Postgraduate Diploma

Security in Computer and Systems Engineering

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Postgraduate Diploma
Security in Computer and Systems Engineering

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

Website: www.techtitute.com/in/information-technology/postgraduate-diploma/postgraduate-diploma-security-computer-systems-engineering

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01

Introduction

The trend to offer services and store information digitally has many benefits, such as cost savings. However, it presents a major problem: security. It is relatively easy to access these files when they are stored on the Internet. This is why organizations around the world invest large amounts of resources in protecting their data. Especially those that by their nature are susceptible to attacks, such as banks or governments themselves. In this regard, TECH has prepared a program with the most up-to-date information on cybersecurity issues. Defining the parts of a security plan, detailing the main entry points for attacks and offering a wide range of resources to stop them. In addition, the contents are available to the student in different formats. Thus, adjusting to their preferences and favoring the assimilation of information.

At TECH, we teach you to think like an attacker would think so that the security solutions proposed are 100% effective"

An example of the need for this professional profile can be found precisely in the banking sector. According to cybersecurity company Trend Micro, it is detecting a 1,318% year-on-year increase in ransomware attacks, a malware that hijacks information and demands payment of a ransom to recover the data. This explains the high demand for qualified professionals to deal with attacks.

For this reason, TECH's agenda covers cybersecurity from different angles. With the intention of offering optimal learning. The types of threats will be defined, providing the keys to perform risk analysis and security plans. In addition, specific topics have been set aside to address network, communications and data security.

The final part of the cybersecurity syllabus will focus on security in different operating systems, specifically Linux and Windows. As well as threat detection and response, and cloud security.

A topic related to software engineering has also been provided. It will deal with the application of software to IT, project management and IT methodologies, Big Data or IoT, among other concepts. Along with a specific module for IT governance, very useful for the corporate environment.

The program will be taught entirely online and without schedules, only a device with an internet connection will be required. In addition, students will have access to the syllabus in different formats, so that they can select the one that best suits their needs. Thus, promoting family and work reconciliation and facilitating the assimilation of learning.

This **Postgraduate Diploma in Security in Computer and Systems Engineering** contains the most complete and up-to-date educational program on the market. Its features are:

- The development of case studies presented by security experts in systems engineering and computer science
- The graphic, schematic, and eminently 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
- 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

Thanks to the techniques provided by our instructors you will learn how to create robust firewalls for files as sensitive as customer databases"

In this University Expert you will learn how to use SIEM systems to centralize the storage and interpretation of safety data"

The ability to detect an attack must be accompanied by the ability to repel it. In this program you will learn how to carry out both processes.

Learn the characteristics, types and possibilities of blockchain technology applied to software thanks to the specific topic raised by TECH

The program's teaching staff includes professionals from the sector who contribute their work experience to this training 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 training programmed to train 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. This will be done with the help of an innovative system of interactive videos made by renowned experts.

02

Objectives

Graduates of this Postgraduate Diploma will be prepared to apply effective security measures focused on the business environment You will learn to identify the different security domains, to define the services and tools for each domain and to design security strategies for corporate services. In addition, students will be instructed in *software* engineering as a way to create synergies in security; as well as in IT governance to implement the knowledge correctly in companies.

Security strategies vary from company to company. Thanks to TECH you will know the commonalities so you can adapt to anyone"

General Objectives

- Analyze the process of designing a security strategy when deploying corporate services
- Identify security areas
- Define the services and tools in each of the security areas
- Develop the *software* creation process
- Determine the different technologies for each sector
- Study work methodologies
- Evaluate the knowledge acquired
- Establish the roles of IT governance and IT management identifying their differences
- Develop the main elements of IT governance
- Analyze the most common frameworks
- Present common IT management processes

Specific Objectives

Module 1. Security Systems

- Define security requirements
- Develop a security plan
- Determine the security systems to be deployed for the execution of a security plan
- Identify the operations necessary for the prevention mechanisms
- Establish guidelines for a logging and monitoring system
- Propose incident response actions
- Analyze the process of designing a security strategy when deploying corporate services
- Identify security areas
- Analyze the services and tools in each of the security areas

Module 2. Software Engineering

- Acquire specialized knowledge in project management methodologies
- Analyze the life cycle of an application
- Explore the different architectures
- Identify programming methodologies

Module 3. IT (Information Technology) Governance and Management

- Determine the roles of IT governance and IT management, identifying their differences
- Develop the main elements of IT governance
- Analyze the most common frameworks
- Present common IT management processes
- Establish the importance of IT governance and management functions
- Identify the different reference models and standards
- Propose actions for the implementation of an IT Government
- Analyze the COBIT, ITIL frameworks
- Identify IT management functions
- Examine how new technologies such as *Cloud Computing* and AI are being integrated into IT governance

In TECH you will learn about the different security fields that exist and you will learn to manage them with ease and professionalism"

03

Course Management

TECH offers you a faculty with specific training in computer and systems engineering security, colloquially known as cybersecurity. The student will receive theoretical material about the security processes and tools most commonly used by companies. In addition, you will put these techniques into practice so that the learning process is complete. Always accompanied by professionals who will resolve any doubts that may arise during the work process.

TECH professionals will provide you with the most up-to-date techniques in a field that, by its nature, is constantly changing"

Management

D. Olalla Bonal, Martín

- Technical sales blockchain specialist en IBM
- Blockchain Hyperledger and Ethereum Architecture Manager at Blocknitive
- Director of the Blockchain area at PSS Information Technologies.
- Director de Información en ePETID - Global Animal Health
- IT Infrastructure Architect at Bankia - wdoIT (IBM - Bankia Join Venture)
- Project director and manager at Daynet integral services
- Director of Technology at Wiron Construcciones Modulares
- Head of IT Department at Dayfisa
- Head of IT department at Dell Computer, Majsa and Hippo Viajes
- Electronics Technician in IPFP Juan de la Cierva

Professors

D. Gómez Rodríguez, Antonio

- Cloud Solutions Engineer at Oracle
- Project Manager at Sopra Group
- Project Manager at Everis
- Project Manager at Empresa pública de Gestion de Programas Culturales. Department of Culture of Andalusia
- Information Systems Analyst. Sopra Group
- Degree in Telecommunications Engineering from the Polytechnic University of Catalonia.
- Postgraduate Degree in Information Technologies and Systems, Catalan Institute of Technology
- E-Business Master, La Salle School of Business

D. Villamizar Lamus, Christian Alfonso

- Senior Digital Architect at Banco Santander
- Digital architect at KPMG in a *cloud* banking platform project
- Lead Digital Project Specialist at Deloitte Greece
- Technical architect at Everis and NTT Data with projects at Telefónica de España, Securitas Direct, Grupo Santillana, Bankia, Banco Bilbao Vizcaya, FCC and ASISA
- Telecommunications Engineer, University Santo Tomás, Bucaramanga, Colombia
- Specialist in declarative programming and programming engineering from the Polytechnic University of Valencia

04

Structure and Content

The Postgraduate Diploma in Systems and Computer Engineering Security focuses on IT security systems. It defines governance and management, analyzes cryptography and certificate technologies, and develops network, communications and data security. Not to mention such important elements as identity and permissions management, threat detection and incident response. In addition, content related to software engineering, such as the frontend and backend of applications, and IT governance has been developed.

Learn the peculiarities of security in operating systems such as Linux or Windows thanks to this Postgraduate Diploma"

Module 1. Security Systems

1.1. Information Technology Security Systems
- 1.1.1. Information Systems Security Challenges
- 1.1.2. Types of Threats
- 1.1.3. Network and Internet Systems

1.2. Information Security Governance and Management
- 1.2.1. Security Governance. Safety Regulations
- 1.2.2. Risk Analysis
- 1.2.3. Security Planning

1.3. Cryptography and Certificate Technologies
- 1.3.1. Cryptographic Techniques
- 1.3.2. Cryptographic Protocols
- 1.3.3. Digital Certificates. Applications

1.4. Network and Communications Security
- 1.4.1. Security in Communication Systems
- 1.4.2. Firewall Security
- 1.4.3. Intrusion Detection and Prevention Systems

1.5. Identity and Permission Management Systems
- 1.5.1. Authentication Management Systems
- 1.5.2. Authorization Management System: Access Policies
- 1.5.3. Key Management Systems

1.6. Data Security
- 1.6.1. Securitization of Storage Systems
- 1.6.2. Protection of Database Systems
- 1.6.3. Securing Data in Transit

1.7. Operating Systems Security
- 1.7.1. Linux
- 1.7.2. Windows
- 1.7.3. Vulnerability Scanning and Patching

1.8 Detection of Threats and Attacks
- 1.8.1. Auditing, *Logging* and Monitoring Systems
- 1.8.2. Event and Alarm Systems
- 1.8.3. SIEM Systems

1.9. Incident Response
- 1.9.1. Incident Response Plan
- 1.9.2. Ensuring Business Continuity
- 1.9.3. Forensic Analysis and Remediation of Incidents of the Same Nature.

1.10. Security in Cloud Environments
- 1.10.1. Security in *Cloud* Environments
- 1.10.2. Shared Management Model
- 1.10.3. Security Management Systems Application

Module 2. Software Engineering

2.1. Software Applications in Information Technology
- 2.1.1. Software Applications
- 2.1.2. Life Cycle
- 2.1.3. Architecture
- 2.1.4. Methods

2.2. Project Management and IT Methodologies
- 2.2.1. Project Management
- 2.2.2. Agile Methodologies
- 2.2.3. Tools

2.3. Front end Development and Mobile Applications
- 2.3.1. Front end Development and Mobile Applications
- 2.3.2. HTML, CSS
- 2.3.3. JavaScript, jQuery
- 2.3.4. Angular
- 2.3.5. React

2.4. Backend Development of *Software* Applications
- 2.4.1. Backend Development of *Software* Applications
- 2.4.2. Backend Architecture of *Software* Applications
- 2.4.3. Backend Programming Languages
- 2.4.4. Application Servers in *Software* Architecture

2.5. Data Storage, Databases and Caching
- 2.5.1. Data Management of *Software* Applications
- 2.5.2. File System
- 2.5.3. Relational Databases
- 2.5.4. Non-Relational Databases
- 2.5.5. Cache

2.6. Container Management in Cloud Computing
- 2.6.1. Container Technology
- 2.6.2. Containers with Docker and Docker-Compose Technology
- 2.6.3. Container Orchestration with Kubernetes
- 2.6.4. Containers in Cloud Computing

2.7. Testing and Continuous Integration
- 2.7.1. Testing and Continuous Integration
- 2.7.2. Unit Tests
- 2.7.3. Test e2e
- 2.7.4. Test Driven Development (TDD)
- 2.7.5. Continuous Integration

2.8. *Software*-Oriented *Blockchain*
- 2.8.1. *Software*-Oriented *Blockchain*
- 2.8.2. Cryptocurrencies
- 2.8.3. Types of *Blockchain*

2.9. *Big Data* Software, Artificial Intelligence, IoT
- 2.9.1. Big Data, Artificial Intelligence, IoT
- 2.9.2. *Big Data*
- 2.9.3. Artificial Intelligence
- 2.9.4. Neural Networks

2.10. IT *Software* Security
- 2.10.1. IT *Software* Security
- 2.10.2. Servers
- 2.10.3. Ethical Aspects
- 2.10.4. European Data Protection Regulation (GDPR)
- 2.10.5. Risk Analysis and Management

Module 3. IT (Information Technology) Governance and Management

3.1. IT Governance and Management
- 3.1.1. IT Governance and Management
- 3.1.2. Advanced IT Governance
- 3.1.3. IT Governance: Security and Risk

3.2. Reference Sources for IT Governance
- 3.2.1. *Frameworks* and Models
- 3.2.2. IT Governance Standards
- 3.2.3. IT Governance Quality Systems

3.3. IT Governance. Structures and Management
- 3.3.1. Role of IT Governance
- 3.3.2. IT Governance Structures
- 3.3.3. Implementation of IT Governance

3.4. Key Elements in IT Governance
- 3.4.1. Enterprise Architecture
- 3.4.2. Data Governance
- 3.4.3. Relationship of IT Governance and AI

3.5. COBIT. Control Objectives for Information and Related Technologies
- 3.5.1. COBIT. Control Objectives
- 3.5.2. *Framework* COBIT
- 3.5.3. Areas, Domains and Processes

3.6. ITIL v4 Framework
- 3.6.1. ITIL v4 Framework
- 3.6.2. *Service Value System*
- 3.6.3. Dimensions and Principles

3.7. IT Governance Performance Measurement
- 3.7.1. IT Governance Monitoring and Control Principles
- 3.7.2. IT Governance Control Metrics
- 3.7.3. Integral Control Panel

3.8. IT Management
- 3.8.1. IT Management
- 3.8.2. IT Service Provider Procurement and Management
- 3.8.3. IT Performance Monitoring
- 3.8.4. IT Quality Assurance

3.9. Acquisition and Development of Information Systems
- 3.9.1. Project Management Structure
- 3.9.2. Product Development Methodology
- 3.9.3. Implementation and Exploitation of Information Systems

3.10. Governance, IT Management and *Cloud Computing*
- 3.10.1. IT Governance and Management in *Cloud Computing* Environments
- 3.10.2. Shared Security Management Model
- 3.10.3. Enterprise Cloud Architectures

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH we use the Case Method

Our program offers a revolutionary method of skills and knowledge development. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a way of learning that is shaking the foundations of traditional universities around the world"

We are the first online university to combine Harvard Business School case studies with a 100% online learning system based on repetition.

The student will learn, through collaborative activities and real cases, how to solve complex situations in real business environments.

A learning method that is different and innovative

This intensive Information Technology program at TECH Technological University prepares you to face all the challenges in this field, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH Technological University you will use Harvard *case studies*, with which we have a strategic agreement that allows us, to offer you material from the best university in the world.

> *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

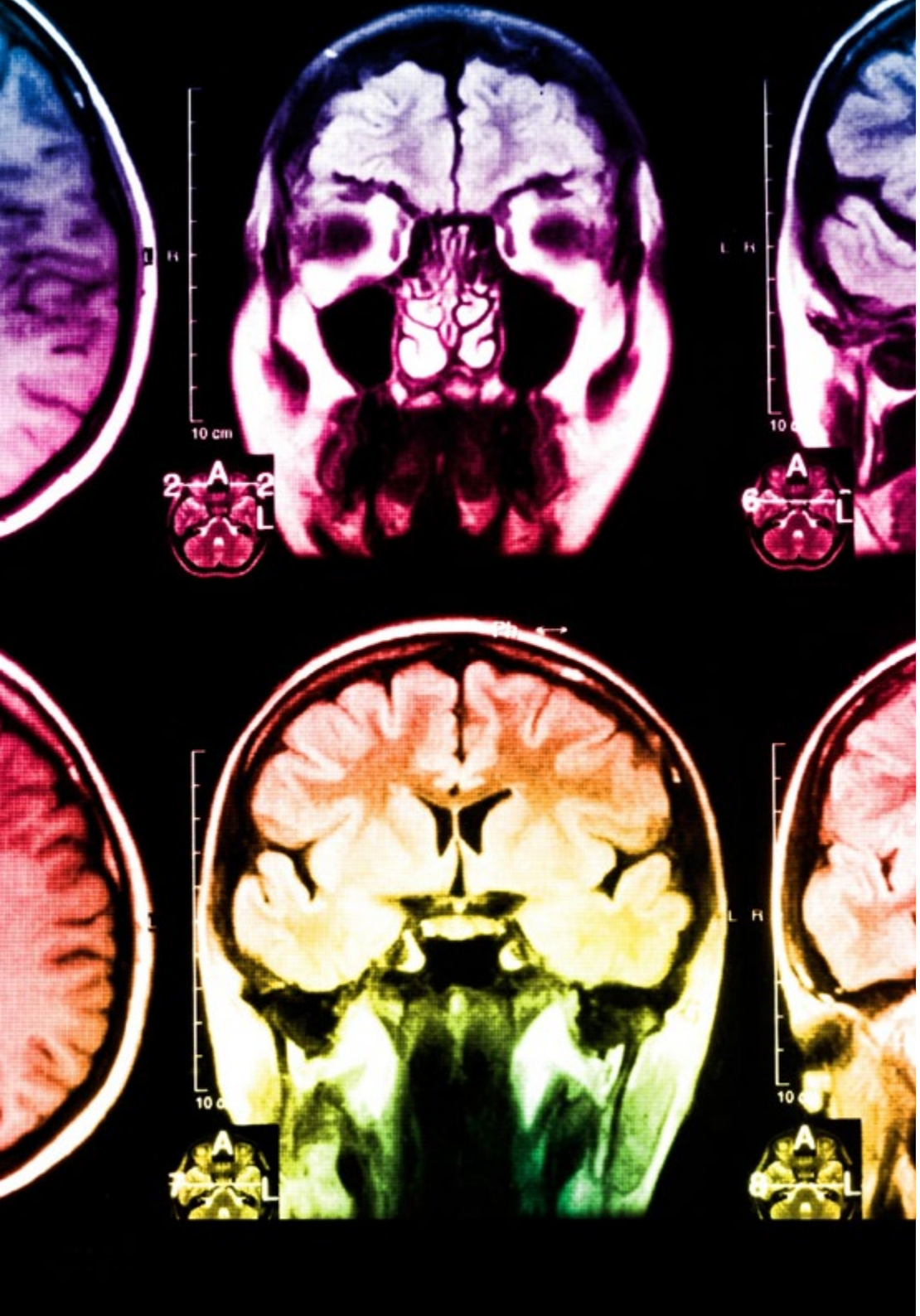
Our university is the first in the world to combine Harvard University *case studies* with a 100%-online learning system based on repetition, which combines different teaching elements in each lesson.

We enhance Harvard *case studies* 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 university 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.

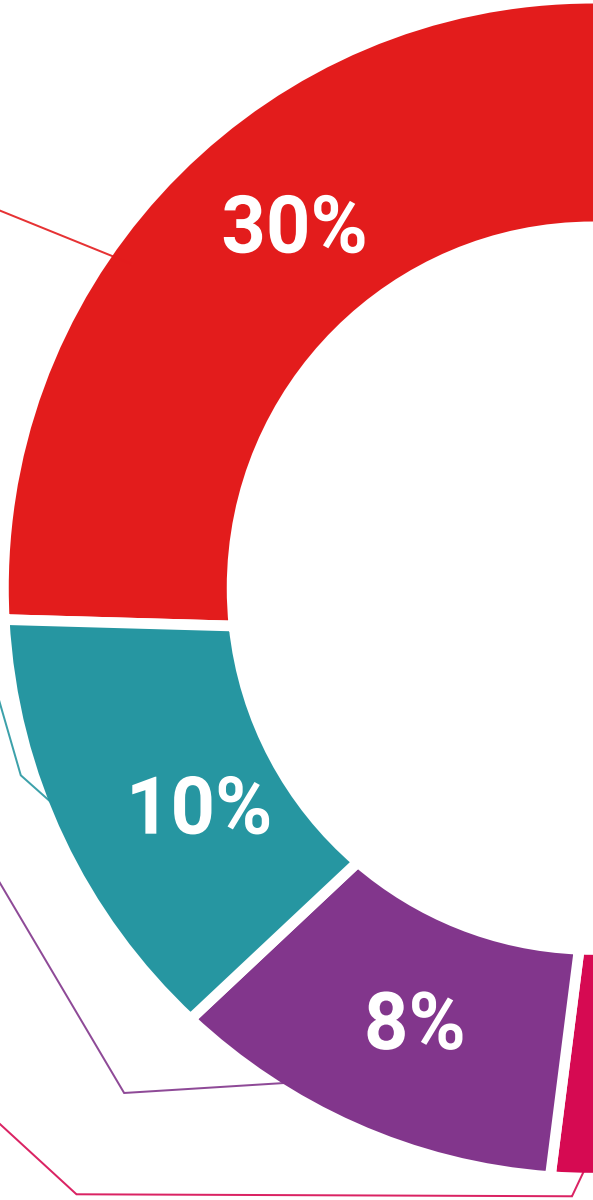
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

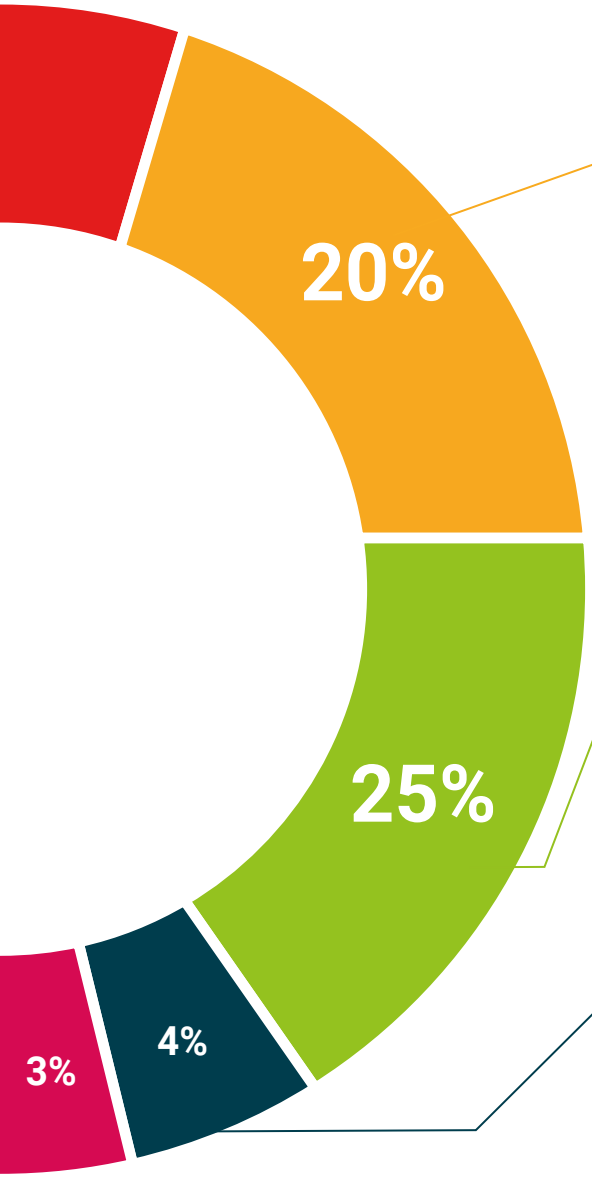
Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.

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

They will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management 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 multimedia content presentation training Exclusive system 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 your goals.

06

Certificate

The Postgraduate Diploma in Computer and Systems Engineering Security guarantees, in addition to the most rigorous and up-to-date training, access to a Postgraduate Diploma degree issued by TECH Technological University.

Successfully complete this training program and receive your university certificate without travel or laborious paperwork"

This **Postgraduate Diploma in Security in Computer and Systems Engineering** 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 certificate issued by **TECH Technological University** will reflect the qualification obtained in the University Expert, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional from career evaluation committees.

Title: **Postgraduate Diploma in Security in Computer and Systems Engineering**

Official Nº of Hours: **450 h.**


tech technological university

Awards the following

CERTIFICATE

to

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

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Security in Computer and Systems Engineering

This is a qualification awarded by this University, equivalent to 450 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

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFWORD23S techtitute.com/certificates

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

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