

# Postgraduate Certificate

## DevOps and Continuous Integration.

### Advanced Practical Solutions in Software Development





## Postgraduate Certificate

### DevOps and Continuous Integration. Advanced Practical Solutions in Software Development

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

Website: [www.techtitute.com/us/information-technology/postgraduate-certificate/devops-continuous-integration-advanced-practical-solutions-software-development](http://www.techtitute.com/us/information-technology/postgraduate-certificate/devops-continuous-integration-advanced-practical-solutions-software-development)



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01

# Introduction

The current dynamics of speed and agility in systems demand the application of methodologies to optimize work and team collaboration. This, without sacrificing safety and reliability in the project. Meeting these requirements requires professionals trained in the business environment, who provide advanced practical solutions in the development of powerful software, including scalability and efficient incident resolution. That is why an exclusive program has been designed to provide all the necessary knowledge regarding DevOps and continuous integration, in a 100% online format with a cutting-edge methodology and the guidance of experts.



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*Develop the latest practices and tools in continuous integration and deployment. Being able to apply them selectively in their future projects thanks to this Postgraduate Certificate”*

Coordinating and integrating the work of the entire software development team on a main line on a very frequent basis, and delivering the product with these new changes as soon as possible, is one of the objectives of continuous integration within the framework of the use of the DevOps methodology.

The commitment involved in each project makes us work efficiently, quickly and adaptable to the requirements that may arise. For this, it is essential to establish the minimum stages and requirements in any software development process. In this program, a global and complete vision of the entire ecosystem is offered, from human policies, product or management requirements, to the theoretical and practical implementation of the processes themselves.

Therefore, students will be able to create and adapt the complete software delivery cycle, according to specific needs, taking into account economic and security considerations with the presentation of real cases based on problems. With content selected by the expert teachers who direct this program and who, in addition, will accompany students throughout the learning process through the various multimedia resources available on the TECH Technological University platform.

A modern study system implemented by TECH, which allows students to balance their daily responsibilities with the program, and graduate in a maximum of 6 weeks, without investing a great deal of time and effort. It is a 100% online methodology based on Relearning, which facilitates the learning process for the professional.

This **Postgraduate Certificate in DevOps and Continuous Integration. Advanced Practical Solutions in Software Development** contains the most complete and up-to-date program on the market. Its most notable features are:

- ◆ Case studies presented by experts in software development
- ◆ The graphic, schematic, and practical contents with which they are created, provide practical information on the 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 for experts and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection

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*With this program, you will learn to generate advanced practical solutions in software development through DevOps and continuous integration. Enroll now and qualify in 6 weeks"*

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*Companies are looking for efficient professionals in the development of IT solutions tailored to their needs. Become an expert with this Postgraduate Certificate”*

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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 training programmed to train 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 student will be assisted by an innovative interactive video system created by renowned and experienced experts.

You no longer have to worry about endless hours of studying in a classroom. Get trained 100% online and from any device with TECH Technological University.

After this program, you will be able to design a software delivery process using continuous integration in an efficient way.



02

# Objectives

Provide the knowledge of the most up-to-date techniques and tools to achieve an automatic and robust software delivery process, establishing the requirements and stages of continuous integration, is the objective of this update program; so that the professional reaches high quality standards in their deliveries, estimating the security vulnerabilities during and after the same.



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*Raise the level of your professional profile with specific knowledge that will provide you with immediate improvements"*



## General Objectives

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- ◆ Develop the criteria, tasks and advanced methodologies to understand the relevance of quality-oriented work
- ◆ Analyze the key factors in the quality of a software project
- ◆ Develop the relevant regulatory aspects
- ◆ Implement DevOps and systems processes for Quality Assurance
- ◆ Reduce the technical debt of projects with a quality approach rather than an approach based on economics and short deadlines
- ◆ Provide the student with specialized knowledge to be able to measure and quantify the quality of a software project
- ◆ Defend the economic proposals of projects on the basis of the quality approach





## Specific Objectives

- ◆ Identify the stages of the software development and delivery cycle adapted to particular cases
- ◆ Design a software delivery process using continuous integration
- ◆ Build and implement continuous integration and deployment based on your previous design
- ◆ Establish automatic quality checkpoints on each Software delivery
- ◆ Maintain an automatic and robust software delivery process
- ◆ Adapt future needs to the continuous integration and deployment process
- ◆ Analyze and anticipate security vulnerabilities during and after the software delivery process

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*Understand all about improving Pipeline runtime: Static Analysis, Git Hooks and Unit Tests*

03

# Course Management

Computer engineers with extensive experience in the design of software for different business environments make up the teaching staff of this Postgraduate Certificate. Their extensive experience and knowledge provide this program with a high value and quality level of content, adequate to TECH's requirements. These professionals will be in charge of teaching through a 100% online relearning methodology, with exclusive material presented in different formats, which will make the learning process much more dynamic and easy.



```
mirror_mod.use_y = True
mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end
mirror_ob.select= 1
modifier_ob.select= 1
bpy.context.scene.objects.active = modifier_ob
print("Selected object is " + modifier_ob.name)
```

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Having the experience of renowned professors in the area of computer engineering will allow you to acquire the value you need for your professional development”

## International Guest Director

With an extensive professional career of more than 30 years in the technology sector, Daniel St. John is a prestigious **Computer Engineer** highly specialized in **Software Quality**. In this same line, he has established himself as a true leader in this field due to his pragmatic approach based on continuous improvement and innovation.

Throughout his career, he has been part of international reference institutions such as **General Electric Healthcare** in Illinois. In this way, his work has focused on optimizing the **digital infrastructures** of organizations with the aim of significantly improving the **user experience**. Thanks to this, multiple patients have enjoyed more personalized and agile care, with faster access to both clinical results and health follow-ups. At the same time, it has implemented technological solutions that have enabled professionals to make more informed **strategic decisions** based on large volumes of data.

He has also balanced this work with the creation of cutting-edge technological projects to maximize the effectiveness of the institutions' operational processes. In this regard, he has led the **digital transformation** of numerous companies belonging to different industries. As such, he has implemented emerging tools such as **Artificial Intelligence**, **Big Data** or **Machine Learning** to automate complex daily tasks. As a result, these organizations have managed to adapt to market trends with immediacy and ensure their long-term sustainability.

It is worth noting that Daniel St. John has participated as a speaker at various scientific congresses on a global scale. In this way, he has shared his vast knowledge in areas such as the adoption of **Agile Methodologies**, **Application Testing** to ensure the reliability of systems or implementation of innovative **Blockchain** techniques that guarantee the protection of confidential data.



## Mr. St. John, Daniel

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- Director of Software Engineering at General Electric Healthcare of Wisconsin, United States
- Head of Software Engineering at Siemens Healthineers, Illinois
- Director of Software Engineering at Natus Medical Incorporated, Illinois
- Senior Software Engineer at WMS Gaming of Chicago
- Senior Software Engineer at Siemens Medical Solutions, Illinois
- M.S. in Data Strategy and Analytics from Lake Forest Graduate School of Management  
B.S. in Computer Science from the University of Wisconsin-Parkside
- Illinois Institute of Technology Advisory Board Member
- Certifications in: Python for Data Science, Artificial Intelligence and Development, SAFe SCRUM, and Project Management.

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*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Mr. Molina Molina, Jerónimo

- AI Engineer & Software Architect. NASSAT - Internet Satellite in Motion
- Sr. Consultant at Hexa Ingenieros. Introducer of Artificial Intelligence (ML and CV) in the company
- Expert in artificial intelligence based solutions in the fields of Computer Vision, ML/DL and NLP. Currently investigating application possibilities of Transformers and Reinforcement Learning in a personal research project
- University Expert in Business Creation and Development. Bancaixa – FUNDEUN Alicante
- Computer Engineer. University of Alicante
- Master in Artificial Intelligence. Catholic University of Avila
- Executive MBA. European Business Campus Forum

## Professors

### Mr. Tenrero Morán, Marcos

- ◆ DevOps Engineer – Allot Communications
- ◆ Application Lifecycle Management & DevOps – Meta4 Spain. Cegid
- ◆ QA Automation Engineer – Meta4 Spain. Cegid
- ◆ Graduated in Computer Engineering from Rey Juan Carlos University
- ◆ Development of professional applications for Android - Galileo University (Guatemala)
- ◆ Cloud Services Development (nodeJs, JavaScript, HTML5) - UPM
- ◆ Continuous Integration with Jenkins – Meta4. Cegid
- ◆ Web Development with Angular-CLI (4), Ionic and nodeJS. Meta4 - Rey Juan Carlos University



DEV  
OPS

04

# Structure and Content

Today's professionals need skills that offer them agile and convenient alternatives. The syllabus of this Diploma will be available from the first day and is presented in different written and audiovisual formats, through a modern and 100% online methodology; it provides the expected flexibility for those who wish to professionalize without sacrificing their current activities. In addition, expert teachers will accompany students throughout the process in a personalized and group setting, and they will be able to share experiences with other professionals in the forums and meeting rooms.



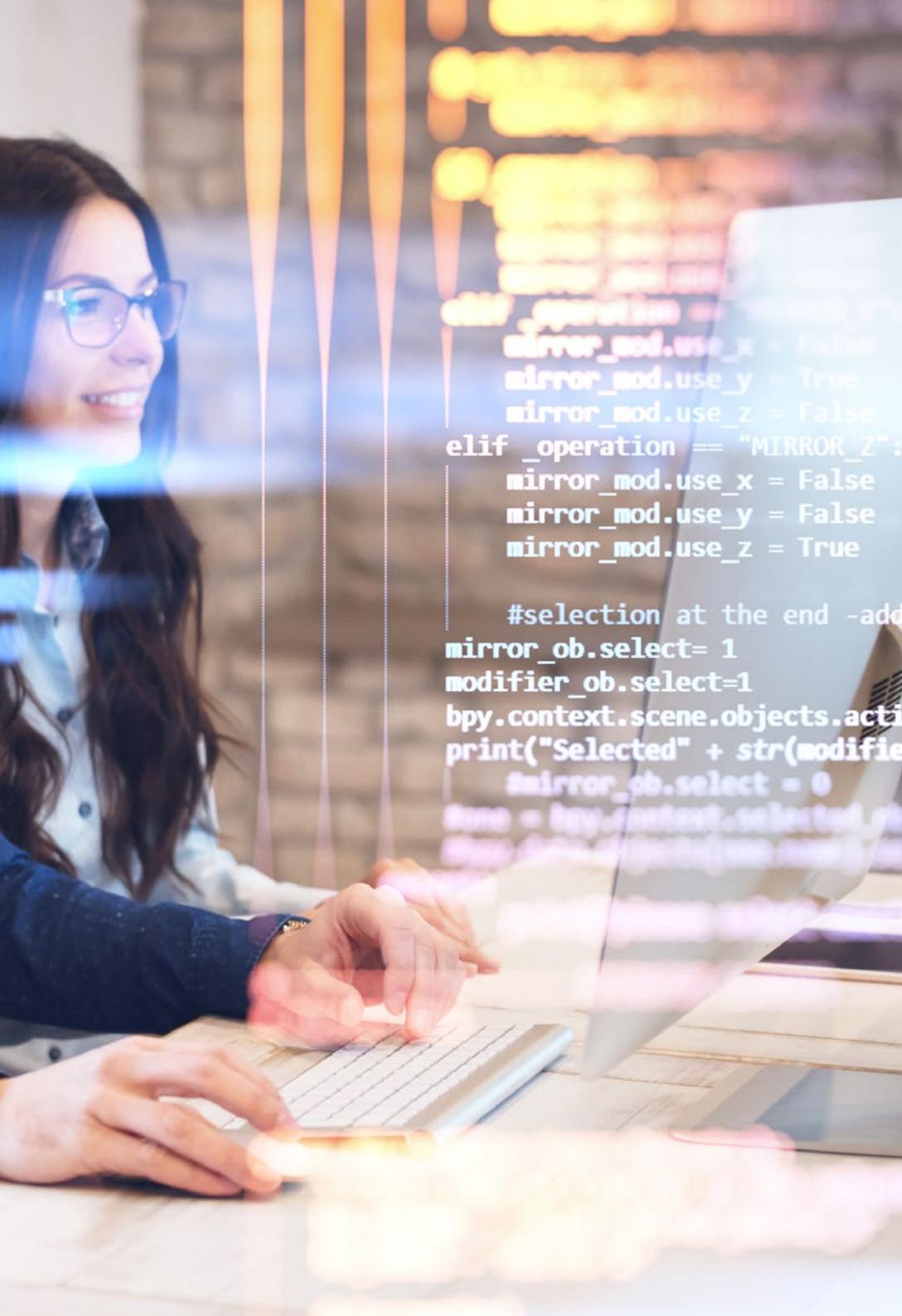
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*Studying doesn't have to be boring. With TECH, in addition to quality, you will find a variety of resources for dynamic and effective learning"*

**Module 1.** DevOps and Continuous Integration. Advanced Practical Solutions in Software Development

- 1.1. Software Delivery Flow
  - 1.1.1. Identification of Actors and Artifacts
  - 1.1.2. Software Delivery Flow Design
  - 1.1.3. Software Delivery Flow Inter-Stage Requirements
- 1.2. Process Automation
  - 1.2.1. Continuous Integration
  - 1.2.2. Continuous Deployment
  - 1.2.3. Environment Configuration and Secret Management
- 1.3. Declarative Pipelines
  - 1.3.1. Differences Between Traditional, Code-Like and Declarative Pipelines
  - 1.3.2. Declarative Pipelines
  - 1.3.3. Declarative Pipelines in Jenkins
  - 1.3.4. Comparison of Continuous Integration Providers
- 1.4. Quality Gates and Enriched Feedback
  - 1.4.1. Quality Gates
  - 1.4.2. Quality Standards with Quality Gates. Maintenance
  - 1.4.3. Business Requirements in Integration Requests
- 1.5. Artifact Management
  - 1.5.1. Artifacts and Life Cycle
  - 1.5.2. Artifact Storage and Management Systems
  - 1.5.3. Security in Artifact Management





- 1.6. Continuous Deployment
  - 1.6.1. Continuous Deployment as Containers
  - 1.6.2. Continuous Deployment with PaaS
  - 1.6.3. Continuous Deployment of Mobile Applications
- 1.7. Improving Pipeline Runtime: Static Analysis and Git Hooks
  - 1.7.1. Static Analysis
  - 1.7.2. Code Style Rules
  - 1.7.3. Git Hooks and Unit Tests
  - 1.7.4. The Impact of Infrastructure
- 1.8. Vulnerabilities in Containers
  - 1.8.1. Vulnerabilities in Containers
  - 1.8.2. Image Scanning
  - 1.8.3. Periodic Reports and Alerts

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*Relearning is based on reiteration. Scientific evidence indicates that repetition is the best way to learn. A methodology implemented by TECH Technological University that revolutionizes today's university world"*

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

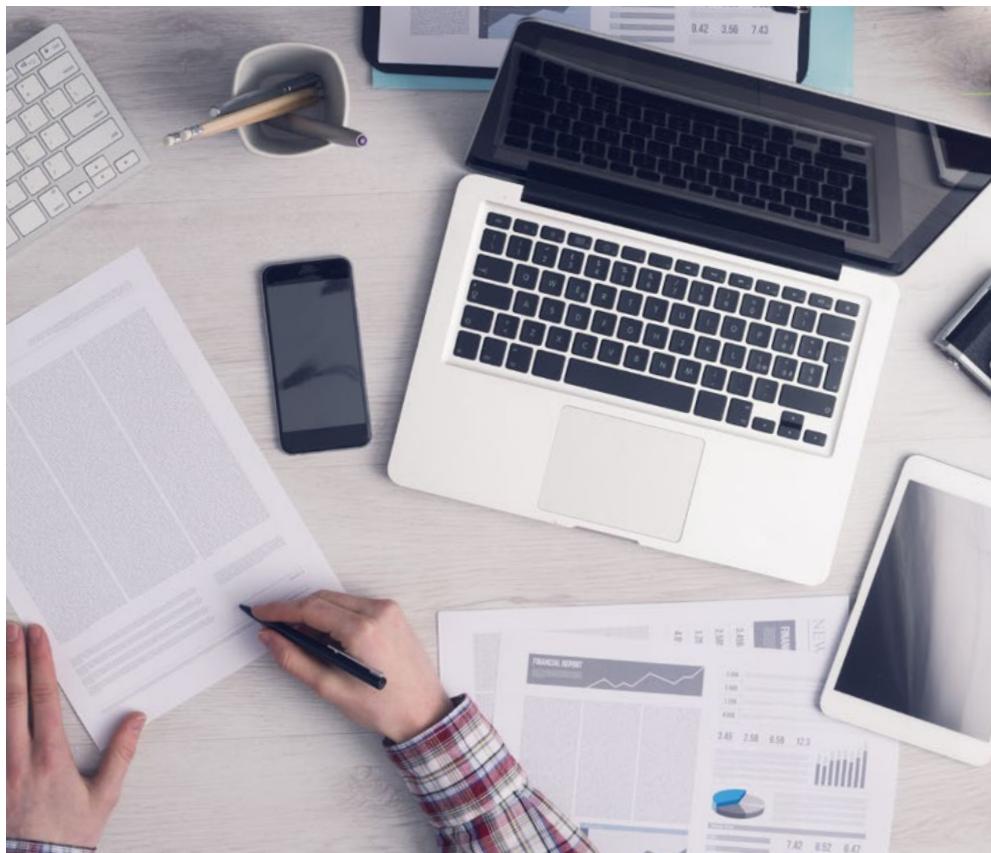
Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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*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.

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*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

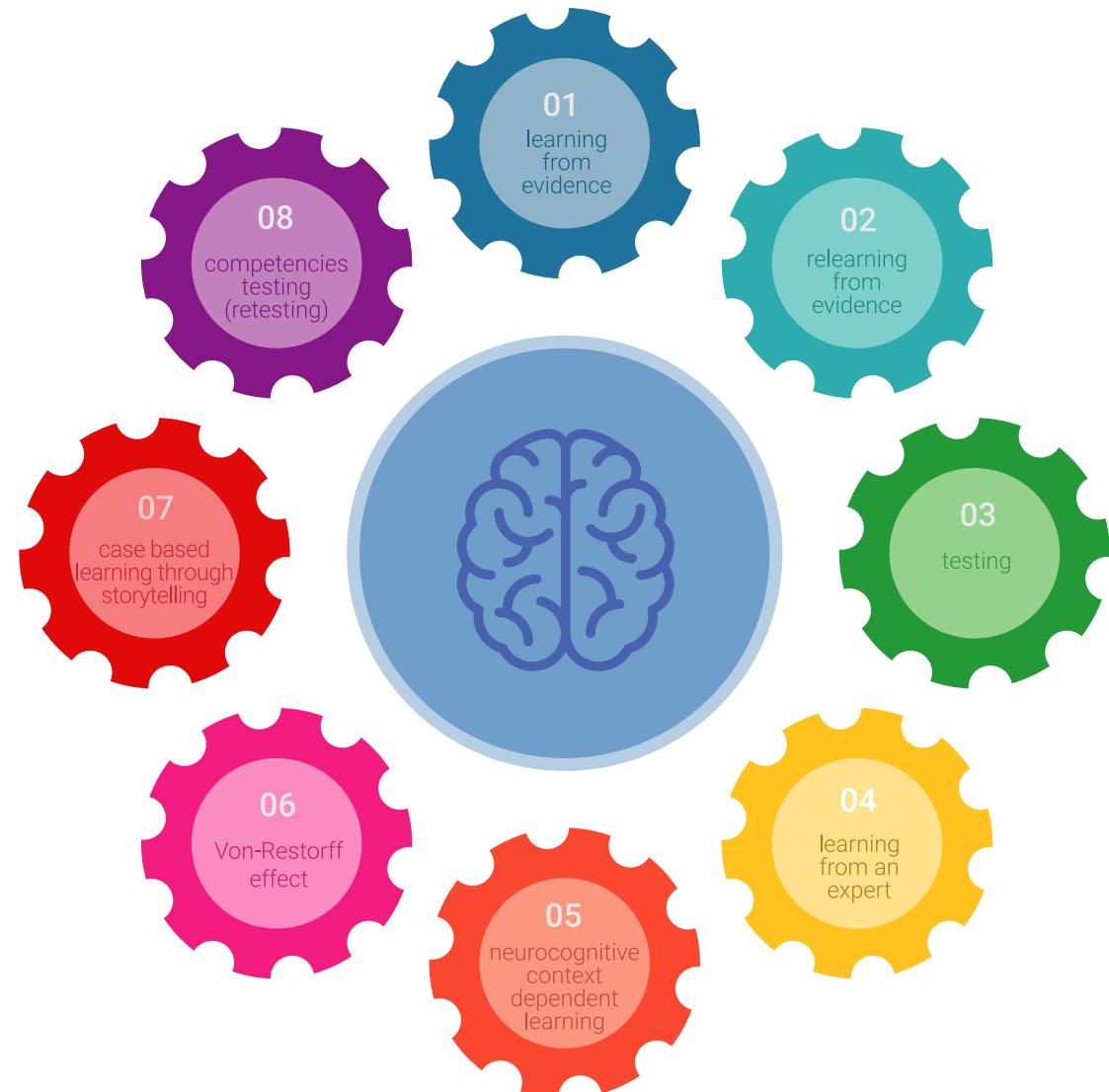
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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

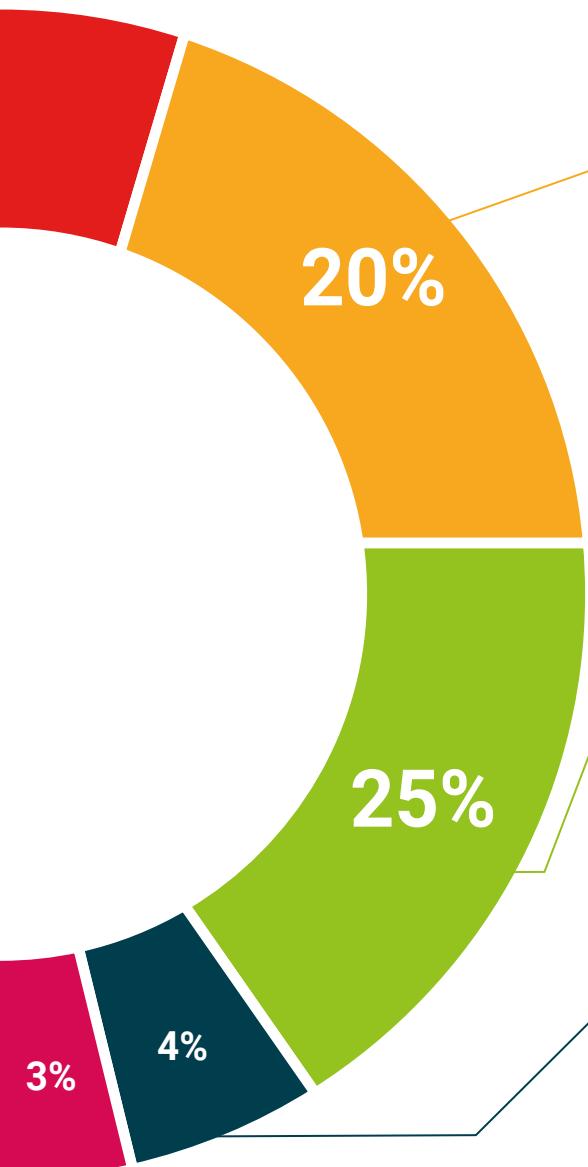
They will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



#### 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 DevOps and Continuous Integration. Advanced Practical Solutions in Software Development 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 DevOps and Continuous Integration. Advanced Practical Solutions in Software Development** contains the most complete and up-to-date 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 diploma 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 DevOps and Continuous Integration. Advanced Practical Solutions in Software Development**

Official Nº of Hours: **150 h.**



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



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