# Postgraduate Diploma

## Optimization of Cloud Deployments

tech global university

# Postgraduate Diploma
## Optimization of Cloud Deployments

» Modality: **online**
» Duration: **6 months**
» Certificate: **TECH Global University**
» Credits: **18 ECTS**
» Schedule: **at your own pace**
» Exams: **online**

Website: **www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-optimization-cloud-deployments**

# Index

# 01
# Introduction

In the very near future, software development will be in the Cloud. Internet Data Center points out that, by 2025, 90% of new applications will be Cloud Native and indicates that, by 2023, some 500 million digital applications and services will be developed using the Cloud. In this context, this program offers an up-to-date education for IT professionals who wish to expand their knowledge in programming Cloud Computing architectures. The innovative multimedia content, together with the Relearning system and case studies will facilitate the foundation of this learning process, which will be taught entirely online.

*Companies demand agility and speed in their online processes. Obtain a Postgraduate Diploma in Optimization of Cloud Deployments with this program"*

In a scenario of digital growth, companies require highly qualified personnel prepared to face the development of any innovative project. This Postgraduate Diploma is aimed at IT professionals willing to improve their career through specialization.

This program will allow students to identify and develop the key aspects of the design and programming of Cloud Computing Architecture and delve into container orchestration, paying special attention to the correct development of Docker and Kubernetes platforms. The relevance of Cloud Native makes it necessary for IT professionals to know not only the programming language and Frameworks, but also how to establish a correct strategy.

The 100% online modality offered by TECH in all its specializations favors learning, especially in those students who wish to combine their personal and work life with the expansion of knowledge. The multimedia content can be accessed without fixed schedules and can be downloaded for viewing at any time. An opportunity to improve easily in a field with a wide range of job opportunities.

This **Postgraduate Diploma in Optimization of Cloud Deployments** contains the most complete and up-to-date program on the market. The most important features include:

◆ Practical cases presented by experts in Digital Transformation

◆ 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 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 Internet connection

*Incorporate containers in Cloud projects, but in a secure way. Delve into Kubernetes and Docker in this Postgraduate Diploma"*

"

*Always go one step further.
Master not only the technique
but learn how to establish the
data management strategies
in Cloud Native environments*"

*Specialize and learn the main
techniques in Cloud Native development
thanks to this program. Just one click
and you are already enrolled.*

*Learn the main use cases for
Serverless development and
apply it to your Cloud project.*

The program's teaching staff includes professionals from the sector who contribute their work experience to this educational program, as well as renowned specialists from leading societies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow professionals to learn in a contextual and situated learning environment, i.e., a simulated environment that will provide immersive education programmed to prepare in real situations.

The design of this program focuses on Problem-Based Learning, by means of which professionals 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.

02
# Objectives

This Postgraduate Diploma in Optimization of Cloud Deployments teaches IT professionals to develop the basics of container architecture and technology, define the different digital tools applied to containers and learn about the correct operation of Kubernetes as a service orchestrator. Furthermore, upon completion of the six-months program, students will be able to create a complete Cloud architecture with guarantees of an optimal development. The use of practical examples and a library of multimedia resources will help students to achieve their professional development goals.

" *In six months, you will obtain a Postgraduate Diploma that will open doors in the Cloud Computing field"*

## General Objectives

- Analyze the different approaches to cloud adoption and their contexts
- Acquire specialized knowledge to determine the appropriate Cloud
- Develop a virtual machine in Azure
- Establish the sources of threats in application development and best practices to apply
- Evaluate the differences in the specific implementations of different public Cloud vendors
- Determine the different technologies applied to containers
- Identify the key aspects of a Cloud Native adoption strategy
- Fundamentals and evaluation of the programming languages most commonly used in Big Data, necessary for data analysis and processing

*Realize your full potential with this Postgraduate Diploma. Develop Cloud Architecture as a true professional"*

## Specific Objectives

### Module 1. Container Orchestration: Kubernetes and Docker

- Develop the foundations of container architecture and technology
- Establish the different technologies applied to containers
- Determine infrastructure requirements
- Examine deployment options

### Module 2. Native Cloud Application Programming

- Introduce technologies for continuous development and integration
- Demonstrate how Kubernetes works as an orchestration of services
- Analyze Cloudnative observability and security tools
- Evaluate deployment platforms
- Fundamentals of data management strategies in Cloud Native environments
- Identify common techniques in Cloud Native developments

### Module 3. Architecture Programming in Cloud Computing

- Develop specialized knowledge on the bases of architecture
- Specialize the student in the knowledge of Cloud infrastructures
- Evaluate advantages and disadvantages of deploying On Premise or in the Cloud
- Determine infrastructure requirements
- Identify deployment options
- Train for the implementation of a Cloud infrastructure in production
- Design and define the operation and maintenance of a Cloud architecture

## 03
# Course Management

TECH has professional programs specialized in each subject to ensure an education that is at the forefront of postgraduate teaching. Following this philosophy, this Postgraduate Diploma has a highly qualified teaching staff with experience in Cloud, Big Data and Storage The faculty has been involved in the implementation of digital projects, which guarantees students obtain a diploma with up-to-date and useful content for professional performance.

"

*A teaching team with experience in the creation of projects and Cloud developers will guide you in this program"*

## Management

**Mr. Bressel Gutiérrez-Ambrossi, Guillermo**

- Specalist in Systems Administration and Computer Networks
- Storage and SAN Network Administrator at Experis IT (BBVA)
- Network Administrator at IE Business School
- Graduate in Computer Systems and Network Administration at ASIR (ASIR)
- Ethical Hacking course at OpenWebinar
- Powershel course at OpenWebinar

## Professors

### Mr. Torres Palomino, Sergio

- IT Engineer with expertise in Blockchain
- Blockchain Lead at Telefónica
- Blockchain Architect at Signeblock
- Blockchain Developer at Blocknitive
- Writer and Publisher at O´Really Media Books
- Lecturer in postgraduate studies and Blockchain related courses
- Degree in Computer Engineering from San Pablo CEU University
- Master's Degree in Big Data Architecture
- Master's Degree in Big Data and Business Analytics

### Mr. Gómez Rodríguez, Antonio

- Principal Cloud Solutions Engineer for Oracle
- Co-organizer of Málaga Developer Meetup
- Specialist Consultant for Sopra Group and Everis
- Team Leader at System Dynamics
- Software Developer at SGO Software
- Master's Degree in E-Business from La Salle Business School
- Postgraduate Degree in Information Technologies and Systems, Catalan Institute of Technology
- Degree in Telecommunications Engineering from the Polytechnic University of Catalonia

# 04
# Structure and Content

The syllabus of this Postgraduate Diploma has been developed by a teaching staff specialized in the field of Cloud Architecture. As part of the program, first, the IT professionals will delve into containers: Kubernetes and Docker, to later learn extensively about cloud-native applications. The syllabus concludes with Cloud Computing Architecture, which will provide students with all the knowledge required to create a cloud project from start to finish and with all the guarantees. The multimedia content with videos in detail of each module and the complementary readings will help to understand the repertoire of this program.

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*This 100% online program allows you to view the sessions whenever you wish and from any electronic device with internet connection"*

## Module 1. Container Orchestration: Kubernetes and Docker

1.1.    Basis of Application Architectures
   1.1.1.    Current Application Models
   1.1.2.    Application Execution Platforms
   1.1.3.    Container Technologies

1.2.    Docker Architecture
   1.2.1.    Docker Architecture
   1.2.2.    Docker Architecture Installation
   1.2.3.    Commands. Local Project

1.3.    Docker Architecture Storage Management
   1.3.1.    Image and Register Management
   1.3.2.    Docker Networks
   1.3.3.    Storage Management

1.4.    Advanced Docker Architecture
   1.4.1.    Docker Compose
   1.4.2.    Docker in Organization
   1.4.3.    Docker Adoption Example

1.5.    Kubernetes Architecture
   1.5.1.    Kubernetes Architecture
   1.5.2.    Kubernetes Deployment Elements
   1.5.3.    Distributions and Managed Solutions
   1.5.4.    Installation and Environment

1.6.    Kubernetes Architecture Kubernetes Development
   1.6.1.    Tools for K8s Development
   1.6.2.    Imperative Mode Vs. Declarative Mode
   1.6.3.    Application Deployment and Exposure

1.7.    Kubernetes in Enterprise Environments
   1.7.1.    Data Persistence
   1.7.2.    High Availability, Scaling and Networking
   1.7.3.    Kubernetes Security
   1.7.4.    Kubernetes Management and Monitoring

1.8.    K8s Distributions
   1.8.1.    Deployment Environment Comparison
   1.8.2.    Deployment on GKE, AKS, EKS or OKE
   1.8.3.    On Premise Deployment

1.9.    Rancher and Openshift
   1.9.1.    Rancher
   1.9.2.    Openshift
   1.9.3.    Openshift: Configuration and Application Deployment

1.10.    Kubernetes Architecture and Containers Updates
   1.10.1.    Open Application Model
   1.10.2.    Tools for Deployment Management in Kubernetes Environments
   1.10.3.    References to Other Projects and Trends

## Module 2. Native Cloud Application Programming

2.1.    Cloud Native Technologies
   2.1.1.    Cloud Native Technologies
   2.1.2.    Cloud Native Computing Foundation
   2.1.3.    Cloud Native Development Tools

2.2.    Cloud Native Application Architecture
   2.2.1.    Cloud Native Application Design
   2.2.2.    Cloud Native Architecture Components
   2.2.3.    Legacy Application Modernization

2.3.    Containerization
   2.3.1.    Container-Oriented Development
   2.3.2.    Development with Microservices
   2.3.3.    Tools for Teamwork

2.4.    DevOps and Continuous Integration and Deployments
   2.4.1.    Continuous Integration and Deployments: CI/CD
   2.4.2.    Tools Ecosystem for CI/CD
   2.4.3.    Creating a CI/CD Environment

2.5.    Observability and Platform Analysis
   2.5.1.    Cloud Native Application Observability
   2.5.2.    Tools for Monitoring, Logging  and Tracing
   2.5.3.    Implementation of an Observability and Analysis Environment

## Module 3. Architecture Programming in Cloud Computing

# 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.

# Certificate

The Postgraduate Diploma in Cloud Software guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.

*Successfully complete this program and receive your Postgraduate Diploma without having to travel or fill out laborious paperwork"*

This program will allow you to obtain your **Postgraduate Diploma in Optimization of Cloud Deployments** 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.
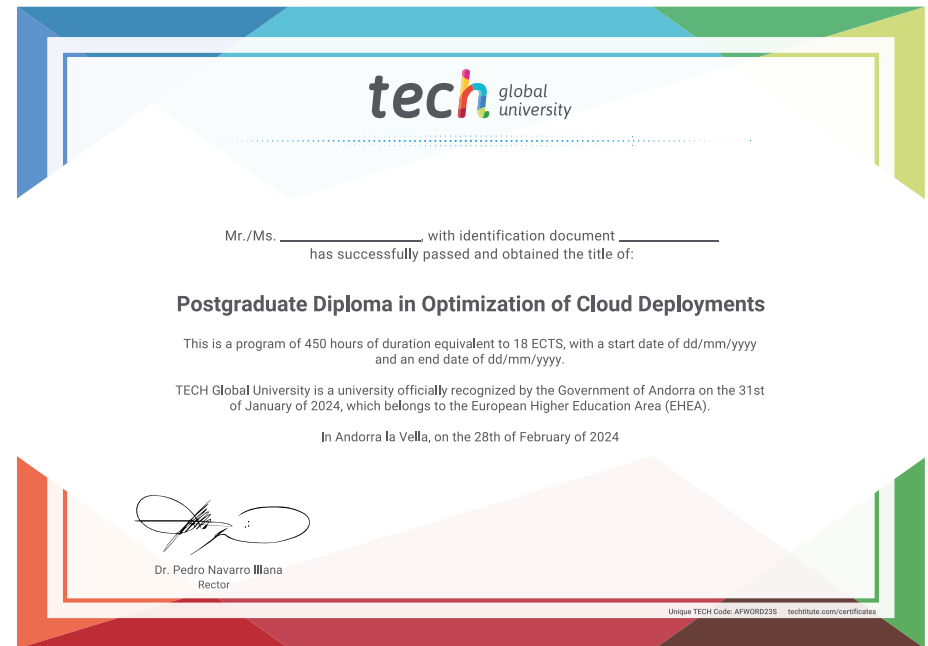
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Optimization of Cloud Deployments**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**

**tech** global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

**Postgraduate Diploma in Optimization of Cloud Deployments**

This is a program of 450 hours of duration equivalent to 18 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Rector

Unique TECH Code: AFWORD23S    techtitute.com/certificates

*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.

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