

# Postgraduate Certificate DevOps and Advanced Automation



## Postgraduate Certificate DevOps and Advanced Automation

- » 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/devops-advanced-automation](http://www.techtute.com/us/information-technology/postgraduate-certificate/devops-advanced-automation)

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# 01

# Introduction to the Program

Digital transformation has driven the adoption of DevOps methodologies and advanced automation in companies, optimizing software development, deployment, and management. Organizations with mature DevOps practices achieve greater operational efficiency and significantly reduce delivery times. Technologies such as containers, continuous integration and delivery, and infrastructure as code have revolutionized the sector, enabling greater scalability and automation. In this context, TECH offers an exclusive university program focused on Advanced DevOps and Automation. And all through a flexible, completely online format!



```
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
```

```
print("Selected")
```

```
#mirror
```

```
name = bpy
```

```
obj = bpy
```

“

*Master the principles of Software architecture and design scalable solutions with this 100% online Postgraduate Certificate”*

The adoption of DevOps has transformed the way applications are developed, tested, and deployed, optimizing processes and improving operational efficiency. Task automation, the use of containers, and the integration of agile infrastructures have reduced errors and delivery times, driving innovation in the technology industry. In an increasingly dynamic and competitive environment, understanding these methodologies has become key to ensuring scalable and secure solutions.

This university program delves into each of the essential DevOps tools, from container orchestration to test and deployment automation. It provides an understanding of how to optimize infrastructures using Kubernetes, manage environments with infrastructure as code, and apply advanced monitoring and security strategies. With a practical approach, it facilitates the immediate application of the knowledge acquired, providing a significant advantage in facing the challenges of a constantly evolving sector.

The online format offers the possibility of accessing the content from anywhere and at any time, allowing students to balance their studies with other responsibilities. The combination of interactive materials and practical cases offers a dynamic experience that facilitates the assimilation of key concepts. In addition, the constant updating of content guarantees access to the latest innovations in the sector, ensuring learning that is aligned with current trends.

This **Postgraduate Certificate in DevOps and Advanced Automation** contains the most complete and up-to-date program on the market. The most important features include:

- ♦ The development of case studies presented by experts in Software and Technology
- ♦ 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 Software Development
- ♦ 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



*Learn how to implement advanced design patterns to optimize application development and improve code quality”*

“

*Optimize software performance, security, and scalability through clean, modular, and adaptable architecture strategies”*

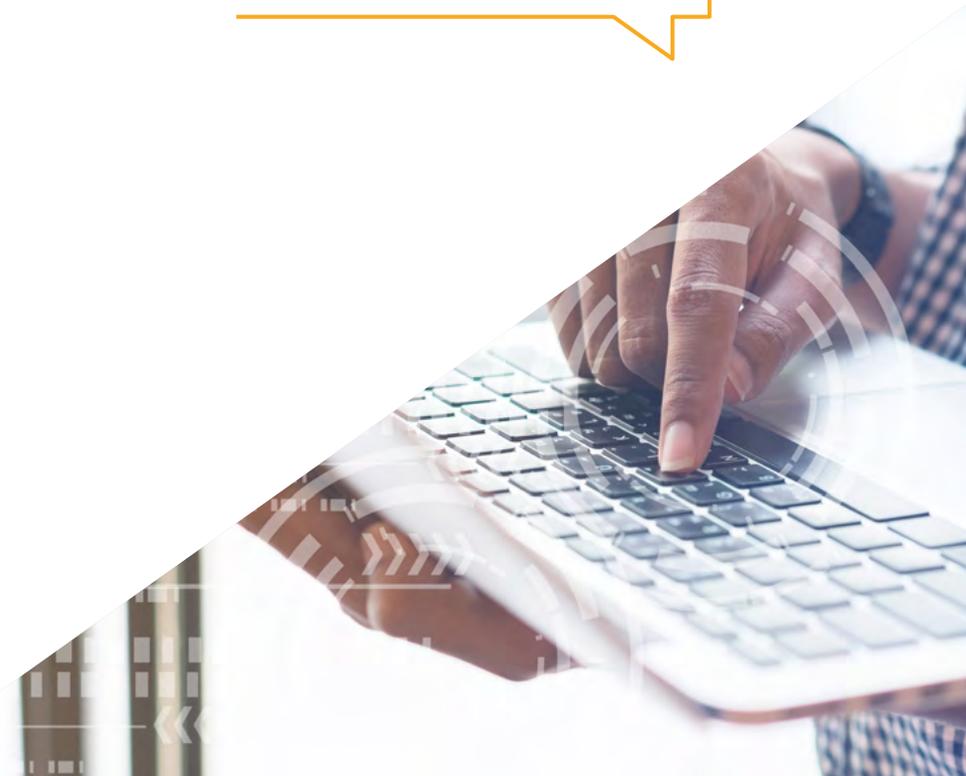
*Explore the integration of microservices and containers to create flexible, efficient, and easy-to-maintain systems.*

*Develop resilient applications with DevOps methodologies, process automation, and continuous deployment in dynamic environments.*

The teaching staff includes professionals from the field of technology, 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.



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 has a huge faculty of more than 6,000 professors of the highest international prestige.



“

*Study at the largest online university in the world and ensure your professional success. The future begins 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 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 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 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**

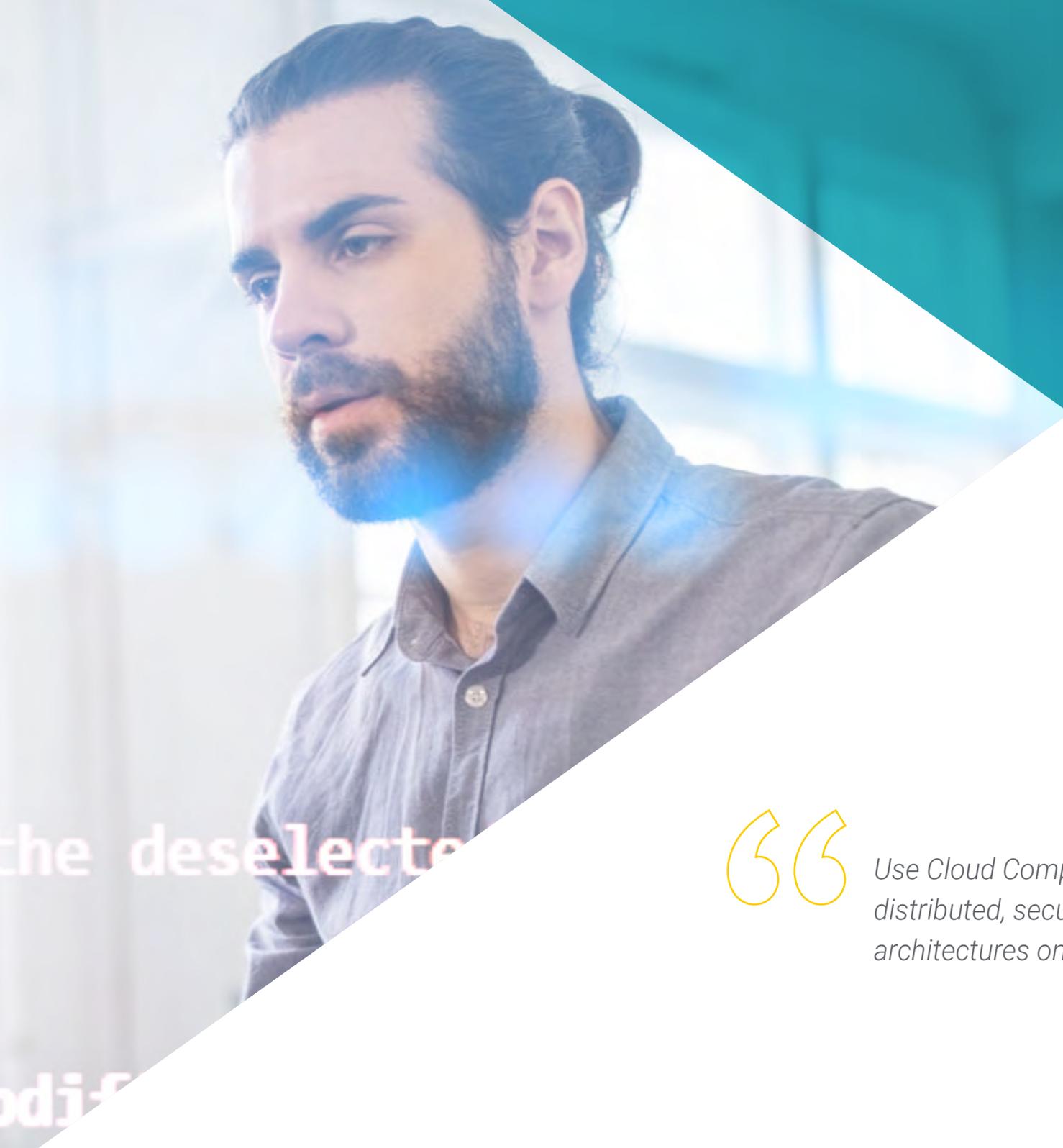
Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and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



# 03 Syllabus

Digital transformation has driven the need for more agile, secure, and automated technology infrastructures. In this context, the use of DevOps has revolutionized software development, enabling more efficient integration between teams, optimized processes, and continuous deployments without interruptions. This syllabus covers everything from scalable infrastructure management to advanced automation with CI/CD, intelligent monitoring, and security strategies in dynamic environments. With a practical and up-to-date approach, it provides the tools necessary to face today's technological challenges and optimize the operation of complex systems in an increasingly demanding market.

```
selection at the end - track t  
ob.select= 1  
modifier_ob.select=1  
bpy.context.scene.objects.active = mo
```



the deselected

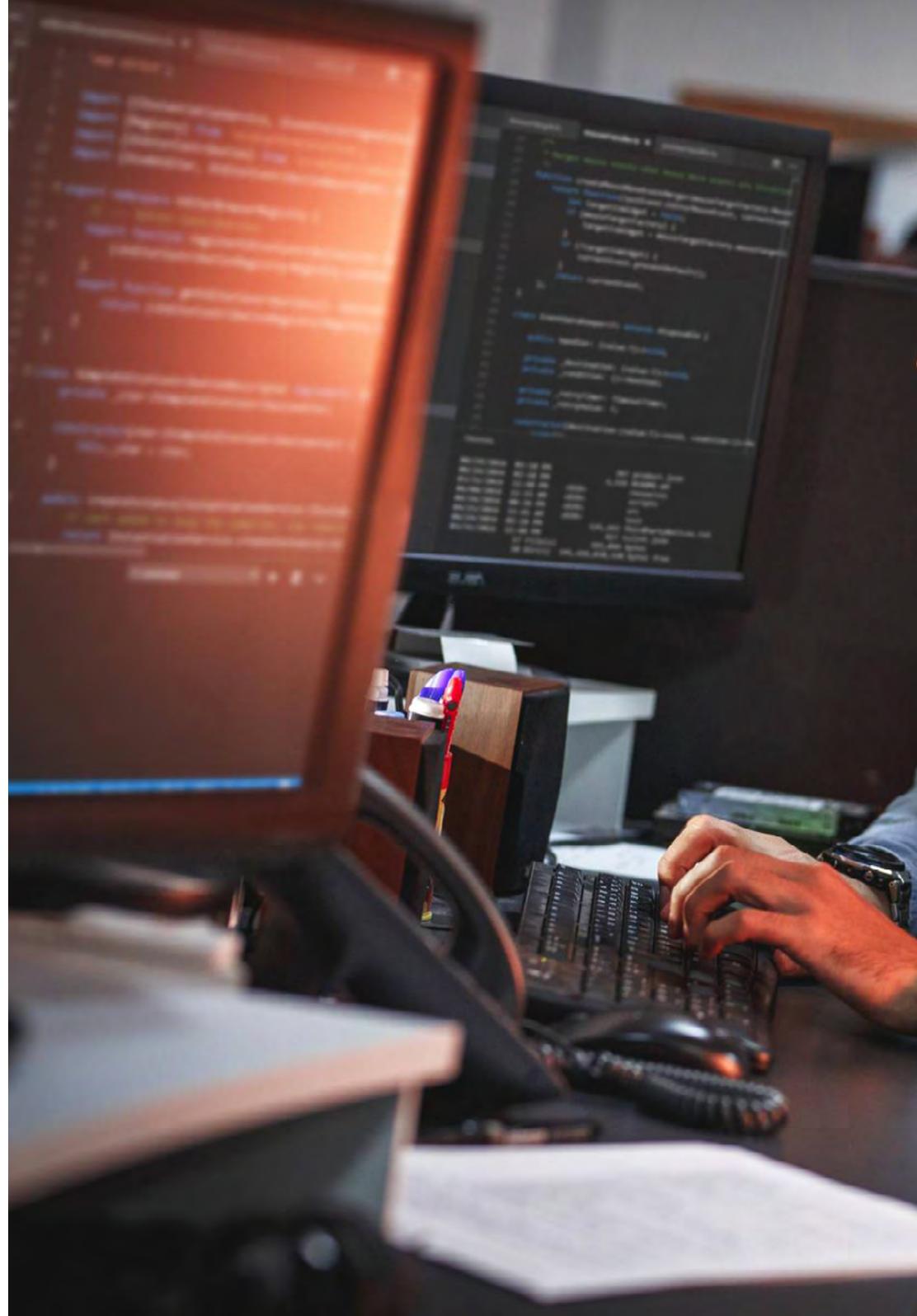
odj-f

“

*Use Cloud Computing to implement distributed, secure, and highly available architectures on different platforms”*

## Module 1. DevOps and Advanced Automation for Seniors

- 1.1. DevOps
  - 1.1.1. DevOps. Principles and Benefits
  - 1.1.2. DevOps Lifecycle: Development, Integration, Deployment
  - 1.1.3. Comparison with Traditional Models
- 1.2. Containers and Virtualization
  - 1.2.1. Differences Between Virtual Machines and Containers
  - 1.2.2. Docker: Installation and Commands
  - 1.2.3. Docker Container Creation and Management
- 1.3. Container Orchestration
  - 1.3.1. Kubernetes: Architecture and Components
  - 1.3.2. Cluster Creation and Administration
  - 1.3.3. Deployments and Services in Kubernetes
- 1.4. Continuous Integration (CI)
  - 1.4.1. Continuous Integration. Principles
  - 1.4.2. CI Pipeline Configuration with GitHub Actions
  - 1.4.3. Test and Build Automation
- 1.5. Continuous Delivery (CD)
  - 1.5.1. Continuous Delivery (CD)
  - 1.5.2. CD Pipeline Configuration
  - 1.5.3. Automated Deployment Tools
- 1.6. Infrastructure as Code (IaC)
  - 1.6.1. Terraform and Its Usefulness
  - 1.6.2. Cloud Infrastructure Management with IaC
  - 1.6.3. Practical Examples with Terraform and AWS
- 1.7. Monitoring and Logging in DevOps
  - 1.7.1. Monitoring in DevOps
  - 1.7.2. Tools such as Prometheus and Grafana
  - 1.7.3. Log Management with ELK Stack (Elasticsearch, Logstash, Kibana)





- 1.8. Security in DevOps (DevSecOps)
  - 1.8.1. Integrating Security Testing into Pipelines
  - 1.8.2. Vulnerability Scanning in Docker Images
  - 1.8.3. Configuration Auditing in Kubernetes Clusters
- 1.9. Performance and Scalability Testing
  - 1.9.1. Load Testing Tools (JMeter, Locust)
  - 1.9.2. Strategies for Assessing System Scalability
  - 1.9.3. Optimization Based on Test Results
- 1.10. Practical Application of a DevOps Case Study
  - 1.10.1. Implementing Full CI/CD for a Project
  - 1.10.2. Using Kubernetes for Deployment
  - 1.10.3. Automated Monitoring and Security Configuration

“

*You will implement automated pipelines for compilation, testing, deployment, and monitoring”*

# 04

# Teaching Objectives

The main objective of this university program is to provide in-depth, up-to-date knowledge of DevOps, covering everything from process automation to performance optimization in advanced technological environments. Students will gain advanced skills to integrate DevOps practices into modern development environments. They will also master deployment automation, infrastructure management as code, and CI/CD pipeline implementation. In addition, they will learn how to optimize collaborative processes between development and operations, ensuring efficiency, quality, and scalability in continuous software delivery.



“

*Integrate external services efficiently by understanding the best strategies for error handling, retry implementation, and timeout control”*



## General Objectives

- ♦ Provide in-depth knowledge of advanced software architectures and their applicability in professional environments
- ♦ Provide a comprehensive overview of modern back-end development, covering architectures, tools, and best practices
- ♦ Develop efficient and scalable front-end applications with modern technologies
- ♦ Apply advanced data science and machine learning techniques
- ♦ Understand the fundamentals of cybersecurity and its importance in software development
- ♦ Master the fundamental principles of DevOps and its impact on software development
- ♦ Implement the principles of the agile manifesto in development environments
- ♦ Manage the differences and benefits of native and cross-platform mobile development
- ♦ Analyze the fundamental concepts of cloud computing and its impact on application development and operation





## Specific Objectives

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- Configure and manage containerized development environments using Docker and Kubernetes
- Implement CI/CD pipelines with GitHub Actions and continuous delivery tools
- Automate infrastructure management with Terraform and IaC on AWS
- Monitor applications with Prometheus, Grafana, and ELK Stack

“

*Delve into security, data management, and best practices to protect systems from threats”*

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.



“

*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

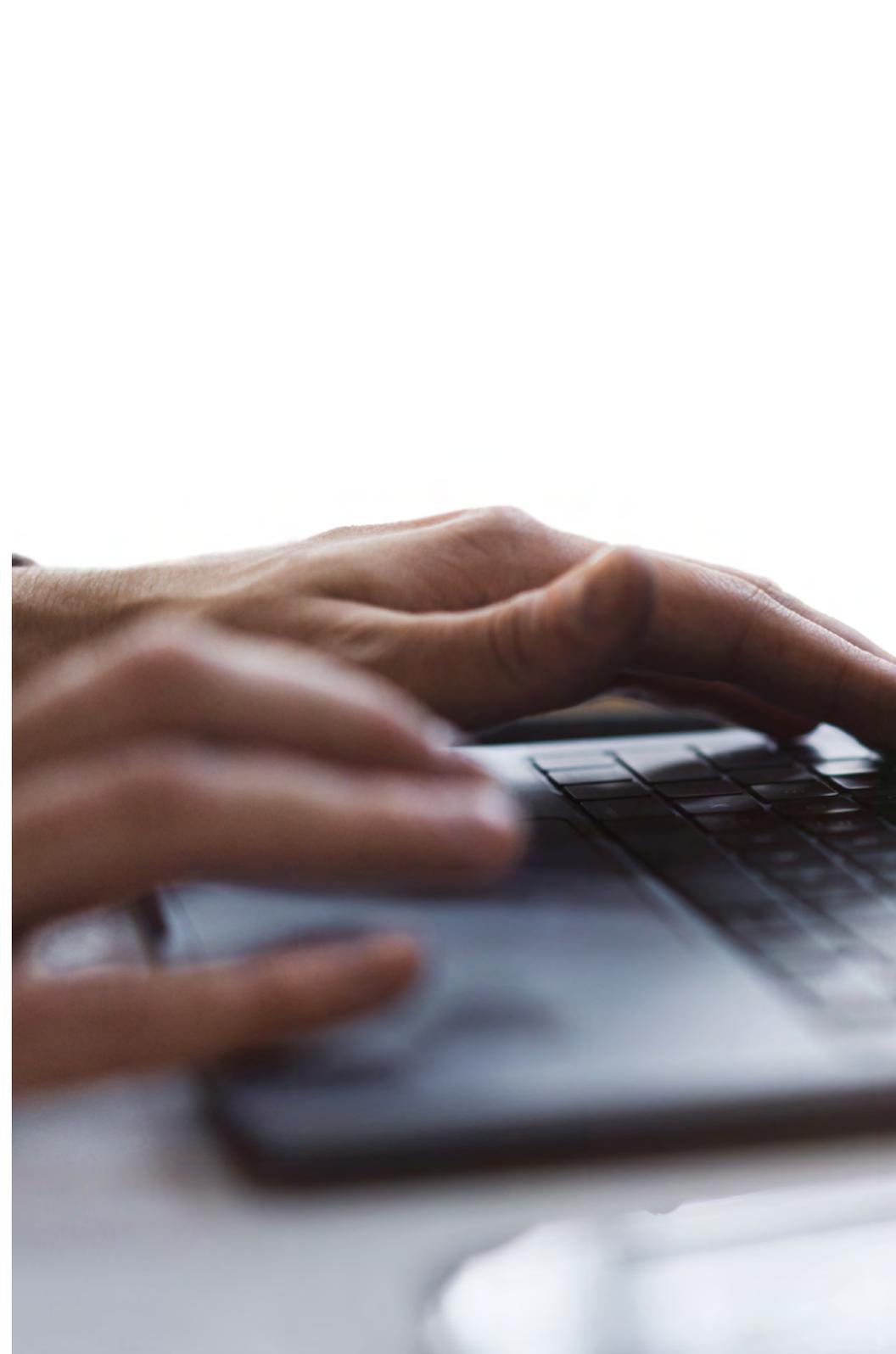
In TECH's study methodology, the student is the main protagonist.

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.

“

*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.

“

*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

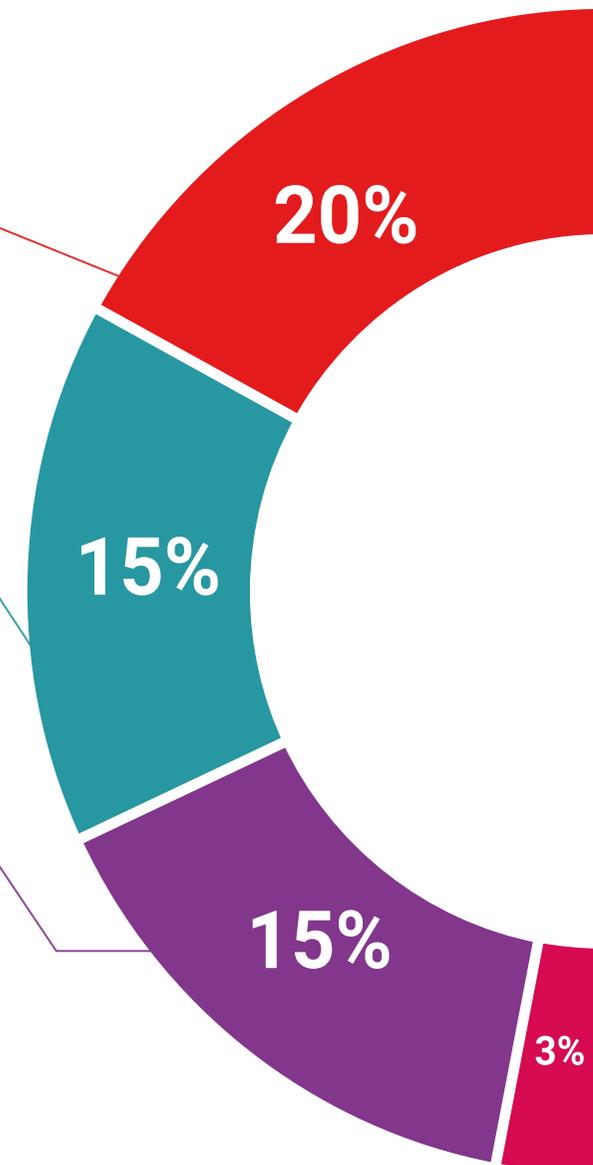
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

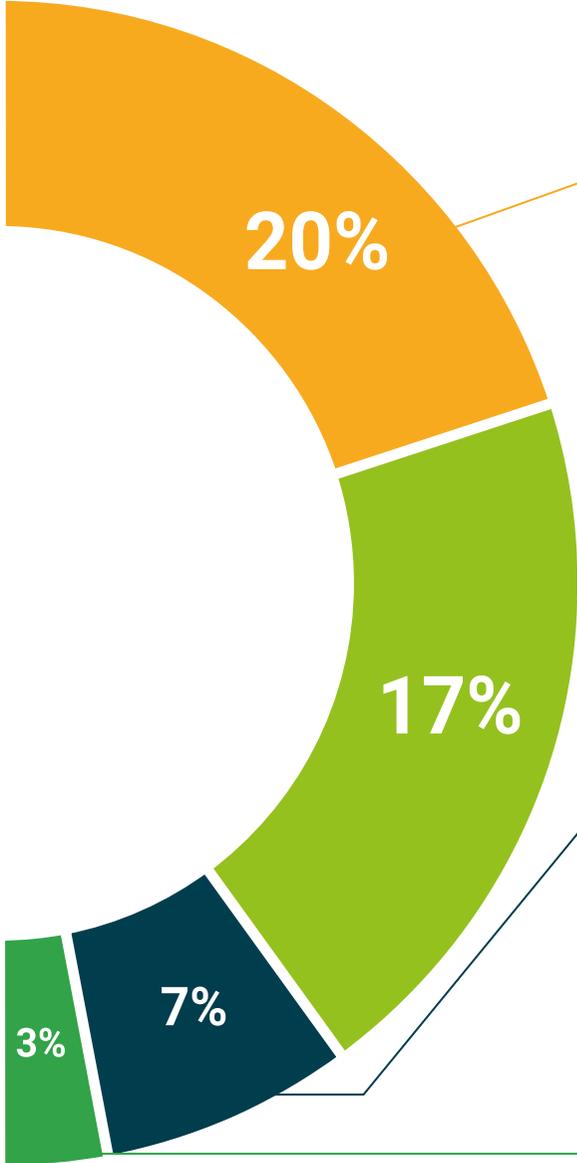
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



#### 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 for this program is made up of DevOps experts with solid experience in implementing advanced technological solutions. Thanks to their experience in integration and continuous deployment, infrastructure automation, and security in scalable environments, they offer practical teaching that is aligned with industry trends. In addition, their methodological approach combines strategic analysis with the application of innovative tools, ensuring a dynamic education adapted to current challenges.



“

*You will enjoy a university program  
designed by renowned specialists in  
DevOps and Advanced Automation”*

## Management



### Mr. Utrilla Utrilla, Rubén

- Technology Project Manager at Serquo
- Fullstack Developer at ESSP
- Junior Fullstack Developer at Sinis Technology S.L
- Junior Fullstack Developer at Cantoblanco Polytechnic School Campus
- Master's Degree in AI and Innovation by Founderz
- Degree in Computer Engineering from the Autonomous University of Madrid
- Google Cloud Developer course in Google Academic Program

## Professors

### Mr. Amate Ortega, Antonio

- Technical Product Manager at Serquo Software
- Expert in Computer Engineering
- Expert in Mathematics
- Product-Oriented Full-Stack Development Specialist
- Software Engineering Specialist
- Digital Product Creation Specialist
- Graduate in Computer Engineering from the Autonomous University of Madrid

```
65 <span class="hidden-xs">
66 <span class="hidden-xs">
67 
68 </span>
69 </a>
70
71 <p class="navbar-text">
72 <a href="#" class="navbar-toggle"
73 <i class="fa fa-bars"></i>
74 </a>
75 </p>
76 </div>
77
78 <div class="navbar-collapse collapse" id="navbar-collapse">
79
80 <ul class="nav navbar-nav navbar-right">
81
82 <li>
83 <button class="navbar-btn">
84 <div class="btn-alert fa fa-clock-o"></div>
85 <div class="alert-top">20</div>
86 </button>
87 </li>
88
89 <li class="dropdown">
90 <button class="navbar-btn tab-cm-top" data-toggle="dropdown">
91 
92 <em class="cm-name-top">Nutik Wanda</em>
93 <i class="fa fa-angle-down"></i>
94 </button>
95
96 <ul class="dropdown-menu">
97 <li>
98 <a href="patient-01-info-customer.html">
99 <i class="fa fa-address-card"></i>
100 </a>
101 </li>
102 <li>
103 <a href="#">
104 <i class="fa fa-sign-out"></i>
105 </a>
106 </li>
107 </ul>
108 </li>
109 </ul>
110 </div>
111 </pre>
```

07

# Certificate

This Postgraduate Certificate in DevOps and Advanced Automation guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the 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 private qualification will allow you to obtain a diploma for the **Postgraduate Certificate in DevOps and Advanced Automation** 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.

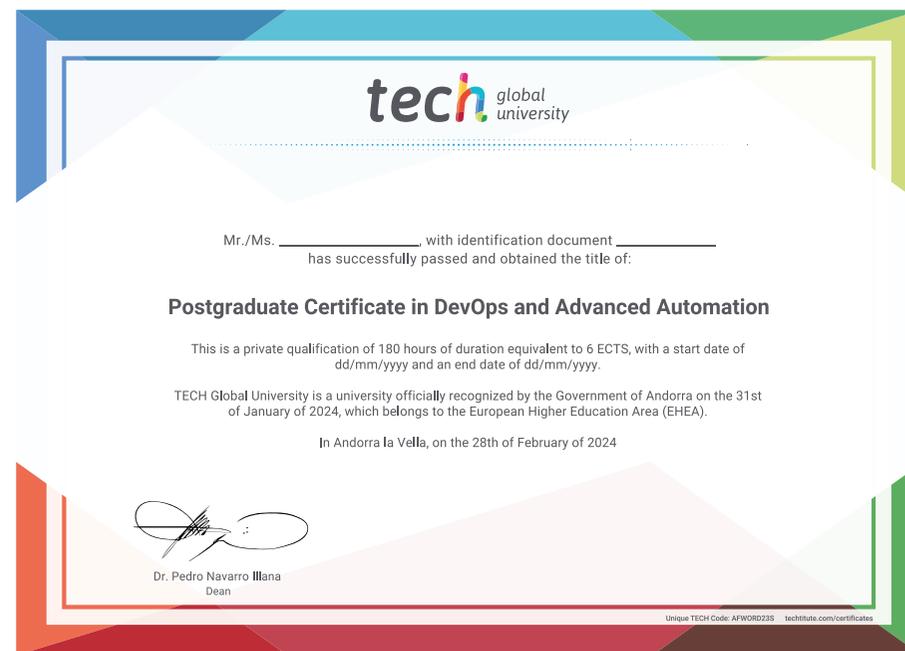
This **TECH Global University** private qualification, is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in DevOps and Advanced Automation**

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.

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



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