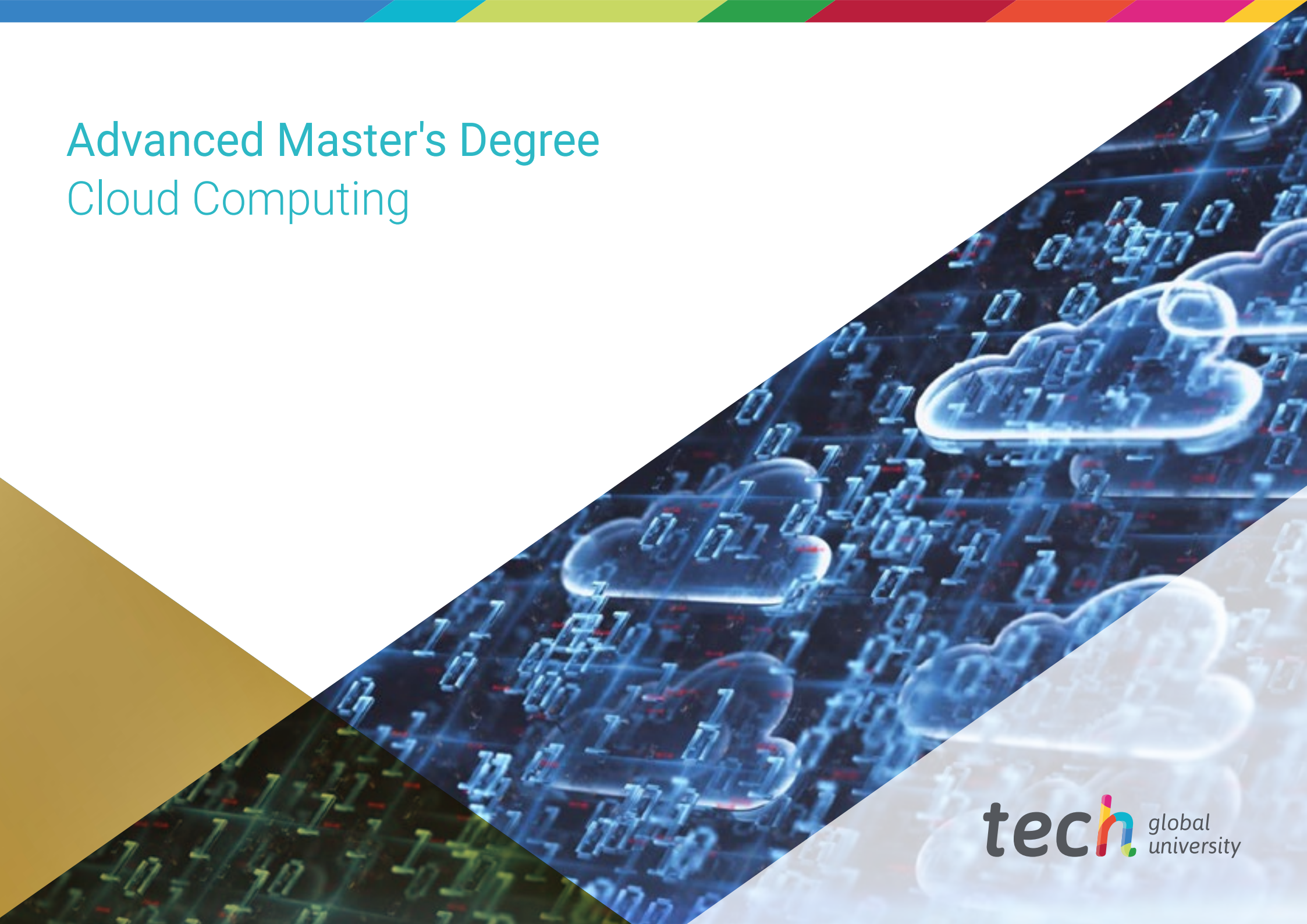
Advanced Master's Degree
Cloud Computing



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Advanced Master's Degree
Cloud Computing

- Modality: **online**
- Duration: **2 years**
- Certificate: **TECH Global University**
- Accreditation: **120 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/advanced-master-degree/advanced-master-degree-cloud-computing

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01

Introduction

Cloud Computing has experienced exponential growth in recent decades. New digital tools and innovative technologies have revolutionized the sector, and although it may seem that a limit has been reached, constant evolution continues to be the basis of an area that day by day transforms the way companies operate. The impact of this technology on society and business makes it essential to have highly qualified and experienced professionals capable of leading technological projects that become benchmarks of good work. However, to reach this level, it is essential to have an academic background that allows technology experts to develop the necessary skills to excel in roles of high responsibility. Precisely for this reason, TECH offers its students programs such as this one, designed to offer the most advanced and up-to-date knowledge in this area.

Specialize in the senior management of technological projects in Cloud Computing and master the management of these solutions until your initiatives achieve the desired recognition"

Cloud Computing has become a fundamental pillar in the digital transformation of companies and organizations around the world, revolutionizing the way they operate and access technology. This field is especially relevant due to its ability to optimize processes, reduce costs and foster innovation through technologies such as the Internet of Things (IoT), Machine Learning and Artificial Intelligence. Senior management in this field is configured a key element to lead successful projects, which is why TECH has designed this complete advanced program, aimed at professionals looking to specialize in this technology and take their skills to the highest level.

With this approach, the program addresses the fundamental concepts of Cloud Computing, from programming cloud architectures to the integration of advanced services. It also dedicates an essential section to container orchestration with tools such as Kubernetes and Docker, guiding the student through the process of designing, implementing and managing scalable and secure technological infrastructures. In addition, the content includes the most up-to-date knowledge in cybersecurity, cloud storage and IT infrastructure transformation, providing added value for both those already in leadership roles and those aspiring to fill these positions in the technology industry.

One of the main advantages of this program is that it is 100% online, without the need for rigid schedules or transfers, allowing students to self-manage their learning. Thanks to this flexibility, they will be able to combine it with their daily responsibilities, adjusting their pace of study to achieve their professional goals in an efficient and practical way, with the support of an updated syllabus and resources designed by experts in the sector.

This **Advanced Master's Degree in Cloud Computing** contains the most complete and up-to-date educational program on the market. Its most notable features are:

- Practical cases presented by experts in Cloud Computing
- The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in Cloud Computing management
- 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

Driving business value with Cloud Computing depends on effectively managing cloud solutions"

The multitude of practical resources in this Cloud Computing program will allow you to consolidate essential industry knowledge"

A 100% online program that will allow you to specialize at any time and from anywhere in the world.

TECH offers the most innovative methodology to guarantee effective and up-to-date learning.

It includes in its teaching staff professionals belonging to the field of Cloud Computing, who pour into this program the experience of their work, in addition to recognized specialists from reference companies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive learning experience designed to prepare for real-life situations.

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

02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs, available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it has a huge faculty of more than 6,000 professors of the highest international prestige.

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

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future"

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in eleven different languages, making us the largest educational institution in the world.

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.

Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

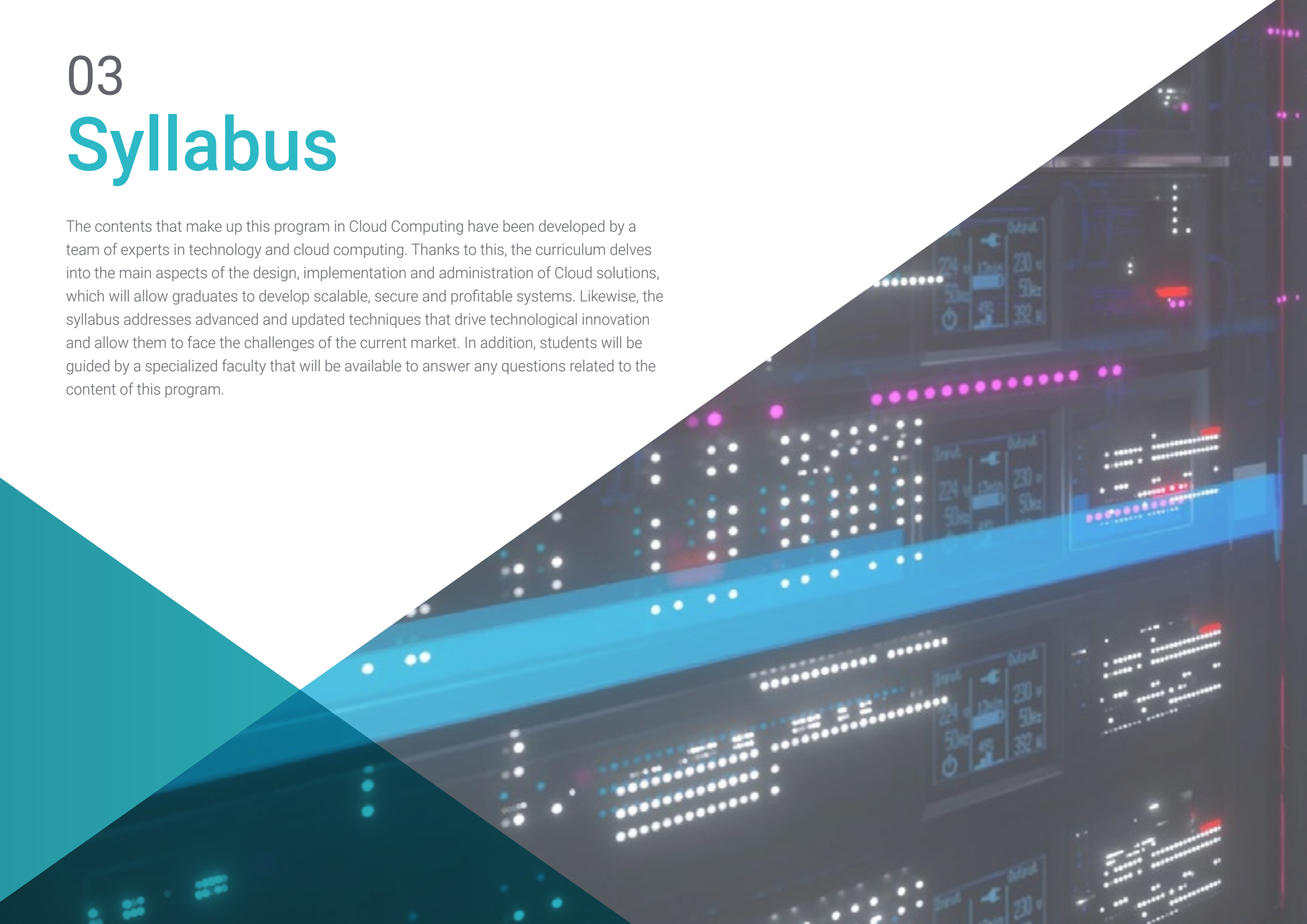
The top-rated university by its students

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

03

Syllabus

The contents that make up this program in Cloud Computing have been developed by a team of experts in technology and cloud computing. Thanks to this, the curriculum delves into the main aspects of the design, implementation and administration of Cloud solutions, which will allow graduates to develop scalable, secure and profitable systems. Likewise, the syllabus addresses advanced and updated techniques that drive technological innovation and allow them to face the challenges of the current market. In addition, students will be guided by a specialized faculty that will be available to answer any questions related to the content of this program.



You will boost the development of technological skills in Cloud Computing that will allow users to reach their maximum potential in the professional environment"

Module 1. Cloud Programming. Azure, AWS and Google Cloud Services

1.1. Cloud. Cloud Services and Technologies
- 1.1.1. Cloud Services and Technologies
- 1.1.2. Cloud Terminology
- 1.1.3. Reference Cloud Providers

1.2. Cloud Computing
- 1.2.1. Cloud Computing
- 1.2.2. Cloud Computing Ecosystem
- 1.2.3. Types of Cloud Computing

1.3. Cloud Service Models
- 1.3.1. IaaS. Infrastructure as a Service
- 1.3.2. SaaS. Software as a Service
- 1.3.3. PaaS. Platform as a Service

1.4. Cloud Computing Technologies
- 1.4.1. Virtualization Systems
- 1.4.2. Service-Oriented Architecture (SOA)
- 1.4.3. GRID Computing

1.5. Cloud Computing Architecture
- 1.5.1. Cloud Computing Architecture
- 1.5.2. Networks Types in Cloud Computing
- 1.5.3. Cloud Computing Security

1.6. Public Cloud
- 1.6.1. Public Cloud
- 1.6.2. Public Cloud Architecture and Costs
- 1.6.3. Public Cloud. Typology

1.7. Private Cloud
- 1.7.1. Private Cloud
- 1.7.2. Architecture and Costs
- 1.7.3. Private Cloud. Typology

1.8. Hybrid Cloud
- 1.8.1. Hybrid Cloud
- 1.8.2. Architecture and Costs
- 1.8.3. Hybrid Cloud. Typology

1.9. Cloud Providers
- 1.9.1. Amazon Web Services
- 1.9.2. Azure
- 1.9.3. Google

1.10. Cloud Security
- 1.10.1. Infrastructure Security
- 1.10.2. Operating System and Network Security
- 1.10.3. Cloud Risk Mitigation

Module 2. Architecture Programming in Cloud Computing

2.1. Cloud Architecture for a University Network. Cloud Provider Selection. Practical Example
- 2.1.1. Cloud Architecture Approach for a University Network According to Cloud Provider
- 2.1.2. Cloud Architecture Components
- 2.1.3. Analysis of Cloud Solutions According to Proposed Architecture

2.2. Economic Estimation of the Project for the Creation of a University Network. Financing
- 2.2.1. Cloud Provider Selection
- 2.2.2. Economical Estimation According to Components
- 2.2.3. Project Financing

2.3. Estimation of Human Resources of the Project. Composition of a Software Team
- 2.3.1. Composition of the Software Development Team
- 2.3.2. Roles in a Development Team. Typology
- 2.3.3. Assessment of the Economic Estimation of the Project

2.4. Execution Schedule and Project Documentation
- 2.4.1. Agile Project Schedule
- 2.4.2. Project Feasibility Documentation
- 2.4.3. Documentation to Be Provided for Project Execution

2.5. Legal Implications of a Project
- 2.5.1. Legal Implications of a Project
- 2.5.2. Data Protection Policy
  - 2.5.2.1. GDPR. General Data Protection Regulation
- 2.5.3. Responsibility of the Integrating Company

2.6. Design and Creation of a Cloud Blockchain Network for the Proposed Architecture
- 2.6.1. Blockchain – Hyperledger Fabric
- 2.6.2. Hyperledger Fabric Basics
- 2.6.3. Design of an International University Hyperledger Fabric Network

2.7. Proposed Architecture Expansion Approach
- 2.7.1. Creation of the Proposed Architecture with Blockchain
- 2.7.2. Proposed Architecture Expansion
- 2.7.3. Configuration of a High Availability Architecture

2.8. Administration of the Proposed Cloud Architecture
- 2.8.1. Adding a New Participant to the Initial Proposed Architecture
- 2.8.2. Administration of the Cloud Architecture
- 2.8.3. Project Logic Management – Smart Contracts

2.9. Administration and Management of Specific Components in the Proposed Cloud Architecture
- 2.9.1. Management of Network Certificates
- 2.9.2. Security Management of Various Components: CouchDB
- 2.9.3. Blockchain Network Nodes Management

2.10. Modification of an Initial Basic Installation in the Creation of a Blockchain Network
- 2.10.1. Adding a Node to the Blockchain Network
- 2.10.2. Addition of Extra Data Persistence
- 2.10.3. Smart Contracts Management
- 2.10.4. Addition of a New University to the Existing Network

Module 3. Azure Cloud Storage

3.1. MV Installation in Azure
- 3.1.1. Creation Commands
- 3.1.2. Visualization Commands
- 3.1.3. Modification Commands

3.2. Azure Blobs
- 3.2.1. Types of Blobs
- 3.2.2. Container
- 3.2.3. Azcopy
- 3.2.4. Reversible Blob Suppression

3.3. Managed Disk and Storage in Azure
- 3.3.1. Managed Disk
- 3.3.2. Security
- 3.3.3. Cold Storage
- 3.3.4. Replication
  - 3.3.4.1. Local Redundancy
  - 3.3.4.2. Redundancy in a Zone
  - 3.3.4.3. Geo-Redundant

3.4. Azure Tables, Queues, Files
- 3.4.1. Tables
- 3.4.2. Queues
- 3.4.3. Files

3.5. Azure Encryption and Security
- 3.5.1. Storage Service Encryption (SSE)
- 3.5.2. Access Codes
  - 3.5.2.1. Shared Access Signature
  - 3.5.2.2. Container-Level Access Policies
  - 3.5.2.3. Access Signature at Blob Level
- 3.5.3. Azure AD Authentication

3.6. Azure Virtual Network
- 3.6.1. Subnetting and Matching
- 3.6.2. Vnet to Vnet
- 3.6.3. Private Link
- 3.6.4. High Availability

3.7. Types of Azure Connections
- 3.7.1. Azure Application Gateway
- 3.7.2. Site-to-Site VPN
- 3.7.3. Point-to-Site VPN
- 3.7.4. ExpressRoute

3.8. Azure Resources
- 3.8.1. Blocking Resources
- 3.8.2. Resource Movement
- 3.8.3. Removal of Resources

3.9. Azure Backup
- 3.9.1. Recovery Services
- 3.9.2. Azure Agent Backup
- 3.9.3. Azure Backup Server

3.10. Solutions Development
- 3.10.1. Compression, Deduplication, Replication
- 3.10.2. Recovery Services
- 3.10.3. Disaster Recovery Plan

Module 4. Cloud Environments. Security

4.1. Cloud Environments. Security
- 4.1.1. Cloud Environments, Security
  - 4.1.1.1. Cloud Security
  - 4.1.1.2. Security Position

4.2. Cloud Shared Security Management Model
- 4.2.1. Security Elements Managed by Vendor
- 4.2.2. Elements Managed by Customer
- 4.2.3. Security Strategy

4.3. Cloud Prevention Mechanisms
- 4.3.1. Authentication Management Systems
- 4.3.2. Authorization Management System. Access Policies
- 4.3.3. Key Management Systems

4.4. Cloud Infrastructure Data Security
- 4.4.1. Securing Storage Systems:
  - 4.4.1.1. Block
  - 4.4.1.2. Object Storage
  - 4.4.1.3. File Systems
- 4.4.2. Protection of Database Systems
- 4.4.3. Securing Data in Transit

4.5. Cloud Infrastructure Protection
- 4.5.1. Secure Network Design and Implementation
- 4.5.2. Security in Computing Resources
- 4.5.3. Tools and Resources for Infrastructure Protection

4.6. Application Risks and Vulnerabilities
- 4.6.1. Application Development Risks
- 4.6.2. Critical Safety Risks
- 4.6.3. Vulnerabilities in Software Development

4.7. Application Defenses against Attacks
- 4.7.1. Application Development Design
- 4.7.2. Securitization through Verification and Testing
- 4.7.3. Secure Programming Practices

4.8. DevOps Environment Security
- 4.8.1. Security in Virtualized and Container Environments
- 4.8.2. Development Security and Operations (DevSecOps)
- 4.8.3. Best Security Practices in Containerized Production Environments

4.9. Security in Public Clouds
- 4.9.1. AWS
- 4.9.2. Azure
- 4.9.3. Oracle Cloud

4.10. Security Regulations, Governance and Compliance
- 4.10.1. Security Compliance
- 4.10.2. Risk Management
- 4.10.3. Processes in Organizations

Module 5. Container Orchestration: Kubernetes and Docker

5.1. Basis of Application Architectures
- 5.1.1. Current Application Models
- 5.1.2. Application Execution Platforms
- 5.1.3. Container Technologies

5.2. Docker Architecture
- 5.2.1. Docker Architecture
- 5.2.2. Docker Architecture Installation
- 5.2.3. Commands. Local Project

5.3. Docker Architecture. Storage Management
- 5.3.1. Image and Register Management
- 5.3.2. Docker Networks
- 5.3.3. Storage Management

5.4. Advanced Docker Architecture
- 5.4.1. Docker Compose
- 5.4.2. Docker in Organization
- 5.4.3. Docker Adoption Example

5.5. Kubernetes Architecture
- 5.5.1. Kubernetes Architecture
- 5.5.2. Kubernetes Deployment Elements
- 5.5.3. Distributions and Managed Solutions
- 5.5.4. Installation and Environment

5.6. Kubernetes Architecture: Kubernetes Development
- 5.6.1. Tools for K8s Development
- 5.6.2. Imperative vs. Declarative Mode
- 5.6.3. Application Deployment and Exposure

5.7. Kubernetes in Enterprise Environments
- 5.7.1. Data Persistence
- 5.7.2. High Availability, Scaling and Networking
- 5.7.3. Kubernetes Security
- 5.7.4. Kubernetes Management and Monitoring

5.8. K8s Distributions
- 5.8.1. Deployment Environment Comparison
- 5.8.2. Deployment on GKE, AKS, EKS or OKE
- 5.8.3. On Premise Deployment

5.9. Rancher and Openshift
- 5.9.1. Rancher
- 5.9.2. Openshift
- 5.9.3. Openshift: Configuration and Application Deployment

5.10. Kubernetes Architecture and Containers. Updates
- 5.10.1. Open Application Model
- 5.10.2. Tools for Deployment Management in Kubernetes Environments
- 5.10.3. References to Other Projects and Trends

Module 6. Cloud-Native Application Programming

6.1. Cloud-Native Technologies
- 6.1.1. Cloud-Native Technologies
- 6.1.2. Cloud Native Computing Foundation
- 6.1.3. Cloud-Native Development Tools

6.2. Cloud-Native Application Architecture
- 6.2.1. Cloud-Native Application Design
- 6.2.2. Cloud-Native Architecture Components
- 6.2.3. Legacy Application Modernization

6.3. Containerization
- 6.3.1. Container-Oriented Development
- 6.3.2. Development with Microservices
- 6.3.3. Tools for Teamwork

6.4. DevOps and Continuous Integration and Deployments
- 6.4.1. Continuous Integration and Deployments: CI/CD
- 6.4.2. Tools Ecosystem for CI/CD
- 6.4.3. Creating a CI/CD Environment

6.5. Observability and Platform Analysis
- 6.5.1. Cloud-Native Application Observability
- 6.5.2. Tools for Monitoring, Logging and Tracing
- 6.5.3. Implementation of an Observability and Analysis Environment

6.6. Data Management in Cloud-Native Applications
- 6.6.1. Cloud-Native Database
- 6.6.2. Data Management Patterns
- 6.6.3. Technologies to Implement Data Management Patterns

6.7. Communications in Cloud-Native Applications
- 6.7.1. Synchronous and Asynchronous Communications
- 6.7.2. Technologies for Synchronous Communications Patterns
- 6.7.3. Technologies for Asynchronous Communications Patterns

6.8. Resilience, Security and Performance in Cloud-Native Applications
- 6.8.1. Application Resilience
- 6.8.2. Secure Development in Cloud-Native Applications
- 6.8.3. Application Performance and Scalability

6.9. Serverless
- 6.9.1. Cloud Native Serverless
- 6.9.2. Serverless Platforms
- 6.9.3. Use Cases for Serverless Development

6.10. Deployment Platforms
- 6.10.1. Cloud-Native Development Environments
- 6.10.2. Orchestration Platforms. Comparison
- 6.10.3. Infrastructure Automation

Module 7. Cloud Programming. Data Governance

7.1. Data Management
- 7.1.1. Data Management
- 7.1.2. Data Handling Ethics

7.2. Data Governance
- 7.2.1. Classification. Access Control
- 7.2.2. Data Processing Regulation
- 7.2.3. Data Governance. Value

7.3. Data Governance. Tools
- 7.3.1. Lineage
- 7.3.2. Metadata
- 7.3.3. Data Catalog. Business Glossary

7.4. User and Processes in Data Governance
- 7.4.1. Users
  - 7.4.1.1. Roles and Responsibilities
- 7.4.2. Processes
  - 7.4.2.1. Data Enrichment

7.5. Data Life Cycle in the Enterprise
- 7.5.1. Data Creation
- 7.5.2. Data Processing
- 7.5.3. Data Storage
- 7.5.4. Data Use
- 7.5.5. Data Destruction

7.6. Data Quality
- 7.6.1. Quality in Data Governance
- 7.6.2. Data Quality in Analytics
- 7.6.3. Data Quality Techniques

7.7. Data Governance in Transit
- 7.7.1. Data Governance in Transit
  - 7.7.1.1. Lineage
- 7.7.2. The Forth Dimension

7.8. Data Protection
- 7.8.1. Access Levels
- 7.8.2. Classification
- 7.8.3. Compliance. Standards

7.9. Data Governance Monitoring and Measurement
- 7.9.1. Data Governance Monitoring and Measurement
- 7.9.2. Lineage Monitoring
- 7.9.3. Data Quality Monitoring

7.10. Data Governance Tools
- 7.10.1. Talend
- 7.10.2. Collibra
- 7.10.3. Computing

Module 8. Real-Time Cloud Programming. *Streaming*

8.1. Processing and Structuring of Streaming Information
- 8.1.1. Data Collection, Structuring, Processing, Analysis, and Interpretation Process
- 8.1.2. Streaming Data Processing Techniques
- 8.1.3. Streaming Processing
- 8.1.4. Streaming Processing Use Cases

8.2. Statistics for Understanding Streaming Data Flows
- 8.2.1. Descriptive Statistics
- 8.2.2. Probability Calculation
- 8.2.3. Inference

8.3. Programmng with Python
- 8.3.1. Typology, Conditionals, Functions and Loops
- 8.3.2. Numpy, Matplotlib, Dataframes, Csv Files and Json Formats
- 8.3.3. Sequences: Lists, Loops, Files and Dictionaries
- 8.3.4. Mutability, Exceptions and Higher-Order Functions

8.4. R Programming
- 8.4.1. R Programming
- 8.4.2. Vector and Factors
- 8.4.3. Matrix and Array
- 8.4.4. Lists and Data Frame
- 8.4.5. Functions

8.5. SQL Database for Streaming Data Processing
- 8.5.1. SQL Databases
- 8.5.2. Entity-Relationship Model
- 8.5.3. Relational Model
- 8.5.4. SQL

8.6. Non-SQL Database for Streaming Data Processing
- 8.6.1. Non-SQL Databases
- 8.6.2. MongoDB
- 8.6.3. MongoDB Architecture
- 8.6.4. CRUD Operations
- 8.6.5. Find, Projections, Index Aggregation and Cursors
- 8.6.6. Data Model

8.7. Data Mining and Predictive Modeling
- 8.7.1. Multivariate Analysis
- 8.7.2. Dimension Reduction Techniques
- 8.7.3. Cluster Analysis
- 8.7.4. Series

8.8. Machine Learning for Streaming Data Processing
- 8.8.1. Machine Learning and Advanced Predictive Modeling
- 8.8.2. Neural Networks
- 8.8.3. Deep Learning
- 8.8.4. Bagging and Random Forest
- 8.8.5. Gradient Boosting
- 8.8.6. SVM
- 8.8.7. Assembly Methods

8.9. Streaming Data Processing Technologies
- 8.9.1. Spark Streaming
- 8.9.2. Kafka Streaming
- 8.9.3. Flink Streaming

8.10. Apache Spark Streaming
- 8.10.1. Apache Spark Streaming
- 8.10.2. Spark Components
- 8.10.3. Spark Architecture
- 8.10.4. RDD
- 8.10.5. SPARK SQL
- 8.10.6. Jobs, Stages and Tasks

Module 9. Cloud Integration with Web Services. Technologies and Protocols

9.1. Web Standards and Protocols
- 9.1.1. Web and Web 2.0
- 9.1.2. Client-Server Architecture
- 9.1.3. Communication Protocols and Standards

9.2. Web Services
- 9.2.1. Web Services
- 9.2.2. Communication Layers and Mechanisms
- 9.2.3. Service Architectures

9.3. Service Oriented Architectures
- 9.3.1. Service Oriented Architecture (SOA)
- 9.3.2. Web Service Design
- 9.3.3. SOAP and REST

9.4. SOAP. Service Oriented Architecture
- 9.4.1. Structure and Message Passing
- 9.4.2. Web Service Description Language (WSDL)
- 9.4.3. Client Implementation and SOAP Servers

9.5. REST Architecture
- 9.5.1. REST Architectures and RESTful Web Services
- 9.5.2. HTTP Verbs: Semantics and Purposes
- 9.5.3. Swagger
- 9.5.4. Client Implementation and REST Servers

9.6. Microservices-Based Architectures
- 9.6.1. Monolithic Architectural Approach vs. Use of Microservices
- 9.6.2. Microservices-Based Architectures
- 9.6.3. Communication Flows with the Use of Microservices

9.7. Invoking APIs from the Client Side
- 9.7.1. Types of Web Clients
- 9.7.2. Development Tools for Web Services Processing
- 9.7.3. Cross-Origin Resources (CORS)

9.8. API Invocation Security
- 9.8.1. Web Services Security
- 9.8.2. Authentication and Authorization
- 9.8.3. Authentication Methods Based on the Degree of Security

9.9. Cloud Provider Application Integration
- 9.9.1. Cloud Computing Suppliers
- 9.9.2. Platform Services
- 9.9.3. Services Oriented to the Implementation/Consumption of Web Services

9.10. Implementation of Bots and Wizards
- 9.10.1. Use of Bots
- 9.10.2. Use of the Web Service in Bots
- 9.10.3. Implementation of Chatbots and Web Assistants

Module 10. Cloud Programming. Project Management and Product Verification

10.1. Waterfall Methodologies
- 10.1.1. Classification of Methodologies
- 10.1.2. Waterfall Model. Waterfall
- 10.1.3. Strength and Weakness
- 10.1.4. Model Comparison. Waterfall vs. Agile

10.2. Agile Methodology
- 10.2.1. Agile Methodology
- 10.2.2. The Agile Manifesto
- 10.2.3. Use of Agile

10.3. Scrum Methodology
- 10.3.1. Scrum Methodology
  - 10.3.1.1. Use of Scrum
- 10.3.2. Scrum Events
- 10.3.3. Scrum Artifacts
- 10.3.4. Scrum Guide

10.4. Agile Inception Desk
- 10.4.1. Agile Inception Desk
- 10.4.2. Inception Desk Phases

10.5. Impact Mapping Technique
- 10.5.1. Impact Mapping
- 10.5.2. Use of Impact Mapping
- 10.5.3. Impact Mapping Structure

10.6. User Stories
- 10.6.1. User Stories
- 10.6.2. Writing User Stories
- 10.6.3. User Story Hierarchy
- 10.6.4. Use Story Mapping

10.7. Test Qa Manual
- 10.7.1. Testing Manual
- 10.7.2. Validation and Verification. Differences
- 10.7.3. Manual Tests. Typology
- 10.7.4. UAT. User Acceptance Testing
- 10.7.5. UAT and Alpha & Beta Testing
- 10.7.6. Software Quality

10.8. Automatic Tests
- 10.8.1. Automatic Tests
- 10.8.2. Manual Tests vs Automatic
- 10.8.3. The Impact of the Automatic Test
- 10.8.4. The Result of Applying Automation
- 10.8.5. The Quality Wheel

10.9. Functional and Non-Functional Testing
- 10.9.1. Functional and Non-Functional Testing
- 10.9.2. Functional Tests
  - 10.9.2.1. Unit Tests
  - 10.9.2.2. Integration Tests
  - 10.9.2.3. Regression Testing
  - 10.9.2.4. Smoke Tests
  - 10.9.2.5. Mono Tests
  - 10.9.2.6. Sanitation Tests
- 10.9.3. Non-Functional Tests
  - 10.9.3.1. Load Testing
  - 10.9.3.2. Performance Testing
  - 10.9.3.3. Security Tests
  - 10.9.3.4. Configuration Tests
  - 10.9.3.5. Stress Tests

10.10. Verification Methods and Tools
- 10.10.1. Heat Map
- 10.10.2. Eye Tracking
- 10.10.3. Scroll Maps
- 10.10.4. Movement Maps
- 10.10.5. Confetti Maps
- 10.10.6. Test A/B
- 10.10.7. Blue & Green Deployment Method
- 10.10.8. Canary Release Method
- 10.10.9. Tool Selection
- 10.10.10. Analytical Tools

Module 11. Transformation of IT Infrastructures. Cloud Computing

11.1. Cloud Computing. Cloud Computing Adoption
- 11.1.1. Computing
- 11.1.2. Cloud Computing Adoption
- 11.1.3. Types of Cloud Computing

11.2. Cloud Computing Adoption. Adoption Factors
- 11.2.1. Adoption Factors of Cloud Infrastructures
- 11.2.2. Uses and Services
- 11.2.3. Evolution

11.3. Cloud Computing Infrastructures
- 11.3.1. Cloud Computing Infrastructures
- 11.3.2. Types of Infrastructures (IaaS, PaaS, SaaS)
- 11.3.3. Types of Implementation (Private, Public, Hybrid)
- 11.3.4. Elements (Hardware, Storage, Network)

11.4. Cloud Computing Infrastructure: Operation
- 11.4.1. Virtualization
- 11.4.2. Automation
- 11.4.3. Management

11.5. Cloud Computing Ecosystem
- 11.5.1. Observability and Analysis
- 11.5.2. Procurement
- 11.5.3. Orchestration and Management
- 11.5.4. Cloud Platforms

11.6. Services Management in Cloud Infrastructures
- 11.6.1. Service Orientation
- 11.6.2. Standard and Ecosystem
- 11.6.3. Types of Services

11.7. Cloud Infrastructure Management Automation
- 11.7.1. Ecosystem
- 11.7.2. DevOps Culture
- 11.7.3. Infrastructure as Code (Terraform, Ansible, Github, Jenkins)

11.8. Security in Cloud Infrastructures
- 11.8.1. Ecosystem
- 11.8.2. DevSecOps Culture
- 11.8.3. Tools

11.9. Preparation of the Cloud Infrastructure Management Environment
- 11.9.1. Tools
- 11.9.2. Preparation of the Environment
- 11.9.3. First Steps

11.10. Cloud Infrastructures. Future and Evolution
- 11.10.1. Cloud Infrastructures. Challenges
- 11.10.2. Evolution of Cloud Infrastructures
- 11.10.3. Challenges in Security and Compliance

Module 12. Infrastructure as a Service (IaaS)

12.1. Cloud Computing Abstraction Layers and Their Management
- 12.1.1. The Abstraction. Core Concepts
- 12.1.2. Services Models
- 12.1.3. Management of Cloud Services. Benefits

12.2. Construction of Architecture. Core Decisions
- 12.2.1. HDDC and SDDC. Hypercompetition
- 12.2.2. Market
- 12.2.3. Working Model and Professional Profiles Changes
  - 12.2.3.1. Figure of the Cloudbroker

12.3. Digital Transformation and Cloud Infrastructures
- 12.3.1. Cloud Work Demo
- 12.3.2. The Role of the Navigator as Tool
- 12.3.3. New Device Concept
- 12.3.4. Advanced Architectures and the Role of the CIO

12.4. Agile Management in Cloud Infrastructures
- 12.4.1. Life Cycle of New Services and Competitiveness
- 12.4.2. Development Methodology of Apps and Microservices
- 12.4.3. Relationship between Development and IT Transactions
  - 12.4.3.1. Use of Cloud as Support

12.5. Cloud Computing Resources I. Identity, Storage and Domain Management
- 12.5.1. Identity and Access Management
- 12.5.2. Secure Data Storage, Flexible File and Database Storage
- 12.5.3. Domain Management

12.6. Cloud Computing Resources II. Network, Infrastructure and Monitoring Resources
- 12.6.1. Private Virtual Network
- 12.6.2. Cloud Computing Capabilities
- 12.6.3. Monitoring

12.7. Cloud Computing Resources III. Automation
- 12.7.1. Serverless Code Execution
- 12.7.2. Message Queuing
- 12.7.3. Workflow Services

12.8. Cloud Computing Resources IV. Other Services
- 12.8.1. Notification Queuing
- 12.8.2. Streaming Services and Transcoding Technologies
- 12.8.3. Turnkey Solution to Publish APIs for External and Internal Consumers

12.9. Cloud Computing Resources vs. Data-Centric Services
- 12.9.1. Data Analytics Platforms and Automation of IT Manual Task
- 12.9.2. Data Migration
- 12.9.3. Hybrid Cloud

12.10. LaaS Services Practice Lab
- 12.10.1. Exercise 1
- 12.10.2. Exercise 2
- 12.10.3. Exercise 3

Module 13. Storage and Databases in Cloud Infrastructures

13.1. Cloud Storage Infrastructure
- 13.1.1. Cloud Storage. Fundamentals
- 13.1.2. Cloud Storage Advantages
- 13.1.3. Operation

13.2. Types of Cloud Storage
- 13.2.1. SaaS
- 13.2.2. IaaS

13.3. Cloud Storage Use Cases
- 13.3.1. Data Analysis
- 13.3.2. Backup and Archiving
- 13.3.3. Software Development

13.4. Cloud Storage Security
- 13.4.1. Security in the Transport Layer
- 13.4.2. Storage Security
- 13.4.3. Storage Encryption

13.5. Cloud Storage Analysis
- 13.5.1. Profitability
- 13.5.2. Agility and Scalability
- 13.5.3. Administration

13.6. Infrastructure of Cloud Databases
- 13.6.1. Fundamentals of Databases
- 13.6.2. Analysis of Databases
- 13.6.3. Cloud Database Classification

13.7. Types of Cloud Database Infrastructure
- 13.7.1. Relational Databases
- 13.7.2. Non-SQL Databases
- 13.7.3. Datawarehouse Databases

13.8. Cloud Database Infrastructure Use Cases
- 13.8.1. Data Storage
- 13.8.2. Data Analysis. IA .ML
- 13.8.3. Big Data

13.9. Security/Safety of Infrastructure of Cloud Databases
- 13.9.1. Access Control. ACL, IAM, SG
- 13.9.2. Data Encryption
- 13.9.3. Audits

13.10. Migration and Backup of Cloud Database Infrastructure
- 13.10.1. Database Backups
- 13.10.2. Database Migration
- 13.10.3. Database Optimization

Module 14. Network DevOps and Network Architectures in Cloud Infrastructures

14.1. Network DevOps (NetOps)
- 14.1.1. Network DevOps (NetOps)
- 14.1.2. NetOps Methodology
- 14.1.3. NetOps Benefits

14.2. Fundamentals of NetOps
- 14.2.1. Fundamentals of Networking
- 14.2.2. OSI TCP/IP Model, CIDR and Subnetting
- 14.2.3. Main Protocols
- 14.2.4. HTTP Responses

14.3. Tools and Software for Network DevOps
- 14.3.1. Network Layer Tools
- 14.3.2. Application Layer Tools
- 14.3.3. DNS Tools

14.4. Networking in Cloud Environments: Internal Network Services
- 14.4.1. Virtual Networks
- 14.4.2. Subnetworks
- 14.4.3. Routing Tables
- 14.4.4. Availability Zones

14.5. Networking in Cloud Environments: Border Network Services
- 14.5.1. Internet Gateway
- 14.5.2. NAT Gateway
- 14.5.3. Load Balancing

14.6. Networking in Cloud Environments: DNS
- 14.6.1. DNS Fundamentals
- 14.6.2. DNS Cloud Services
- 14.6.3. HA / LB via DNS

14.7. Hybrid / Multitenant Network Connectivity
- 14.7.1. VPN Site to Site
- 14.7.2. VPC Peering
- 14.7.3. Transit Gateway/VPC Peering

14.8. Content Delivery Network Services
- 14.8.1. Content Delivery Services
- 14.8.2. AWS CLoudFront
- 14.8.3. Other CDNs

14.9. Security in Cloud Networks
- 14.9.1. Security Principles in Networks
- 14.9.2. Protection in Layer 3 and 4
- 14.9.3. Protection in Layer 7

14.10. Network Monitoring and Auditing
- 14.10.1. Monitoring and Audit
- 14.10.2. Flow Logs
- 14.10.3. Monitorng Service: CloudWatch

Module 15. Government in Cloud Infrastructures

15.1. Compliance in Cloud Environments
- 15.1.1. Shared Responsibilities Model
- 15.1.2. Laws, Regulations and Contracts
- 15.1.3. Audits

15.2. CISO in Cloud Government
- 15.2.1. Organizational Framework. Figures of the CISO in the Organization
- 15.2.2. Relationship of CISO with the Data Processing Areas
- 15.2.3. GRC Strategy against Shadow IT

15.3. Cloud Governance Standard
- 15.3.1. Previous Assessments
- 15.3.2. Cloud Service Provider Compliance
- 15.3.3. Personnel Obligations

15.4. Privacy in Cloud Environments
- 15.4.1. Consumer and User Relationship with Privacy
- 15.4.2. Privacy in the Americas, Asia Pacific, Middle East and Africa
- 15.4.3. Privacy in the European Context

15.5. Approvals and Regulatory Frameworks in Cloud Environments
- 15.5.1. Approvals and Frameworks in the Americas
- 15.5.2. Approvals and Frameworks in Asia
- 15.5.3. Approvals and Frameworks in Europe

15.6. Certifications and Accreditations in Cloud Environments
- 15.6.1. Americas and Asia Pacific
- 15.6.2. Europe, Middle East and Africa
- 15.6.3. Global

15.7. Laws / Regulations in Cloud Environments
- 15.7.1. CLOUD Act, HIPAA, IRS 1075
- 15.7.2. ITAR, SEC Rule 17a-4(f), VPAT/Section
- 15.7.3. European Regulations

15.8. Cost Control and Billing in Cloud Governance
- 15.8.1. Pay-Per-Use Models. Costs
- 15.8.2. Figure of the CFO and FinOps Profiles
- 15.8.3. Expense Control

15.9. Tools in Cloud Governance
- 15.9.1. OvalEdge
- 15.9.2. ManageEngine ADAudit Plus
- 15.9.3. Erwin Data Governance

15.10. Corporate Governance
- 15.10.1. Code of Conduct
- 15.10.2. Whistleblower Channel
- 15.10.3. Due Diligence

Module 16. Cybersecurity in Cloud Infrastructures

16.1. Risk in Cloud Environments
- 16.1.1. Cybersecurity Strategies
- 16.1.2. Risk-Based Approach
- 16.1.3. Risk Categorization in Cloud Environments

16.2. Security Frameworks in Cloud Environments
- 16.2.1. Frameworks and Cybersecurity Standards
- 16.2.2. Technical Cybersecurity Frameworls
- 16.2.3. Organization Cybersecurity Frameworls

16.3. Threat Modeling in Cloud Environments
- 16.3.1. Threat Modeling Process
- 16.3.2. Threat Modeling Phases
- 16.3.3. STRIDE

16.4. Cybersecurity Data Science at Code Level
- 16.4.1. Tool Classification
- 16.4.2. Integrations
- 16.4.3. Examples of Use

16.5. Cybersecurity Control Integration in Cloud Environments
- 16.5.1. Security in Processes
- 16.5.2. Security Controls in the Different Phases
- 16.5.3. Examples of Integrations

16.6. ZAP Proxy Tool
- 16.6.1. ZAP Proxy
- 16.6.2. ZAP Proxy Features
- 16.6.3. ZAP Proxy Automation

16.7. Automated Vulnerability Scanning in Cloud Environments
- 16.7.1. Persistent and Automated Vulnerability Analysis
- 16.7.2. OpenVAS
- 16.7.3. Vulnerability Analysis in Cloud Environments

16.8. Firewalls in Cloud Environments
- 16.8.1. Types of Firewalls
- 16.8.2. Importance of Firewalls
- 16.8.3. OnPremise Firewalls and Cloud Firewalls

16.9. Security Transport Layer in Cloud Environments
- 16.9.1. SSL/TLS and Certificates
- 16.9.2. SLL Audits
- 16.9.3. The Automation of Certificates

16.10. SIEM in Cloud Environments
- 16.10.1. SIEM as a Security Core
- 16.10.2. Cyberintelligence
- 16.10.3. Examples of SIEM Systems

Module 17. Service Adoption in Cloud Infrastructures

17.1. Server Settings in the Cloud
- 17.1.1. Hardware Configuration
- 17.1.2. Software Configuration
- 17.1.3. Network and Security Setting

17.2. Cloud Service Setting
- 17.2.1. Assigning Permissions to My Cloud Server
- 17.2.2. Setting of Security Rules
- 17.2.3. Cloud Service Deployment

17.3. Administration of a Cloud Server
- 17.3.1. Storage Unit Management
- 17.3.2. Network Management
- 17.3.3. Security Copy Management

7.4. Persistence
- 17.4.1. Decoupling Our Cloud Service
- 17.4.2. Settings of Persistence Service
- 17.4.3. Integration of the Database with Our Cloud Service

17.5. Autoscaling
- 17.5.1. Image Generation of Our Server
- 17.5.2. Creation of Marketing Groups
- 17.5.3. Definition of Automatic Scaling Rules

17.6. Balancing Services
- 17.6.1. Balancing Services
- 17.6.2. Generation of a Load Balancer
- 17.6.3. Connecting the Load Balancer to Our Cloud Service

17.7. Content Delivery Services
- 17.7.1. Content Delivery Services
- 17.7.2. Content Delivery Service Settings
- 17.7.3. CDN Integration with Our Cloud Service

17.8. Configuration Parameters and Secrets
- 17.8.1. Configuration Parameter Management Services
- 17.8.2. Secret Management Services
- 17.8.3. Integrating Configuration and Secret Services with Our Cloud Service

17.9. Queue Management Services
- 17.9.1. Decoupling our Application
- 17.9.2. Queuing Service Configuration
- 17.9.3. Integrating the Queue with Our Cloud Service

17.10. Notification Services
- 17.10.1. Cloud Notification Services
- 17.10.2. Notification Service Configuration
- 17.10.3. Adding Notifications to Our Cloud Service

Module 18. Virtual Desktop Infrastructure (VDI)

18.1. Virtual Desktop Infrastructure (VDI)
- 18.1.1. VDI. Operation
- 18.1.2. Advantages and Disadvantages of VDI
- 18.1.3. VDI Common Usage Scenarios

18.2. Cloud and Hybrid VDI Architectures
- 18.2.1. VDI Hybrid Architectures
- 18.2.2. Cloud VDI Implementation
- 18.2.3. Cloud VDI Management

18.3. Designing and Planning a VDI Implementation
- 18.3.1. Selection of Hardware and Software
- 18.3.2. Network and Storage Infrastructure Design
- 18.3.3. Deployment and Scaling Planning

18.4. VDI Management
- 18.4.1. VDI Installation and Configuration
- 18.4.2. Desktop and Application Image Management
- 18.4.3. Security and Compliance Management
- 18.4.4. Availability and Performance Management

18.5. Integration of Applications and Peripherals in the VDI
- 18.5.1. Enterprise Application Integration
- 18.5.2. Integration of Peripherals and Devices
- 18.5.3. VDI Integration with Videoconferencing and Instant Messaging Solutions
- 18.5.4. VDI Integration with Online Collaboration Platforms

18.6. VDI Optimization and Improvement
- 18.6.1. Service Quality and Performance Optimization
- 18.6.2. Improvement of the Efficiency and Scalability
- 18.6.3. Improvement of Final User Experience

18.7. VDI Lifecycle Management
- 18.7.1. Hardware and Software Lifecycle Management
- 18.7.2. Infrastructure Migration and Replacement Management
- 18.7.3. Support and Maintenance Management

18.8. Safety in VDI: Infrastructure and User Data Protection
- 18.8.1. VDI Network Security
- 18.8.2. Protection of Data Stored in the VDI
- 18.8.3. User Security. Privacy Protection

18.9. VDI Advanced Usage Cases
- 18.9.1. Using VDI for Secure Remote Access
- 18.9.2. Using VDI for Specialized Application Virtualization
- 18.9.3. Using VDI for Mobile Devices Management

18.10. Trends and Future of VDI
- 18.10.1. New Technologies and Trends in the Field of VDI
- 18.10.2. Predictions on the Future of VDI
- 18.10.3. Future Challenges and Opportunities for VD

Module 19. Infrastructure as Code (IAC) Operation

19.1. Infrastructure as Code (IAC)
- 19.1.1. IaC, Infrastructure as Code
- 19.1.2. Infrastructure Management. Evolution
- 19.1.3. Advantages of IaC

19.2. Strategies for IAC Definition
- 19.2.1. Requirements Analysis
- 19.2.2. Imperative Definition
- 19.2.3. Declarative Definition

19.3. IAC Tools
- 19.3.1. IAC Objectives
- 19.3.2. Proprietary Tools
- 19.3.3. Third-Party Tools

19.4. Evolution of Infrastructure as Code
- 19.4.1. IaC in Kubernetes
- 19.4.2. Platform as Code
- 19.4.3. Compliance as Code

19.5. IAC in Devops
- 19.5.1. Flexible Infrastructures
- 19.5.2. Continuous Integration
- 19.5.3. Pipelines as Code

19.6. IAC - VPC - Proprietary Tools
- 19.6.1. Design of a VPC
- 19.6.2. Deployment of the Solution
- 19.6.3. Validation and Analysis

19.7. IAC - Serverless - Proprietary Tools
- 19.7.1. Design of a Serverless Solution
- 19.7.2. Deployment of the Solution
- 19.7.3. Validation and Analysis

19.8. IAC-VPC- Third-Party Tools
- 19.8.1. Design of a VPC
- 19.8.2. Deployment of the Solution
- 19.8.3. Validation and Analysis

19.9. IAC - Serverless- Third-Party Tools
- 19.9.1. Design of a Serverless Solution
- 19.9.2. Deployment of the Solution
- 19.9.3. Validation and Analysis

19.10. IAC - Comparison. Future Trends
- 19.10.1. Valuation of Proprietary Solutions
- 19.10.2. Valuation of Third-Party Solutions
- 19.10.3. Future lines

Module 20. Monitoring and Backup of Cloud Infrastructures

20.1. Monitoring and Backup of Cloud Infrastructures
- 20.1.1. Benefits of Backup in Clouds
- 20.1.2. Types of Backup
- 20.1.3. Benefits of Monitoring in the Cloud
- 20.1.4. Types of Monitoring

20.2. Availability and Security of Cloud Infrastructure Systems
- 20.2.1. Main Factors
- 20.2.2. The Most Demanded Uses and Services
- 20.2.3. Evolution

20.3. Types of Backup Services in Cloud Infrastructures
- 20.3.1. Total Backup
- 20.3.2. Incremental Backup
- 20.3.3. Differential Backup
- 20.3.4. Other Types of Backup

20.4. Strategy, Planning and Management of Backups in Cloud Infrastructures
- 20.4.1. Establishment of Objectives and Scope
- 20.4.2. Types of Backup Copies
- 20.4.3. Good Practices

20.5. Continuity Plan in Cloud Infrastructures
- 20.5.1. Strategy Continuity Plan
- 20.5.2. Types of Plans
- 20.5.3. Creating a Continuity Plan

20.6. Monitoring Types in Cloud Infrastructures
- 20.6.1. Performance Monitoring
- 20.6.2. Availability Monitoring
- 20.6.3. Event Monitoring
- 20.6.4. Log Monitoring
- 20.6.5. Network Traffic Monitoring

20.7. Monitoring Strategy, Tools and Techniques in Cloud Infrastructures
- 20.7.1. How to Set Objectives and Scope
- 20.7.2. Types of Monitoring
- 20.7.3. Good Practices

20.8. Continuous Improvement in Cloud Infrastructures
- 20.8.1. Continuous Improvement in the Cloud
- 20.8.2. Key Performance Metrics (KPIs) in the Cloud
- 20.8.3. Designing a Continuous Improvement Plan in the Cloud

20.9. Case Studies in Cloud Infrastructures
- 20.9.1. Backup Case Study
- 20.9.2. Study Case Monitoring
- 20.9.3. Learnings and Good Practices

20.10. Case Studies in Cloud Infrastructures
- 20.10.1. Laboratory 1
- 20.10.2. Laboratory 2
- 20.10.3. Laboratory 3

This program will enable you to become a professional ready to lead innovative projects in the industry"

04

Teaching Objectives

This TECH Cloud Computing program has been designed with the main objective of providing technology professionals with advanced tools that they can apply in their daily practice, developing key skills to lead high-impact technology projects. Undoubtedly, a unique opportunity that will mark a before and after in your career, enhancing your chances of growth, employability and leadership in a constantly evolving sector.

Transform your professional experience with an absolutely innovative program that will mark a before and after in your career"

General Objectives

- Develop advanced skills in the management and implementation of Cloud Computing solutions, applying methodologies such as DevOps and DevSecOps to optimize processes and improve business efficiency
- Strengthen skills to analyze, plan and execute technology projects, using virtualization techniques, container orchestration and infrastructure management as code
- Acquire specialized knowledge about the main Cloud Computing providers and services, enabling the appropriate selection and integration according to the specific needs of each organization
- Apply advanced cybersecurity, governance and monitoring strategies in cloud networks and infrastructures, ensuring operational continuity and protection of corporate data

Specific Objectives

Module 1. Cloud Programming. Azure, AWS and Google Cloud Services

- Develop applications using the storage, compute and database services of these platforms
- Compare the service offerings and tools of each Cloud platform and select the most suitable one for a given project

Module 2. Architecture Programming in Cloud Computing

- Understand the principles of designing and programming scalable cloud architectures
- Apply architectural patterns suitable for Cloud solutions, such as microservices and serverless architectures

Module 3. Cloud Azure Storage

- Configure and manage scalable and secure storage in Azure
- Apply best practices for managing data in the cloud, including optimizing performance and security in storage systems

Module 4. Cloud Environments. Security

- Explore the principles of security in Cloud environments, including data protection and identity management
- Apply security measures such as encryption, multi-factor authentication and access control to protect cloud resources

Module 5. Container Orchestration: Kubernetes and Docker

- Develop skills to deploy, manage, and scale container-based applications in cloud environments
- Configure and manage Kubernetes clusters to automate the deployment and scaling of applications in the cloud

Module 6. Cloud-Native Application Programming

- Develop Cloud Native applications using tools and services provided by platforms such as Azure, AWS and Google Cloud
- Apply agile development and operations practices in the lifecycle of native cloud applications

Module 7. Cloud Programming. Data Governance

- Apply data governance principles to ensure data quality, privacy, and regulatory compliance in the cloud
- Develop data management and access control strategies to protect sensitive data on Cloud platforms

Module 8. Real-Time Cloud Programming. Streaming

- Develop applications that handle real-time data streams using services such as Amazon Kinesis, Google Pub/Sub and Azure Stream Analytics
- Implement solutions for real-time data processing and analytics in Cloud applications

Module 9. Cloud Integration with Web Services. Technologies and Protocols

- Develop skills to integrate web-based applications with cloud services using industry-standard technologies
- Implement efficient integration solutions between on-premise systems and Cloud services

Module 10. Cloud Programming. Project Management and Product Verification

- Apply good project planning, execution and control practices to ensure the successful delivery of cloud solutions
- Develop skills in the verification of Cloud products, ensuring that they meet quality and performance requirements

Module 11. Transformation of IT Infrastructures. Cloud Computing

- Understand the advantages of migrating to the cloud in terms of flexibility, scalability and reduction of operating costs
- Implement digital transformation strategies in companies through the adoption of cloud solutions

Module 12. Infrastructure as a Service (IaaS)

- Understand the Infrastructure as a Service (IaaS) model and its benefits for enterprises
- Implement IaaS-based solutions using Cloud service providers such as Azure, AWS and Google Cloud

Module 13. Storage and Databases in Cloud Infrastructures

- Configure and manage databases on Cloud platforms, using services such as Amazon RDS, Azure SQL Database and Google Cloud Datastore
- Optimize the performance and scalability of databases in cloud environments

Module 14. Network DevOps and Network Architectures in Cloud Infrastructures

- Develop skills to design and manage network architectures in cloud environments, ensuring connectivity and security
- Implement network automation and orchestration solutions in the cloud using tools such as Terraform

Module 15. Government in Cloud Infrastructures

- Understand cloud infrastructure governance principles, including compliance with regulations and organizational policies
- Develop and implement cloud governance strategies to ensure security, compliance and optimization of resources

Module 16. Cybersecurity in Cloud Infrastructures

- Implement security measures in cloud infrastructures, such as encryption, authentication, access control and monitoring
- Develop and implement security policies to protect infrastructure and data in the cloud

Module 17. Service Adoption in Cloud Infrastructures

- Understand the benefits and challenges associated with the adoption of cloud services in an organization
- Develop strategies for the successful adoption of Cloud services, including migration and integration with existing systems

Module 18. Virtual Desktop Infrastructure (VDI)

- Configure and deploy VDI solutions to deliver virtual desktops to end users, improving security and IT governance
- Develop strategies to optimize the performance and scalability of cloud VDI infrastructures

Module 19. Infrastructure as Code (IAC) Operation

- Implement IaC solutions using tools such as Terraform and AWS CloudFormation to manage Cloud resources
- Develop skills for the creation, configuration and automatic deployment of infrastructures using IaC

Module 20. Monitoring and Backup of Cloud Infrastructures

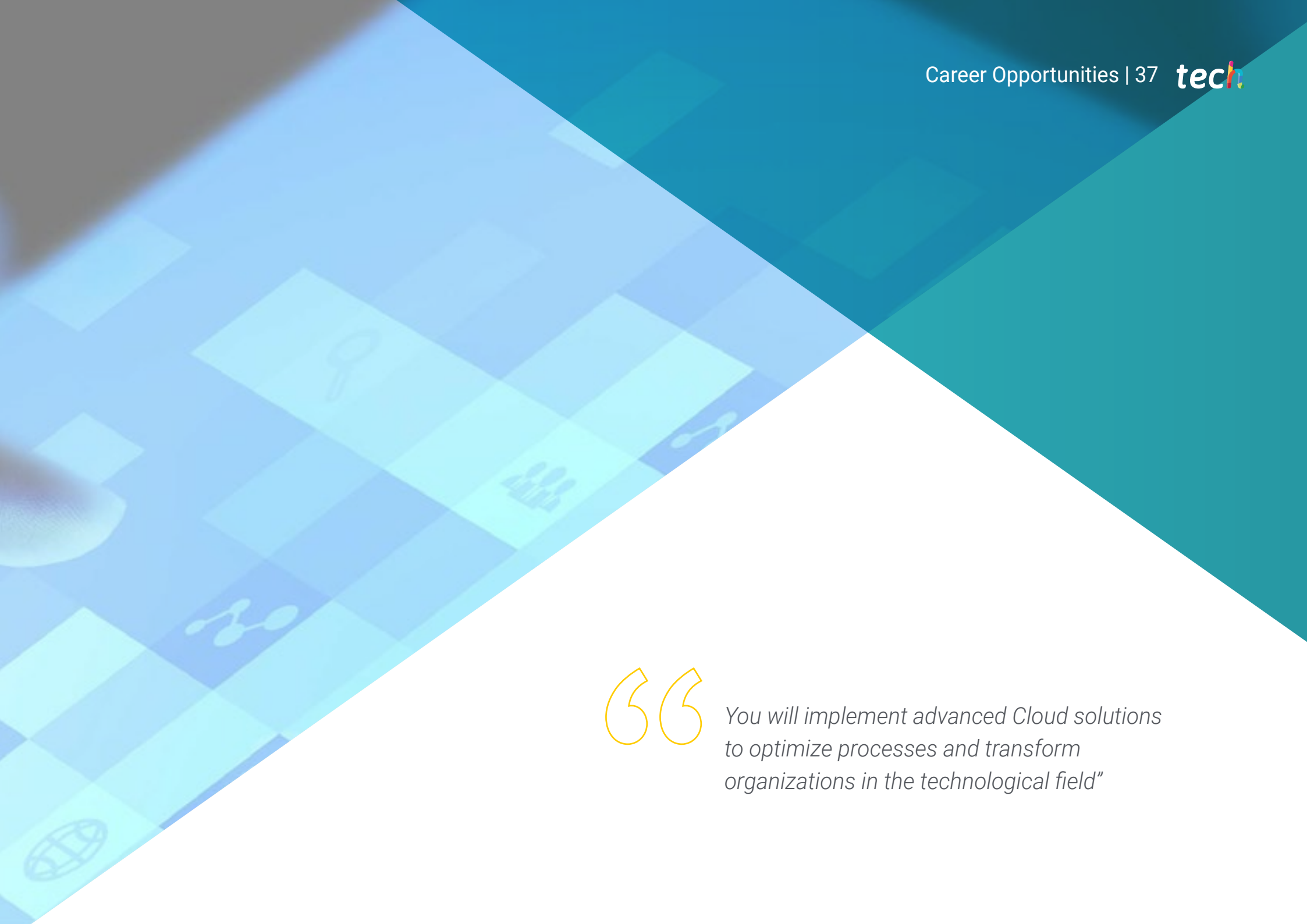
- Implement backup and recovery solutions in the cloud, ensuring business continuity
- Develop and implement monitoring and backup strategies for the optimization and protection of cloud infrastructures

This program will give you the tools you need to become a technology leader"

05

Career Opportunities

Upon completion of this program in Cloud Computing, professionals will have a solid understanding of the most advanced technological strategies for designing, implementing and managing cloud solutions. Graduates will master key areas such as programming cloud architectures, container orchestration with Kubernetes and Docker, and cybersecurity in cloud infrastructures, ensuring scalable and secure environments for various industries. In addition, you will be prepared to lead technology projects, optimize IT infrastructures and meet market challenges with an innovative and strategic approach.



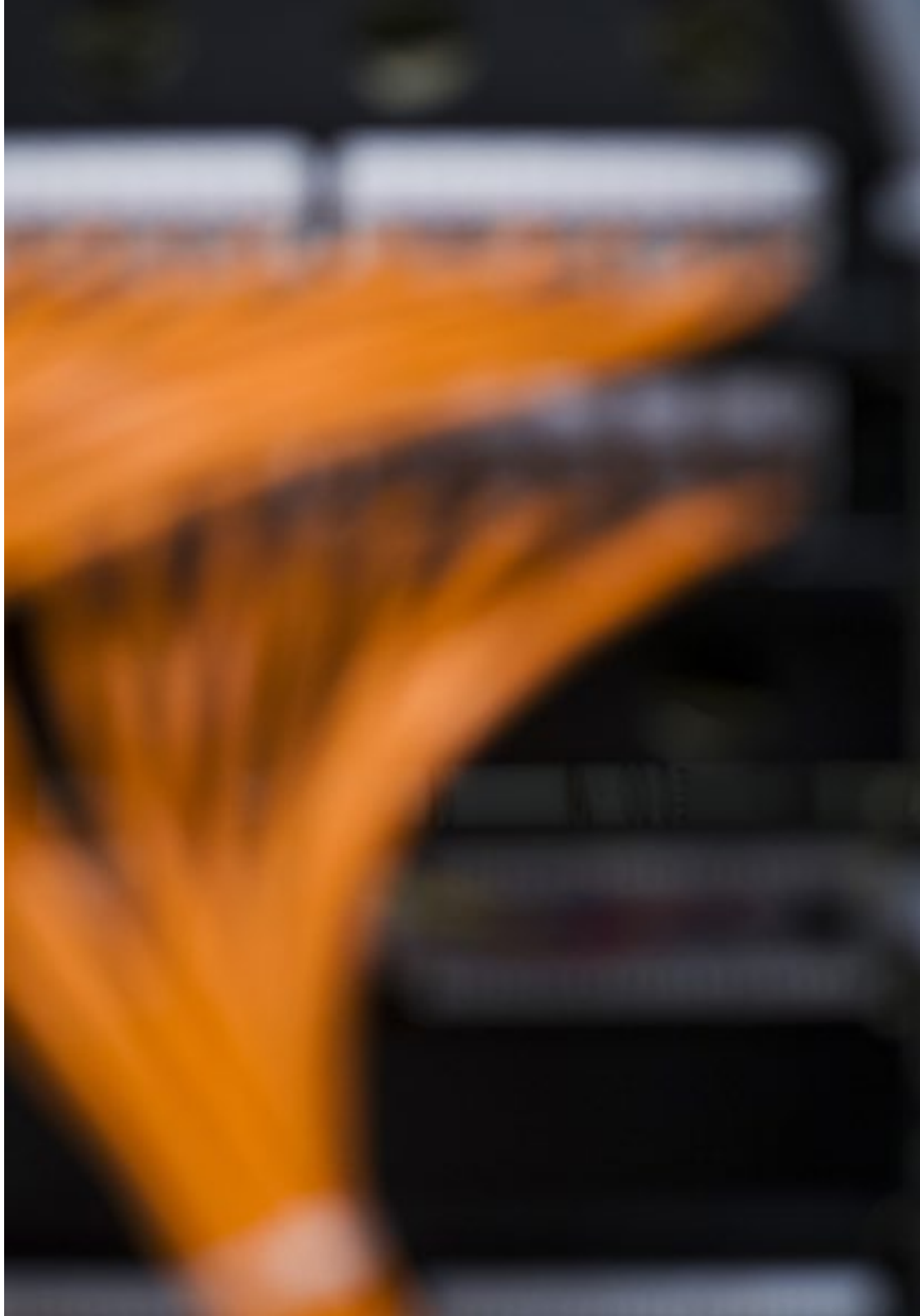
You will implement advanced Cloud solutions to optimize processes and transform organizations in the technological field"

Graduate Profile

Graduates of the Cloud Computing program will be highly qualified professionals in the design and management of advanced technological solutions in the cloud. They will possess in-depth knowledge in areas such as Cloud application programming, infrastructure management as code, data analytics and cybersecurity. You will also be prepared to lead complex technological projects, optimize business resources and ensure the operational continuity of organizations. In addition, your ability to integrate services from multiple providers, implement Cloud governance strategies and master key technologies such as AWS, Azure and Google Cloud will position you as a comprehensive expert in digital transformation.

You will combine advanced knowledge in Cloud Computing with practical skills to design, implement and manage scalable and secure solutions.

- **Technological Leadership:** Design digital transformation strategies using Cloud technologies
- **Advanced Infrastructure Management:** Implement and manage hybrid and multicloud architectures with a focus on security and efficiency
- **Resource Optimization:** Apply techniques to improve scalability and performance in Cloud environments
- **Cybersecurity:** Develop plans for data protection, monitoring and incident response in Cloud infrastructures
- **Technological Innovation:** Integrate emerging technologies such as IoT, Machine Learning and Big Data in Cloud solutions



After completing the Advanced Master's Degree, you will be able to apply your knowledge and skills in the following positions:

1. **Cloud Architect:** expert in the design, implementation and optimization of cloud infrastructures, ensuring scalable, secure and efficient environments
2. **Cloud Cybersecurity Specialist:** professional in charge of guaranteeing the protection of data, applications and services in Cloud environments through advanced security strategies
3. **Digital Transformation Consultant:** leader in technological migration and optimization processes, helping companies to adopt innovative Cloud solutions that boost their competitiveness
4. **IT Infrastructure Administrator:** specialist in the management, configuration and maintenance of Cloud platforms such as AWS, Azure and Google Cloud, ensuring their performance and operational continuity
5. **Container Orchestration Engineer:** professional who uses tools such as Kubernetes and Docker to deploy and manage applications in scalable and dynamic environments
6. **Data Governance Specialist:** in charge of designing and implementing data governance strategies in the cloud, ensuring its integrity, security and availability
7. **DevOps Leader:** responsible for integrating and automating development and operations processes, promoting efficiency and collaboration in hybrid and multicloud environments
8. **Native Cloud Application Developer:** expert in the creation and optimization of applications specifically designed for Cloud environments, leveraging advanced technologies and agile methodologies
9. **Cloud Governance Strategies Consultant:** professional dedicated to designing policies and governance frameworks that align technology and business objectives, ensuring regulatory compliance
10. **Monitoring and Backup Specialist:** in charge of implementing solutions for proactive monitoring and the creation of backup plans to ensure operational continuity in critical technology environments

06

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.

TECH will prepare you to face new challenges in uncertain environments and achieve success in your career"

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.
The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

"At TECH you will NOT have live classes (which you might not be able to attend)"

The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

> *TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"*

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.

Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.

"The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

The effectiveness of the method is justified by four fundamental achievements:

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

As such, the best educational materials, thoroughly prepared, will be available in this program:

Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is highly specific and precise.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

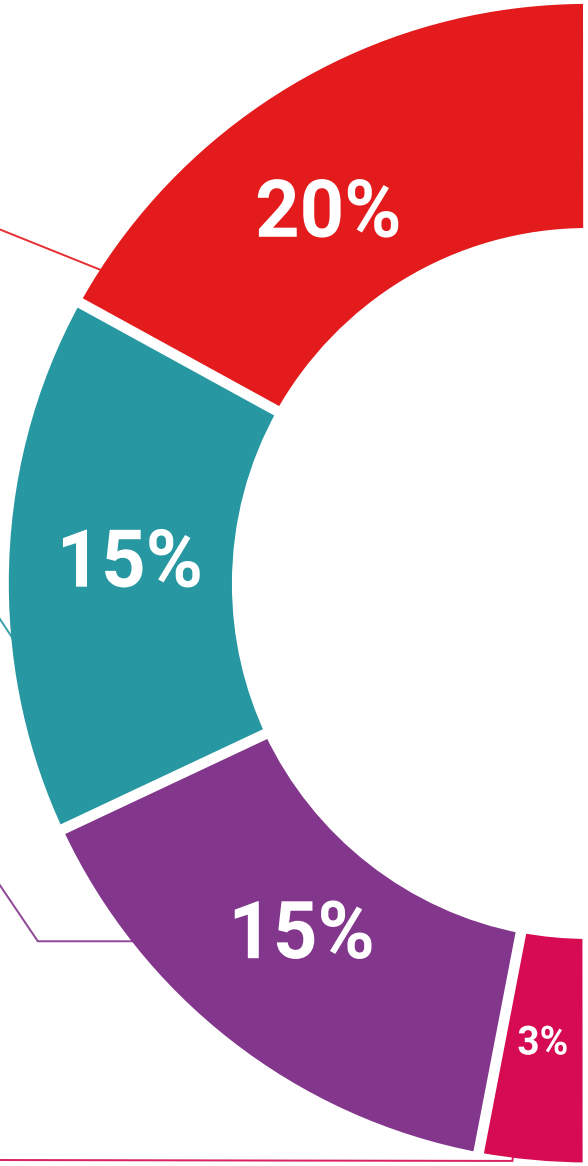
Interactive Summaries

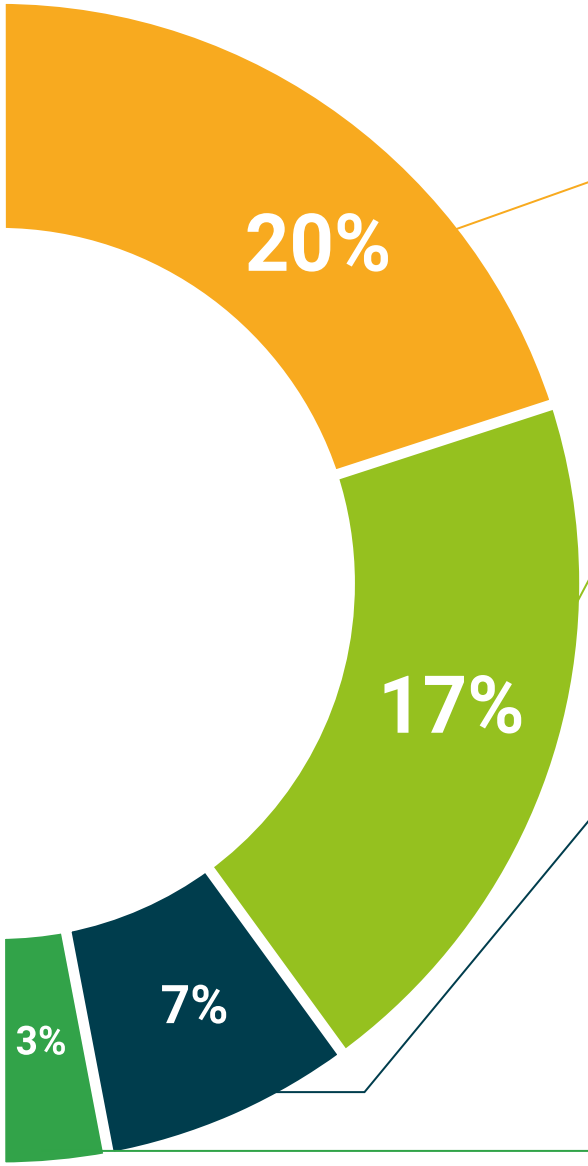
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





Case Studies

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an expert strengthens knowledge and memory, and generates confidence for future difficult decisions.

Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.

07

Teaching Staff

The teaching team of this program is composed of professionals with excellent professional experience in Computer Systems and Networks, Application Development and Cloud in Oracle. Their consolidated career in this field allows them to transmit to the students practical knowledge adapted to the needs of the market. A unique opportunity to learn from real professionals that only TECH, the largest online university in the world, can offer you.

Specialize in the transformation of IT infrastructures towards Cloud Computing with the best experts"

Management

Mr. Bressel Gutiérrez-Ambrossi, Guillermo

- Specialist in Systems Administration and Computer Networks
- Storage and SAN Network Administrator at Experis IT (BBVA)
- Network Administrator at IE Business School
- Higher Degree in Computer Systems and Network Administration at ASIR (ASIR)
- Ethical Hacking course at OpenWebinar
- Powershell course at OpenWebinar

Mr. 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. 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 from La Salle Business School
- Postgraduate degree in Information Technologies and Systems from the Catalan Institute of Technology.
- Degree in Telecommunications Engineering from the Polytechnic University of Catalonia

Mr. Bernal de la Varga, Yeray

- Big Data Solutions Architect at Orange Bank
- Big Data Architect at Bankia
- Big Data Engineer at Hewlett-Packard
- Adjunct Professor in the Master of Big Data at the University of Deusto
- Degree in Computer Science from the Polytechnic University of Madrid
- Expert in Big Data from the U-Tad University Center for Technology and Digital Art

Ms. Rodríguez Camacho, Cristina

- API consultant and developer of microservices at Inetum
- Degree in Health Engineering, with mention in Biomedical Engineering from the University of Malaga
- Master's Degree in Blockchain and Big Data from the Complutense University of Madrid
- Expert in DevOps & Cloud at UNIR

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'Reily Media Books
- Professor in postgraduate studies and Blockchain related courses
- Degree in Computer Engineering from CEU San Pablo University
- Master's Degree in Big Data Architecture
- Master's Degree in Big Data and Business Analytics

Mr. Rodríguez García, Darius

- Software Architect at NEA F3 MASTER SL
- Full-Stack Developer in NEA F3 MASTER SL
- Degree in Computer Software Engineering from the University of Oviedo
- Master's Degree in Web Engineering by the University of Oviedo
- Professor in Web Engineering software
- Course instructor at the Udemy e-learning platform

Dr. Moguel Márquez, Miguel

- Computer Engineer and Technological Advisor
- Advisor in Web Engineering, design and development of applications in the Web, Software Architectiure and new technological trends
- PhD in Information Technologies from the University of Extremadura
- Master's Degree in Computer Engineering from the University of Extremadura
- Degree in Computer Engineering from the University of Extremadura

Dr. García Sanz-Calcedo, Justo

- Engineer Specialist in Health
- Director of Engineering and Maintenance at Extremadura Health Service
- PhD Industrial Engineering from the University of Extremadura
- Industrial Engineering, University of Extremadura
- Expert in Team Management Skills and Trainer of Trainers
- Senior Management Program in Healthcare Institutions at IESE Business School

Dr. Sánchez-Barroso Moreno, Gonzalo

- Industrial and Mechanical Engineer
- Consultant for Industrial Research and Experimental Development projects
- PhD Industrial Engineering from the University of Extremadura
- Degree in Mechanical Engineering from the University of Extremadura
- Master's Degree in Industrial Engineering from the University of Extremadura
- Specialization in Innovation Project Management
- Certified Associate in Project Management (Level D) by International Project Management Association (IPMA)

Dr. González Domínguez, Jaime

- Consultant for Industrial Research and Experimental Development projects
- PhD in Modeling and Experimentation in Science and Technology
- Industrial and Mechanical Engineeri from the University of Extremadura
- Specialization in Innovation Project Management
- Certified Associate in Project Management (Level D) by the International Project Management Association (IPMA)

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 Database Administrator by MongoDB University
- Telecommunication Engineer by the University of Valladolid

Mr. Nadal Martín, Aser

- Site Reliability Engineering at TELECYL SA
- Systems Administrator at Altia Consultores SA
- 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 the University of Valladolid
- Collaborator at Boss Technical Lighting SL
- Degree 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
- Network and Systems Security Administrator at Entelgy Innotec Security
- 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 SA
- User Support Engineer at Telecyl SA
- Computer Monitor at Caño Argales Neighborhood Association
- Degree 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

08

Certificate

The Advanced Master's Degree in Cloud Computing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.

Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork"

This private qualification will allow you to obtain a **Advanced Master's Degree in Cloud Computing** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra (***official bulletin***). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

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

Title: **Advanced Master's Degree in Cloud Computing**

Modality: **online**

Duration: **2 years**

Accreditation: **120 ECTS**


tech global university

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

Advanced Master's Degree in Cloud Computing

This is a private qualification of 3,600hours of duration equivalent to 120 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
Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates


Advanced Master's Degree in Cloud Computing

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Cloud Programming. Azure, AWS and Google Cloud Services	6	CO
1º	Architecture Programming in Cloud Computing	6	CO
1º	Cloud Azure Storage	6	CO
1º	Cloud Environments. Security	6	CO
1º	Container Orchestration: Kubernetes and Docker	6	CO
1º	Cloud-Native Application Programming	6	CO
1º	Cloud Programming. Data Governance	6	CO
1º	Real-Time Cloud Programming. Streaming	6	CO
1º	Cloud Integration with Web Services. Technologies and Protocols	6	CO
1º	Cloud Programming. Project Management and Product Verification	6	CO

Year	Subject	ECTS	Type
2º	Transformation of IT Infrastructures. Cloud Computing	6	CO
2º	Infrastructure as a Service (IaaS)	6	CO
2º	Storage and Databases in Cloud Infrastructures	6	CO
2º	Network DevOps and Network Architectures in Cloud Infrastructures	6	CO
2º	Government in Cloud Infrastructures	6	CO
2º	Cybersecurity in Cloud Infrastructures	6	CO
2º	Service Adoption in Cloud Infrastructures	6	CO
2º	Virtual Desktop Infrastructure (VDI)	6	CO
2º	Infrastructure as Code (IAC) Operation	6	CO
2º	Monitoring and Backup of Cloud Infrastructures	6	CO

Dr. Pedro Navarro Illana
Dean

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*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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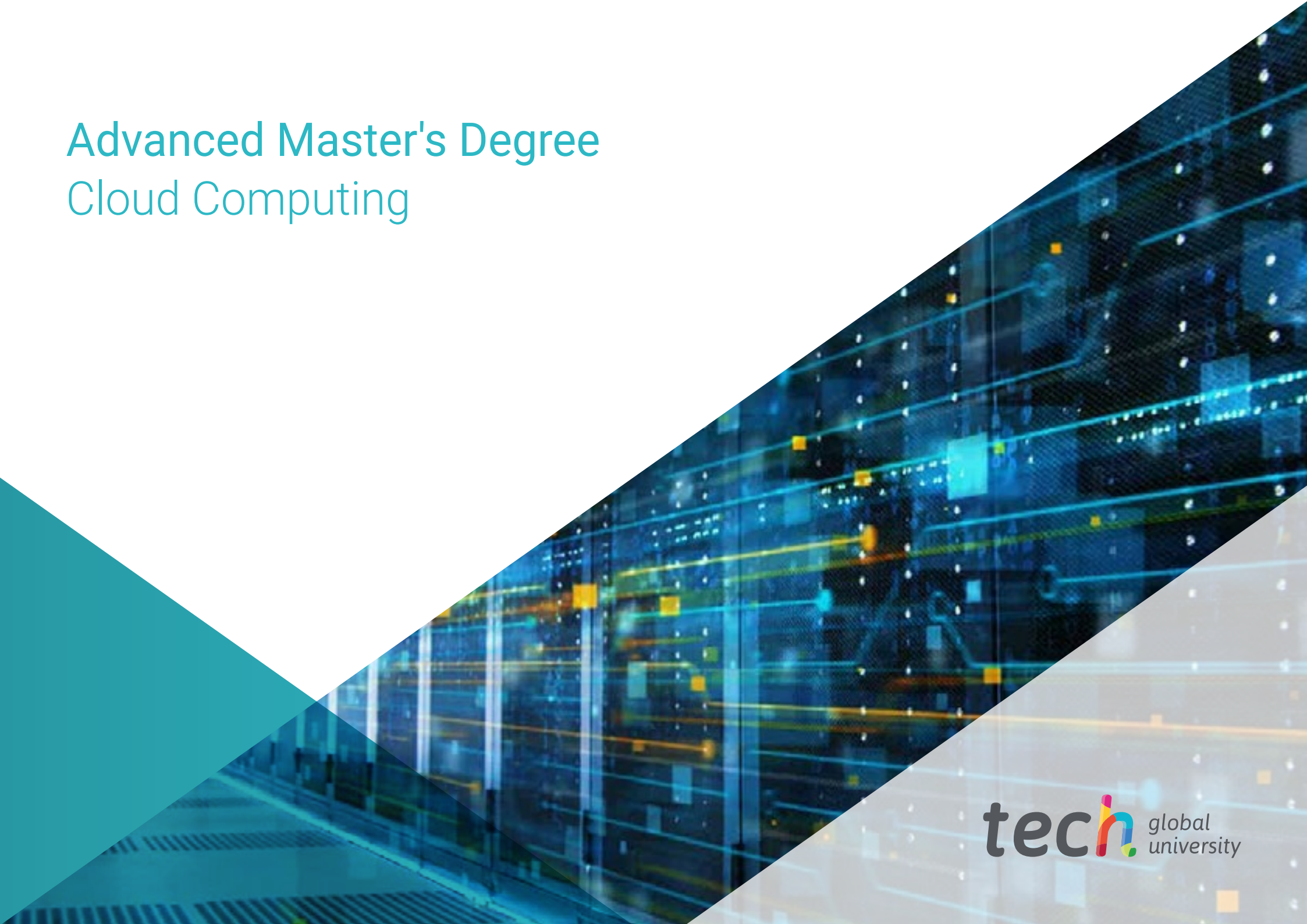
Advanced Master's Degree
Cloud Computing

- Modality: **online**
- Duration: **2 years**
- Certificate: **TECH Global University**
- Accreditation: **120 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Advanced Master's Degree
Cloud Computing



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