Postgraduate Diploma
Networks

tech technological university

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Postgraduate Diploma
Networks

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

Website: www.techtitute.com/us/information-technology/postgraduate-diploma/postgraduate-diploma-networks

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01

Introduction

Networks are mechanisms used to transmit information between two points through signals, both in analog and digital form. This program brings students closer to the field of networks, with an up-to-date and quality program. It is a comprehensive preparation for their profession.

If you are looking for quality training that will help you specialize in one of the fields with the most professional prospects, this is your best option"

Advances in telecommunications are happening all the time, as this is one of the fastest evolving areas. It is therefore necessary to have IT experts who can adapt to these changes and have first-hand knowledge of the new tools and techniques that are emerging in this field.

This Postgraduate Diploma in Networks addresses the complete range of topics involved in this field. Its study has a clear advantage over other programs that focus on specific blocks, which prevents students from knowing the interrelation with other areas included in the multidisciplinary field of telecommunications. In addition, the teaching team of this educational program has made a careful selection of each of the topics of this program in order to offer students the most complete study opportunity possible and always linked to current events.

This program is aimed at those interested in attaining a higher level of knowledge of Networks. The main objective of this Postgraduate Diploma is for students to specialize their knowledge in simulated work environments and conditions in a rigorous and realistic manner so that they can later apply it in the real world.

Additionally, as it is a 100% online program, the student is not constrained by fixed timetables or the need to move to another physical location, but can access the contents at any time of the day, balancing their professional or personal life with their academic life.

This **Postgraduate Diploma in Networks** contains the most complete and up-to-date program on the market. Its most notable features are:

- The development of practical cases presented by Networks experts
- 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 self-assessment can be used to improve learning
- Its special emphasis on innovative methodologies in Networks
- 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

Do not miss the opportunity to study this Postgraduate Diploma in Networks at TECH. It's the perfect opportunity to advance your career"

This Postgraduate Diploma is the best investment you can make when choosing a refresher program to update your existing knowledge of Networks"

This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.

This 100% online Postgraduate Diploma will allow you to combine your studies with your professional work. You choose where and when to study.

The teaching staff includes professionals from the field of design, who bring their experience to this specialization program, as well as renowned specialists from leading societies and prestigious universities.

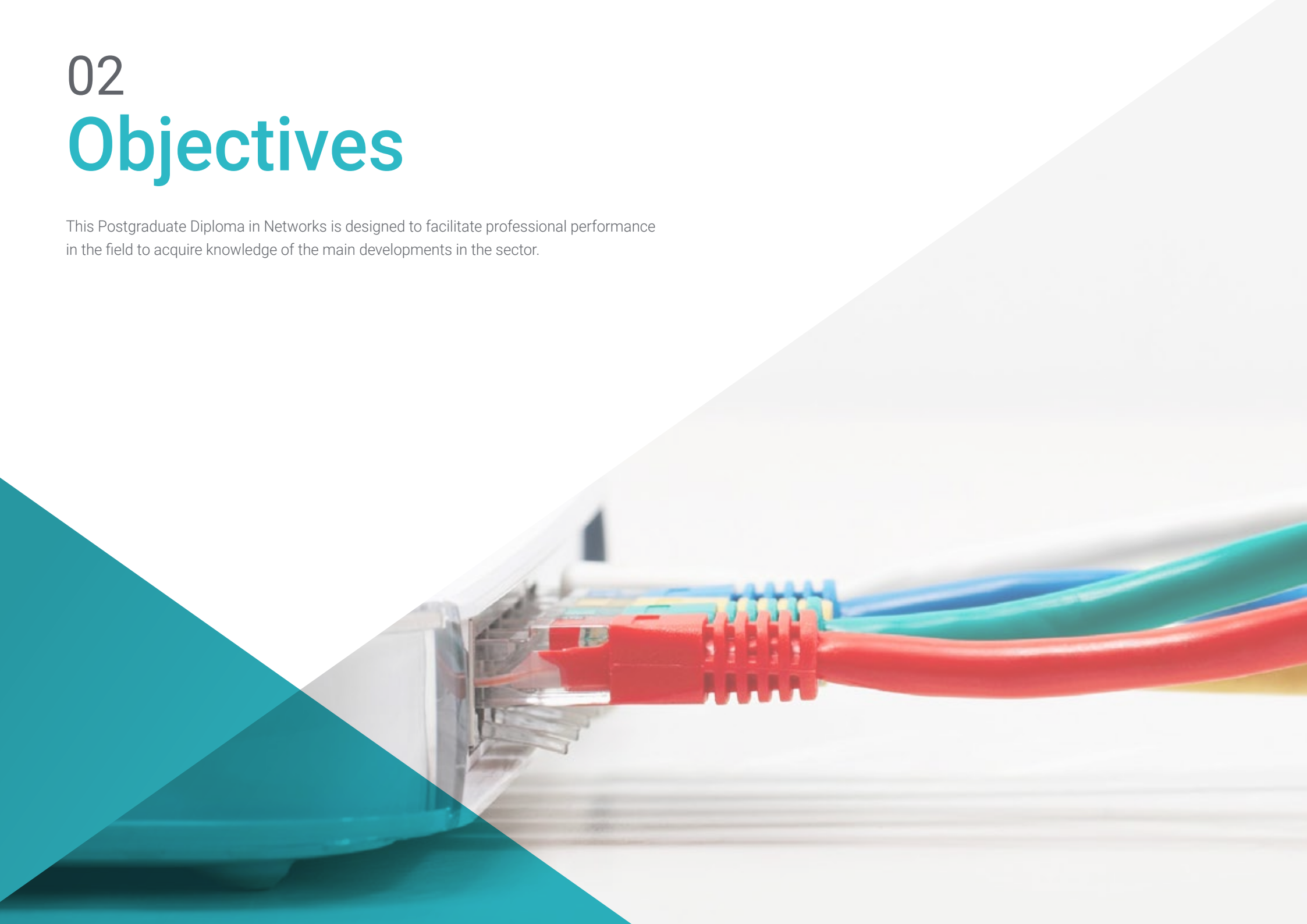
The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the academic year. To do so, professionals will be assisted by an innovative interactive video system created by renowned and experienced experts in hormone therapy.

02

Objectives

This Postgraduate Diploma in Networks is designed to facilitate professional performance in the field to acquire knowledge of the main developments in the sector.



Our goal is to make you the best professional in your sector. And for this we have the best methodology and content"

General Objective

- Prepare students to be able to develop their work with total security and quality in the field of Networks

Specialize in the world's leading private Spanish-speaking online university"

Specific Objectives

Module 1. Computer Networks

- Acquire essential knowledge of computer networks on the Internet
- Understand the operation of the different layers that define a networked system, such as the application, transport, network and link layers
- Understand the composition of LANs, their topology, and their network and interconnection elements
- Learn how IP addressing and Subnetting works
- Understand the structure of wireless and mobile networks, including the new 5G network
- Know the different network security mechanisms, as well as the different Internet security protocols

Module 2. Corporate Networks and Infrastructure

- Master advanced aspects of infrastructure interconnection, essential when designing and planning high-speed networks
- Know the main characteristics and technologies of transport networks
- Understand the architectures of: Classic WANs, All-Ethernet, MPLS, VPNs
- Analyze the fundamental aspects of the evolution of networks to NGN (Next Generation Networks)
- Understand advanced requirements for quality of service, routing and congestion control and reliability
- Understand and know how to apply the international network standards

Module 3. Data Centers, Network Operation and Services

- Be able to design, operate, manage and maintain networks, services and content provided through a Data Center
- Know all the essential elements that make up a Data Center and the existing standards and certifications
- Analyze the economic impact of a Data Center infrastructure in terms of performance and efficiency
- Identify in real infrastructures the hardware elements of a Data Center
- Understand the security implications of the different solutions to offer services by market providers
- Know how the virtualization process works
- Understand the advantages, benefits and adoption models of the Cloud

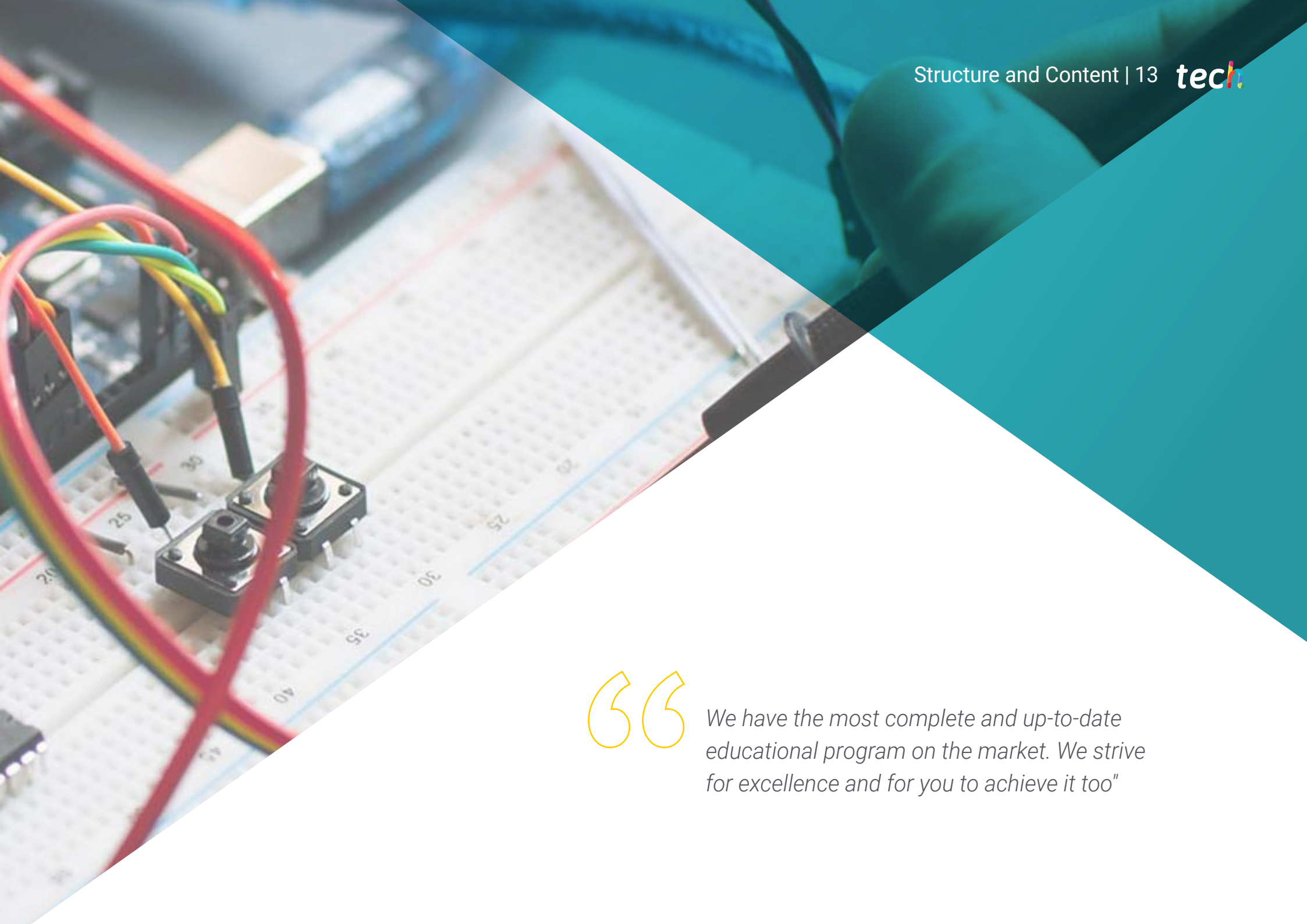
Module 4. System Engineering and Network Services

- Master the fundamental concepts of service engineering
- Know the basic principles of configuration management of evolving software systems
- Know the technologies and tools for the provision of telematic services
- Know different architectural styles of a software system, understand their differences and know how to choose the most appropriate one according to the system requirements
- Understand validation and verification processes and their relationships with other life cycle phases
- Be able to integrate systems for the capture, representation, processing, storage, management and presentation of multimedia information for the construction of telecommunication services and telematic applications
- Know common elements for the detailed design of a software system
- Acquire the ability to program, simulate and validate telematic, networked and distributed services and applications
- Understand the process and activities of transition, configuration, deployment and operation
- Understand network management, automation and optimization processes

03

Structure and Content

The structure of the contents has been designed by the best professionals in the from the engineering sector, with extensive experience and recognized prestige in the profession.



We have the most complete and up-to-date educational program on the market. We strive for excellence and for you to achieve it too"

Module 1. Computer Networks

1.1. Computer Networks on the Internet
- 1.1.1. Networks and Internet
- 1.1.2. Protocol Architecture

1.2. The Application Layer
- 1.2.1. Model and Protocols
- 1.2.2. FTP and SMTP Services
- 1.2.3. DNS Service
- 1.2.4. HTTP Operation Model
- 1.2.5. HTTP Message Formats
- 1.2.6. Interaction with Advanced Methods

1.3. The Transport Layer
- 1.3.1. Communication Between Processes
- 1.3.2. Connection-Oriented Transportation: TCP and SCTP

1.4. The Network Layer
- 1.4.1. Circuit and Packet Switching
- 1.4.2. IP Protocol (v4 and v6)
- 1.4.3. Routing Algorithms

1.5. The Link Layer
- 1.5.1. Link Layer and Error Detection and Correction Techniques
- 1.5.2. Multiple Access Links and Protocols
- 1.5.3. Link Level Addressing

1.6. LAN Networks
- 1.6.1. Network Topologies
- 1.6.2. Network and Interconnection Elements

1.7. IP Addressing
- 1.7.1. IP Addressing and Subnetting
- 1.7.2. Overview: An HTTP Request

1.8. Wireless and Mobile Networks
- 1.8.1. 2G, 3G and 4G Mobile Networks and Services
- 1.8.2. 5G Networks

1.9. Network Security
- 1.9.1. Fundamentals of Communications Security
- 1.9.2. Access Control
- 1.9.3. System Security
- 1.9.4. Fundamentals of Cryptography
- 1.9.5. Digital Signature

1.10. Internet Security Protocols
- 1.10.1. IP Security and Virtual Private Networks (VPN)
- 1.10.2. Web Security with SSL/TLS

Module 2. Corporate Networks and Infrastructure

2.1. Transport Networks
- 2.1.1. Functional Architecture of Transport Networks
- 2.1.2. SDH Network Node Interface
- 2.1.3. Network Element
- 2.1.4. Network Quality and Availability
- 2.1.5. Transport Network Management
- 2.1.6. Evolution of Transportation Networks

2.2. Classic WAN Architectures
- 2.2.1. WAN Wide Area Networks
- 2.2.2. WAN Standards
- 2.2.3. WAN Encapsulation
- 2.2.4. WAN Devices
  - 2.2.4.1. Router
  - 2.2.4.2. Modem
  - 2.2.4.3. Switch
  - 2.2.4.4. Communication Servers
  - 2.2.4.5. Gateway
  - 2.2.4.6. Firewall
  - 2.2.4.7. Proxy
  - 2.2.4.8. NAT

2.2.5. Connection Types
2.2.5.1. Point-to-Point Links
2.2.5.2. Circuit Switching
2.2.5.3. Packet Switching
2.2.5.4. WAN Virtual Circuits
2.3. ATM-Based Networks
2.3.1. Introduction, Characteristics and Layer Model
2.3.2. ATM Physical Access Layer
2.3.2.1. Physical Environment Dependent Sublayer PM
2.3.2.2. TC Transmission Convergence Sublayer
2.3.3. ATM Cell
2.3.3.1. Heading
2.3.3.2. Virtual Connection
2.3.3.3. ATM Switching Nodes
2.3.3.4. Flow Control (Link Loading)
2.3.4. AAL Cell Adaptation
2.3.4.1. AAL Service Types
2.4. Advanced Queuing Models
2.4.1. Introduction
2.4.2. Fundamentals of Queuing Theory
2.4.3. Queuing Theory Basic Systems
2.4.3.1. M/M/1, M/M/m and M/M/∞ Systems
2.4.3.2. M/M/1 and K/M/ M/M/∞ Systems
2.4.4. Advanced System Queuing Theory
2.4.4.1. M/G/1 System
2.4.4.2. M/G/1 System with Priorities
2.4.4.3. Queuing Networks
2.4.4.4. Communication Network Modeling

2.5. Quality of Service in Corporate Networks
- 2.5.1. Fundamentals
- 2.5.2. QoS factors in Converged Networks
- 2.5.3. QoS Concepts
- 2.5.4. QoS Policies
- 2.5.5. Methods for Implementing QoS
- 2.5.6. QoS Models
- 2.5.7. Mechanisms for Deploying DiffServ QoS
- 2.5.8. Application Examples

2.6. Corporate Networks and All-Ethernet Infrastructures
- 2.6.1. Ethernet Network Topologies
  - 2.6.1.1. Bus Topology
  - 2.6.1.2. Star Topology
- 2.6.2. Ethernet and IEEE 802.3 Frame Format
- 2.6.3. Switched Ethernet Network
  - 2.6.3.1. Virtual VLANs
  - 2.6.3.2. Port Aggregation
  - 2.6.3.3. Connection Redundancy
  - 2.6.3.4. QoS Management
  - 2.6.3.5. Safety Functions
- 2.6.4. Fast Ethernet
- 2.6.5. Gigabit Ethernet

2.7. MPLS Infrastructures
- 2.7.1. Introduction
- 2.7.2. MPLS
  - 2.7.2.1. MPLS Background and Evolution
  - 2.7.2.2. MPLS Architecture
  - 2.7.2.3. Reshipment of Labeled Packages
  - 2.7.2.4. Label Distribution Protocol (LDP)
- 2.7.3. VPN MPLS
  - 2.7.3.1. VPN Definition
  - 2.7.3.2. VPN Models
  - 2.7.3.3. MPLS VPN Model
  - 2.7.3.4. MPLS VPN Architecture
  - 2.7.3.5. Virtual Routing Forwarding (VRF)
  - 2.7.3.6. RD
  - 2.7.3.7. Route Target (RT)
  - 2.7.3.8. VPNv4 Route Propagation in an MPLS VPN
  - 2.7.3.9. Packet Forwarding in an MPLS VPN Network
  - 2.7.3.10. BGP
  - 2.7.3.11. Extended BGP Community: RT
  - 2.7.3.12. Label Transport with BGP
  - 2.7.3.13. Route Reflector (RR
  - 2.7.3.14. Group RR
  - 2.7.3.15. BGP Route Selection
  - 2.7.3.16. Package Forwarding
- 2.7.4. Common Routing Protocols in MPLS Environments
  - 2.7.4.1. Vector Distance Routing Protocols
  - 2.7.4.2. Link-State Routing Protocols
  - 2.7.4.3. OSPF
  - 2.7.4.4. ISIS

2.8. Carrier Services and VPNs
- 2.8.1. Introduction
- 2.8.2. Basic VPN Requirements
- 2.8.3. Types of VPN
  - 2.8.3.1. Remote VPN Access
  - 2.8.3.2. Point-to-Point VPN
  - 2.8.3.3. VPN Interna (over LAN):
- 2.8.4. Protocols Used in VPN
- 2.8.5. Implementations and Connection Types

2.9. NGN (Next Generation Networks)
- 2.9.1. Introduction
- 2.9.2. Background
  - 2.9.2.1. Definition and Characteristics of NGN Networks
  - 2.9.2.2. Migration to Next Generation Networks
- 2.9.3. NGN Architecture
  - 2.9.3.1. Primary Connectivity Layer
  - 2.9.3.2. Access Layer
  - 2.9.3.3. Service Layer
  - 2.9.3.4. Management Layer
- 2.9.4. IMS
- 2.9.5. Standardizing Organizations
- 2.9.6. Regulatory Trends

2.10. ITU and IETF Standards Review
- 2.10.1. Introduction
- 2.10.2. Standardization
- 2.10.3. Some Standard Organizations
- 2.10.4. WAN Physical Layer Protocols and Standards
- 2.10.5. Examples of Medium Oriented Protocols

Module 3. Data Centers, Network Operation and Services

3.1. Data Center: Basic Concepts and Components
- 3.1.1. Introduction
- 3.1.2. Basic Concepts
  - 3.1.2.1. CD Definition
  - 3.1.2.2. Classification and Importance
  - 3.1.2.3. Catastrophes and Losses
  - 3.1.2.4. Evolutionary Trend
  - 3.1.2.5. Complexity Costs
  - 3.1.2.6. Pillars and Redundancy Layers
- 3.1.3. Design Philosophy
  - 3.1.3.1. Objectives
  - 3.1.3.2. Location Selection
  - 3.1.3.3. Availability
  - 3.1.3.4. Critical Elements
  - 3.1.3.5. Cost Evaluation and Analysis
  - 3.1.3.6. IT Budget
- 3.1.4. Basic Components
  - 3.1.4.1. Access Floor
  - 3.1.4.2. Tile Types
  - 3.1.4.3. General Considerations
  - 3.1.4.4. DC Size
  - 3.1.4.5. Racks
  - 3.1.4.6. Servers and Communication Equipment
  - 3.1.4.7. Monitoring

3.2. Data Center: Control Systems
- 3.2.1. Introduction
- 3.2.2. Power Supply
  - 3.2.2.1. Electrical Network
  - 3.2.2.2. Electrical Power
  - 3.2.2.3. Electrical Distribution Strategies
  - 3.2.2.4. UPS
  - 3.2.2.5. Generators
  - 3.2.2.6. Electrical Problems
- 3.2.3. Environmental Control
  - 3.2.3.1. Temperature
  - 3.2.3.2. Humidity
  - 3.2.3.3. Air Conditioning
  - 3.2.3.4. Caloric Estimation
  - 3.2.3.5. Refrigeration Strategies
  - 3.2.3.6. Corridor Design. Air Circulation
  - 3.2.3.7. Sensors and Maintenance

3.2.4. Safety and Fire Prevention
3.2.4.1. Physical Security
3.2.4.2. Fire and its Classification
3.2.4.3. Classification and Types of Extinction Systems
3.3. Data Center: Design and Organization
3.3.1. Introduction
3.3.2. Network Design
3.3.2.1. Typology
3.3.2.2. Structured Cabling
3.3.2.3. Backbone
3.3.2.4. UTP and STP Network Cables
3.3.2.5. Telephone Cables
3.3.2.6. Terminal Elements
3.3.2.7. Fiber Optic Cables
3.3.2.8. Coaxial Cable
3.3.2.9. Wireless Transmission
3.3.2.10. Recommendations and Labeling
3.3.3. Organization
3.3.3.1. Introduction
3.3.3.2. Basic Measures
3.3.3.3. Cable Management Strategies
3.3.3.4. Policies and Procedures
3.3.4. DC Management
3.3.5. Data Center Standards
3.4. Data Center: Business Models and Continuity
3.4.1. Introduction
3.4.2. Optimization
3.4.2.1. Optimization Techniques
3.4.2.2. Eco-Friendly Data Centers
3.4.2.3. Current Challenges
3.4.2.4. Modular Data Centers
3.4.2.5. Housing
3.4.2.6. Data Centres Consolidation
3.4.2.7. Monitoring
3.4.3. Business Continuity
3.4.3.1. BCP. Business Continuity Plan. Key Points
3.4.3.2. DR. Disaster Recovery Plan
3.4.3.3. DR Implementation
3.4.3.4. Backup and Strategies
3.4.3.5. Back-Up Data Center
3.4.4. Best Practices
3.4.4.1. Recommendations
3.4.4.2. Use of ITIL Methodology
3.4.4.3. Availability Metrics
3.4.4.4. Environmental Control
3.4.4.5. Risk Management
3.4.4.6. DC Manager
3.4.4.7. Tools
3.4.4.8. Implementation Tips
3.4.4.9. Characterization
3.5. Cloud Computing: Introduction and Basic Concepts
3.5.1. Introduction
3.5.2. Basic Concepts and Terminology
3.5.3. Objectives and Benefits
3.5.3.1. Availability
3.5.3.2. Reliability
3.5.3.3. Scales
3.5.4. Risks and Challenges
3.5.5. Roles. Provider. Consumer
3.5.6. Cloud Characteristics
3.5.7. Service Delivery Models
3.5.7.1. IaaS
3.5.7.2. PaaS
3.5.7.3. SaaS
3.5.8. Types of Cloud
3.5.8.1. Public
3.5.8.2. Private
3.5.9.3. Hybrid

3.5.9. Cloud Enabling Technologies
3.5.9.1. Network Architectures
3.5.9.2. Broadband Networks. Interconnectivity
3.5.9.3. Data Center Technologies
3.5.9.3.1. Computing
3.5.9.3.2. Storage
3.5.9.3.3. Networking
3.5.9.3.4. High Availability
3.5.9.3.5. Backup Systems
3.5.9.3.6. Balancers
3.5.9.4. Virtualization
3.5.9.5. Web Technologies
3.5.9.6. Multitenant Technology
3.5.9.7. Service Technology
3.5.9.8. Cloud Security
3.5.9.8.1. Terms and Concepts
3.5.9.8.2. Integrity, Authentication
3.5.9.8.3. Security Mechanisms
3.5.9.8.4. Security Threats
3.5.9.8.5. Cloud Security Attacks
3.5.9.8.6. Case Study

3.6. Cloud Computing: Technology and Cloud Security
3.6.1. Introduction
3.6.2. Mechanisms of Cloud Infrastructure
3.6.2.1. Network Perimeter
3.6.2.2. Storage
3.6.2.3. Server Environment
3.6.2.4. Cloud Monitoring
3.6.2.5. High Availability
3.6.3. Cloud Security Mechanisms (Part I)
3.6.3.1. Automation
3.6.3.2. Load Balancers
3.6.3.3. SLA Monitor
3.6.3.4. Pay-As-You-Go Mechanisms
3.6.4. Cloud Security Mechanisms (Part II)
3.6.4.1. Traceability and Auditing Systems
3.6.4.2. Failover Systems
3.6.4.3. Hypervisor
3.6.4.4. Clustering
3.6.4.5. Multitenant Systems

3.7. Cloud Computing: Infrastructure. Control and Safety Mechanisms
3.7.1. Introduction to Cloud Management Mechanisms
3.7.2. Administrating Remote Systems
3.7.3. Resource Management Systems
3.7.4. Service Level Agreement Management Systems
3.7.5. Invoicing Management Systems
3.7.6. Mechanisms of Cloud Security
3.7.6.1. Encryption
3.7.6.2. Hashing
3.7.6.3. Digital Signature
3.7.6.4. PKI
3.7.6.5. Identity and Access Management
3.7.6.6. SSO
3.7.6.7. Cloud-Based Security Groups
3.7.6.8. Bastioning Systems

3.8. Cloud Computing: Cloud Architectures
3.8.1. Introduction
3.8.2. Basic Cloud Architectures
3.8.2.1. Workload Distribution Architectures
3.8.2.2. Resource Usage Architectures
3.8.2.3. Scalable Architectures
3.8.2.4. Load Balancing Architectures
3.8.2.5. Redundant Architectures
3.8.2.6. Examples:

3.8.3. Advanced Cloud Architectures
3.8.3.1. Hypervisor Cluster Architectures
3.8.3.2. Virtual Load Balancing Architectures
3.8.3.3. Non-Stop Architectures
3.8.3.4. High Availability Architectures
3.8.3.5. Bare-Metal Architectures
3.8.3.6. Redundant Architectures
3.8.3.7. Hybrid Architectures
3.8.4. Specialised Cloud Architectures
3.8.4.1. Direct I/O Access Architectures
3.8.4.2. Direct LUN Access Architectures
3.8.4.3. Elastic Network Architectures
3.8.4.4. SDDC Architectures
3.8.4.5. Special Architectures
3.8.4.6. Examples:
3.9. Cloud Computing: Service Provision Models
3.9.1. Introduction
3.9.2. Cloud Service Provision
3.9.3. Service Provider Perspective
3.9.4. Consumer Perspective of these Services
3.9.5. Study Cases
3.10. Cloud Computing: Contracting Models, Metrics and Service Providers
3.10.1. Introduction to Invoicing Models and Metrics
3.10.2. Invoicing Models
3.10.3. Pay-As-You-Go Metrics
3.10.4. Cost Management Considerations
3.10.5. Introduction to Quality-of-Service Metrics and SLAs
3.10.6. Service Quality Metrics
3.10.7. Service Performance Metrics
3.10.8. Service Scalability Metrics
3.10.9. SLA Service Model
3.10.10. Study Cases

Module 4. System Engineering and Network Services

4.1. Introduction to the System Engineering and Network Services
4.1.1. Computer System Concept and Computer Engineering
4.1.2. The Software and its Features
4.1.2.1. Software Features
4.1.3. Software Evolution
4.1.3.1. The Dawn of Software Development
4.1.3.2. The Software Crisis
4.1.3.3. Software Engineering
4.1.3.4. The Tragedy of Software
4.1.3.5. Current Software
4.1.4. Software Myths
4.1.5. New Software Challenges
4.1.6. Software Engineering Professional Ethics
4.1.7. SWEBOK. Software Engineering Body of Knowledge
4.2. Development Process
4.2.1. Problem-Solving Process
4.2.2. Software Development Process
4.2.3. Software Process vs. Life Cycle
4.2.4. Life Cycles. Process Models (Traditional)
4.2.4.1. Waterfall Model
4.2.4.2. Models Based on Prototypes
4.2.4.3. Incremental Development Model
4.2.4.4. Rapid Application Development (RAD)
4.2.4.5. Spiral Model
4.2.4.6. Unified Development Process or Unified Rational Process (RUP)
4.2.4.7. Component-Based Software Development
4.2.5. Agile Manifesto. Agile Methods
4.2.5.1. Extreme Programming (XP)
4.2.5.2. Scrum
4.2.5.3. Feature Driven Development (FDD)
4.2.6. Software Process Standards
4.2.7. Software Process Definition
4.2.8. Software Process Maturity

4.3. Agile Project Planning and Management
- 4.3.1. What Is Agile?
  - 4.3.1.1. History of Agile
  - 4.3.1.2. Agile Manifesto
- 4.3.2. Agile Basics
  - 4.3.2.1. "Agile" Mentality
  - 4.3.2.2. Agile Alignment
  - 4.3.2.3. Product Development Life Cycle
  - 4.3.2.4. The "Iron Triangle"
  - 4.3.2.5. Working with Uncertainty and Volatility
  - 4.3.2.6. Defined and Empirical Processes
  - 4.3.2.7. Agile Myths
- 4.3.3. Agile Environment
  - 4.3.3.1. Operating Model
  - 4.3.3.2. Agile Roles
  - 4.3.3.3. Agile Techniques
  - 4.3.3.4. Agile Practices
- 4.3.4. Agile Frameworks
  - 4.3.4.1. e-Xtreme Programming (XP)
  - 4.3.4.2. Scrum
  - 4.3.4.3. Dynamic Systems Development Method (DSDM)
  - 4.3.4.4. Agile Project Management
  - 4.3.4.5. Kanban
  - 4.3.4.6. Lean Software Development
  - 4.3.4.7. Lean Start-up
  - 4.3.4.8. Scaled Agile Framework (SAFe)

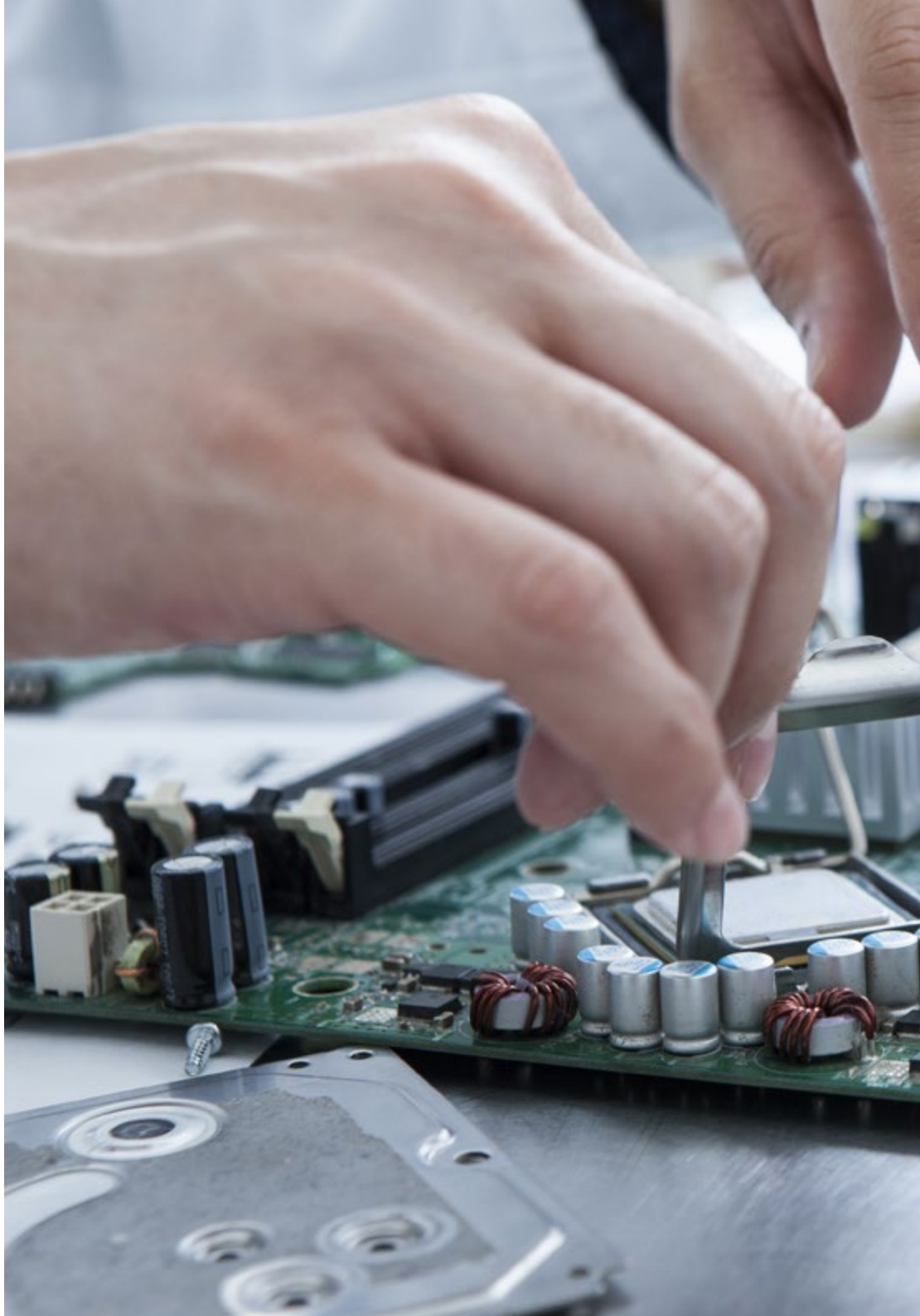
4.4. Configuration Management and Collaborative Repositories
- 4.4.1. Software Configuration Management Basics
  - 4.4.1.1. What is Software Configuration Management?
  - 4.4.1.2. Software Configuration and Software Configuration Items
  - 4.4.1.3. Baselines
  - 4.4.1.4. Versions, Revisions, Variants and "Releases"
- 4.4.2. Configuration Management Activities
  - 4.4.2.1. Configuration Identification
  - 4.4.2.2. Configuration Change Control
  - 4.4.2.3. Status Report Generation
  - 4.4.2.4. Configuration Auditing
- 4.4.3. Configuration Management Plans
- 4.4.4. Configuration Management Tools
- 4.4.5. Configuration Management in the Metrics v.3 Methodology
- 4.4.6. Configuration Management in SWEBOK

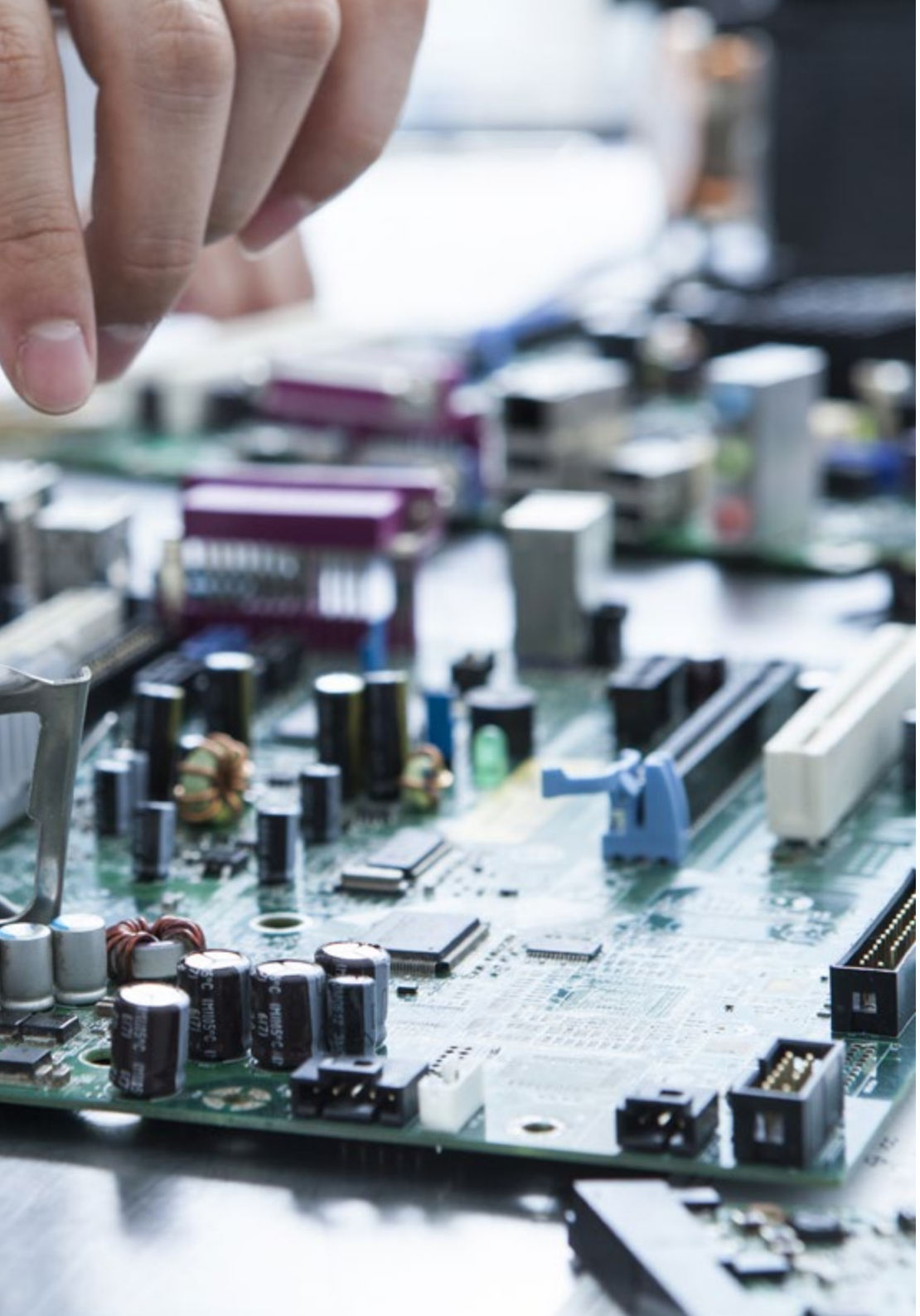
4.5. System and Service Testing
- 4.5.1. General Test Concepts
  - 4.5.1.1. Verify and Validate
  - 4.5.1.2. Test Definition
  - 4.5.1.3. Test Principals
- 4.5.2. Test Approaches
  - 4.5.2.1. White Box Testing
  - 4.5.2.2. Black Box Testing
- 4.5.3. Static Tests or Revisions
  - 4.5.3.1. Formal Technical Reviews
  - 4.5.3.2. Walkthroughs
  - 4.5.3.3. Code Inspections
- 4.5.4. Dynamic Tests
  - 4.5.4.1. Unit Tests
  - 4.5.4.2. Integration Test
  - 4.5.4.3. System Tests
  - 4.5.4.4. Acceptance Tests
  - 4.5.4.5. Regression Tests
- 4.5.5. Alpha Testing and Beta Testing
- 4.5.6. Testing Process
- 4.5.7. Error, Defect and Failure
- 4.5.8. Automatic Testing Tools
  - 4.5.8.1. Junit
  - 4.5.8.2. LoadRunner

4.6. Modeling and Design of Network Architectures
- 4.6.1. Introduction
- 4.6.2. System Characteristics
  - 4.6.2.1. System Description
  - 4.6.2.2. Description and Characteristics of Services 1.3. Performance Requirements
  - 4.6.2.3. Operability Requirements
- 4.6.3. Requirements Analysis
  - 4.6.3.1. User Requirements
  - 4.6.3.2. Application Requirements
  - 4.6.3.3. Network Requirements
- 4.6.4. Network Architecture Design
  - 4.6.4.1. Reference Architecture and Components
  - 4.6.4.2. Architectural Models
  - 4.6.4.3. System and Network Architectures

4.7. Non-Linear System Modeling and Design
- 4.7.1. Introduction
- 4.7.2. Addressing and Routing Architecture
  - 4.7.2.1. Addressing Strategy
  - 4.7.2.2. Routing Strategy
  - 4.7.2.3. Design Considerations
- 4.7.3. Network Design Concepts
- 4.7.4. Design Process

4.8. Platforms and Deployment Environments
- 4.8.1. Introduction
- 4.8.2. Distributed Computer Systems
  - 4.8.2.1. Basic Concepts
  - 4.8.2.2. Computing Models
  - 4.8.2.3. Advantages, Disadvantages and Challenges
  - 4.8.2.4. Operating System Basics





4.8.3. Virtualized Network Deployments
4.8.3.1. Need for Change
4.8.3.2. Transformation of Networks: from "All-IP" to the Cloud
4.8.3.3. Cloud Network Deployment
4.8.4. Example: Azure Network Architecture
4.9. E2E Performance: Delay and Bandwidth. QoS
4.9.1. Introduction
4.9.2. Performance Analysis
4.9.3. QoS
4.9.4. Traffic Prioritization and Management
4.9.5. Service Level Agreements
4.9.6. Design Considerations
4.9.6.1. Performance Assessment
4.9.6.2. Relationships and Interactions
4.10. Network Automation and Optimization
4.10.1. Introduction
4.10.2. Network Management
4.10.2.1. Management and Configuration Protocols
4.10.2.2. Network Management Architectures
4.10.3. Orchestration and Automation
4.10.3.1. ONAP Architecture
4.10.3.2. Controllers and Functions
4.10.3.3. Politics
4.10.3.4. Network Inventory
4.10.4. Optimization

This program will allow you to advance in your career comfortably"

04

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

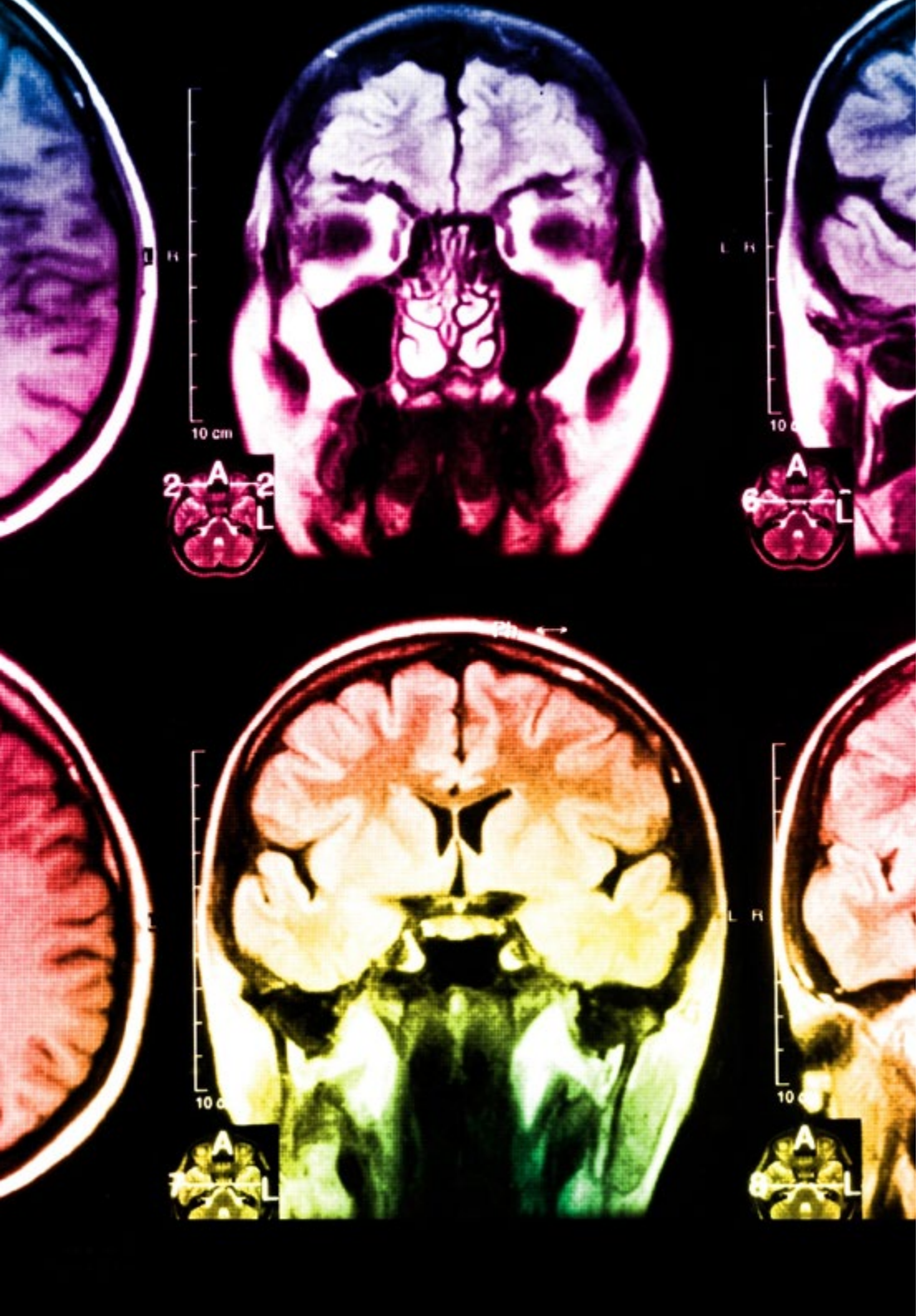
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines different teaching elements in each lesson.

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.

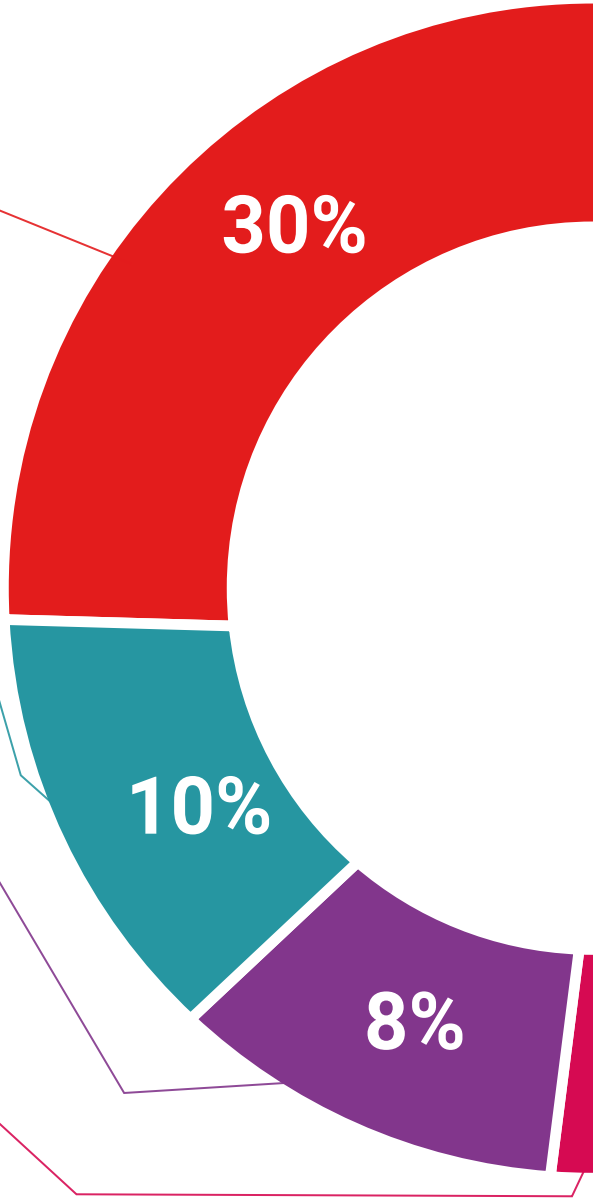
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

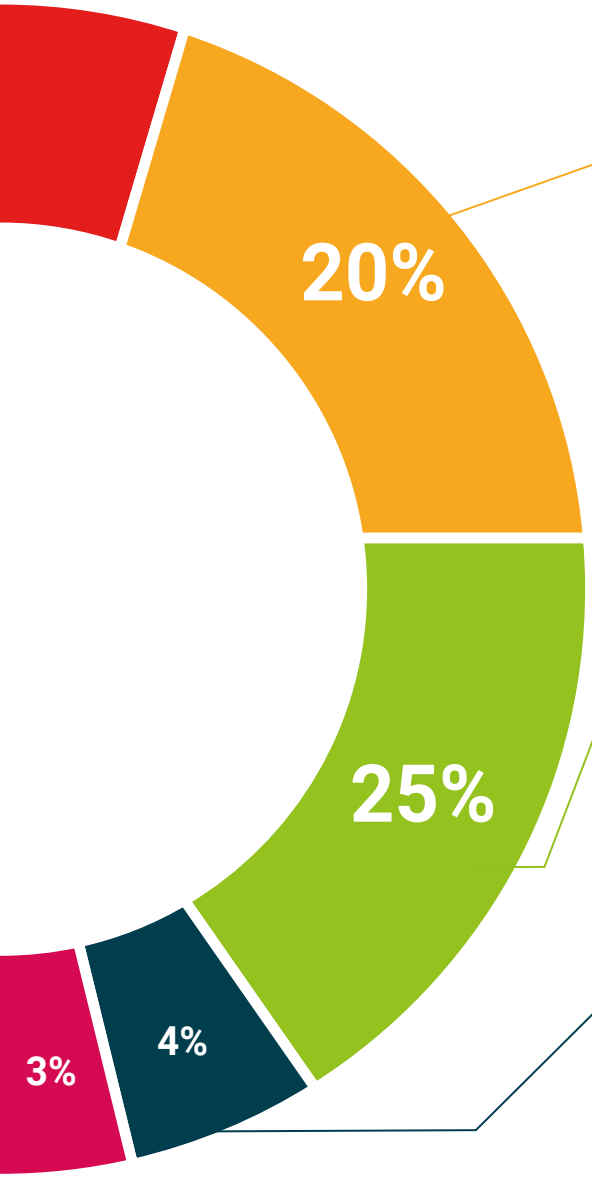
Practising Skills and Abilities

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.

05

Certificate

This Postgraduate Diploma in Networks guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Technological University.

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

This **Postgraduate Diploma in Networks** contains the most complete and up-to-date program on the market.

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

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

Title: **Postgraduate Diploma in Networks**

Official Nº of Hours: **600 h.**

tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Networks

This is a qualification awarded by this University, equivalent to 600 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

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

June 17, 2020

Tere Guevara Navarro

Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates

*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

tech technological university

Postgraduate Diploma
Networks

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

Postgraduate Diploma
Networks

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