

# Professional Master's Degree Cloud Infrastructures



## Professional Master's Degree Cloud Infrastructures

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/in/information-technology/professional-master-degree/master-cloud-infrastructures](http://www.techtute.com/in/information-technology/professional-master-degree/master-cloud-infrastructures)

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# 01

# Introduction

Cloud infrastructures have multiple advantages that make them the best option for companies. They can be managed more efficiently and flexibly than traditional physical infrastructures, obtaining greater agility in processes, cost reduction and better results. For this reason, many companies in all industries require expert professionals in this field and that is why TECH has designed this program. With a completely up-to-date and innovative program, it seeks to enhance the profiles of those students who want to improve their skills in Network DevOps, network architectures or cybersecurity in Cloud Infrastructures, among others. All this in a 100% online mode and with full availability of the latest teaching technologies.



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*Become an expert in cybersecurity and management of Cloud Infrastructures with a 100% online mode and total time freedom”*

With the emergence of new technologies, the Internet and the incalculable advances that have been taking place, many companies had to renew themselves, going through processes of change in which digitization and transformation at all levels were vital. But now, the time has come for the adoption of Cloud Infrastructures, which is considered a key piece in the evolution of the European Union, which is expected to drive a growth of more than 14% of GDP in the coming years.

Cloud Infrastructures guarantee much greater agility, efficiency and cost reduction than conventional physical structures. They allow DevOps teams to implement the infrastructure programmatically, as part of the code of an application, and represent a breakthrough in terms of security, quality control and disaster recovery. In short, they are the best way to balance the needs of today with the opportunities of tomorrow. As a result, the demand for professional experts in implementation and management of Cloud Infrastructures continues to increase, making this area one of the areas with the greatest potential in the labor market.

This is the reason why TECH has created a Professional Master's Degree in Cloud Infrastructures, so that those students who seek to assume a professional future in this sector, enhance their skills and deepen their knowledge. In this way, they will develop the ability to perform their work with the highest possible quality and efficiency, and this through a syllabus that addresses subjects such as implementation models of Cloud Computing, digital transformation, cloud computing resources, storage, Networking, monitoring services or cybersecurity in Cloud Infrastructures, among many other relevant aspects.

Students will be able to combine this program with their professional and personal life, thanks to a 100% online study mode, without any time constraints. In addition, students will be able to access all the main content and a wide variety of additional material from any electronic device with an internet connection. This, together with the most complete multimedia content, up-to-date information and the most innovative tools possible, is a unique opportunity in the educational market.

This **Professional Master's Degree in Cloud Infrastructures** 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 Cloud Infrastructures for
- ◆ 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 to the expert, debate forums on controversial topics, and individual reflection assignments
- ◆ Content that is accessible from any fixed or portable electronic device with an Internet connection



*Quickly stand out in a booming industry and achieve your most demanding IT goals”*



*Put your acquired skills into practice with a variety of activities and case studies supervised by leading Cloud and cybersecurity experts”*

The program’s teaching staff includes professionals from 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 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 the professional must try to solve the different professional practice situations that arise throughout the program. This will be done with the help of an innovative system of interactive videos made by renowned experts.

*Delve into vulnerability analysis in Cloud environments and multiply your chances of success in the workplace.*

*Thanks to TECH you will gain new skills in Virtual Desktop Infrastructure and continuous improvement in Cloud Infrastructures.*



# 02 Objectives

The objective of this Professional Master's Degree in Cloud Infrastructures is to improve the skills and renew the competences of the students in an efficient and accurate way. In this way, they will be able to face their responsibilities and tasks in this field, with the highest possible quality in their work. All this, thanks to the design and creation of the most complete and up-to-date theoretical and practical content in the educational market.





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*The goal of TECH is you: give a boost to your career and stand out in a very relevant field for companies”*



## General Objectives

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- ◆ Develop specialized knowledge about what infrastructures are and what motivations exist for their transformation to the cloud
- ◆ Acquire the skills and knowledge necessary to implement and manage IaaS solutions effectively
- ◆ Acquire specialized knowledge to add or remove storage and processing capacity quickly and easily, enabling you to adapt to fluctuations in demand
- ◆ Examine the scope of Network DevOps, demonstrating that it is an innovative approach for network management in IT environments
- ◆ Understand the challenges faced by an enterprise in Cloud governance and how to address them
- ◆ Use security services in Cloud environments such as Firewalls, SIEMS and threat protection to secure applications and services
- ◆ Establish best practices in the use of Cloud Services and the main recommendations when using them
- ◆ Increase user efficiency and productivity: by enabling users to access their applications and data from anywhere and on any electronic device, VDI can improve user efficiency and productivity
- ◆ Gain specialized knowledge about Infrastructure as Code
- ◆ Identify key points to demonstrate the importance of investing in backup and monitoring in organizations





## Specific Objectives

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### Module 1. Transformation of IT Infrastructures Cloud Computing

- ◆ List the types of clouds that exist
- ◆ Analyze the factors for Cloud Computing adoption
- ◆ Identify the types, models and elements of Cloud Computing
- ◆ Concretize how Cloud Infrastructures work and their relevant aspects
- ◆ Analyze existing ecosystems and their pillars for successful transformation
- ◆ Establish an overview of the different vendors and how they can help the implementation of Cloud Computing
- ◆ Present an overview of the automation and security strategy
- ◆ Generate a first environment for the management of infrastructures under a DevOps or DevSecOps culture
- ◆ Discover the future and evolution of infrastructures, analyzing the challenges and technologies in the field of security and compliance

### Module 2. Infrastructure as a Service (IaaS)

- ◆ Examine the abstraction layers in Cloud Computing and how they relate to each other
- ◆ Concretize the effective management of the Cloud Computing abstraction layers
- ◆ Analyze the core decisions in building a Cloud Architecture
- ◆ Evaluate how digital transformation and the Cloud can drive business success
- ◆ Delve into the DevOps approach and how it can improve the efficiency and effectiveness of software development and delivery
- ◆ Establish the different cloud computing resources available and how they can be used effectively

### Module 3. Storage and Databases in Cloud Infrastructures

- ◆ Determine the characteristics and advantages of cloud storage, the different storage options (public, private, and hybrid) and the selection of the appropriate storage option
- ◆ Develop specialized knowledge about cloud databases, advantages and disadvantages, the different cloud database options (relational and non-relational) and how to select the right option
- ◆ Examine the design and architecture of cloud storage and databases: the design principles of cloud storage and databases, their architectures and common design patterns
- ◆ Manage cloud storage and databases: how to create, manage and monitor cloud storage and databases, how to backup and recover data in the event of loss
- ◆ Analyze security and privacy in the cloud: how to protect stored data and databases in the cloud, privacy and security policies and regulations in the cloud
- ◆ Compile use cases and examples of cloud storage and databases: examples of how cloud storage and databases are used in different use cases of big data management, real-time data analytics, and integration of data from different sources
- ◆ Addressing scalability and performance in the cloud and how to optimize them in cloud applications

#### **Module 4. Network DevOps and Network Architectures in Cloud Infrastructures**

- ◆ Develop the concepts and principles of Network DevOps and its application in Cloud environments
- ◆ Determine the requirements needed to implement Network DevOps in Cloud environments
- ◆ Use the relevant tools and software for Network DevOps
- ◆ Establish how to implement and manage internal network services in cloud environments, such as VPC and subnetting
- ◆ Compile the boundary network services available in Cloud environments and how they are used to connect Cloud and on-premise networks
- ◆ Substantiate the importance of DNS usage in Cloud environments and how to implement hybrid and multi-tenant network connectivity
- ◆ Implement and manage content delivery services in Cloud environments, such as CDNs and WAFs
- ◆ Examine the important aspects of security in Cloud networks and how security measures can be implemented in these environments
- ◆ Monitor and perform network audits in Cloud environments to ensure availability and security

#### **Module 5. Government in Cloud Infrastructures**

- ◆ Analyze the key concepts of compliance and their importance in the Cloud context
- ◆ Identify the main challenges faced by a CISO in Cloud governance and how to address them
- ◆ Establish the main privacy considerations in the Cloud context and how to ensure compliance with applicable regulations
- ◆ Examine the relevant regulatory frameworks and certifications in the Cloud environment
- ◆ Develop how Cloud billing works and how resource usage can be optimized
- ◆ Delve into the use of management and governance services in AWS and Azure to optimize resource usage and ensure compliance with security requirements

#### **Module 6. Cybersecurity in Cloud Infrastructures**

- ◆ Develop specialized knowledge about specific risks and threats in Cloud environments
- ◆ Analyze security frameworks and apply them to protect the infrastructure
- ◆ Design threat models and protect applications and services against threats
- ◆ Evaluate code-level cybersecurity tools and how to use them to detect and prevent vulnerabilities in applications and services
- ◆ Perform integration of cybersecurity controls into processes
- ◆ Master ZAP Proxy to audit Cloud environments
- ◆ Perform automated vulnerability scans to detect and prevent vulnerabilities in applications and services
- ◆ Examine the different types of Firewalls and configure them to protect infrastructure and services
- ◆ Apply transport layer security using SSL/TLS and certificates
- ◆ Evaluate SIEMs and their use to monitor and optimize the security of the Cloud environment

#### **Module 7. Service Adoption in Cloud Infrastructures**

- ◆ List the different computing services in each of the main Cloud providers
- ◆ Substantiate the advantages of interoperability between services
- ◆ Acquire the skills necessary to deploy the application in Cloud and provide it with additional features by incorporating new services
- ◆ Determine how to make an application resilient thanks to auto-scaling

### Module 8. Virtual Desktop Infrastructure (VDI)

- ◆ Providing remote users with access to critical applications: VDI could be used to allow users to access critical applications from anywhere and on any electronic device, which could improve productivity and efficiency for remote users
- ◆ Facilitate collaborative work and communication: VDI could be used to enable users to share and collaborate on applications and data in real time, which could improve communication and collaborative work
- ◆ Reduce hardware and software costs: VDI could be used to reduce hardware and software costs by not having to install and maintain applications and operating systems on each electronic device individually
- ◆ Improve data security and privacy: VDI could be used to improve data security and privacy by storing information on a centralized server and protecting it through security measures for storage and user
- ◆ Facilitate upgrade and maintenance: VDI could be used to facilitate operating system and application upgrade and maintenance by having the virtual desktop centralized on a server

### Module 9. Infrastructure Operation-as-Code (IaC)

- ◆ Compile the main tools for Infrastructure-as-Code management and their main strengths
- ◆ Determine the different approaches proposed by Infrastructure as Code depending on the way you try to define the resources
- ◆ Implement and manage test and production environments efficiently using Infrastructure as Code
- ◆ Use versioning and change control techniques for Infrastructure as Code

### Module 10. Monitoring and Backup of Cloud Infrastructures

- ◆ Determine how to establish a backup strategy and a monitoring strategy
- ◆ Establish the most demanded services and the usage of each service
- ◆ Identify the types of backup and its uses
- ◆ Determine a robust backup strategy that meets business objectives
- ◆ Develop a business continuity plan
- ◆ Identify the types of monitoring and what each one is for
- ◆ Generate a proactive approach to incidents by establishing a scalable monitoring strategy
- ◆ Apply the different strategies on real use cases
- ◆ Specify the points of improvement in order to evolve the environments as the business evolves



*You will achieve your objectives in a few months and with total freedom of schedule thanks to the best tools and the most dynamic practical content on Cloud Infrastructures”*

# 03 Skills

This Syllabus has been designed to guarantee the optimal acquisition of skills by the students, who will be able to face any challenge they may have to face in their future work as a professional in this field. You will be able to perform your duties and complete the work with the highest possible quality and efficiency, thanks to theoretical and practical materials that have been designed based on the most rigorous sources and the latest developments in Cloud Infrastructures.





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*You will acquire the necessary skills to perform your work as an expert in Cloud Infrastructures as efficiently as possible”*



## General Skills

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- ◆ Manage the technologies that help to create a DevSecOps culture that unites development, systems and security teams in common objectives
- ◆ Have the skills and knowledge necessary to implement and manage IaaS solutions effectively
- ◆ Determine the necessary capabilities that facilitate collaboration between teams and departments
- ◆ Apply security and monitoring techniques to Cloud networks
- ◆ Address the challenges faced by a company in the Cloud governance
- ◆ Monitor and optimize the security of applications and services in Cloud environments using monitoring and auditing tools
- ◆ Integrate Cloud services
- ◆ Use collaboration tools and Infrastructure Lifecycle Management as Code
- ◆ Master the different tools and services offered by the cloud for their efficient deployment







## Specific Skills

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- ◆ Know to Identify the types, models and elements of Cloud Computing
- ◆ Effectively manage the different computing resources available in the cloud
- ◆ Understand ways to protect stored data and databases in the cloud
- ◆ Implement and manage internal network services in cloud environments, such as VPC and subnetting
- ◆ Optimize resource usage and ensure compliance with security requirements
- ◆ Perform integration of cybersecurity controls into processes
- ◆ Deploy application in Cloud and provide it with additional features by incorporating new services
- ◆ Understand the full benefits and operation of VDI
- ◆ Use versioning and change control techniques for Infrastructure as Code
- ◆ Develop a business continuity plan



*Know the current situation of the job market in Cloud Adoption and multiply your chances of success, thanks to TECH”*

04

# Course Management

In order to offer an education of the highest quality, TECH has a team of professional experts in the field, who have outstanding and extensive careers. In this way, we have created a complete and innovative content, which together with the most innovative teaching tools, allows us to offer students an optimal development of the skills they demand.





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*Get to stand out as a professional in the area of Cloud Infrastructures with the help of the most renowned experts in the field”*

## Management



### **D. Casado Sarmentero, Iván**

- Head of DevOps at TRAK
- IT Director at Madison Experience Marketing
- Infrastructure and Telecommunications Officer at Madison Experience Marketing
- Operations and Support Officer at Madison Experience Marketing
- IT Systems Administrator at Madison Experience Marketing
- Master in Leadership and Team Management in the Chamber of Commerce of Valladolid
- Higher Level Educational Cycle in Computer Applications Development at IES Galileo

## Professors

### Mr. Zarzuelo Rubio, Guillermo

- ◆ Site Reliability Manager at Madison Experience Marketing
- ◆ DevOps Engineer at Drivies
- ◆ Release Engineer at Aubay Isalia
- ◆ QA Tester at Axpe Consulting
- ◆ Python Analyst Programmer at Telefónica I+D
- ◆ AWS Certified Solutions Architect (B2)
- ◆ MongoDB for DBAs (MongoDB University)
- ◆ Telecommunications Engineer at Valladolid's University

### Mr. Nadal Martín, Aser

- ◆ Site Reliability Engineering at TELECYL S.A
- ◆ Systems Administrator at Altia Consultores S.A Degree in Computer Engineering from the Spanish Open University (UNED)
- ◆ Course on Website Design at CIFESAL
- ◆ Basic Operation of IP Telephony Solution in JCYL
- ◆ Advanced GIT at GESDECO

### Mr. PASTRIÁN GARCÍA, JOSÉ MANUEL

- ◆ IT Security Engineer at MADISON Experience Marketing
- ◆ Cybersecurity Trainee at the General Foundation of Valladolid University
- ◆ Collaborator at Boss Technical Lighting S.L
- ◆ Graduate in Physics from the University of Valladolid

### Mr. Fuente Alonso, Rubén

- ◆ Head of Security Operations Center at Madison Experience Marketing
- ◆ Founding Partner and President of the Asociación Informática Palencia Kernel Panic
- ◆ Network and Systems Security Administrator at Entelgy Innotec Security
- ◆ Level 2 Communications and Security Technician at CODERE
- ◆ PartyLans Network Administrator in several associations
- ◆ Higher University Course on Cybersecurity at Rey Juan Carlos University
- ◆ CCNA R&S and CCNA Security at Cisco Networking Academy
- ◆ TCP/IP Network Design at IBM
- ◆ Senior Technician in Computer Systems Administration at CIFP Palencia

### Mr. Velasco Portela, Óscar

- ◆ Site Reliability Engineer at Telecyl S.A
- ◆ User Support Engineer at Telecyl S.A
- ◆ Computer Monitor at Caño Argales Neighborhood Association
- ◆ Graduate in Network Operating Systems Administration from IES Galileo
- ◆ Higher Education Graduate in 3D Animation
- ◆ Work Cybersecurity Certification
- ◆ CNNA R&S: Introduction to Semantics
- ◆ CNNA R&S: Routing and Switching

# 05

## Structure and Content

The structure and content of this Professional Master's Degree in Cloud Infrastructures have been designed by renowned professionals, who are part of the TECH's team of experts in the field. All the syllabus and materials have been created following the most rigorous requirements of the most efficient teaching methodology in the educational market, the Relearning, which guarantees the best possible assimilation of the contents in a natural, dynamic way and without the need to devote excessive hours of study.



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*Access all the material and a wide variety of additional information on IT infrastructure transformation, databases, VDI or any other aspect of the syllabus that may interest you”*

## Module 1. Transformation of IT Infrastructures Cloud Computing

- 1.1. Cloud Computing Cloud Computing Adoption
  - 1.1.1. Computing
  - 1.1.2. Cloud Computing Adoption
  - 1.1.3. Types of Cloud Computing
- 1.2. Cloud Computing Adoption. Adoption Factors
  - 1.2.1. Adoption Factors of Cloud Infrastructures
  - 1.2.2. Uses and Services
  - 1.2.3. Evolution
- 1.3. Cloud Computing Infrastructures
  - 1.3.1. Cloud Computing Infrastructures
  - 1.3.2. Types of Infrastructures (IaaS, PaaS and SaaS)
  - 1.3.3. Types of Implementation (Private, Public and Hybrid)
  - 1.3.4. Elements (Hardware, Storage and Network)
- 1.4. Cloud Computing Infrastructure: Operation
  - 1.4.1. Virtualization
  - 1.4.2. Automation
  - 1.4.3. Management
- 1.5. Cloud Computing Ecosystem
  - 1.5.1. Observability and Analysis
  - 1.5.4. Procurement.
  - 1.5.5. Orchestration and Management
  - 1.5.6. Cloud Platforms
- 1.6. Services Management in Cloud Infrastructures
  - 1.6.1. Service Orientation
  - 1.6.2. Standard and Ecosystem
  - 1.6.3. Types of Services
- 1.7. Cloud Infrastructure Management Automation
  - 1.7.1. Ecosystem
  - 1.7.2. DevOps Culture
  - 1.7.3. Infrastructure as Code (Terraform, Ansible, Github, Jenkins)

- 1.8. Security in Cloud Infrastructures
  - 1.8.1. Ecosystem
  - 1.8.2. DevSecOps Culture
  - 1.8.3. Data Science
- 1.9. Preparation of the Cloud Infrastructure Management Environment
  - 1.9.1. Data Science
  - 1.9.2. Preparation of the Environment
  - 1.9.3. First Steps
- 1.10. Cloud Infrastructures Future and Evolution
  - 1.10.1. Cloud Infrastructures Challenges
  - 1.10.2. Evolution of Cloud Infrastructures
  - 1.10.3. Challenges in Security and Compliance

## Module 2. Infrastructure as a Service (IaaS)

- 2.1. Cloud Computing Abstraction Layers and Their Management
  - 2.1.1. Abstraction Core Concepts
  - 2.1.2. Services Models
  - 2.1.3. Management of Cloud Services. Benefits
- 2.2. Construction of Architecture. Core Decisions
  - 2.2.1. HDDC and SDDC. Hypercompetition
  - 2.2.2. Market
  - 2.2.3. Working Model and Professional Profiles Changes
    - 2.2.3.1. Figure of the Cloud Broker
- 2.3. Digital Transformation and Cloud Infrastructures
  - 2.3.1. Cloud Work Demo
  - 2.3.2. The Role of the Navigator as Tool
  - 2.3.3. New Device Concept
  - 2.3.4. Advanced Architectures and the Role of the CIO
- 2.4. Agile Management in Cloud Infrastructures
  - 2.4.1. Life Cycle of New Services and Competitiveness
  - 2.4.2. Development Methodology of Apps and Microservices
  - 2.4.3. Relationship between Development and IT Operations
    - 2.4.3.1. Use of Cloud as Support





- 2.5. Cloud Computing Resources I. Identity, Storage and Domain Management
  - 2.5.1. Identity and Access Management
  - 2.5.2. Secure Data Storage, Flexible File and Database Storage
  - 2.5.3. Domain Management
- 2.6. Cloud Computing Resources II. Network, Infrastructure and Monitoring Resources
  - 2.6.1. Private Virtual Network
  - 2.6.2. Cloud Computing Capabilities
  - 2.6.3. Monitoring
- 2.7. Cloud Computing Resources III. Automation
  - 2.7.1. Serverless Code Execution
  - 2.7.2. Message Queuing
  - 2.7.3. Workflow Services
- 2.8. Cloud Computing Resources IV. Other Services
  - 2.8.1. Notification Queuing
  - 2.8.2. Streaming Services and Transcoding Technologies
  - 2.8.3. Turnkey Solution to Publish APIs for External and Internal Consumers.
- 2.9. Cloud V Computing Resources. Data-Centric Services
  - 2.9.1. Data Analytics Platforms and Automation of IT Manual Task
  - 2.9.2. Data Migration
  - 2.9.3. Hybrid Cloud
- 2.10. LaaS Services Practice Lab
  - 2.10.1. Exercise 1
  - 2.10.2. Exercise 2
  - 2.10.3. Exercise 3

### Module 3. Storage and Databases in Cloud Infrastructures

- 3.1. Cloud Storage Infrastructure
  - 3.1.1. Cloud Storage Fundamentals
  - 3.1.2. Cloud Storage Advantages
  - 3.1.3. Operation
- 3.2. Types of Cloud Storage
  - 3.2.1. SaaS
  - 3.2.2. IaaS
- 3.3. Cloud Storage Use Cases
  - 3.3.1. Data Analysis
  - 3.3.2. Backup and Archiving
  - 3.3.3. Software Development
- 3.4. Cloud Storage Security
  - 3.4.1. Security in the Transport Layer
  - 3.4.2. Storage Security
  - 3.4.3. Storage Encryption
- 3.5. Cloud Storage Analysis
  - 3.5.1. Profitability
  - 3.5.2. Agility and Scalability
  - 3.5.3. Administration.
- 3.6. Infrastructure of Cloud Database
  - 3.6.1. Fundamentals of Databases
  - 3.6.2. Analysis of Databases
  - 3.6.3. Cloud Database Classification
- 3.7. Types of Cloud Database Infrastructure
  - 3.7.1. Relational Databases
  - 3.7.2. NoSQL Databases
  - 3.7.3. Data Warehouse. Databases
- 3.8. Use Cases of Cloud Database Infrastructure
  - 3.8.1. Data Storage
  - 3.8.2. IA and ML Data Analysis
  - 3.8.3. Big Data

- 3.9. Cloud Database Infrastructure Security
  - 3.9.1. Access Control ACL, IAM, SG
  - 3.9.2. Data Encryption
  - 3.9.3. Audits
- 3.10. Migration and Backup of Cloud Database Infrastructure
  - 3.10.1. Database Backups
  - 3.10.2. Database Migration
  - 3.10.3. Database Optimization

### Module 4. Network DevOps and Network Architectures in Cloud infrastructures

- 4.1. Network DevOps (NetOps)
  - 4.1.1. Network DevOps (NetOps)
  - 4.1.2. NetOps Methodology
  - 4.1.3. NetOps Benefits
- 4.2. Fundamentals of NetOps
  - 4.2.1. Fundamentals of Networking
  - 4.2.2. OSI, TCP/IP, CIDR and Subnetting Model
  - 4.2.3. Main Protocols
  - 4.2.4. HTTP Responses
- 4.3. Tools and Software for Network DevOps
  - 4.3.1. Network Layer Tools
  - 4.3.2. Application Layer Tools
  - 4.3.3. DNS Tools
- 4.4. Networking in Cloud Environments: Internal Network Services
  - 4.4.1. Virtual Networks
  - 4.4.2. Subnetworks
  - 4.4.3. Routing Tables
  - 4.4.4. Availability Zones
- 4.5. Networking in Cloud Environments: Border Network Services
  - 4.5.1. Internet Gateway
  - 4.5.2. NAT Gateway
  - 4.5.3. Load Balancing

- 4.6. Networking in Cloud Environments: DNS
  - 4.6.1. DNS Fundamentals
  - 4.6.2. DNS Cloud Services
  - 4.6.3. HA/LB through DNS
- 4.7. Hybrid/Multitenant Network Connectivity
  - 4.7.1. VPN Site to Site
  - 4.7.2. VPC Peering
  - 4.7.3. Transit Gateway / VPC Peering
- 4.8. Content Delivery Network Services
  - 4.8.1. Content Delivery Services
  - 4.8.2. AWS CloudFront
  - 4.8.3. Other CDNs
- 4.9. Security in Cloud Networks
  - 4.9.1. Network Security Principles
  - 4.9.2. Protection in Layer 3 and 4
  - 4.9.3. Protection in Layer 7
- 4.10. Network Monitoring and Audit
  - 4.10.1. Monitoring and Audit
  - 4.10.2. Flow Logs
  - 4.10.3. Monitoring Service: CloudWatch

## Module 5. Government in Cloud Infrastructures

- 5.1. Compliance in Cloud Environments
  - 5.1.1. Shared Responsibilities Model
  - 5.1.2. Laws, Regulations and Contracts
  - 5.1.3. Audits
- 5.2. CISO in Cloud Government
  - 5.2.1. Organizational Framework Figures of the CISO in the Organization
  - 5.2.2. Relationship of CISO with the Data Processing Areas
  - 5.2.3. GRC Strategies against Shadow IT
- 5.3. Cloud Governance Standard
  - 5.3.1. Previous Assessments
  - 5.3.2. Cloud Service Provider Compliance
  - 5.3.3. Personnel Obligations
- 5.4. Privacy in Cloud Environments
  - 5.4.1. Consumer and User Relationship with Privacy
  - 5.4.2. Privacy in the Americas, Asia-Pacific, the Middle East and Africa
  - 5.4.3. Privacy in the European Context
- 5.5. Approvals and Regulatory Frameworks in Cloud Environments
  - 5.5.1. American Approvals and Frameworks
  - 5.5.2. Approvals and Frameworks in Asia
  - 5.5.3. Approvals and Frameworks in Europa
- 5.6. Certifications and Accreditations in Cloud Environments
  - 5.6.1. America and Asia Pacific
  - 5.6.2. Europe, Middle East and Africa
  - 5.6.3. Global
- 5.7. Laws/Regulations in Cloud Environments
  - 5.7.1. CLOUD Act, HIPAA, and IRS 1075
  - 5.7.2. ITAR, SEC Rule 17a-4(f) and VPAT/Section 508
  - 5.7.3. European Regulation
- 5.8. Cost Control and Billing in Cloud Governance
  - 5.8.1. Pay-Per-Use Models Costs
  - 5.8.2. CFO Figure and FinOps Profiles
  - 5.8.3. Expense Control
- 5.9. Cloud Governance Tools
  - 5.9.1. OvalEdge
  - 5.9.2. ManageEngine ADAudit Plus
  - 5.9.3. Erwin Data Governance
- 5.10. Corporate Governance
  - 5.10.1. Code of Conduct
  - 5.10.2. Complaints Channel
  - 5.10.3. Due Diligence

## Module 6. Cybersecurity in Cloud Infrastructures

- 6.1. Risk in Cloud Environments
  - 6.1.1. Cybersecurity Strategies
  - 6.1.2. Risk-Based Approach
  - 6.1.3. Risk Categorization in Cloud Environments
- 6.2. Security Frameworks in Cloud Environments
  - 6.2.1. Frameworks and Cybersecurity Standards
  - 6.2.2. Technical Cybersecurity Frameworks
  - 6.2.3. Organization Cybersecurity Frameworks
- 6.3. Threat Modeling in Cloud Environments
  - 6.3.1. Threat Modeling Process
  - 6.3.2. Threat Modeling Phases
  - 6.3.3. STRIDE
- 6.4. Cybersecurity Data Science at Code Level
  - 6.4.1. Tool Classification
  - 6.4.2. Integrations
  - 6.4.3. Examples of Use
- 6.5. Cybersecurity Control Integration in Cloud Environments
  - 6.5.1. Security in Processes
  - 6.5.2. Security Controls in the Different Phases
  - 6.5.3. Examples of Integrations
- 6.6. ZAP Proxy Tool
  - 6.6.1. ZAP Proxy
  - 6.6.2. Characteristics of ZAP Proxy
  - 6.6.3. Automation of ZAP Proxy
- 6.7. Automated Vulnerability Analysis in Cloud Environments
  - 6.7.1. Persistent and Automated Vulnerability Analysis
  - 6.7.2. OpenVAS
  - 6.7.3. Vulnerability Analysis in Cloud Environments
- 6.8. Risk in Cloud Environments
  - 6.8.1. Types of Firewalls
  - 6.8.2. Importance of Firewalls
  - 6.8.3. OnPremise Firewalls and Cloud Firewalls

- 6.9. Layer Transport Security in Cloud Environments
  - 6.9.1. SSL/TLS and Certificates
  - 6.9.2. SLL Audits
  - 6.9.3. The Automation of Certificates
- 6.10. SIEM in Cloud Environments
  - 6.10.1. SIEM as a Security Core
  - 6.10.2. Cyberintelligence
  - 6.10.3. Examples of SIEM Systems

## Module 7. Services Adoption in Cloud Infrastructures

- 7.1. Server Settings in the Cloud
  - 7.1.1. Hardware Setting
  - 7.1.2. Software Setting
  - 7.1.3. Network and Security Setting
- 7.2. Cloud Service Setting
  - 7.2.1. Assigning Permissions to my Server
  - 7.2.2. Setting of Security Rules
  - 7.2.3. Cloud Service Deployment
- 7.3. Administration of a Cloud Server
  - 7.3.1. Storage Unit Management
  - 7.3.2. Network Management
  - 7.3.3. Security Copy Management
- 7.4. Persistence
  - 7.4.1. Decoupling our Cloud Service
  - 7.4.2. Settings of Persistence Service
  - 7.4.3. Integration of the DB with our Cloud Service.
- 7.5. Autoscaling
  - 7.5.1. Image Generation of our Server
  - 7.5.2. Creation of Marketing Groups
  - 7.5.3. Definition of Automatic Scaling Rules

- 7.6. Balancing Services
  - 7.6.1. Balancing Services
  - 7.6.2. Generation of a Load Balancer
  - 7.6.3. Connection of the Load Balancer with our Cloud Service
- 7.7. Content Delivery Services
  - 7.7.1. Content Delivery Services
  - 7.7.2. Content Delivery Service Settings
  - 7.7.3. Integration of the Load CDN with our Cloud Service
- 7.8. Configuration Parameters and Secrets
  - 7.8.1. Configuration Parameter Management Services
  - 7.8.2. Secret Management Services
  - 7.8.3. Integrating Configuration Services and Secrets with our Cloud Service
- 7.9. Queue Management Services
  - 7.9.1. Decoupling our Application
  - 7.9.2. Queuing Service Configuration
  - 7.9.3. Integration the Queue with our Cloud Service.
- 7.10. Notification Services
  - 7.10.1. Cloud Notification Services
  - 7.10.2. Notification Service Configuration
  - 7.10.3. Adding Notifications to our Cloud Service

## Module 8. Virtual Desktop Infrastructure (VDI)

- 8.1. Virtual Desktop Infrastructure (VDI)
  - 8.1.1. VDI Operation
  - 8.1.2. Advantages and Disadvantages of VDI
  - 8.1.3. VDI Common Usage Scenarios
- 8.2. Cloud and Hybrid VDI Architectures
  - 8.2.1. VDI Hybrid Architectures
  - 8.2.2. Cloud VDI Implementation
  - 8.2.3. Cloud VDI Management
- 8.3. Designing and Planning a VDI Implementation
  - 8.3.1. Selection of Hardware and Software.
  - 8.3.2. Network and Storage Infrastructure Design
  - 8.3.3. Deployment and Scaling Planning
- 8.4. VDI Management.
  - 8.4.1. VDI Installation and Configuration
  - 8.4.2. Desktop and Application Image Management
  - 8.4.3. Security and Compliance Management
  - 8.4.4. Availability and Performance Management
- 8.5. Integration of Applications and Peripherals in the VDI
  - 8.5.1. Enterprise Application Integration
  - 8.5.2. Integration of Peripherals and Devices
  - 8.5.3. VDI Integration with Videoconferencing and Instant Messaging Solutions
  - 8.5.4. VDI Integration with Online Collaboration Platforms
- 8.6. VDI Optimization and Improvement
  - 8.6.1. Service Quality and Performance Optimization
  - 8.6.2. Improvement of the Efficiency and Scalability
  - 8.6.3. Improvement of Final User Experience
- 8.7. VDI Lifecycle Management
  - 8.7.1. Hardware and Software Lifecycle Management
  - 8.7.2. Infrastructure Migration and Replacement Management
  - 8.7.3. Support and Maintenance Management
- 8.8. Security in VDI: Protection of Infrastructure and User Data
  - 8.8.1. VDI Network Security
  - 8.8.2. Protection of Data Stored in the VDI
  - 8.8.3. User Security/Privacy Protection
- 8.9. VDI Advanced Usage Cases
  - 8.9.1. Using VDI for Secure Remote Access
  - 8.9.2. Using VDI for Specialized Application Virtualization
  - 8.9.3. Using VDI for Mobile Devices Management
- 8.10. Trends and Future of VDI
  - 8.10.1. New Technologies and Trends in the Field of VDI
  - 8.10.2. Predictions on the Future of VDI
  - 8.10.3. Future Challenges and Opportunities for VDI

## Module 9. Infrastructure Operation-as-Code (IAC)

- 9.1. Infrastructure as-Code (IAC)
  - 9.1.1. IAC, Infrastructure as Code
  - 9.1.2. Infrastructure Management Evolution
  - 9.1.3. Advantages of a IAC
- 9.2. Strategies for IaC Definition
  - 9.2.1. Requirements Analysis
  - 9.2.2. Imperative Definition
  - 9.2.3. Declarative Definition
- 9.3. IaC Tools.
  - 9.3.1. IaC Objectives
  - 9.3.2. Proprietary Tools
  - 9.3.3. Third-Party Tools
- 9.4. Evolution of Infrastructure as Code
  - 9.4.1. IAC in Kubernetes
  - 9.4.2. Platform as Code
  - 9.4.3. Compliance as Code
- 9.5. IaC in Devops
  - 9.5.1. Flexible Infrastructures
  - 9.5.2. Continuous Integration
  - 9.5.3. Pipeline as Code
- 9.6. IAC-VPC-Proprietary Tools
  - 9.6.1. Design of a VPC
  - 9.6.2. Deployment of the Solution
  - 9.6.3. Validation and Analysis
- 9.7. IAC-Serverless - Proprietary Tools
  - 9.7.1. Design of a Serverless Solution
  - 9.7.2. Deployment of the Solution
  - 9.7.3. Validation and Analysis
- 9.8. IAC-VPC- Third-Party Tools
  - 9.8.1. Design of a VPC
  - 9.8.2. Deployment of the Solution
  - 9.8.3. Validation and Analysis

- 9.9. IAC - Serverless- Third-Party Tools
  - 9.9.1. Design of a Serverless Solution
  - 9.9.2. Deployment of the Solution
  - 9.9.3. Validation and Analysis
- 9.10. IAC - Comparison Future Trends
  - 9.10.1. Valuation of Proprietary Solutions
  - 9.10.2. Valuation of Third-Party Solutions
  - 9.10.3. Future Lines

## Module 10. Monitoring and Backup of Cloud Infrastructures

- 10.1. Monitoring and Backup of Cloud Infrastructures
  - 10.1.1. Benefits of Backup in Clouds
  - 10.1.2. Types of Backup
  - 10.1.3. Benefits of Monitoring in Clouds
  - 10.1.4. Types of Monitoring
- 10.2. Availability and Security of Cloud Infrastructure Systems
  - 10.2.1. Main Factors
  - 10.2.2. The Most Demanded Uses and Services
  - 10.2.3. Evolution
- 10.3. Backup Service Types in Cloud Infrastructures
  - 10.3.1. Total Backup
  - 10.3.2. Incremental Back-up
  - 10.3.3. Differential Backup
  - 10.3.4. Other Types of Backup
- 10.4. Strategy, Planning and Management of Backups in Cloud Infrastructures
  - 10.4.1. Establishment of Objectives and Scope
  - 10.4.2. Types of Backup Copies
  - 10.4.3. Good Practices
- 10.5. Continuity Plan in Cloud Infrastructures
  - 10.5.1. Strategy of the Continuity Plan
  - 10.5.2. Types of Plans
  - 10.5.3. Creating a Continuity Plan



- 10.6. Monitoring Types in Cloud Infrastructures
  - 10.6.1. Performance Monitoring
  - 10.6.2. Availability Monitoring
  - 10.6.3. Event Monitoring
  - 10.6.4. Log Monitoring
  - 10.6.5. Network Traffic Monitoring
- 10.7. Cloud Infrastructure Monitoring Strategy, Tools and Techniques.
  - 10.7.1. How to Set Objectives and Scopes
  - 10.7.2. Types of Monitoring
  - 10.7.3. Good Practices
- 10.8. Continuous Improvement in Cloud Infrastructures
  - 10.8.1. Cloud Continuous Improvement:
  - 10.8.2. Key Performance Metrics (KPIs) in the Cloud
  - 10.8.3. Designing a Continuous Improvement Plan in the Cloud
- 10.9. Case Studies in Cloud Infrastructures
  - 10.9.1. Study Case Backup
  - 10.9.2. Study Case Monitoring
  - 10.9.3. Learnings and Good Practices
- 10.10. Case Studies in Cloud Infrastructures
  - 10.10.1. Laboratory 1
  - 10.10.2. Laboratory 2
  - 10.10.3. Laboratory 3

06

# 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.



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.



# 07 Certificate

The Professional Master's Degree in Cloud Infrastructures guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree issued by TECH Technological University.





“

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

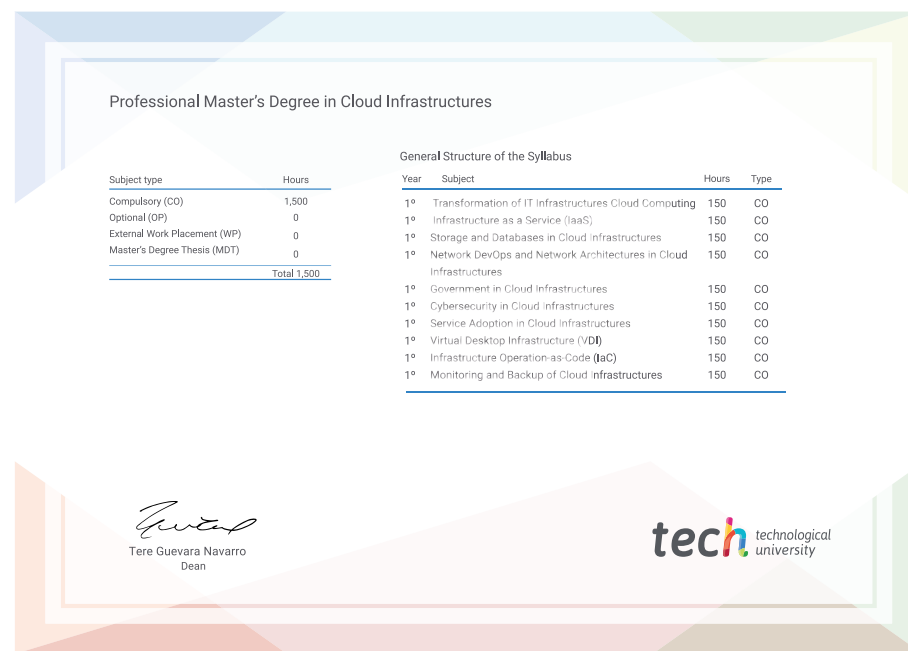
This **Professional Master's Degree in Cloud Infrastructures** contains the most complete and up-to-date program on the market.

After the student has passed the assessments, they will receive their corresponding **Professional Master's Degree diploma** issued by **TECH Technological University** via tracked delivery\*.

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

Title: **Professional Master's Degree in Cloud Infrastructures**

Official N° of Hours: **1,500 h.**



\*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.

future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge preservation  
online development language  
classroom



## Professional Master's Degree Cloud Infrastructures

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

# Professional Master's Degree Cloud Infrastructures