



### Postgraduate Diploma Red Team Cybersecurity

» Modality: online» Duration: 6 months

» Certificate: TECH Global University

» Credits: 18 ECTS

» Schedule: at your own pace

» Exams: online

» Target Group: University Graduates who have previously completed any of the degrees in the fields of Social and Legal Sciences, Administrative and Business Sciences

 $\verb| website: www.techtitute.com/us/school-of-business/postgraduate-diploma/postgraduate-diploma-red-team-cybersecurity| \\$ 

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# 01 **Welcome**

Companies have become very vulnerable to cyber attacks in which, clearly, due to the variety of interconnection channels, they are more than exposed. Therefore, it has been essential for companies to implement cybersecurity systems for data protection, where it is vital to seek experts in the sector to mitigate cybercrime. Currently, this is an area that has a great relevance worldwide, therefore, the business professional must be constantly learning about advanced malware techniques. In this way, the graduate will be acquainted with innovative knowledge related to malware classification, its characteristics and types of analysis. All this with a 100% online format that will provide ample time flexibility.









### tech 08 | Why Study at TECH?

### At TECH Global University



#### **Innovation**

The university offers an online learning model that balances the latest educational technology with the most rigorous teaching methods. A unique method with the highest international recognition that will provide students with the keys to develop in a rapidly-evolving world, where innovation must be every entrepreneur's focus.

"Microsoft Europe Success Story", for integrating the innovative, interactive multi-video system.



### The Highest Standards

Admissions criteria at TECH are not economic. Students don't need to make a large investment to study at this university. However, in order to obtain a qualification from TECH, the student's intelligence and ability will be tested to their limits. The institution's academic standards are exceptionally high...

95%

of TECH students successfully complete their studies



### Networking

Professionals from countries all over the world attend TECH, allowing students to establish a large network of contacts that may prove useful to them in the future.

+100000

+200

executives prepared each year

different nationalities



### **Empowerment**

Students will grow hand in hand with the best companies and highly regarded and influential professionals. TECH has developed strategic partnerships and a valuable network of contacts with major economic players in 7 continents.

+500

collaborative agreements with leading companies



#### **Talent**

This program is a unique initiative to allow students to showcase their talent in the business world. An opportunity that will allow them to voice their concerns and share their business vision.

After completing this program, TECH helps students show the world their talent.



#### **Multicultural Context**

While studying at TECH, students will enjoy a unique experience. Study in a multicultural context. In a program with a global vision, through which students can learn about the operating methods in different parts of the world, and gather the latest information that best adapts to their business idea.

TECH students represent more than 200 different nationalities.



### Learn with the best

In the classroom, TECH's teaching staff discuss how they have achieved success in their companies, working in a real, lively, and dynamic context. Teachers who are fully committed to offering a quality specialization that will allow students to advance in their career and stand out in the business world.

Teachers representing 20 different nationalities.



At TECH, you will have access to the most rigorous and up-to-date case analyses in academia"

### Why Study at TECH? | 09 tech

TECH strives for excellence and, to this end, boasts a series of characteristics that make this university unique:



#### **Analysis**

TECH explores the student's critical side, their ability to question things, their problem-solving skills, as well as their interpersonal skills.



#### **Academic Excellence**

TECH offers students the best online learning methodology. The university combines the Relearning method (postgraduate learning methodology with the best international valuation) with the Case Study. Tradition and vanguard in a difficult balance, and in the context of the most demanding educational itinerary.



### **Economy of Scale**

TECH is the world's largest online university. It currently boasts a portfolio of more than 10,000 university postgraduate programs. And in today's new economy, **volume + technology = a ground-breaking price**. This way, TECH ensures that studying is not as expensive for students as it would be at another university.





### tech 12 | Why Our Program?

This program will provide you with a multitude of professional and personal advantages, among which we highlight the following:



### A Strong Boost to Your Career

By studying at TECH, students will be able to take control of their future and develop their full potential. By completing this program, students will acquire the skills required to make a positive change in their career in a short period of time.

70% of students achieve positive career development in less than 2 years.



## Develop a strategic and global vision of the company

TECH offers an in-depth overview of general management to understand how each decision affects each of the company's different functional fields.

Our global vision of companies will improve your strategic vision.



### Consolidate the student's senior management skills

Studying at TECH means opening the doors to a wide range of professional opportunities for students to position themselves as senior executives, with a broad vision of the international environment.

You will work on more than 100 real senior management cases.



### You will take on new responsibilities

The program will cover the latest trends, advances and strategies, so that students can carry out their professional work in a changing environment.

45% of graduates are promoted internally.



### Access to a powerful network of contacts

TECH connects its students to maximize opportunities. Students with the same concerns and desire to grow. Therefore, partnerships, customers or suppliers can be shared.

You will find a network of contacts that will be instrumental for professional development.



### Thoroughly develop business projects.

Students will acquire a deep strategic vision that will help them develop their own project, taking into account the different fields in companies.

20% of our students develop their own business idea.



### Improve soft skills and management skills

TECH helps students apply and develop the knowledge they have acquired, while improving their interpersonal skills in order to become leaders who make a difference.

Improve your communication and leadership skills and enhance your career.



### You will be part of an exclusive community

Students will be part of a community of elite executives, large companies, renowned institutions, and qualified teachers from the most prestigious universities in the world: the TECH Global University community.

We give you the opportunity to study with a team of world-renowned teachers.





### tech 16 | Objectives

## TECH makes the goals of their students their own goals too Working together to achieve them

This **Postgraduate Diploma in Red Team Cybersecurity** will enable students to:



Study and understand the tactics, techniques and procedures used by malicious actors, enabling the identification and simulation of threats



Apply theoretical knowledge in practical scenarios and simulations, facing real challenges to strengthen Pentesting skills



Learn how to efficiently allocate resources within a cybersecurity team, considering individual skills and maximizing productivity on projects

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Improve communication skills specific to technical environments, facilitating understanding and coordination among team members



Learn project monitoring and control techniques, identifying deviations and taking corrective actions as necessary



Develop competencies to evaluate and improve security configurations in Windows systems, ensuring the implementation of effective measures



Promote ethical and legal practices in the execution of attacks and tests on Windows systems, considering the ethical principles of cybersecurity



Promote ethical and legal practices in malware analysis and development, ensuring integrity and accountability in all activities



Familiarize the graduate with the evaluation of security in APIs and web services, identifying possible points of vulnerability and strengthening security in programming interfaces





Foster effective collaboration with security teams, integrating strategies and efforts to protect network infrastructure



Apply theoretical knowledge in simulated environments, participate in hands-on exercises to understand and counter malicious attacks



Acquire a solid understanding of the fundamental principles of digital forensic investigation (DFIR) and their application in the resolution of cyber incidents



Develop skills to formulate actionable and practical recommendations aimed at mitigating vulnerabilities and improving security posture





Familiarize the learner with best practices for executive reporting, adapting technical information for non-technical audiences



Learn to prepare detailed reports documenting findings, methodologies used and recommendations derived from advanced Red Team exercises





### tech 22 | Structure and Content

### **Syllabus**

This Postgraduate Diploma incorporates 6 months of online learning, in which TECH through world-class education, will lead the student to the pinnacle of their professional career in the Cybersecurity sector. Likewise, the students will have important situations that they will have to face with rigor in the field of Computer Science. Therefore, this educational program provides the graduate with a variety of skills in the analysis and development of Malware, achieving success in the Pentesting sector.

The teachers have provided a highly exclusive syllabus that integrates 3 modules, with the objective that students enhance their skills oriented to advanced phishing campaigns in a highly competitive area of knowledge.

In this way, professionals who take this Postgraduate Diploma program will delve into areas such as firewall log analysis and network intrusion detection. Accordingly, students will achieve advanced learning by being specialists in the execution of Shellcode in memory and on disk.

Likewise, TECH orients the education from excellence and comfort by providing the most innovative and exclusive material, being this, a program in which you will only need an electronic device with Internet access. In this way, you will be able to access the virtual platform from the comfort of wherever you are, and in this way you will be able to open your lessons without any scheduling problems.

This Postgraduate Diploma takes place over 6 months and is divided into 3 modules:

| Module 1 | Malware Analysis and Development |
|----------|----------------------------------|
| Module 2 | Forensic Fundamentals and DFIR   |
| Module 3 | Advanced Red Team Exercises      |



### Where, When and How is it Taught?

TECH offers the possibility of developing this Postgraduate Diploma in Red Team Cybersecurity completely online. Throughout the 6 months of the educational program, you will be able to access all the contents of this program at any time, allowing you to self-manage your study time.

A unique, key, and decisive educational experience to boost your professional development and make the definitive leap.

## tech 24 | Structure and Content

| Module 1. Malware Analysis and Developm   | ent   |  |   |
|---|---|--|---|
| <ul> <li>1.1. Malware Analysis and Development</li> <li>1.1.1. Malware History and Evolution</li> <li>1.1.2. Malware Classification and Types</li> <li>1.1.3. Malware Analysis</li> <li>1.1.4. Malware Development</li> </ul> | <ul> <li>1.2. Preparing the Environment</li> <li>1.2.1. Configuration of Virtual Machines and Snapshots</li> <li>1.2.2. Malware Analysis Tools</li> <li>1.2.3. Malware Development Tools</li> </ul>             | <ul><li>1.3. Windows Basics</li><li>1.3.1. PE file format (Portable Executable)</li><li>1.3.2. Processes and Threads</li><li>1.3.3. File System and Registry</li><li>1.3.4. Windows Defender</li></ul> | <ul><li>1.4. Basic Malware Techniques</li><li>1.4.1. Shellcode Generation</li><li>1.4.2. Shellcode Execution on Disk</li><li>1.4.3. Disk vs Memory</li><li>1.4.4. Shellcode Execution in Memory</li></ul>   |
| <ul> <li>1.5. Intermediate Malware Techniques</li> <li>1.5.1. Persistence in Windows</li> <li>1.5.2. Home Folder</li> <li>1.5.3. Registration Keys</li> <li>1.5.4. Screensaver</li> </ul>                                     | <ul> <li>1.6. Advanced Malware Techniques</li> <li>1.6. 1 Shellcode Encryption (XOR)</li> <li>1.6.2. Shellcode Encryption (RSA)</li> <li>1.6.3. String Obfuscation</li> <li>1.6.4. Process Injection</li> </ul> | <ul><li>1.7. Static Malware Analysis</li><li>1.7.1. Analyzing Packers with DIE (Detect It Easy)</li><li>1.7.2. Analyzing Sections with PE-Bear</li><li>1.7.3. Decompilation with Ghidra</li></ul>      | <ul> <li>1.8. Dynamic Malware Analysis</li> <li>1.8.1. Observing Behavior with Process Hacker</li> <li>1.8.2. Analyzing Calls with API Monitor</li> <li>1.8.3. Analyzing Registry Changes with Regshot</li> <li>1.8.4. Observing Network Requests with TCPView</li> </ul> |
| <ul><li>1.9. Analysis in .NET</li><li>1.9.1. Introduction to .NET</li><li>1.9.2. Decompiling with dnSpy</li><li>1.9.3. Debugging with dnSpy</li></ul>   | 1.10. Analyzing Real Malware 1.10.1. Preparing the Environment 1.10.2. Static Malware Analysis 1.10.3. Dynamic Malware Analysis 1.10.4. YARA Rule Creation  |  |   |

### Structure and Content | 25 tech

| М      | lodule 2. Forensic Fundamentals and  | d DFIR                      |   |        |  |        |  |
|--------|--|-----------------------------|---|--------|--|--------|--|
| 2.1.   | Digital Forensics  | 2.2.                        | Fundamentals of Computer Forensics  | 2.3.   | File Systems and Data Structure  | 2.4.   | Operating Systems Analysis   |
| 2.1.2. | History and Evolution of Computer Forensics<br>Importance of Computer Forensics<br>in Cybersecurity<br>History and Evolution of Computer Forensics | 2.2.2.<br>2.2.3.            | Chain of Custody and Its Application<br>Types of Digital Evidence<br>Evidence Acquisition Processes | 2.3.2. | Main File Systems<br>Data Hiding Methods<br>Analysis of File Metadata and Attributes | 2.4.2. | Forensic Analysis of Windows Systems<br>Forensic Analysis of Linux Systems<br>Forensic Analysis of macOS Systems |
| 2.5.   | Data Recovery and Disk Analysis  | 2.6.                        | Network and Traffic Analysis  | 2.7.   | Malware and Malicious Code Analysis  | 2.8.   | Log and Event Analysis   |
|        | Data Recovery from Damaged Media   | 2.6.1.                      | Network Packet Capture and Analysis   | 2.7.1. | Malware Classification and Its Characteristics                                       |        | Types of Logs in Systems and Applications  |
|        | Disk Analysis Tools<br>Interpretation of File Allocation Tables  |                             | Firewall Log Analysis<br>Network Intrusion Detection  |        | Static and Dynamic Malware Analysis Disassembly and Debugging Techniques             |        | Interpretation of Relevant Events<br>Log Analysis Tools  |
| 2.9.   | Respond to Security Incidents  | 2.10. Evi                   | dence and Legal Presentation  |        |  |        |  |
|        |  |                             | es of Digital Evidence  |        |  |        |  |
|        |  | 2.10.2. Prep<br>2.10.3. App | ne Legal Field<br>paration of Forensic Reports<br>earance at Trial as<br>Expert Witness             |        |  |        |  |

## tech 26 | Structure and Content

| Мо   | dule 3. Advanced Red Team Exercises   |  |   |
|------|---|--|---|
|      | <ul> <li>Advanced Recognition Techniques</li> <li>Advanced Subdomain Enumeration</li> <li>Advanced Google Dorking</li> <li>Social Networks and the Harvester</li> </ul> | <ul><li>3.2. Advanced Phishing Campaigns</li><li>3.2.1. What is Reverse-Proxy Phishing?</li><li>3.2.2. 2FA Bypass with Evilginx</li><li>3.2.3. Data Exfiltration</li></ul> | 3.3.Advanced Persistence Techniques3.4.Advanced Avoidance Technique3.3.1.Golden Tickets3.4.1.AMSI Bypass3.3.2.Silver Tickets3.4.2.Modification of Existing Tools3.3.3.DCShadow Technique3.4.3.Powershell Obfuscation    |
| 3.5. | . Advanced Lateral Movement Techniques  1. Pass-the-Ticket (PtT) 2. Overpass-the-Hash (Pass-the-Key) 3. NTLM Relay  | <ul><li>3.6. Advanced Post-Exploitation Technique</li><li>3.6.1. LSASS Dump</li><li>3.6.2. SAM Dump</li><li>3.6.3. DCSync Attack</li></ul>                                 | 3.7.Advanced Pivoting Techniques3.8.Physical Intrusions3.7.1.What Is Pivoting3.8.1.Surveillance and Reconnaissance3.7.2.Tunneling with SSH3.8.2.Tailgating and Piggybacking3.7.3.Pivoting with Chisel3.8.3.Lock-Picking |
| 3.9. | . Wi-Fi Attacks  1. WPA/WPA2 PSK Attacks  2. AP Rogue Attacks  3. Attacks on WPA2 Enterprise  | 3.10. RFID Attacks 3.10.1. RFID Card Reading 3.10.2. RFID Card Manipulation 3.10.3. Creation of Cloned Cards   |   |





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.

88



### tech 30 | Methodology

## TECH Business School uses the 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.





This program prepares you to face business challenges in uncertain environments and achieve business success.



Our program prepares you to face new challenges in uncertain environments and achieve success in your career.

### A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch to present executives with challenges and business decisions at the highest level, whether at the national or international level. 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 business reality is taken into account.



You will learn, through collaborative activities and real cases, how to solve complex situations in real business environments"

The case method has been the most widely used learning system among the world's leading business 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 we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They must integrate all their knowledge, research, argue and defend their ideas and decisions.

### tech 32 | Methodology

### **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.

Our online system will allow you to organize your time and learning pace, adapting it to your schedule. You will be able to access the contents from any device with an internet connection.

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 online business school is the only one in the world licensed to incorporate 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.



### Methodology | 33 tech

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. With this methodology we have 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, markets, and financial 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 specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to 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.

### tech 34 | Methodology

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.



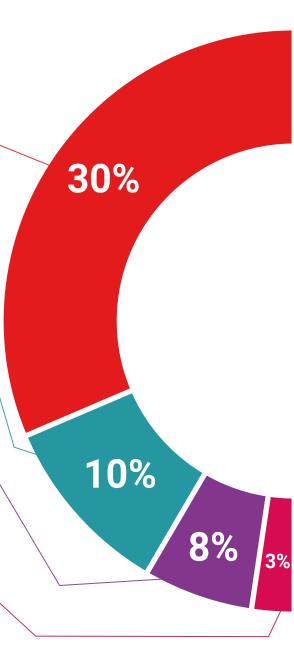
### **Management Skills Exercises**

They will carry out activities to develop specific executive competencies in each thematic area. Practices and dynamics to acquire and develop the skills and abilities that a high-level manager 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.





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 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.

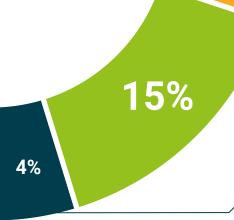


This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

#### **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.

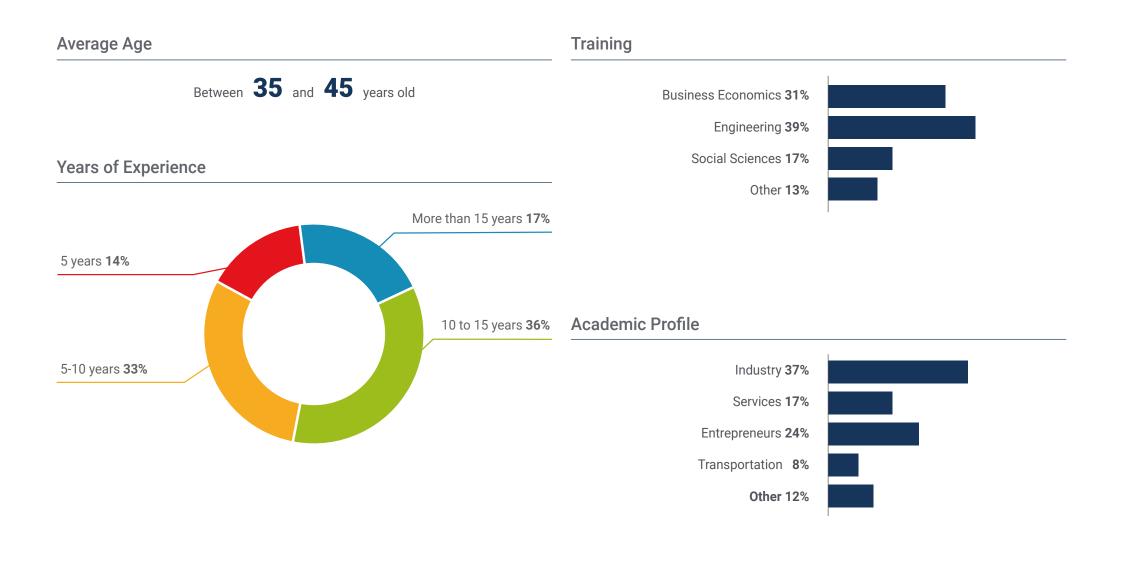




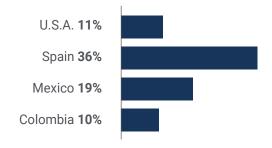
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### **Geographical Distribution**



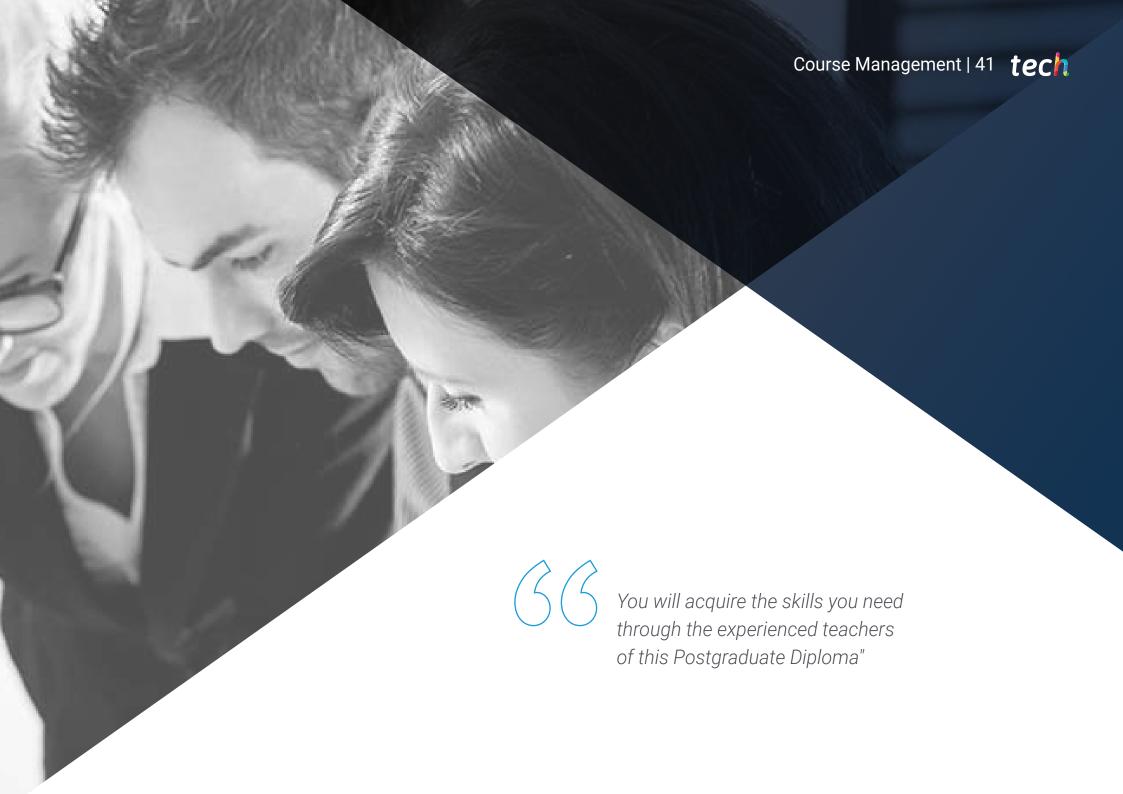


## **Ramón Torres**

#### **Digital Forensic Analyst**

"Due to the business vulnerability regarding cyber-attacks, this educational program provided me with multiple tools to broaden the view in the company about cyber threats. In this way, avoiding specific and general digital security issues within the entity"





### tech 42 | Course Management

#### Management



### Mr. Gómez Pintado, Carlos

- Manager of Cybersecurity and Network Team Cipherbit in Oesía Group
- Manager Advisor & Investor at Wesson App
- Graduate in Software Engineering and Information Society Technologies, Polytechnic University of Madrid
- Collaboration with educational institutions for the development of Higher Level Training Cycles in cybersecurity







In this field of study
you will enable you
to expand your
knowledge of the rules
of digital evidence in
the legal field and the
preparation of forensic
reports in just 6 months
of online training.

# Are you ready to take the leap? Excellent professional development awaits you

The Postgraduate Diploma in Red Team Cybersecurity at TECH is an intensive program that prepares you to face challenges and business decisions in the field of Information Technology. The main objective is to promote your personal and professional growth. Helping you achieve success.

TECH offers
exclusive multimedia
material that offers
you great dynamism,
ensuring the success
in the development
of this program.

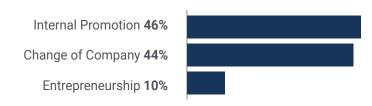
#### When the change occurs

During the program 13%

During the first year 64%

After 2 years 23%

### Type of change



### Salary increase

This program represents a salary increase of more than 25,55% for our students

\$55,465

A salary increase of **25,55%** 

\$74,500





### tech 50 | Benefits for Your Company

Developing and retaining talent in companies is the best long-term investment.



#### Growth of talent and intellectual capital

The professional will introduce the company to new concepts, strategies, and perspectives that can bring about significant changes in the organization.



## Retaining high-potential executives to avoid talent drain

This program strengthens the link between the company and the professional and opens new avenues for professional growth within the company.



### **Building agents of change**

You will be able to make decisions in times of uncertainty and crisis, helping the organization overcome obstacles.



### Increased international expansion possibilities

Thanks to this program, the company will come into contact with the main markets in the world economy.







### **Project Development**

The professional can work on a real project or develop new projects in the field of R & D or business development of your company.



### Increased competitiveness

This program will equip students with the skills to take on new challenges and drive the organization forward.





### tech 54 | Certificate

This program will allow you to obtain your **Postgraduate Diploma in Red Team Cybersecurity** 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: Postgraduate Diploma in Red Team Cybersecurity

Modality: online

Duration: 6 months

Accreditation: 18 ECTS



#### Postgraduate Diploma in Red Team Cybersecurity

This is a program of 450 hours of duration equivalent to 18 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



<sup>\*</sup>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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» Exams: online

