Professional Master's Degree

Cloud Programming

tech global university

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Professional Master's Degree

Cloud Programming

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/information-technology/professional-master-degree/master-cloud-programming

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01

Introduction

Companies and start-ups have initiated digital transformation processes, where Cloud environments streamline their work processes, provide them with greater security and cost control: a technological breakthrough that is on the rise. Companies require professionals capable of designing, building, configuring and managing the cloud. This program provides the opportunity to acquire a specialization and knowledge foundation in Cloud technologies. The online modality of this education and the Relearning system, based on the reiteration of content, will facilitate learning, especially for those who want flexibility and autonomy to distribute the teaching load of this education.

Thanks to this Professional Master's Degree, you will be able to occupy relevant positions in the competitive Cloud Computing sector"

Software development and Cloud environments have led to the emergence of a new professional figure in the field of new technologies. Companies, in a short time, have understood the advantages of using Cloud Computing technology. In this scenario, the IT professionals have an opportunity to advance in an emerging field.

This Professional Master's Degree from TECH brings together a teaching team competent in the field of Cloud technologies and with extensive experience in the sector. Their knowledge provides students with all the necessary tools to learn about the different cloud providers, therefore mastering all the technologies offered by the major distributors of Cloud solutions. Likewise, The IT professional, guided by experts in the field, will delve into the most relevant concepts and tools currently relevant in data persistence such as Data Lakes.

This 12-month program delves into the virtualization and containerization of applications that have made the systems administration sector evolve and are essential today. All this, from a theoretical-practical perspective designed for future Cloud architects, DevOps or Cloud infrastructure specialists.

An excellent opportunity for professionals who wish to improve their professional aspirations through this 100% online format. They only need an electronic device with internet connection to access the library of multimedia resources and practical simulation cases, which will facilitate learning and give them the flexibility to combine it with their most demanding professional and personal responsibilities.

This **Professional Master's Degree in Cloud Programming** contains the most complete and up-to-date program on the market. The most important features include:

- Practical cases presented by experts in Cloud Programming
- The graphic, schematic and practical contents of the book provide technical and practical information on those disciplines that are essential for professional practice
- Practical exercises where the self-assessment process can be carried out to improve learning
- Its special emphasis on innovative methodologies
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection

Become an expert in Cloud Programming, thanks to this Professional Master's Degree. Growing in a highly competitive industry"

Microsoft Azure, Amazon Web Services and Google Cloud are the main Cloud platforms for companies. Master all its possibilities with this Professional Master's Degree. Enroll now"

Deepen your knowledge and become a specialist in Cloud infrastructure, mastering the most modern Cloud Native technologies and architectures.

Learn at your own pace, without fixed schedules and from anywhere with the online methodology offered by TECH in all its programs.

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

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

The design of this program focuses on Problem-Based Learning, by means of which professionals must try to solve the different professional practice situations that arise during the academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Objectives

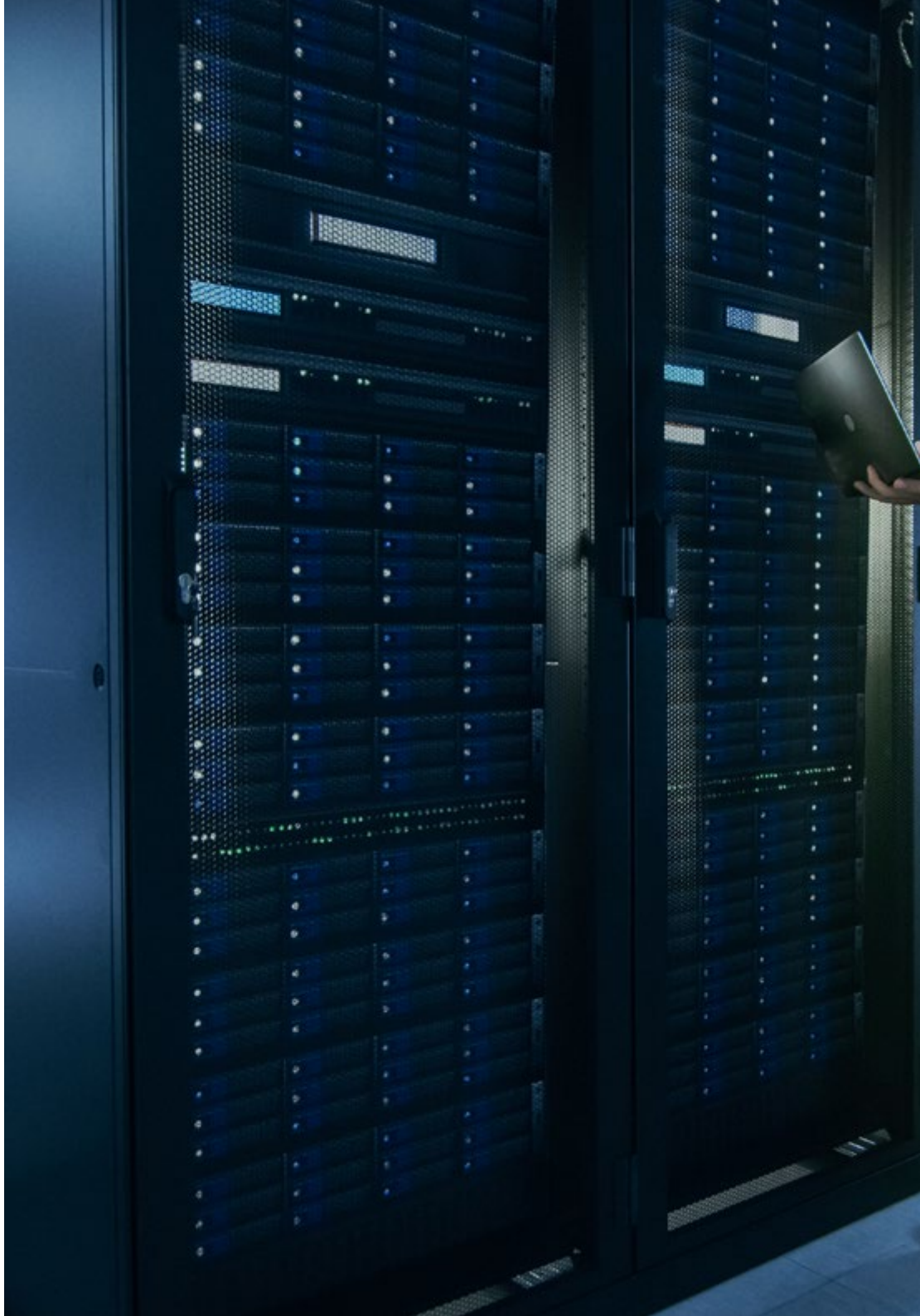
The design of the program of this Professional Master's Degree will allow students to start a project in Cloud environments in their own start-up or in large companies. To this end, in this program, you will acquire the specialized knowledge to determine the right Cloud, learn to analyze the different approaches to cloud adoption and their contexts, as well as master the main tools and providers in this rising technological field. The interactive content and case simulation will allow the students to gain knowledge in one of the most promising technological areas at present.

Progress in your professional career. Everyday companies demand more Front-End or Back-End engineers. Specialize in a field with a wide range of job opportunities"

General Objectives

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

The multimedia resources and the Relearning system will help you to build your knowledge. Advance your career by becoming an expert in Cloud Programming"



Specific Objectives

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

- Generate specialized knowledge about the cloud and the differences with traditional on-premise solutions
- Acquire specialized vocabulary fundamental to the cloud Master the terms used by different vendors
- Establish the main components of the cloud and its their uses
- Determine the vendors in the cloud market, their strengths and weaknesses, and contributions

Module 2. Architecture Programming in Cloud Computing

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

Module 3. Cloud Azure Storage

- Examine a virtual machine in Azure
- Establish the different types of storage
- Evaluate the functions of backup
- Manage Azure resources
- Analyze the different types of services
- Examine the different types of security
- Generate virtual networks
- Concretize the different network connections

Module 4. Cloud Environments: Security/Safety

- Identifying risks of a public cloud infrastructure deployment
- Analyze security risks in application development
- Determine security requirements
- Developing a security plan for a cloud deployment
- Establish guidelines for a logging and monitoring system
- Propose incident response actions

Module 5. Container Orchestration: Kubernetes and Docker

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

Module 6. Native Cloud Application Programming

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

Module 7. Cloud Programming: Data Governance

- Generate specialized knowledge on data management, strategies and processing techniques
- Develop data governance strategies targeting people, processes, and tools
- Carry out data governance from ingest to preparation and usage
- Determine techniques to govern data transmission
- Establish data protection for authentication, security, backup and monitors

Module 8. Real-Time Cloud Programming. Streaming

- Analyze the process of collecting, structuring, processing, analyzing and interpreting streaming data
- Develop the principles of streaming processing, the current context and current use cases in the national context
- Develop key fundamentals of statistics, maching learning, data mining and predictive modeling for understanding data analysis and processing
- Analyze the main Big Data programming languages
- Examine the fundamentals of Apache Spark Streaming, Kafka Stream and Flink Stream

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

- Assess the progress of web technologies and architectures in determine the complexity of the system and, based on this, propose a software solution
- Develop distributed projects in Cloud Computing using web services and different functional and security requirements
- Analyze different web services implementation technologies, identifying the one that gives the best support considering the problem scenario
- Assess the correct functions of a server-side web service implementation by launching requests from different types of web clients

Module 10. Cloud Programming: Project Management and Product Verification

- Know the scenarios and applications in life cycle management
- Manage projects as a process and determine the organization model
- Determine the risks and costs by applying agile methodologies during the conceptualization phase or during project execution
- Lead and manage projects with agile methodologies and the quality of Cloud projects by applying different methodologies

03

Skills

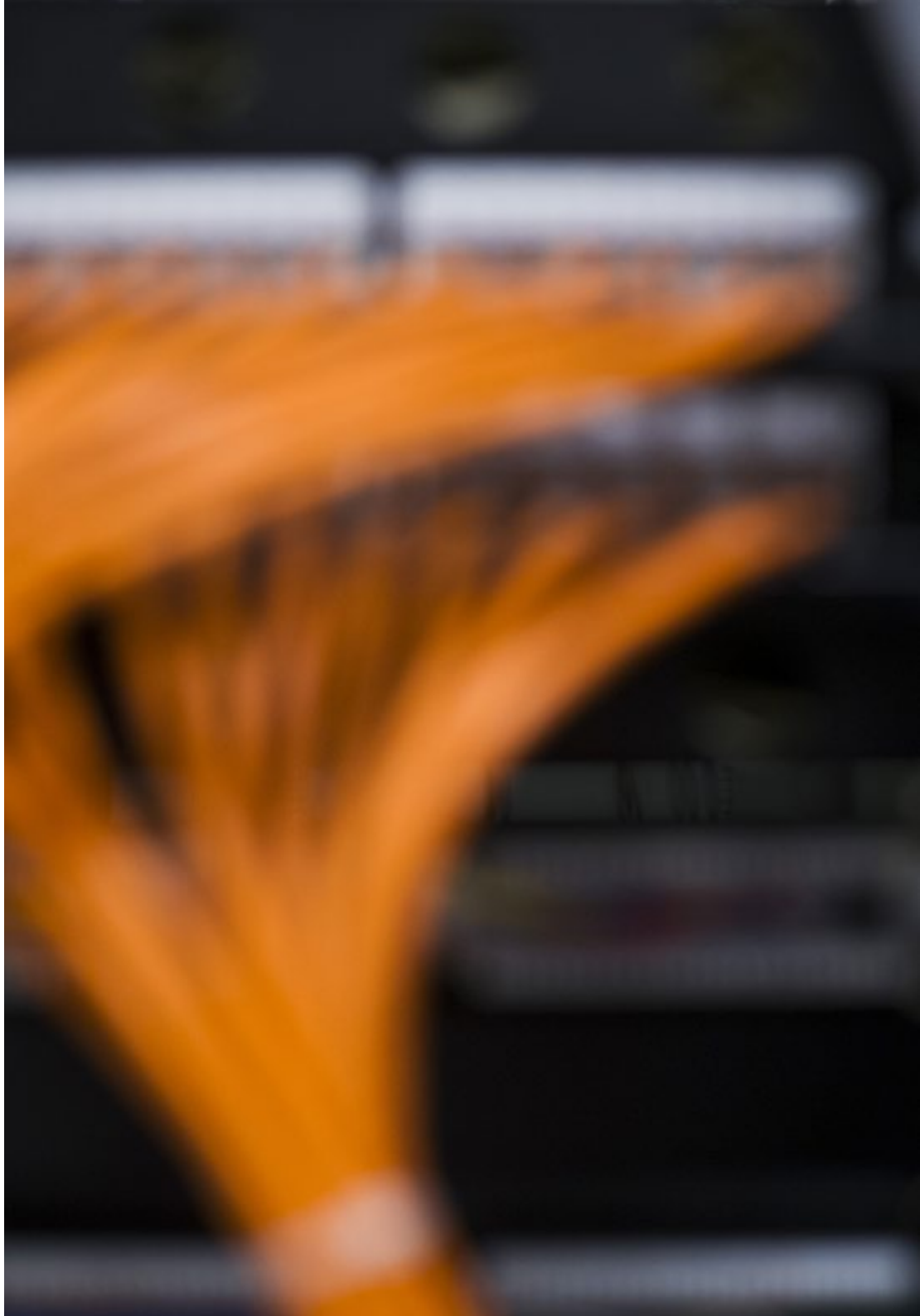
The structure of this Professional Master's Degree is designed for the IT professional to be able to carry out Cloud programming in companies that want to manage all their assets in an agile way. At the end of this program you will be able to manage the different existing providers, optimize and differentiate the use of virtualization technology, Cloud Computing and containers. The teaching team will guide you toward excellence throughout this program.

Learn the fundamentals of the DevOp methodology and apply them in the development of digital products"

General Skills

- Analyze the transformation process experienced by companies that have adopted the DevOps methodology
- Learn the fundamentals of the DevOps methodology to apply them in the management of the process of implementation and development of digital products
- Master the different existing business analysis techniques for the correct development of the planning phase
- Manage the existing verification and validation techniques to ensure the quality of the developed product
- Establish the differences between virtualization, cloud computing and container technologies for the optimal use of each of them
- Examine the bases on which cloud services are based in order to make proper use of these tools in the company
- Know the providers and the characteristics of the services offered in Cloud Computing to select those that best fit the needs of the company

Large companies are demanding better efficiency in their workflows. Make it easier for them with your experience and knowledge in Cloud programming"



Specific Skills

- Identify the main data processing techniques
- Increase knowledge of the different tools and their use in the field of project management
- Generate specialized knowledge on the quality of service and how to achieve an adequate quality with your product
- Substantiate the concrete use of a service architecture to provide a solution to a problem in a specific setting
- Identify the weaknesses and threats of a system in order to propose a technological solution that supports system security
- Examine the different services provided by Cloud providers and justify the use of them in a particular project
- Examine the use of containers and development with microservices
- Identify the Cloud services to be deployed for the implementation of a security plan and the operations required for prevention mechanisms

04

Course Management

In its commitment to offer an elite education for all, TECH rigorously selects a teaching team so that students acquire a solid knowledge in Cloud Programming. Therefore, this Professional Master's Degree has a highly qualified team with extensive experience in the sector. Thanks to their knowledge and proximity to the professional field, the content of this teaching brings the IT professional closer to the latest developments in this technology and the current needs of companies in this field.

A highly qualified teaching faculty will guide you during the twelve months of this Professional Master's Degree. Click and enroll"

Management

Mr. Bressel Gutiérrez-Ambrossi, Guillermo

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

Professors

D. Gómez Rodríguez, Antonio

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

D. 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 IT from the Polytechnic University of Madrid
- Expert in Big Data by U-TAD

Ms. Rodríguez Camacho, Cristina

- Apis consultant and developer of microservices at Inetum
- Graduate 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´Really Media Books
- Lecturer in postgraduate studies and Blockchain related courses
- Degree in Computer Engineering from San Pablo CEU University
- Master's Degree in Big Data Architecture
- Master's Degree in Big Data and Business Analytics

Mr. Rodríguez García, Darío

- Software Architect at NEA F3 MASTER
- Full-Stack Developer in NEA F3 MASTER
- Graduate 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 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 Architecture 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 Project Management Associate (Level D) by International Project Management Association (IPMA)

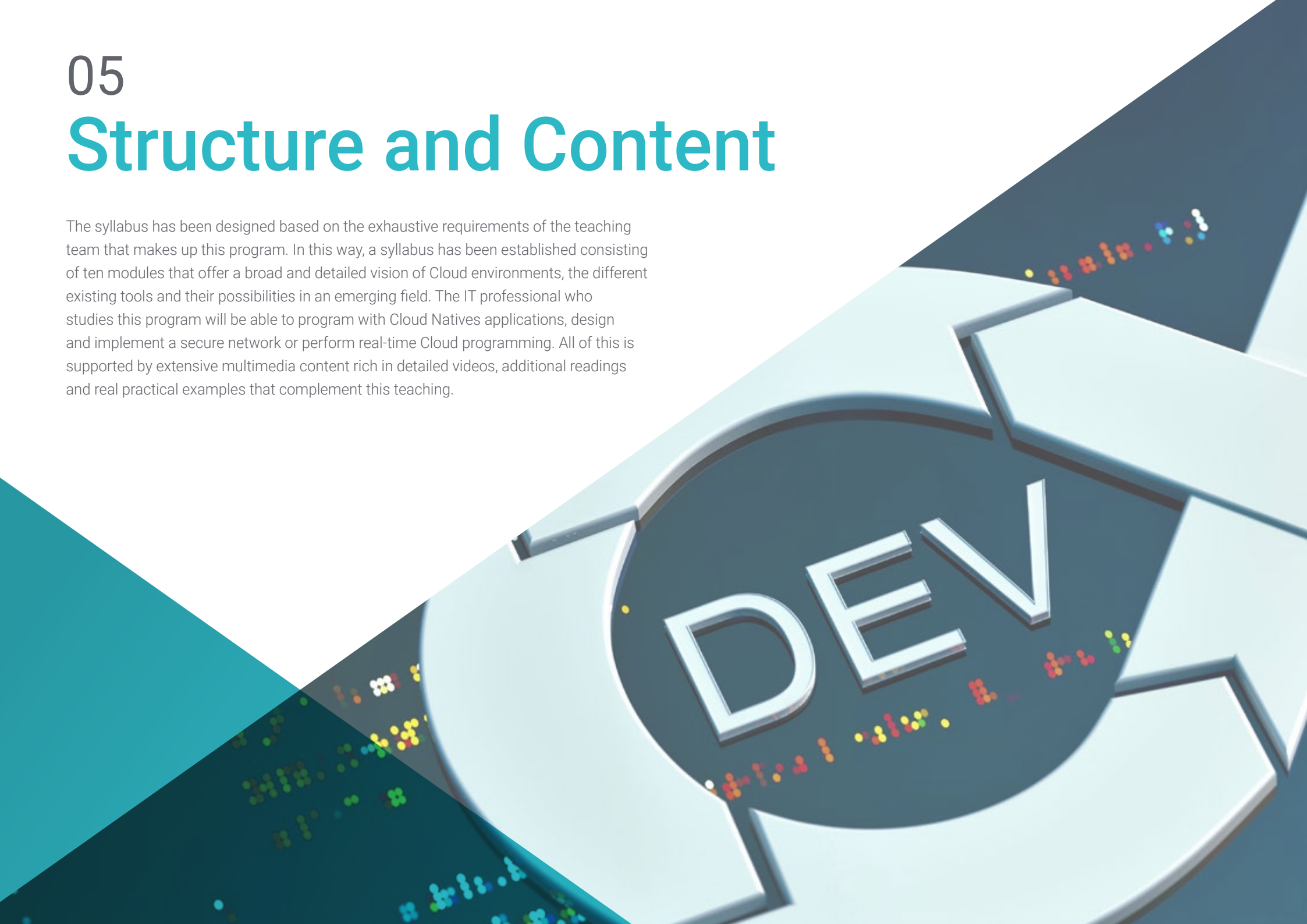
Dr. González Domínguez, Jaime

- 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 Project Management Associate (Level D) by International Project Management Association (IPMA)

05

Structure and Content

The syllabus has been designed based on the exhaustive requirements of the teaching team that makes up this program. In this way, a syllabus has been established consisting of ten modules that offer a broad and detailed vision of Cloud environments, the different existing tools and their possibilities in an emerging field. The IT professional who studies this program will be able to program with Cloud Natives applications, design and implement a secure network or perform real-time Cloud programming. All of this is supported by extensive multimedia content rich in detailed videos, additional readings and real practical examples that complement this teaching.



TECH offers you a curriculum with quality content and a current and innovative approach to Cloud environments"

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. Architecture Cloud Computing
- 1.5.1. Architecture Cloud Computing
- 1.5.2. Network 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 from 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. Cloud Azure 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/Safety
- 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/Safety

4.1. Cloud Environments: Security/Safety
- 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. Security in Development 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 Mode 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. Native Cloud 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. Data Science
- 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 Fourth Dimension

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

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. IT specialist

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. Programming 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. Sets

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 Bosting
- 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 Architecture Approach. Micro-Service Use
- 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 Service 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 Bots Web Service
- 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. Agile Use

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 Mappig
- 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

Be a true professional. Reduce risks in the Cloud and guarantee security to the companies you work for"

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

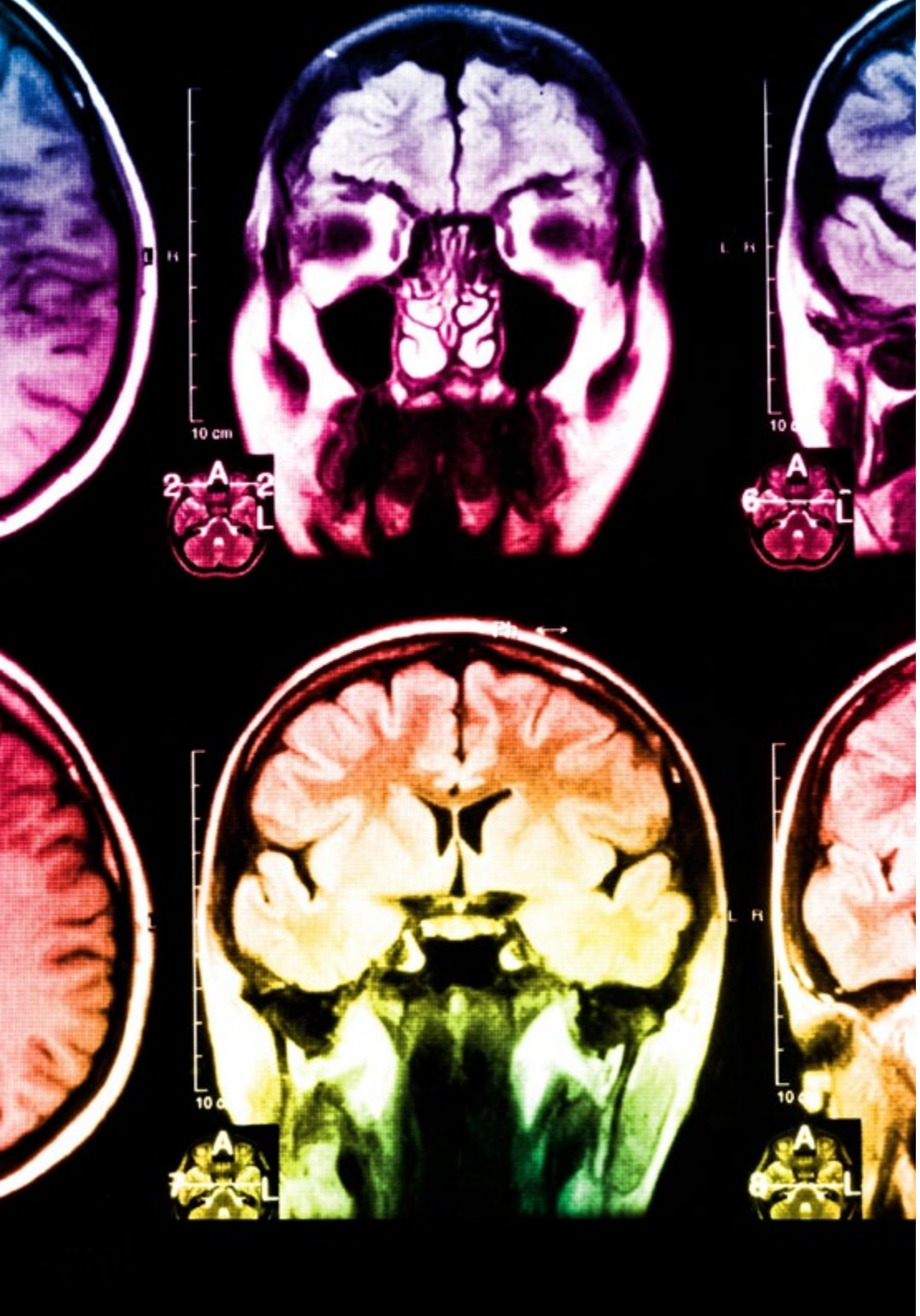
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

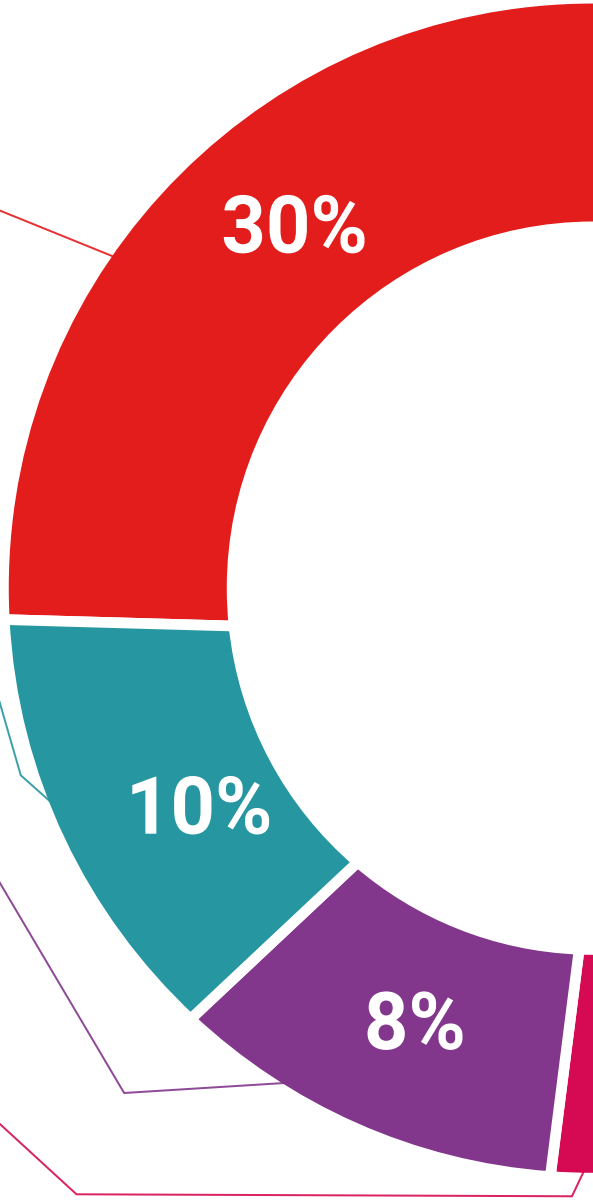
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

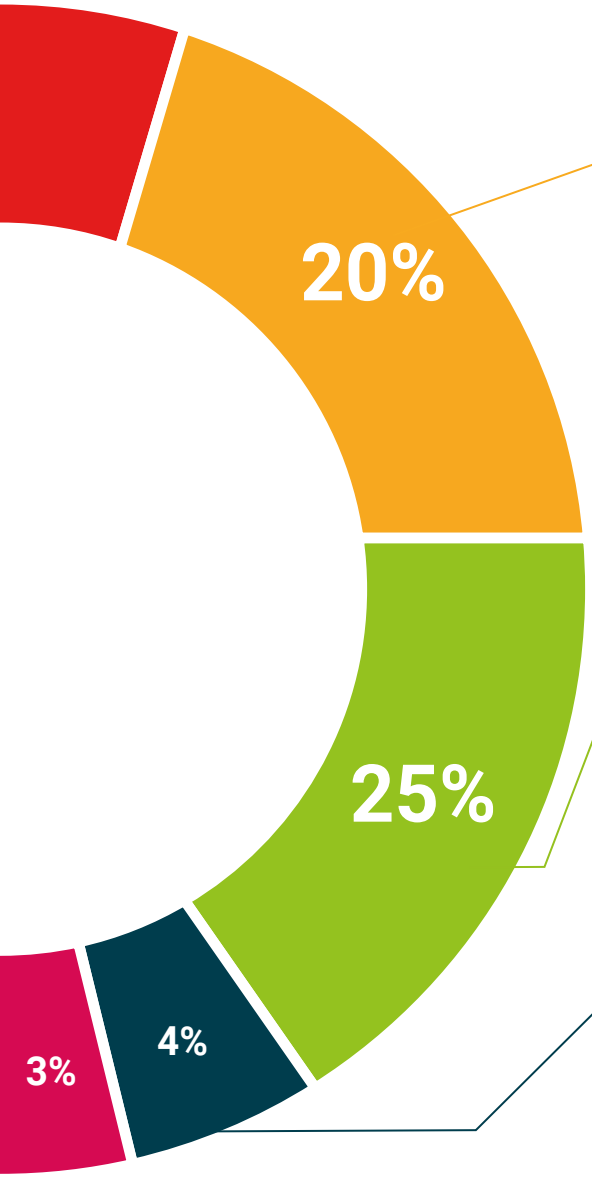
Practising Skills and Abilities

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

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

This program will allow you to obtain your **Professional Master's Degree diploma in Cloud Programming** endorsed by **TECH Global University**, the world's largest online university.

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

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

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

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**


tech global university

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

Professional Master's Degree in Cloud Programming

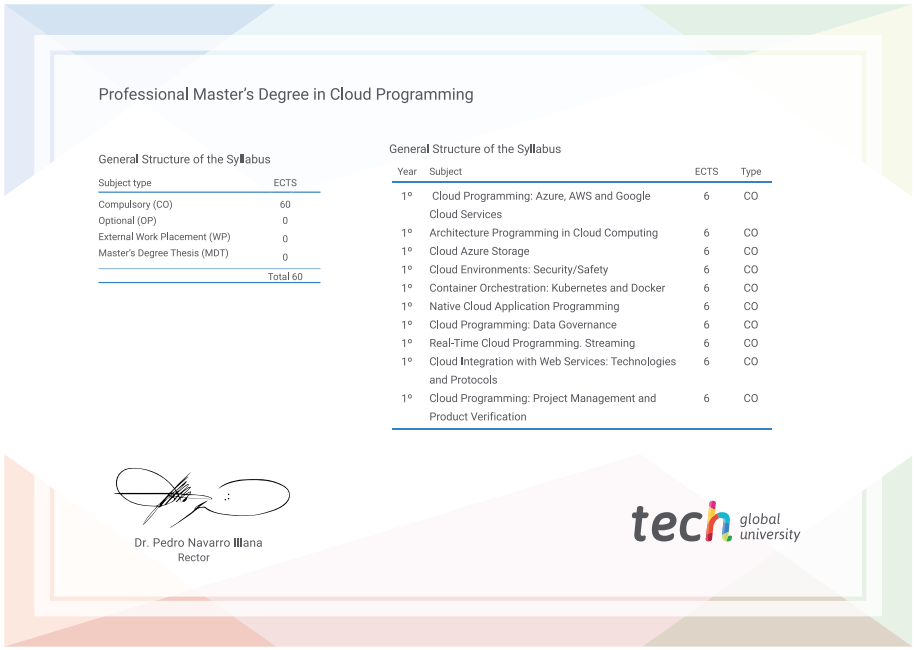
This is a program of 1,500 hours of duration equivalent to 60 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

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

Dr. Pedro Navarro Illana
Rector

Unique TECH Code: AFWORD23S techtitute.com/certificates


Professional Master's Degree in Cloud Programming

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 60

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/Safety	6	CO
1º	Container Orchestration: Kubernetes and Docker	6	CO
1º	Native Cloud 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

Dr. Pedro Navarro Illana
Rector

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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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Professional Master's Degree

Cloud Programming

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Global University**
- Credits: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Professional Master's Degree
Cloud Programming

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