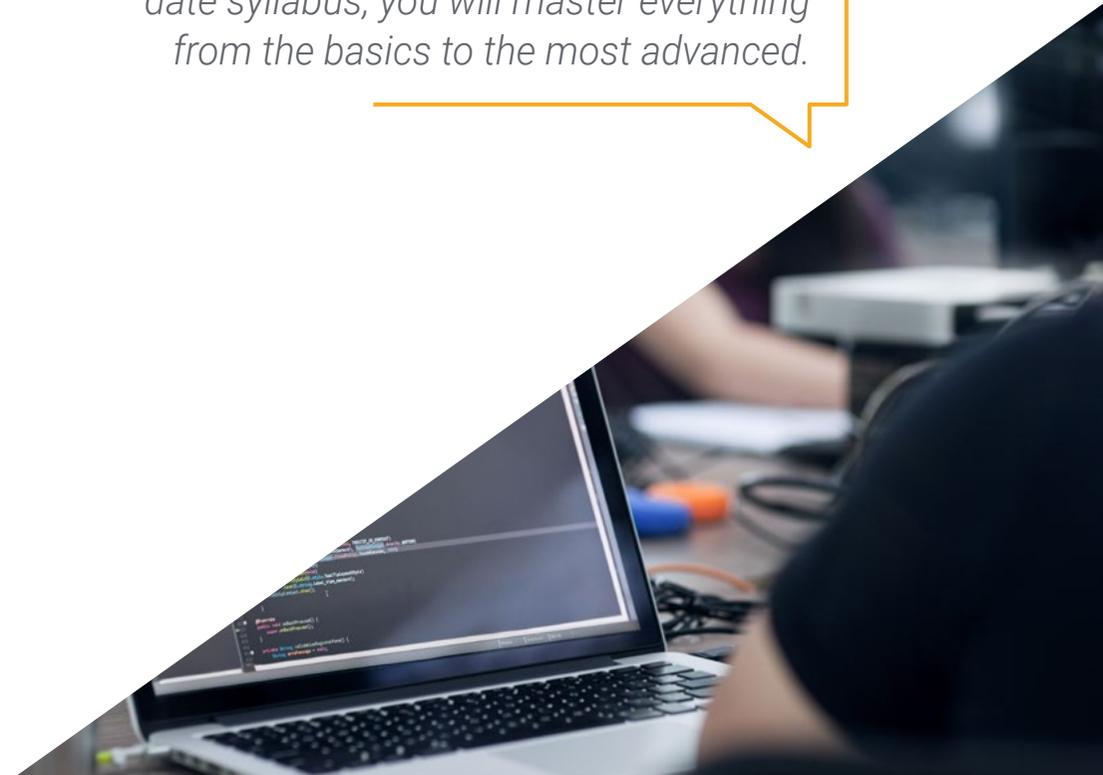
Its teaching staff includes professionals from the field of programming, who bring their work experience to this program, as well as renowned specialists from leading companies and prestigious universities.

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 an immersive learning experience designed to prepare for real-life situations.

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

Knowing how to program has never been so accessible! In this program you will have interactive resources and a practical approach that will help you master Python from anywhere. Are you ready for the change?

Discover the potential of Python and master Back-end Development with the guidance of technology experts. Through an up-to-date syllabus, you will master everything from the basics to the most advanced.



02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it relies on an enormous faculty of more than 6,000 professors of the highest international renown.



“

*Study at the world's largest online university
and guarantee your professional success.
The future starts at TECH”*

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

Forbes
The best online university in the world

The most complete
syllabus

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

TOP
international faculty

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

World's No.1
The World's largest online university

The most effective methodology

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.



Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.



The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.



03 Syllabus

Through a carefully designed study plan, professionals will master everything from the fundamentals of the Python language, its syntax, data structures and object-oriented programming, to advanced aspects such as database integration, the handling of RESTful APIs and the implementation of frameworks such as Django and Flask for Back-end projects. Likewise, they will delve into key topics such as web application security, efficient server management and application performance optimization.





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With the support of experts in the field, you will be ready to excel in a highly competitive professional environment. The first step towards your professional transformation starts here!”

Module 1. Back-End Development I: Python from Scratch

- 1.1. Python from Scratch. Installation
 - 1.1.1. Python Language. Features
 - 1.1.2. Installing Python on Windows, macOS and Linux
 - 1.1.3. Setting up the Development Environment: IDEs and Code Editors
 - 1.1.4. First Program in Python: "Hello World"
- 1.2. Syntax and Variables in Python
 - 1.2.1. Structure of Python Code: Indentation
 - 1.2.2. Comments in Python
 - 1.2.3. Variables and Data Types in Python
 - 1.2.4. Arithmetic and Logical Operations in Python
- 1.3. Flow Control: Conditionals
 - 1.3.1. Control Structures
 - 1.3.2. Conditional Statements: if, elif, else
 - 1.3.3. Ternary Conditional Operator
- 1.4. Loops in Python
 - 1.4.1. Use of Loops in Programming
 - 1.4.2. "for" and "while" Loops
 - 1.4.3. Flow Control in Loops: Break and Continue
 - 1.4.4. Nested Loops
- 1.5. Functions in Python
 - 1.5.1. Functions in Python. Uses
 - 1.5.2. Parameters and Arguments of Functions
 - 1.5.3. Return Values
 - 1.5.4. Predefined Functions vs. User-Created Functions
- 1.6. Lists and Tuples in Python
 - 1.6.1. Creation and Use of List in Python
 - 1.6.2. Common Operations with Lists: Add, Remove, Modify
 - 1.6.3. Tuples: Differences with Lists
 - 1.6.4. Creating and Using Lists in Python



- 1.7. Dictionaries and Sets in Python
 - 1.7.1. Dictionaries: Key-Value
 - 1.7.2. Methods for Manipulating Dictionaries
 - 1.7.3. Sets: Use
 - 1.7.4. Comparison of Dictionaries and Sets
- 1.8. File Handling in Python from Scratch
 - 1.8.1. Opening and Closing Files
 - 1.8.2. Opening Modes: Reading, Writing and Appending
 - 1.8.3. Reading and Writing Text Files
- 1.9. Handling Errors and Exceptions
 - 1.9.1. Types of Exceptions
 - 1.9.2. Using Try, Except to Handle Errors
 - 1.9.3. Creating Custom Exceptions
- 1.10. Best Practices and Debugging in Python
 - 1.10.1. Debugging: Purpose
 - 1.10.2. Debugging Techniques: Use of Print and Breakpoints
 - 1.10.3. Best Practices in Code Writing

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This qualification combines the latest research in Python with new advances in Back-end Development. With TECH you will take the step towards professional excellence. What are you waiting for to enroll?"

04

Teaching Objectives

This program is designed to offer a comprehensive educational experience that allows professionals to master the fundamentals of programming and apply them effectively in the development of Back-end applications. In this way, the program will enable graduates to understand everything from the most basic concepts of Python, such as its syntax, control structures and data management, to advanced skills such as the implementation of relational and non-relational databases, the creation of RESTful APIs and the handling of frameworks. They will also develop practical skills to design, build and optimize scalable and secure applications.



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You will be prepared to successfully face the challenges of today's technological environment and stand out in a highly competitive labor market. Get ready to achieve your professional goals with this innovative program!



General Objectives

- ♦ Master the fundamentals of Python to develop efficient applications
- ♦ Design data structures and algorithms applied to back-end development
- ♦ Implement back-end servers and services using frameworks such as Flask or Django
- ♦ Integrate relational and non-relational databases in back-end projects
- ♦ Create RESTful APIs for communication between systems and applications
- ♦ Apply principles of modular design and scalable architecture in back-end projects
- ♦ Optimize the performance of back-end applications to handle large amounts of data
- ♦ Use testing tools to ensure the quality of code and application
- ♦ Implement security measures in the development of back-end services
- ♦ Solve complex problems by designing and implementing innovative back-end solutions





Specific Objectives

- ♦ Master the characteristics of Python
- ♦ Understand the structure and basic syntax of Python
- ♦ Develop skills in flow control using conditionals
- ♦ Apply loops to create repetition cycles in Python



Not only will you acquire the necessary technical knowledge, but you will also develop critical thinking and autonomy in learning. Take the plunge and learn Python and Back-End Development from scratch!

05

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”

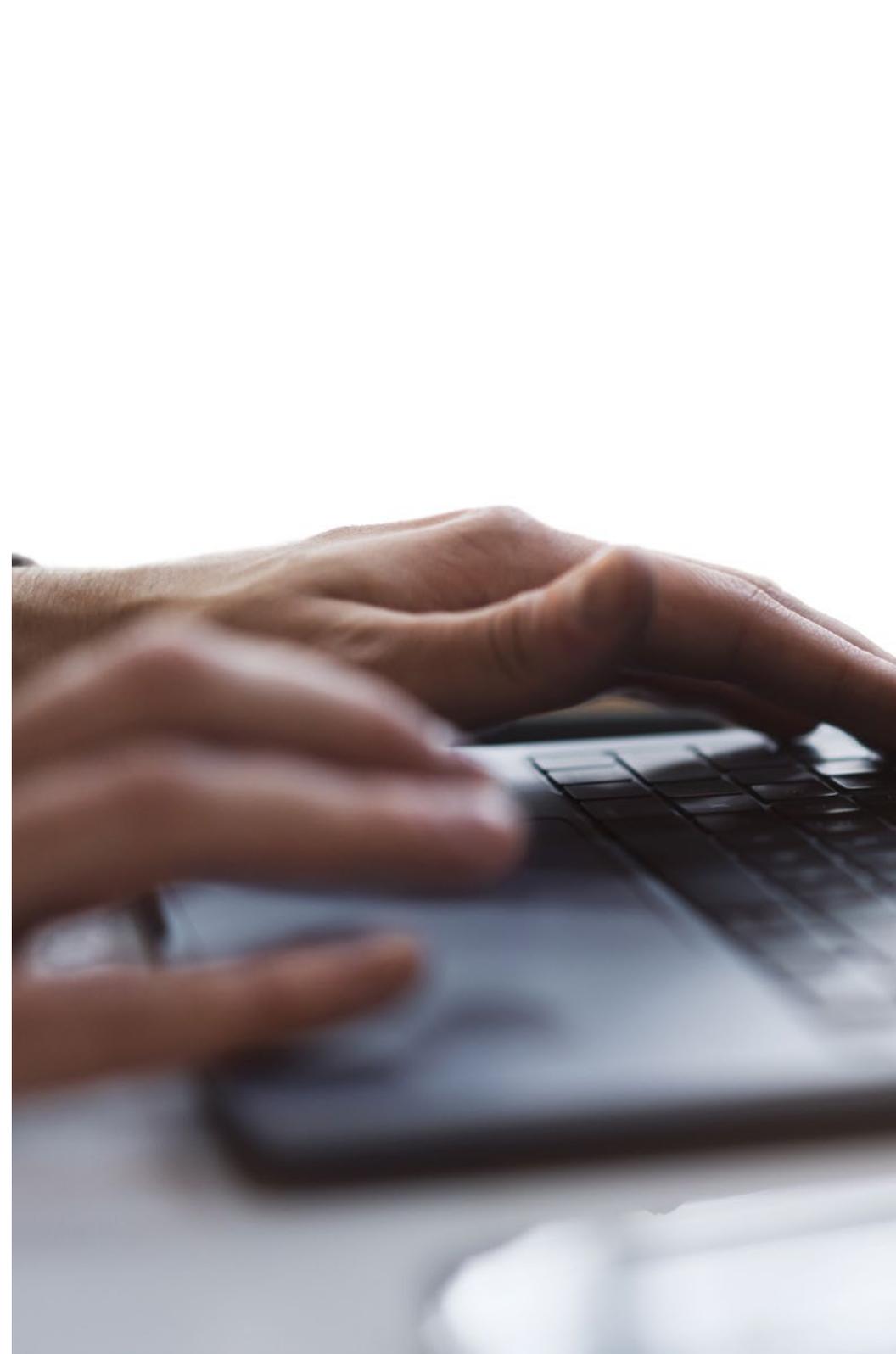
The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist. The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes
(which you might not be able to attend)”*



The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

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TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want”

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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



A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.



As such, the best educational materials, thoroughly prepared, will be available in this program:



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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



Interactive Summaries

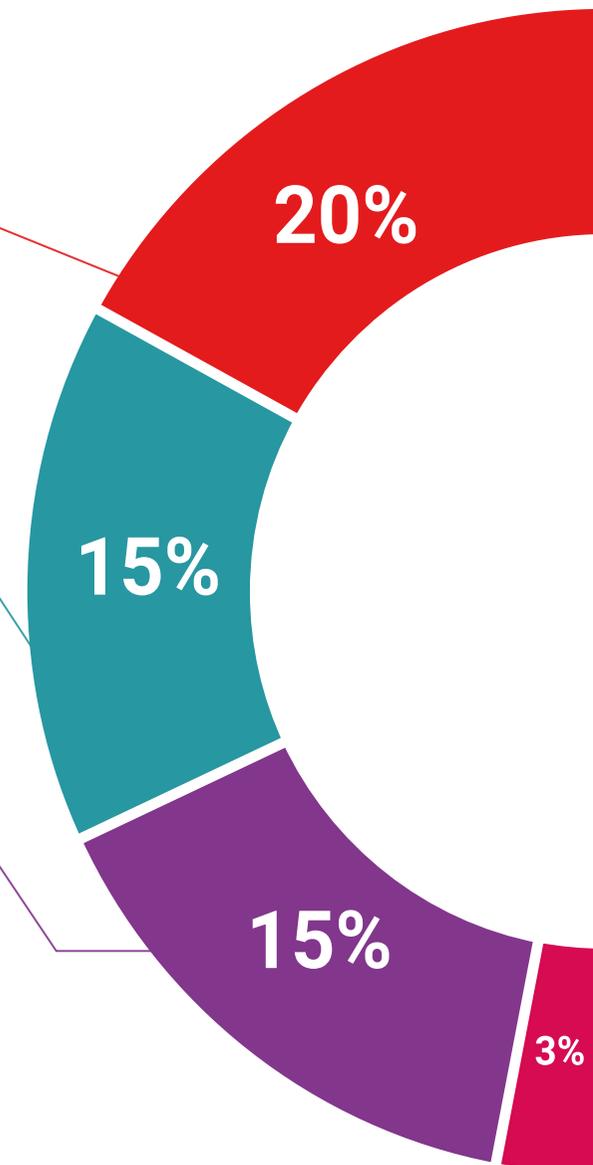
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

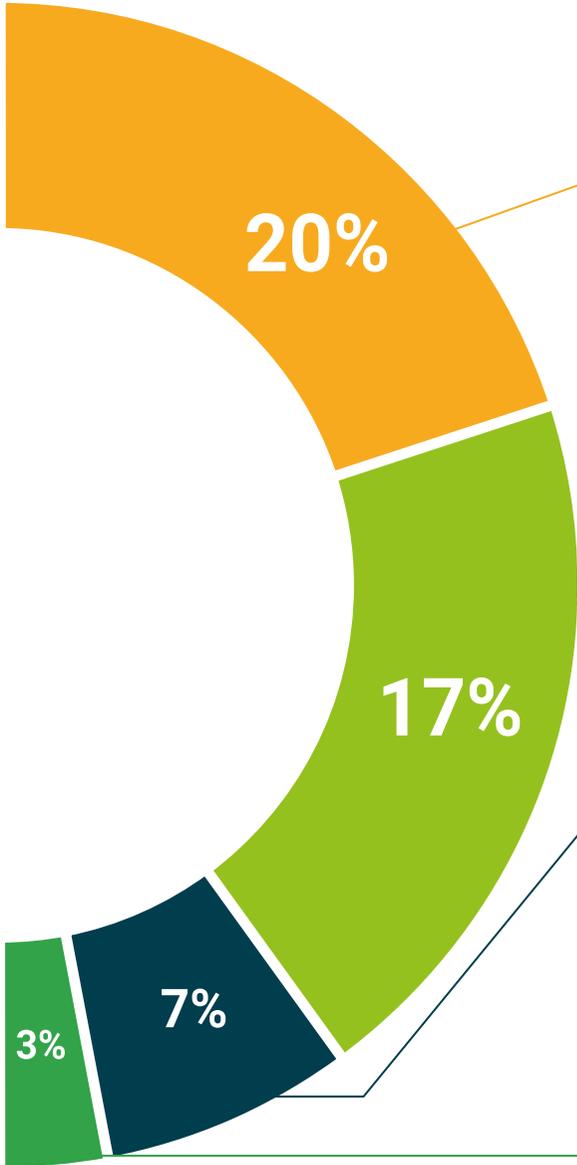
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





Case Studies

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



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 for future difficult decisions.



Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.



06

Teaching Staff

The teaching staff is made up of a group of highly qualified professionals who combine solid educational experience with in-depth practical knowledge in the field of programming and web development. In fact, each of them has worked on innovative technology projects, collaborating with leading companies in the field, which allows them to offer a realistic and up-to-date view of market demands. Through a close and dynamic approach, the mentors will guide the graduates at each stage, from understanding the fundamentals of the Python language to implementing advanced Back-end solutions.



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The teaching staff is made up of experts committed to your professional success. You will learn from the best and become the developer you always wanted to be!

Management



Dr. Lucas Cuesta, Juan Manuel

- ♦ Senior Software Engineer and Analyst at Indizen – Believe in Talent
- ♦ Senior Software Engineer and Analyst at Krell Consulting and IMAGiNA Artificial Intelligence
- ♦ Software Engineer at Intel Corporation
- ♦ Software Engineer at Intelligent Dialog Systems
- ♦ PhD in Electronic Systems Engineering for Intelligent Environments from the Polytechnic University of Madrid
- ♦ Graduate in Telecommunications Engineering at the Polytechnic University of Madrid
- ♦ Master's Degree in Electronic Systems Engineering for Intelligent Environments from the Polytechnic University of Madrid



Mr. Márquez Ruiz de Lacanal, Juan Antonio

- ♦ Software Developer at GTD Defense & Security Solutions
- ♦ Software Developer at Solera Inc
- ♦ Development and Research Engineer at GRVC Sevilla
- ♦ Co-founder of Unmute
- ♦ Co-founder of VR Educa
- ♦ Academic Exchange in Engineering and Entrepreneurship at the University of California, Berkeley
- ♦ Degree in Industrial Engineering from the University of Sevilla



Professors

Mr. Pi Morell, Oriol

- ◆ Functional Analyst at Fihoca
- ◆ Hosting and Mail Product Owner CDMON
- ◆ Functional Analyst and Software Engineer at Atmira and CapGemini
- ◆ Teacher at ORACLE Forms CapGemini and Atmira
- ◆ Professional Master's Degree in Technical Engineering in Computer Management from the Autonomous University of Barcelona.
- ◆ Master's Degree in Artificial Intelligence from the Catholic University of Avila
- ◆ Professional's Degree in Business Administration and Management by IMF Smart Education
- ◆ Master's Degree in Information of Systems Management by IMF Smart Education
- ◆ Postgraduate Degree in Design in Patterns from the Open University of Catalonia

“

A unique, key and decisive learning experience to boost your professional development"

07

Certificate

This Postgraduate Certificate in Python and Back-End Development from Scratch guarantees, in addition to the most rigorous and up-to-date program, access to an Postgraduate Certificate diploma issued by TECH Global University.



“

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

This private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in Python and Back-End Development from Scratch** 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** private qualification, 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 Python and Back-End Development from Scratch**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





Postgraduate Certificate
Python and Back-End
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Postgraduate Certificate Python and Back-End Development from Scratch

```
    line  
    e.preventDefault(true);  
    // this is a modified line  
  
    if (e.keyCode == 13) {  
        e.stopPropagation();  
        e.preventDefault();  
        self.search();  
        self.deactivate();  
        return;  
    }  
    //up/down  
    if (e.keyCode == 38 || e.keyCode == 40) {  
        e.preventDefault();  
        e.stopPropagation();  
        if (e.keyCode == 38) { // up  
            // show previous search query  
            if (hist.currentIndex == hist.history.length) {  
                hist.currentQuery = input.value;  
                // skip previous search if we're already at the top  
                if (hist.currentQuery == hist.history[hist.history.length - 1])  
                    hist.currentIndex--;  
            }  
        }  
    }  
    // this is a modified line
```