Postgraduate Diploma

DevOps and Reliability
for Web Applications

tech technological university

Postgraduate Diploma
DevOps and Reliability
for Web Applications

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

Website: **www.techtitute.com/in/information-technology/postgraduate-diploma/postgraduate-diploma-devops-reliability-web-applications**

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01
Introduction

In modern software development, increasing efficiency, reducing errors and ensuring higher quality of web applications has become indispensable. For this reason, the computer scientist who masters the deployment processes, designs and operates more robust systems becomes a highly demanded profile within the technology sector. To increase the possibilities of professional growth and distinction within the competitive work environment, TECH has designed this 100% online program that leads the graduate to master the DevOps methodology, security measures, as well as observability and resilience. All this, in addition, with innovative multimedia content, accessible 24 hours a day, 7 days a week from any electronic device with an Internet connection.

You are looking at a 100% online, flexible and advanced Postgraduate Diploma in DevOps and Reliability for Web Applications"

The significant growth of the digital world has led IT professionals to expand their possibilities of progression in the technology sector. In this sense, specialization is of great relevance, especially in those profiles with the ability to face the changing challenges and demands of the industry.

For this reason, mastering the DevOps methodology and the most effective strategies to achieve the reliability of Web Applications is a plus for professionals who wish to focus their career in this area. Given this reality, TECH has designed this Postgraduate Diploma of 450 teaching hours and with the most advanced syllabus, developed by a teaching team specialized in this field.

An academic journey that will lead students to delve into the development of web applications, code version management, techniques to prevent attacks, generate protection against bots and keep abreast of security regulations. In addition, thanks to multimedia teaching resources, you will learn more about the observability and resilience of web applications in a dynamic and fluid way.

In addition, thanks to the Relearning method, based on the repetition of key contents, the graduate will achieve a much more effective learning, without the need to invest many hours in study and memorization.

TECH offers a unique learning opportunity through a flexible teaching methodology adapted to the needs of professionals. The student only needs a cell phone, tablet or computer with an Internet connection to view, at any time of the day, the syllabus hosted on the virtual platform. In this way, without the need for attendance or classes with restricted schedules, the graduate will have greater freedom to self-manage their learning time and reconcile it with their daily personal activities.

This **Postgraduate Diploma in DevOps and Reliability for Web Applications** 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 Computer, Software, Systems

- 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

- 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

Thanks to the Relearning system you will learn more effectively and in less time"

Do you want a flexible education that is compatible with your daily personal and professional life? This is the right program for you, enroll now.

" *With this Postgraduate Diploma you will be up to date on Web Application security policies, regulations and existing recommendations"*

Learn with the best material in the development and operation work model and grow professionally in the technology sector.

The program includes in its teaching staff professionals from the sector who bring to this program the experience of their work, as well as recognized specialists from leading societies and prestigious universities.

Its 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 education programmed to learn in real situations.

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

02
Objectives

Students who take this program will obtain after 6 months a learning that will allow them to successfully develop web applications and the DevOps model, as well as code version management, continuous integration and quality control. For this, TECH provides the IT professional with a theoretical-practical approach and a methodology that favors self-management of study time.

"

Access the best educational material whenever and wherever you want and achieve your professional aspirations as a DevOps"

General Objectives

- Generate specialized knowledge on advanced web architecture

- Address the development of the Back-end part of the web application, reviewing the available technologies, integration mechanisms such as APIs, message and event queues, deployment and optimization processes

- Develop the necessary steps for the creation of the Front-end of the web application, taking into account programming aspects as well as accessibility requirements, multi-language and multi-platform support

- Create personalized experiences, monitor and monetize the use of the website

- Consolidate application design and development best practices with a project management that favors continuous iteration, integration and deployment

- Analyze in depth the aspects related to the security of web applications, with a special focus on the most common attacks and the prevention, detection and mitigation mechanisms

- Review security recommendations and regulations

- Address security as one of the pillars of advanced web architectures

- Establish cloud computing as a growing alternative for the development and deployment of web applications

- Review the main features and vendors, planning migration scenarios and incorporating new roles and processes in project management
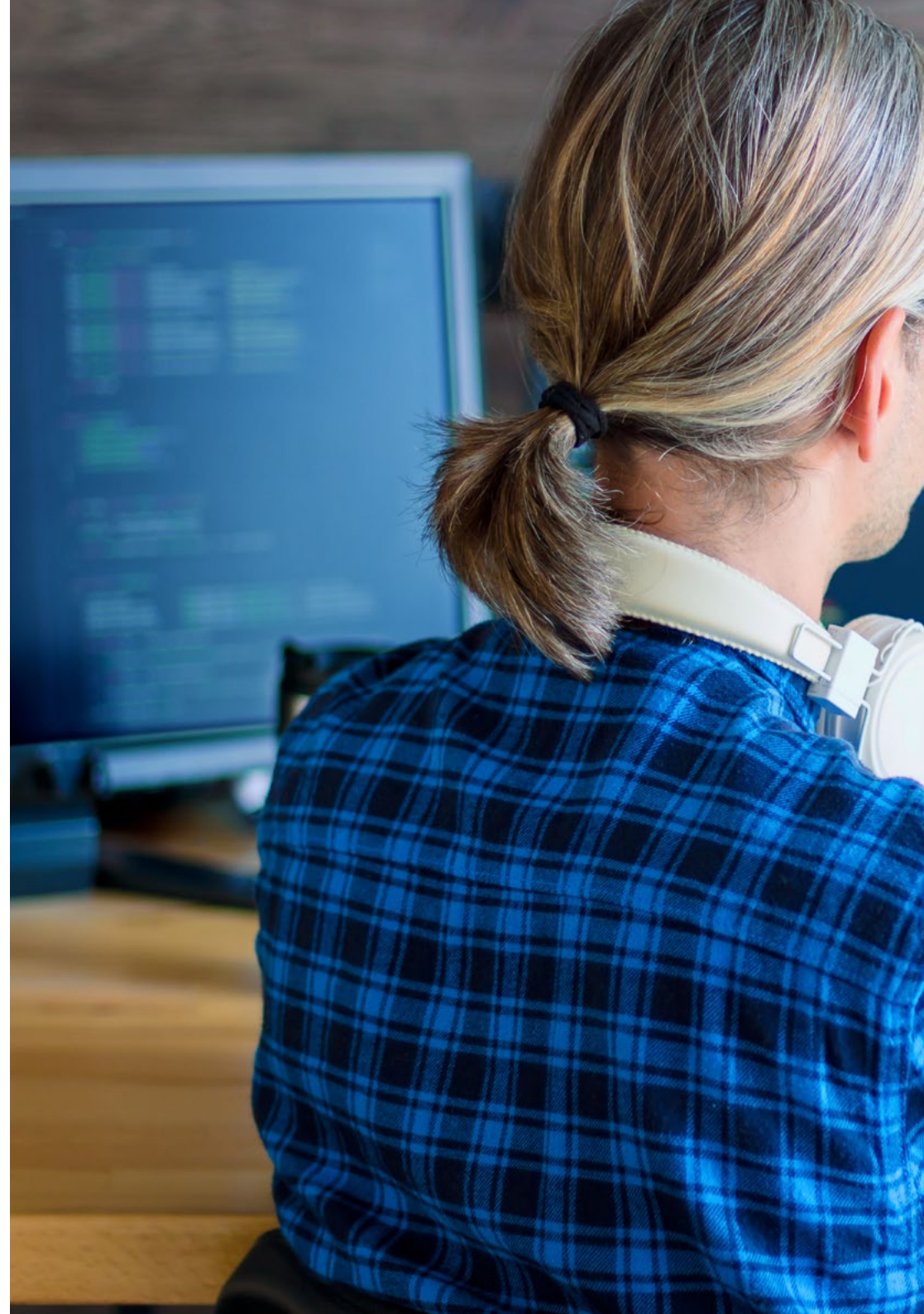
Specific Objectives

Module 1. Web Project Management and Organization

- Analyze the web application development process and its methodologies
- Examine the DevOps working model and its implications
- Develop the mechanisms and solutions for code version control
- Specify the process of integration and continuous deployment of applications
- Establish the tasks of quality control and application maintenance
- Delve into the cost and release management in the web project

Module 2. Web Applications Security

- Review data encryption mechanisms and web certificates
- Identify, prevent and mitigate the main types of web attacks
- Determine the types of bots and protection mechanisms in place
- Examine the main web security tools and services
- Establish web industry security recommendations and regulations

Module 3. Web Application Observability and Resilience

- Incorporate aspects of resilience and observability in development
- Manage the components of observability: logs, traces and metrics
- Determine how to design fault-tolerant architectures
- Discover mechanisms to ensure performance and high availability
- Assimilate Chaos Engineering strategies to train and prepare teams

Course Management

The management and teaching staff of this Postgraduate Diploma has extensive experience in the technology sector and a deep knowledge of Computer Systems Engineering. In addition, its proximity to the students gives them the guarantee of accessing an advanced program, with a syllabus prepared by an excellent teaching staff that will also resolve any doubts they may have about the contents of the course throughout the 6 months of the course.

"You have at your disposal a syllabus elaborated by a teacher versed in Systems and Computing with wide experience in the technological sector"

Management

Dr. Pantaleón García del Valle, Eduardo

- Solutions Architect at Amazon Web Services (AWS)
- Solutions Architect at Liferay, Inc
- Technical Manager at Jungheinrich AG
- Senior Software Engineer and Team Manager at Liferay
- Project Manager at Protecmedia
- Organization and delivery of online technical webinars within the AWS Customer Proficiency Plan program
- Member of the Alumni Mentoring program at Carlos III University of Madrid, for career advice to students and recent graduates
- Graduated in Telecommunication Engineering from Carlos III University of Madrid
- PhD in Software, Systems and Computing from the Polytechnic University of Madrid
- Master's Degree in Computer Languages and Systems from the National University of Distance Education (UNED)
- Executive Data Science Specialization from Johns Hopkins University

Professors

Dr. López Rodríguez, Armando

- Technical Consultancy Area Head in the Office of the President of Puertos del Estado
- Head of Strategic Planning Area in Puertos del Estado
- Project Manager at Puertos del Estado
- Head of the Resources and Information and Communications Technology Area at Puertos del Estado
- Head of the Development Area in Puertos del Estado
- Head of Corporate Relations Area in Puertos del Estado
- Head of Strategic Planning Area at Puertos del Estado Associate Professor at Industrial Organization School (Escuela de Organización Industrial)
- AENOR Associate Professor
- Associate Professor at UBT Lab
- Telecommunications Engineer from Universidad Politécnica de Madrid
- Degree in History from the National University of Distance Education (UNED)
- PhD in History from the National University of Distance Education (UNED)
- Master's Degree in Advanced Methods and Techniques of Historical, Artistic and Geographical Research from the National University of Distance Education (UNED)
- Postgraduate Certificate in Management Development Program (PDD) from the IESE of the University of Navarra

Mr. López Mendoza, Marvin Roberto

- Computer Systems Engineer
- Senior Agile Coach, Manager Projects and Agile Chapter Lead at Cognizant
- Senior IT Consultant, Scrum Master, Tech Evangelist at Minsait
- QA Lead, Senior Team Lead and Scrum Master at Control Risks
- Senior QA Engineer at Smartmatic
- IT Project Manager at Blom Sistemas Geospaciales
- Computer Systems Engineer from the Technological University of Panama
- Master's Degree in Agile Product, Business and Technology Management from IEBS
- Master's Degree in Investment Project Formulation and Evaluation from the Latin University of Panama

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

04
Structure and Content

The curriculum of this Postgraduate Diploma provides advanced knowledge in managing web projects efficiently, ensuring the security of applications and efficiency of uninterrupted operation through observation and resilience. All this, in addition, through innovative multimedia teaching material and multiple teaching resources, accessible 24 hours a day from any digital device (tablet, mobile phone or computer).

Thanks to this proposal you will be aware of the most effective tools used for disaster recovery"

Module 1. Web Project Management and Organization

1.1. Web Application Development Process
- 1.1.1. Phases in the Developers Process
- 1.1.2. Roles and organization in web development projects
- 1.1.3. Collaborative web development

1.2. Collaborative development methodologies
- 1.2.1. Agile Values and Principles
- 1.2.2. Comparing Agile Methodologies: Scrum and Kanban
- 1.2.3. Web project management tools

1.3. Development and operation work model (DevOps)
- 1.3.1. Responsibilities
- 1.3.2. Adopting a DevOps working model
- 1.3.3. Other approaches: DevSecOps, DataOps, MLOps

1.4. Version Control
- 1.4.1. Version Control Systems
- 1.4.2. Benefits of version control
- 1.4.3. Version control solutions: Github, Gitlab

1.5. Infrastructure as-Code (IaC)
- 1.5.1. Infrastructure as-Code (IaC)
- 1.5.2. Infrastructure management patterns
- 1.5.3. IaaC tools and frameworks: Terraform

1.6. Continuous Integration and Deployment (CI/CD)
- 1.6.1. Integration Strategies
- 1.6.2. Deployment and rollback strategies
- 1.6.3. Solutions for CI/CD pipelines

1.7. Quality Assurance (QA)
- 1.7.1. Test planning
- 1.7.2. Types of Tests
- 1.7.3. Test automation and execution

1.8. Maintenance and troubleshooting
- 1.8.1. Service Level Objectives (SLOs) and Service Level Indicators (SLIs)
- 1.8.2. Incident management and post-incident analysis
- 1.8.3. Incident management tools

1.9. Cost management in web projects
- 1.9.1. Cost factors in web projects: infrastructure, development, operations
- 1.9.2. Cost Estimation
- 1.9.3. Cost control and optimization

1.10. Release management in web projects
- 1.10.1. Pre-release phases: MVP, Alpha, Beta
- 1.10.2. Production release planning
- 1.10.3. Generation of new versions and compatibility

Module 2. Web Application Security

2.1. Web architecture design Insurance
- 2.1.1. Customer security
- 2.1.2. Network security
- 2.1.3. Software Security

2.2. Encryption
- 2.2.1. Encryption techniques
- 2.2.2. Encryption in transit
- 2.2.3. Encryption at rest

2.3. Web certificates
- 2.3.1. Types of web certificates
- 2.3.2. Generation and storage of web certificates
- 2.3.3. Certification Authorities

2.4. Major Cyber Web Attacks
- 2.4.1. Open Worldwide Application Security Project (OWASP) Top
- 2.4.2. Injection attacks
- 2.4.3. Denial of Service Attacks

2.5. Other types of Attack
- 2.5.1. Software attacks: malware, ransomware
- 2.5.2. Impersonation and social engineering attacks: phishing, spoofing
- 2.5.3. Exploitation of vulnerabilities: supply chain, zero-day exploit

2.6. Protection against bots
- 2.6.1. Types of bots
- 2.6.2. Algorithms Detention
- 2.6.3. Challenges for bots: CAPTCHA, image recognition

2.7.   Web security tools and services
    2.7.1.   Prevention
    2.7.2.   Detection
    2.7.3.   Mitigation
2.8.   International Safety Recommendations and Regulations in the Web Industry
    2.8.1.   ISO 27001
    2.8.2.   Regional regulations: NIS2, NIST
    2.8.3.   Industry regulations: PCI, HIPAA
2.9.   Security Policies
    2.9.1.   Roles of security in Development Team
    2.9.2.   Secure Developers Practices
    2.9.3.   Incident response: training and automation
2.10.   Safety Testing
    2.10.1.   Vulnerability Analysis
    2.10.2.   Penetration Test
    2.10.3.   Security Audits

Module 3. Web Application Observability and Resilience

3.1.   Site Reliability Engineering (SRE)
    3.1.1.   Development of observable and resilient applications
    3.1.2.   Capacity planning
    3.1.3.   SRE and DevOps collaboration
3.2.   Application registrations
    3.2.1.   Log levels and structures
    3.2.2.   Log storage and analysis
    3.2.3.   Logging frameworks and tools
3.3.   Request traces
    3.3.1.   Application instrumentation
    3.3.2.   End-to-end traceability: trace ID
    3.3.3.   Frameworks and tools for traces
3.4.   Metrics monitoring
    3.4.1.   Types of Metrics
    3.4.2.   Metrics storage and analysis
    3.4.3.   Frameworks and tools for metrics

3.5.   Incident response
    3.5.1.   Alerts and notifications
    3.5.2.   Dashboards and reports
    3.5.3.   Process Automation
3.6.   Fault Tolerant Application Design
    3.6.1.   Detection of failure points and health-checks
    3.6.2.   Detection of failure points and health-checks
    3.6.3.   Graceful degradation
3.7.   High Availability Architectures
    3.7.1.   Load balancing
    3.7.2.   Horizontal and vertical scalability
    3.7.3.   Downtime-free upgrades
3.8.   Data backup and recovery
    3.8.1.   Data backup and retention policies
    3.8.2.   Backup mechanisms
    3.8.3.   Recovery options
3.9.   Disaster planning and recovery
    3.9.1.   Disaster planning: RTO and RPO
    3.9.2.   Disaster recovery strategies
    3.9.3.   Disaster recovery tools
3.10.   Chaos Engineering
    3.10.1.   Failure Testing
    3.10.2.   Safety and isolation mechanisms
    3.10.3.   Tools and frameworks for failure testing

Specialized readings will allow you to further extend the information in this Postgraduate Diploma in DevOps"

05
Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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

Case Study to contextualize all content

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

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

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

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

A learning method that is different and innovative

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

"

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

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

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

Relearning Methodology

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

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

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

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

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

01 learning from evidence

02 relearning from evidence

03 testing

04 learning from an expert

05 neurocognitive context dependent learning

06 Von-Restorff effect

07 case based learning through storytelling

08 competencies testing (retesting)

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:
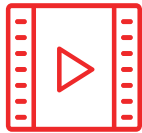
Study Material

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.

30%

10%

8%

20%

25%

4%

3%
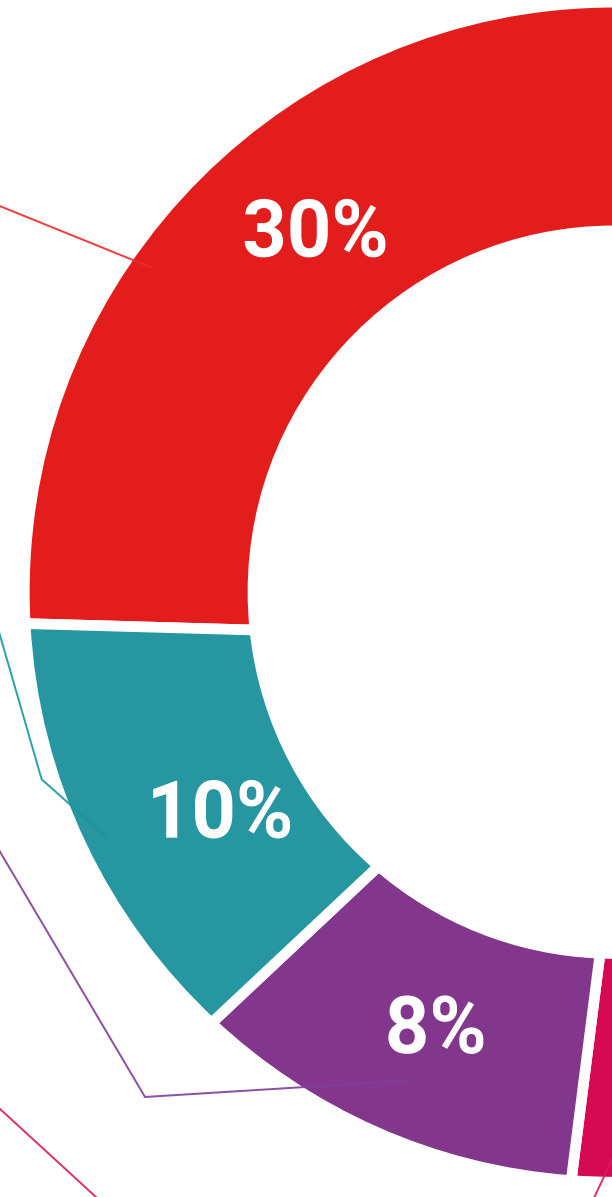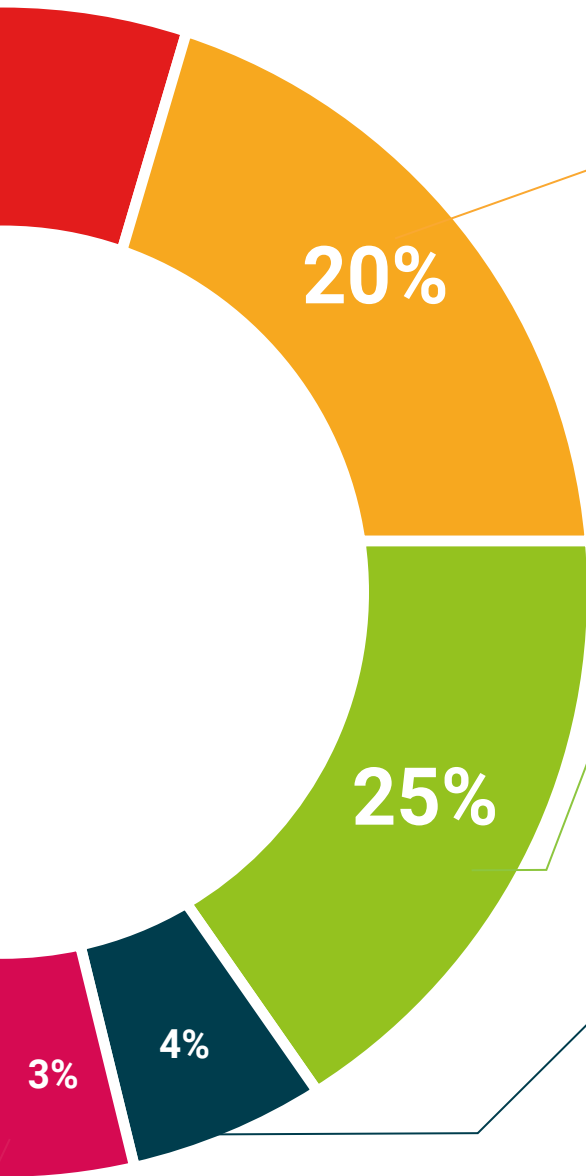
Case Studies

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 Diploma in DevOps and Reliability for Web Applications guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.

"Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"
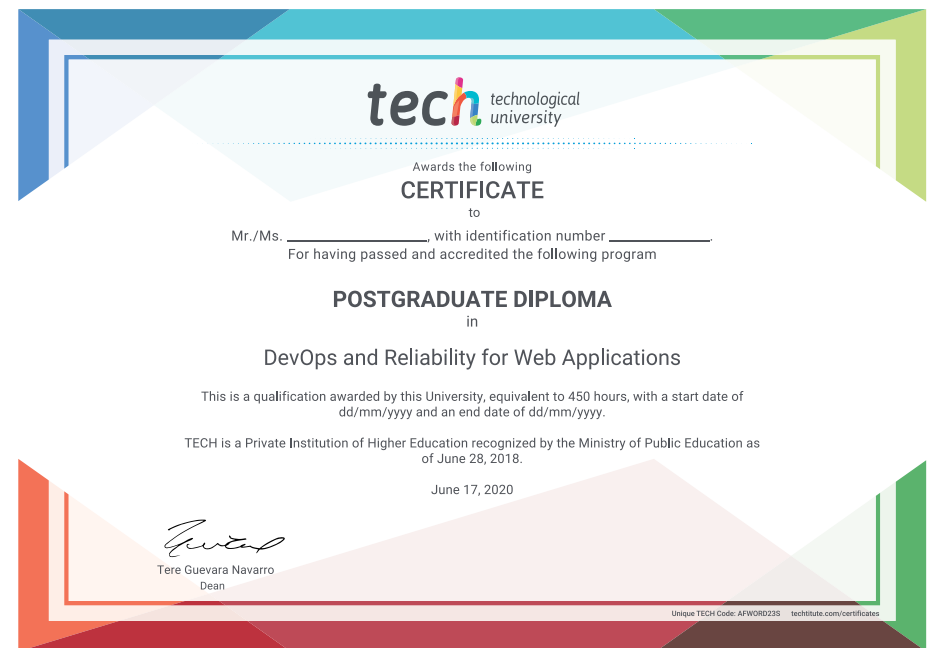
This **Postgraduate Diploma in DevOps and Reliability for Web Applications** contains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Diploma in DevOps and Reliability for Web Applications**

Official Nº of Hours: **450 h.**

tech technological university

Awards the following

CERTIFICATE
to

Mr./Ms. _____, with identification number _____.
For having passed and accredited the following program

POSTGRADUATE DIPLOMA
in

DevOps and Reliability for Web Applications

This is a qualification awarded by this University, equivalent to 450 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro
Dean

Unique TECH Code: AFWORD23S   techtitute.com/certificates

*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.

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Postgraduate Diploma
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- » Dedicated **16h/week**
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- » Exams: **online**

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